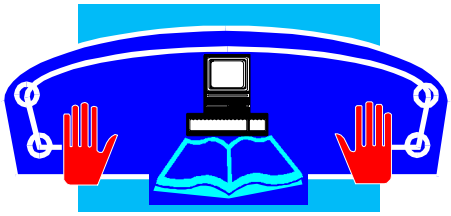

Campbell Hill/lake Park Feasibility Study
Date of Report: 1982
Author: Resource Management Consultants (n.w.t.) Ltd.
Catalogue Number: 11-8-31

CAMPBELL HILLS/LAKE PARK FEASIBILITY STUDY

Presented To
Department of Economic Development and Tourism,
Government of the Northwest Territories.
May 1982

RMC in **cooperation with:**
W. M. Baker, Tourism, Parks & Recreation *consultant*
Lambur Scott **Architects** *Ltd*

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May 31, 1982

Mr. Keith Thompson,
Head, Development and Research,
Tourism and Parks,
Department of Economic Development and Tourism,
Government of the Northwest Territories,
Yellowknife, N.W.T.

Dear Mr. Thompson:

RMC Resources Management Consultants (N.W.T.) Ltd. is pleased to submit the final report entitled "Campbell Hills/Lake Park Feasibility Study".

The study team have addressed in a comprehensive manner all planning and development aspects of the first Natural Environmental Recreational Park in the Northwest Territories. The research, consultation, and report compilation process was an exhaustive yet inventive exercise over the last eight months and we believe the study reflects this intensive level of effort.

We wish to take this opportunity to thank you and your colleagues in the Department; the Canadian Wildlife Service; and residents of Inuvik and area for the cooperation we received during the study.

Sincerely,

RMC RESOURCES MANAGEMENT CONSULTANTS
(N.W.T.) LTD.

Gerry Gallant

G.J. Gallant
Resident Principal

GJG:bm

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STUDY OBJECTIVES

The objectives of this study are to provide the Government of the Northwest Territories with:

a. park purpose statements and recommended type of park;
b. environmental capability and activity suitability mapping for the site;
c. a conceptual development plan;
d. projections of the types of users and likely level of use of the site for the first five years of park operation;
e. a phasing plan, together with associated cost estimates for each phase; and
f. a suggested administrative structure and operational guidelines for the park."

PLANNING ISSUES

The preliminary list of-planning issues outlined in this report have been drawn from discussions with a wide variety of interest groups in Inuvik, and from the study team's own observations assembled following the initial field trip.

These issues are intended to provide a point of departure for the resolution of a wide array of planning problems bearing upon this feasibility study. They serve to clarify the nature of planning problems and, as such, represent an important component of the study process. Ultimately, the success of any proposed park development plan will depend on the extent to which significant planning issues have been addressed and adequately resolved in context with one another.

The overall list of planning issues have been addressed under the following broad topic areas:

* Environmental Issues - dealing with the environment, its sensitivity, and capability to accommodate increased intervention within the context of existing use patterns.

* Park Structure Issues - dealing with type of park and its potential for facilities development to meet user needs.

* Management/Administrative Issues - dealing with the operational framework necessary to implement and manage the proposed park.

RECREATIONAL USE AND DEMAND

Recreation activity per capita (resident and tourist), and total number of visitors, are both growing rapidly. The total supply of recreational facilities should likewise expand.

The major deficiency limiting recreational involvement within the study area is the lack of shelter facility(ies). The second most mentioned requirement was the need for marked trails to be used by a variety of activity groups such as hikers, picnickers, snowmobiles, skiiers, etc.

ALTERNATIVE PHYSICAL DEVELOPMENT CONCEPTS

It is important to note that the final selection of a preferred development concept does not necessarily imply a choice between the options presented. The preferred strategy most probably will be comprised of elements of each of the three alternatives consistent with emerging local objectives respecting user orientation, local economic impact, environment protection, target development cost, and financial self-sufficiency.

(a) The Background Implications of Supply and Demand Analysis for Feasible Development Options

The preparation of alternative development plans requires consideration of implications of the various supply foundations including climate, terrain configuration, hydrography, vegetation, wildlife, fish, insects, historical aspects and transportation infrastructure. Competitive forms of land use, particularly quarrying, must be assessed. Economic and social factors related to resident/visitor use and demand, and interpretive programs require note.

(b) Protection of the Unique Natural Environment vs. Outdoor Local Resident and Tourist Activities

The study area is noted for its rare and, in some cases, unique floristic and avian resources. It offers a reasonably strong undisturbed, natural arctic environment that relatively speaking, is easily accessible to a wide variety of potential users.

The retention of the proposed park area in as natural a state as possible should always be an underlying objective.

(c) The Accommodation of Non-Conforming Land Uses in the Study Area

Consistent with GNWT policy, resource exploitation (e.g., gravel quarrying) is not necessarily viewed as being inconsistent with park development objectives. However, given that extensive resource-related impacts may affect the image or quality of the environment associated with the proposed park, they should be evaluated both in terms of physical effects on the environment and in terms of defined park development objectives. In simple terms, resource development should be restricted to areas sufficiently removed from the defined environmentally sensitive precinct. Furthermore, these areas should be situated so as to minimize visual impact from heavily travel led routes, thereby minimizing damage to the wilderness experience impact that is so important to visitors.

(d) Summer vs. Winter Seasonal Emphasis on Park Development

Climate impacts heavily upon traditional southern recreation patterns. Because of the short summer tourist season, every effort should be made to integrate tourist-oriented facilities (e.g., accommodation, interpretative and day-use facilities, etc.) with the year-long, primarily winter- oriented use patterns of the local residents.

(e) The Community Social & Economic Impact Issue

Extensive inventory work has identified the need for a wide range of recreational programs and facilities for the residents of Inuvik. In the planning for these needs, however, it should be recognized that the proposed park is not a substitute for intensive facility-oriented recreation most economically and conveniently provided within the town itself. The park offers, by virtue of its particular and valuable site characteristics, a complement to urban recreation and can, in combination with in-town facilities, provide a rich diversity of recreational experiences for the Inuvik resident.

The location of the primary administration and Interpretation Centre for the park is an important tangible manifestation of this general issue. It would appear that there are major economic and social benefits to be achieved by placing these facilities within the Town of Inuvik rather than within the park itself.

(f) Park Image/Design Issue

The image/design theme chosen must be a function of both tourist and local resident expectations if the user potential is to be realized. The local resident tends to view the park as an extension of the immediately available recreation opportunities. The tourist is generally looking for the wilderness experience, and the opportunity to stand at the edge of civilization to view the remoteness of the north that the arctic venue offers.

ALTERNATIVE DEVELOPMENT STRATEGIES

In theory, a continuum of options is available extending from a "do nothing/leave as is" proposition; reservation as a single use/purpose natural history reserve, preserve or management area, through to an intensive use local and immediate regional outdoor recreation area of the Town of Inuvik. Between the latter two extremes, a considerable range of alternatives can be formulated that seek to combine the objectives of preservation of unique natural environmental values and the utilization of local resident and tourist outdoor recreation opportunities.

On the basis of supply, demand and local interest/ attitudinal investigations conducted to date, it appears that the development of an Extensive Use Natural Environmental Park, as defined under Territorial legislation and regulations, is the most practical and feasible strategy. Within this general concept, a number of variations placing varying degrees of emphasis upon various aspects of the issue-based planning guideline framework can be formulated readily.

Alternative Concept A: Natural Environmental Emphasis

In this option for an extensive use/natural environmental park, the preservation of natural environmentally significant landscape units occcupies a critical central position in planning procedures. While maintaining and expanding upon outdoor recreation opportunities, access to the interior rock uplands is restricted to hiking access.

The main administrative and operational centre for the park would be located in Inuvik proper. The centre would contain all major interpretation facilities and be coordinated with existing educational programs.

Along the Dempster Highway corridor flanking Campbell Lake, the following improvements/facilities are proposed.

* Caribou Creek Campground: Upgrade and maintain the existing day-use area in keeping with the wilderness park image. Develop a park entrance/gateway with a small information/display area highlighting park features.

* Provide for observation points coordinated with picnic sites along the Highway facing the escarpment.

* Campbell Creek Day-Use Area: Retain and upgrade visual appearance of the existing day-use facilities (primarily for local resident use).

Along the east/west portion of the Dempster Highway north of the airport, it is proposed that the existing MOT road be developed as a recreational access to Dolomite Lake, with boat launch facilities and shore line trails provided.

To meet the perceived demand for further cottage development in the area, it is also suggested that a restricted development zone, 200 metres in depth along the south shore of Dolomite Lake, be reserved for this purpose. Access to this area would be maintained by boat along an improved Dolomite Creek waterway (with channel markers) and via an improved MOT road with docking facilities on Dolomite Lake as described above.

The East Channel of the Mackenzie River would be designated as the primary waterway access to the site, with improvements by way of channel markers and landing sites to provide points of departure for wilderness camping trips.

For the interior of the site, an extensive trail system is proposed. This system, traverses the site and establishes a number of circuits connecting points of visual interest while bypassing sensitive environmental areas. This system has been extended to provide a link to the town site and is coordinated with the proposed Dolomite Lake shore line trails and, in the vicinity of Inuvik, with established snowmobile routes.

Cross-country ski and snowmobile trails are also proposed for the area, with modifications to the existing use patterns to bypass the rare plant communities. In conjunction with the proposed routings (which provide for a circuit through the town site), a winter shelter is proposed.

Boating access to Campbell Lake would be maintained via the East Channel and Gull River to the south end and Campbell Creek to the north. Landing restrictions are proposed for the west shore of Campbell Lake, with minor landing facilities to be provided along the east shore as demand warrants. Lower Campbell Lake would be subject to restricted boat access to protect the migratory bird staging area.

Alternative Concept B: Resident Recreation-Oriented Emphasis

In this option, park development proposals are concentrated within the primary local use zone, generally defined as the northern portion of the study area centering on the Dempster Highway from Inuvik to the Campbell Creek day-use area.

As in Concept A, the East Channel of the Mackenzie River is designated as the primary waterway access to the southern portion of the site. It is proposed that a "base camp" facility, providing winter shelter and camping access to the uplift area, be established in the vicinity of the existing Norris camp.

In the vicinity of Inuvik, it is proposed that a recreational corridor to accommodate hiking, cross-country skiing, and snowmobile trails, be developed as a link between the town site and Dolomite Lake. As a terminus of the trail corridor, Dolomite Lake may absorb increased cottage development and provide the water-based recreation activities. Consequently, the MOT road should be improved to provide direct vehicular access from the Dempster Highway to Dolomite Lake.

Between the Dolomite Lake recreational area and the Campbell Creek facility, it is proposed that the old quarry road be upgraded to provide access to a new day-use area at the northern edge of the uplift area. This facility could provide a point of origin for a series of short trails to attractive lake destinations and view points within a zone representative of the physical features of the larger uplift area.

The popular and extensively used Campbell Creek facilities represent an additional significant component of this option. It is proposed that existing day use facilities would be upgraded and expanded within the limits of site development capacity. Additional recreational vehicle parking is required, and the primary boat access via Campbell Creek to Campbell Lake should be maintained and improved if possible to maximize the boating potential at the site.

In an attempt to maximize local use of Campbell Lake, a multipurpose site to accommodate picnicking, hiking, and boating is proposed in a location south of the existing "Teacher's cabin". This site will also provide access to beaches on the west shore of Campbell Lake and could accommodate a winter shelter at the terminus of an established snowmobile and cross-country ski trail.

Given that the facilities proposed under this option impinge upon the previously defined environmentally sensitive areas, considerable care must be taken to limit the extent of trail development and control seasonal usage of prescribed facilities.

Alternative Concept C: Tourism-Oriented Emphasis

This option emphasizes intensive facility development in the Dempster Highway corridor within the context of a natural wilderness park. The Caribou Creek gateway facilities and the Campbell Lake promontory area would, under this option, both warrant a high degree of development.

At Caribou Creek, highway service functions; (e.g., food, fuel, etc.) could be incorporated with the campground and visitor centre facility if demand requires.

At the Campbell Hill promontory, interpretive hiking trails (1 ocated adjacent to the Highway at the south end of the main portion of Campbell Lake) to an observation point overlooking the site and interpretive program facilities may be developed. Adjacent to the promontory, on the west side of the Highway, there is further potential for development of a recreation vehicle campground on the site of an abandoned quarry.

Between the promontory and an upgraded Campbell Creek day-use centre, a number of rest areas combined with picnic facilities could be developed utilizing existing sites and areas cleared during the construction of the Dempster Highway.

The proposed new day-use facilities, accessed from the old quarry road west of the Campbell Creek day-use area, could be developed as outlined in Concept B, except that a more sophisticated infrastructure (e.g., paved or wooden trails) may be required to mitigate against environmental impact resulting from heavy visitor usage.

The Town of Inuvik itself could accommodate a major regional tourism centre promoting the park and providing visitor information facilities for the Delta region.

An extensive trail system would be developed over the park interior under the tourism emphasis with routes converging on the quarry road day-use area and the East Channel base camp.

To ensure a wide variety of recreational activity options, private tourist operators should be encouraged to participate in facilities development at the major activity focal points.

For this tourism-oriented emphasis, the importance of the development of the Dolomite Lake area as a major recreational focal point may be reduced in favour of highway-related development, although the cottage development zone identified in preceding options could, perhaps, be redefined to accommodate tourist lodge-type facilities.

In any case, the adoption of a tourism-oriented concept for park development requires rigorous control over the quality of proposed improvements and new construction, and demands rigorous management and maintenance programs to ensure that the park offers a consistently high level of enjoyment to all visitors.

ALTERNATIVE JURISDICTION/MANAGEMENT CONCEPTS

A comprehensive consideration of the jurisdiction/management aspect demands an initial recognition of the three major constituencies having varying degrees of interest in the study area. This is by virtue of legislative mandates, park research and development activity and current and future outdoor recreation and tourist use. Within each, several sub-groups or sub- constituencies are present as summarized in the following schematic.

Federal	Territorial	Municipal
1. Ministry of the Environment a) Canadian Wildlife Service (Edmonton) b) Parks Canada (Edmonton) c) Inland Waters Directorate (Inuvik) 2. Transport Canada Airport Administration (Inuvik)	1. Dept. of Economic Development & Tourism - Tourism & Parks 2. Renewable Resources Wildlife	1. Council of the Town Inuvik - Inuvik Recreation Board 2. Dept. of Education, GNWT 3. Non-Government Organizations (NGOs) - sports clubs and associations

The legitimate significant interest and concerns of the above jurisdictions and agencies varies considerably and hence their degree of involvement. Tourism and Parks of the GNWT Department of Economic Development and Tourism is clearly the central lead agency.

If an extensive use Natural Environmental park is selected, then strong inputs from the Fish and Wildlife branch of the Government of the NWT will be crucial both for basic research (limnology and wildlife inventories) and for continuous maintenance. The involvement of the Canadian Wildlife Service (Edmonton), particularly in relation to peregrine falcon populations, is also highly desirable, especially from a research standpoint.

The accommodation of the local/municipal interests and points of view into the operation of any park development in the study area appears desirable and essential to achieve effective and efficient operation.

The involvement of the local educational agencies in the park administrative structure clearly depends upon the nature and extent of the natural and cultural interpretation programs presented in the park program.

ALTERNATIVE FINANCING CONCEPTS

It is almost impossible to deal effectively with this topic until discussions have been held with respect to the preferred physical development and jurisdiction/management concepts. However, a few useful general comments can be presented at this point.

The central management agency obviously will assume primary or complete financial/budgetary responsibility for development, operation and maintenance of the preferred facility. In the long range, the operational/maintenance costs will be the major expenditure.

Financial contribution to any facet, including development, operations and maintenance, brings a degree of control, usually proportional to the scale of the inputs relative to total cost. In some cases, "sweat equity" or labour input may be considered as a form of financial input yielding some influence in management and operational decision making.

Given the probable volume of activity in the park, particularly in the early years of operation and development, revenues can be expected to be virtually non-existent to minimal.

THE PREFERRED STRATEGY: NATURAL ENVIRONMENT RECREATION PARK

Natural environmental parks are integral and indispensable components in the comprehensively structured park system outlined in G.N.W.T. policy. However, to date no parks of this category have been established within the system of the Northwest Territories.

The need for parks of this type, which perhaps represent the essence of the park concept, have been clearly defined. They provide protection and preservation for natural and cultural landscape values, make available a quality setting for outdoor recreation activities, offer superb opportunities for natural history interpretation and education and in some cases represent excellent natural research laboratories.

MULTIPLE OBJECTIVES

The planning, development, operation and maintenance of the park will be governed by four basic objectives including protection and preservation; low intensity, extensive use outdoor recreation activity; natural and cultural heritage appreciation and interpretation; and increased positive tourism impacts. Research activities consistent with and supportive of the foregoing objectives also will be considered legitimate undertakings within the park area.

(a) Protection and Preservation

Territorially and internationally significant elements requiring protection and preservation include rare plant communities, raptor nesting sites, meromictic lakes, terrain with outstanding aesthetic values and elements of the cultural landscape of an archeological and historic nature.

(b) Low Intensity, Extensive Use Outdoor Recreation Activity

Within the proposed park, several opportunities exist within the capabilities of the landscape for the provision of recreation areas and facilities to meet the needs of Inuvik residents and the tourists. These include hiking, wilderness and conventional camping, cross country skiing and snowmobiling, angling, waterway travel by powerboat and canoe, windsurfing, iceboating and picnicking.

(c) Natural and Cultural Heritage Appreciation and Interpretation

Interpretation facilities and programs will provide the opportunity for the appreciation and understanding of the natural and cultural landscape heritage of the area including its climate, geology, physiology, hydrography, biology, vegetation, prehistoric cultures and historic associations.

(d) Economic Impact of Park Development and Increased Tourism

The objective in this case is to induce increased tourist visitation, length of stay and participation in the Inuvik and region economy, thereby generating increased income and employment opportunities for local residents.

ENVIRONMENTAL CONSTRAINTS

The recognition and accommodation of the fragile nature of the arctic delta environment is the fundamental starting point for any planning development and operating strategy for the proposed park. In this high northern latitude, facilities for dispersed extensive forms of recreation, interpretation and tourism activity must dominate the park development concept. Moreover, winter season use and travel is least destructive of terrain values and should be fully developed as a basic approach in overall operations. This contrasts sharply and dramatically with the parks planning and development in southern Canada where the focus is upon concentrated intensive summer use in highly serviced and organized campgrounds, beaches and trailways.

MASTER PLANNING, ZONING AND FACILITY APPROACH

Master planning, developed through zoning of the site and. implemented through facility development and supporting use regulations, provides a suitable framework for the attainment of the previously listed multiple recreation objectives and the preservation of the outstanding natural and cultural landscape attributes present. Areas of extreme sensitivity and significant established patterns of use are recognized in the general zoning of the park area. Appropriate facility development, and where necessary regulations restricting the time and intensity of use, are proposed for these areas to . define and direct the use of the proposed park.

In order to achieve the multiple objectives of recreation, tourism attraction and environmental preservation numerous , facilities are proposed for the park area.

PRINCIPAL FACILITY COMPONENTS

(a) Entrance - Primary access to the park by both residents and tourists will be along the Dempster Highway. A major entrance sign and a posting of park rules and regulations at the Caribou Creek location constitutes the southern entry point.

(b) Highway Interpretive Site - A major interpretive site is proposed for an area midway down the east side of Campbell Lake on the Dempster Highway.

(c) Day Use Sites - The principle entry-way facility at Caribou Creek and facility at Campbell Creek, would be maintained in their existing layouts.

(d) Accommodation Sites - Proposed accommodation facilities within the park area are of two types; a primitive, unserviced walk-in campsite and primitive, semi-serviced rental cabins.

(e) Boating Facilities - The existing boat launch at Campbell Creek will be maintained. Channel markers at the junction of Dolomite Creek and Little and Big Gull Rivers with the Mackenzie are proposed.

(f) Interior Trail System - It will provide a carefully chosen route allowing campers and hikers the full range of the unique Campbell Hills landscape while avoiding the most environmentally sensitive areas.

Two new facilities, comprised of full all weather shelters with firewood supplies are suggested at alternate locations to serve as destinations for winter day travelers from Inuvik.

(g) Central Administration Office - A separate Park Administration Building is not necessary at this time. The minimal complement of full time seasonal staff, the anticipated small number of tourist park users and the convenience of staff, residents, and tourists to facilities in Inuvik all dictate the use of the existing G.N.W.T. Tourism office for initial park administration purposes.

OPERATIONAL GUIDELINES

The park will receive full time supervision during the peak summer season from a Park Supervisor. He will be responsible (either directly or through contractual agreement) for the operation and maintenance of the park, including: access and parking areas, day use areas, interior hiking trails and campsites, interpretive displays and programs, water supply, waste disposal, park security and the Inuvik administration office. The Park Supervisor would also be responsible for the coordination of a rental cabin site, if developed, and would serve as the immediate territorial liaison with local interest groups.

Maintenance

Maintenance work would, be undertaken by local contractors and would include day use areas, roads and parking areas and interior campsites.

Administration

The appointed Park Supervisor will be the immediate Government contact for matters dealing with the park. He will serve as the liaison with local interest groups, including the Town of Inuvik, and in consultation with the GNWT Wildlife Service, will monitor the impact of Park operations.

In many respects the Campbell Hills Lake Park will serve as a municipal recreational resource for the Town of Inuvik. The Administration should, therefore, promote extensive participation by the local community in Park operations.

MARKETING/PROMOTION STRATEGY

Primary emphasis should be placed on the tourism element, as local residents will quickly become aware of the benefits of the park via word of mouth and through the tourism promotion methods. Residents will likely utilize the park area regardless of promotion although the GNWT can act as a catalyst for the involvement of local clubs and groups in park related activities.

The underlying marketing objective of the park should be to increase tourist and resident use of the park in a manner that results in the economic benefit from recreation expenditures accruing in the Inuvik and area business infrastructure. .

COSTS

The Park development process in large part represents an entrenchment of existing, primarily-local resident, use patterns within a larger framework of environmental preservation. As such, only several minor additional capital projects are proposed and these are intended to generally reinforce and direct established patterns of use, not create new ones. ,

STAGING

In order to generate a 'park presence' and a recognition by both resident and tourist of the new facility which has been established, the proposed capital projects should be put in place as soon as possible. Given the relatively small magnitude of these facilities, it is suggested that the majority of this work be completed within the first three years of the development process.

1. INTRODUCTION

1.1 Authority

The study was completed in accordance with the terms of a contract between RMC Resources Management Consultants (N.W.T.) Ltd. and the Department of Economic Development and Tourism, Government of the Northwest Territories, and the Canadian Wildlife Service, Environment Canada, Edmonton, dated September, 1981. For the conduct of the study, the prime contractor entered into consortium arrangement with W.M. Baker, Tourist, Park & Recreation Consultant, Scarborough, Ontario, and Lambur Scott, Architects, Edmonton.

1.2 STUDY OBJECTIVES

The objectives of this study, as quoted from the Terms of Reference, 2.0 Contract Purposes, were to provide the Government of the Northwest Territories with:

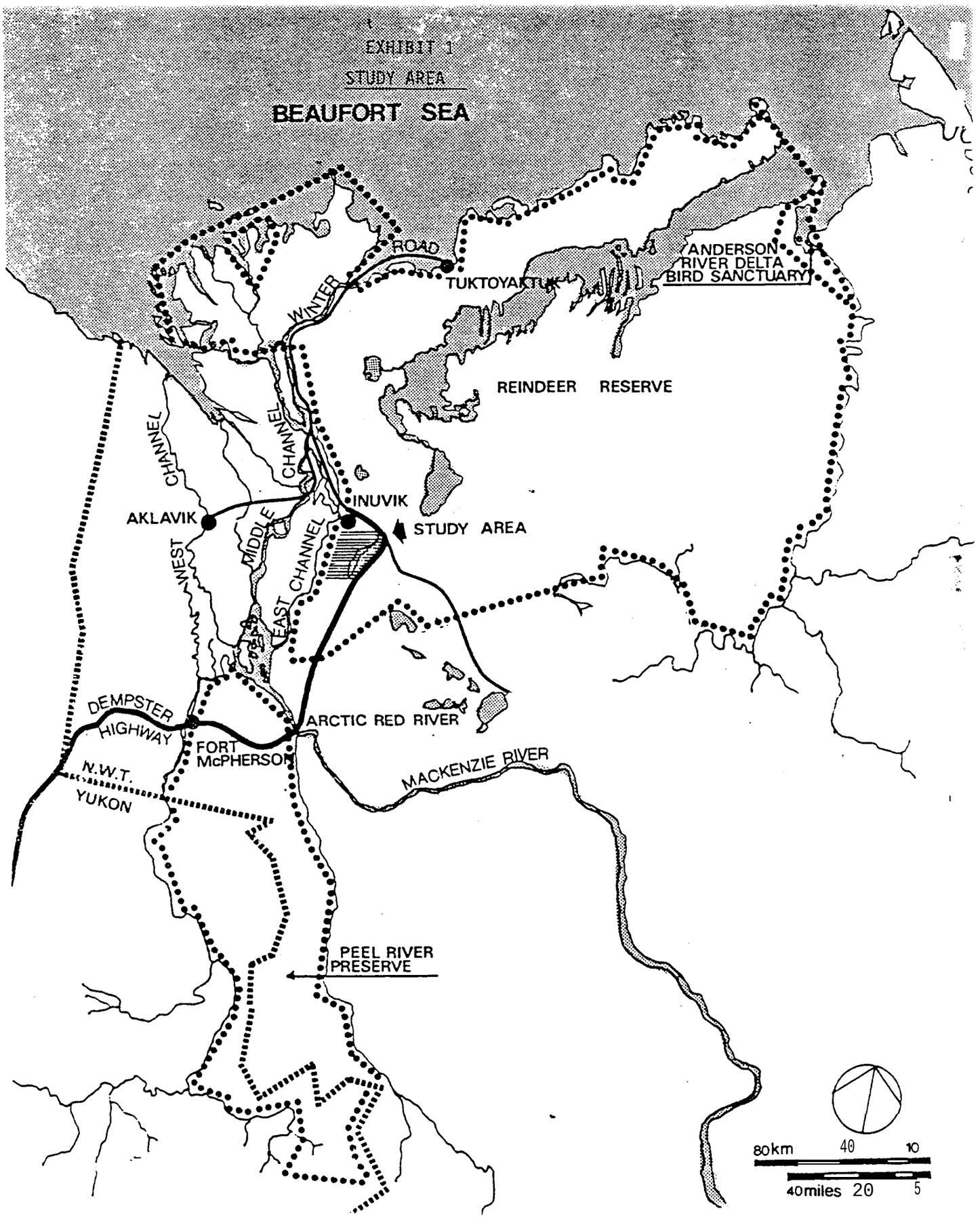
"a. park purpose statements and recommended type of park
b. environmental capability and activity suitability mapping for the site
c. a conceptual development plan
d. projections of the types of users and likely level of use of the site for the first five years of park operation
e. a phasing plan, together with associated cost estimates for each phase
f. a suggested administrative structure and operational guidelines for the park."

The consultants were to prepare at least two alternative park development concepts and to provide an indication of their respective costs and benefits. In describing and documenting the conceptual development plans, the consultants were to indicate the variety, type, location and size of all existing and proposed park visitor land uses and related developments (access roads, trails etc.) The list of possible visitor activities/services were to include, but not necessarily be limited to:

primitive campsites (accessible only by water, foot, snowmobile)
semi-serviced campsites
air and water access
gas and oil for both cars and boats

EXHIBIT 1

STUDY AREA



equipment rentals (e.g., boats)
primitive (simple, but comfortable) roofed, rental accommodations (e.g., housekeeping units, tent "shacks")
group and bus tour facilities (e.g., campgrounds)
boat launch
securable long term car parking
picnicking, swimming, wading and fishing activities for all seasons of the year "
use by visitors to the area and Inuvik residents alike.

1.30 Approach and Methods

A detailed statement of approach and methods is contained in the work program presented with the proposal submitted to the client on July 14, 1981. This document, together with the detailed tabulation. of contacts presented in Appendix 1 to the report, provides a complete statement of the approach and methods, and the actual implementation process. The following discussion is intended to serve only as a brief overview.

Initial phases of the study involved the identification, assembly and analysis of a wide body of documentary evidence obtained in government offices in Ottawa, Edmonton and Yellowknife. This was supplemented by additional documentary material obtained from the offices of the Town of Inuvik and the Northern Scientific Research Centre of the Department of Indian and Northern Affairs situated in that community.

The determination of local interests, needs and demands for park and outdoor recreational facilities, together with tourist volume visitation and activity participation involved about 15 days of interviews with a wide range of knowledgeable Inuvik residents. Extensive interviews also were conducted with Federal and Territorial administrators involved in resource, park and tourism development.

A moderately intensive field examination of the study area was completed over a 15 day period in September and early October. The terrain for a mile on either side of the Dempster Highway was examined in detail, and its physical characteristics carefully mapped. The upland rock cliffs along the west shore of Campbell Lake were penetrated on three occasions on foot. The Mackenzie River, Campbell River, Campbell Lake and Dolomite Lake portions of the study area were inspected by boat to obtain an appreciation of the general impact of the area from a low level perspective. An understanding of the nature of the waterways was obtained, and an accurate mapping of shoreline conditions including beaches was undertaken. Finally, a helicopter flight was made across all portions of the study area.

During field operations, a11 key members of the study team were present in Inuvik. This provided a satisfactory basis for the exchange of impressions and the preliminary development of viable alternative concepts.

All physical terrain mapping was completed while in Inuvik. In addition, the text for the bulk of the analysis of the physical foundations for park and tourism development was prepared prior to leaving the field.

Most of the research for chapters 2 through 6was conducted during the Inuvik field operations. The remaining research was accomplished in Yellowknife, Edmonton and Ottawa. Chapters 1 through 6 formed the foundation for the development of Chapter 7. - Alternative Land Use Concepts.

It is critical to note several significant constraints imposed upon the conduct of the study:

(a) Fieldwork was undertaken at a time of year when the impact of the area was probably at its minimum. Days were cloudy, with intermittent snow and rain showers. With the exception of the Swan, the golden eagle and a few ducks, the migratory bird life had left the area. Water levels were extremely low, which made boat travel difficult. There was little opportunity to observe either tourist activity or local recreational use of the area. Given these constraints, it was necessary to place heavy reliance on documentary evidence and verbal comment, some of which was conflicting, as is often the case.

(b) Topographic maps, at a scale of 1:50,000, were somewhat out of date, in that there was no highway indicated and many of the gravel pits and quarries were not shown. Of greater importance, the only air photography available for the entire area was flown by the R.C.A.F. in 1959, at a scale of 1:20,000. The resolution was insufficient for detailed bio-physical evaluation of terrain conditions. The flights were made when the ice was still on the lakes and there was no foliation on the deciduous trees or the tamarack.

1.4 Report Format

This initial phase of the study is divided into seven chapters. Introductions are presented in chapter one. Chapter two discusses the various planning issues involved. The elements of the physical inventory are detailed in chapter three. Environmental capability is presented in chapter four. Resident and visitor recreational use and demand is described in chapter five. Chapter six examines the interpretive program potential. Alternative park development concepts are investigated and presented for discussion and selection in chapter seven.

1.5 Previous Interest in Park Development in the Study Area

Over the last decade, or more, the area has been examined in varying degrees of intensity, under a number of scientific investigations and park inventory programs.

In 1970, an area of about 130 square miles, situated to the west of Campbell Lake, south of Dolomite Lake, and bounded on the west and south by the Mackenzie and Campbell Rivers, was considered by the Government of the Northwest Territories to be a suitable park reserve. To date, no action has been taken on this proposal.

In the 1972 report of the Sub-Arctic Panel 10 of the Sub-Committee Conservation of Terrestrial Communities, of the Canadian Committee for the International Biological Program, the area was identified as a candidate for inclusion in a system of ecological reserves in northern Canada. The basis of the recommendation centered upon the presence of a number of rare arctic and arctic/beringian plant communities, together with a large population of nesting peregrine falcons. An area of approximately 120 square miles, centred around Campbell Lake, was designated as Site Number 48 - 19 Dolomite/Campbell Lake Area. To date, Polar Bear Pass is the only site being implemented as a biological reserve in northern Canada.

In 1975, an extensive study of the Campbell Hills (Exhibit 2) was conducted by the Canadian Wildlife Service, and a report prepared recommending development as a National Wildlife Area. In this proposal, ample provision was made for non- conforming uses such as gravel quarries, and for extensive local recreational activity within a management program which was intended to guarantee the maintenance of the peregrine falcon population and the rare plant communities identified under the IBP. After extensive discussion, a number of memoranda, and follow-up reports based on this study, the concept has been held in abeyance. To a considerable extent, the problem was one of timing which saw the proposal caught up in the matter of Indian and Inuit land claims and the interests of the Town of Inuvik in maintaining adequate sources of gravel and crushed rock for anticipated expansion.

In August 1976, The Town Council of Inuvik presented a paper entitled, Recommendations for Town Council Action, . ..''objecting to the encroachment of outside environmental groups who are attempting to tie up a large area of land...known as the Chitsi area...".

In the 1977 edition of the Land Use Information Series, Aklavik Sheet prepared by the Department of Indian and Northern Affairs for the Department of the Environment, the area identified under the International Biological Program (IBP), is shown as Area 38, and termed as a Northern Ecological Site (1975). It encompasses approximately 172 square miles. (Please refer to Exhibit 2, Section 2 - Planning Issues)

In 1979, Parks Canada completed an analysis of the Mackenzie Delta (Natural Region 10) to determine potentials for inclusion under their program of Natural Areas and Sites of Canadian Significance (NACS). In this study, four NACS were identified within the region. The two that scored very highly in the resource evaluation were classed as Preliminary Areas. The two that did not score quite so well were designated as Candidate Areas. Included in the latter were the Campbell or Rocky Hills.

On July 14, 1981, the Town of Inuvik Council passed Motion 81 - 2994, requesting the Commissioner of the Northwest Territories to transfer to the Town, lands encompassing the present study area as well as a buffer zone to the north, east and west of Inuvik. The area was to function primarily as an outdoor recreational site for residents.

1.6 Summary of Pertinent Data - Inuvik, N.W.T.

1.6.1 Population

Dene Population	241	(7.4%)
Inuit Population	616	(19.0%)
Others - Population	2,393	(73.6%)
Total Population, 1981	3,250	(1 OO. O%)

1.6.2 Location

Latitude: 68° 21′ North
Longitude: 133° 43′ West

Located on the East Channel of Mackenzie River; 97 km. south of the Beaufort Sea; at the terminus of the Dempster Highway; 3372 road km. from Edmonton; 1930 air km. northwest of Edmonton.

1.6.3 Local Economy

Government of the N.W.T. Inuvik Regional Office with 228 positions.

Government of Canada Departments including Canadian Forces , Station contingent of 200 positions.

Beaufort Sea oil and gas exploration and development supply and services.

Commercial activities supporting government and industry. Hunting, trapping, fishing on a limited scale.

1.6.4 Climate

July mean high 19.2°C, low 7.4°C, sun above horizon 24 hours/day.

January mean high -24.1°C, low -34.5°C, sun below horizon December 6 - January 6.

2. PLANNING ISSUES

The preliminary list of planning issues outlined below have been drawn from discussions with a wide variety of interest groups in Inuvik (See Appendix 1), and from the study team's own observations assembled following the initial field trip.

Issues are intended to provide a point of departure for the resolution of a wide array of planning problems bearing upon this feasibility study. They serve to clarify the nature of planning problems and, as such, represent an important component of the study process. Ultimately, the success of any proposed park development plan will depend on the extent to which significant planning issues have been addressed and adequately resolved in context with one another.

For the purpose of this study, issues may be grouped into three broad categories as follows:

* Environmental Issues:

  Issues dealing with the environment, its sensitivity, and capability to accommodate increased-intervention within the context of existing use patterns.

* Park Structure Issues:

  Issues dealing with type of park and its potential for facilities development to meet user needs.

* Management/Administrative Issues:

  Issues which deal with the operational framework necessary to implement and manage the proposed park.

2.1 Environmental Issues

As discussed in the Introduction and in Chapter Three, Physical Inventory, the Campbell Hills area has been the subject of considerable study over recent years, due in large part to its unique physical (faunal and floristic) characteristics. The common thread throughout the published reports with respect to environmental concerns is the need to protect the status quo. J. Windsor, in a report entitled "A Conceptual Management Plan for the Proposed Campbell Lake Hills National Wildlife Area" (Canadian Wildlife Services, Edmonton, 1976) concludes that: "Unless measures are taken to redirect the type, location, and chronology of future use, any increase in accessibility (to the Campbell Hills area) will probably result in irreparable damage to an area unique in North America for its faunal and floristic elements". In the context of this study, it is imperative therefore that any proposed development option be sensitized to minimize the environmental impact. As such, the following specific issues should be addressed:

1. Stability of the peregrine falcon population/potential for rehabilitation of nesting sites.

2. Protection of rare plant communities.

3. Suitability of the environmentally sensitive uplift area (ref. physical inventory) to accommodate recreational activities.

4. Control of quarrying and other non-renewable resource operations (present and proposed).

5. Impact of potential increased boat access to Campbell Lake.

6. Impact of potential vehicular access route penetration into the site.

7. Potential for future cottage development.

8. Viability of existing facilities within the proposed park area (e.g. Teacher's Cabin).

9. Potential for reclamation of abandoned Quarries for future development sites.

10. Extent and impact of winter park usage (e.g. snowmobile trails).

2.2 Park Structure

Issues grouped under this heading point towards development options designed to accommodate local recreational needs and tourism potential. They range from broad purpose issues to site-specific concerns. The resolution of these issues within the environmental context will establish the image of the proposed park and its emphasis.

1. Suitability of 'southern' park planning concepts in a wilderness setting.

2. Potential for park development as representative of the larger Delta region.

3. Emphasis on winter park development potential versus summer (tourist) park development potential.

4* The role of the study area in meeting local urban recreational demands.

5. Potential for on-site interpretive program functions.

6. Potential for entrepreneurial involvement in park development.

7. Emphasis on the Dempster Highway as the major recreation activity corridor.

8. Potential of Mackenzie River (East Channel) as the major park access waterway.

9. Need to upgrade/expand the Campbell Creek campground facility.

10. Adequacy of Caribou Creek campground facilities.

11. Need for additional camping and day-use facilities on-site.

12. Potential for a recreational vehicles campground and on-site tourist accommodation.

13. Designation of a design theme compatible with the desired image.

14. Suitability of local materials for park facilities construction.

2.3 Management/Administrative Issues

Many of the issues under this heading focus on the question of jurisdiction. Several interest groups and agencies (including the Town of Inuvik, the Ministry of Transport, C.O.P.E. , various resource corporations, etc.) influence the site through legislated or leased control of land parcels. A further set of issues address the internal management structure of park development and operations. Some of the more significant issues under the management/administrative heading include:

1. Demarcation of park boundaries.

2. Impact of native land claims (Dene, C.O.P.E.).

3. Impact of potential local (Town of Inuvik) control over park development (via extension of existing municipal boundaries).

4. Potential role of various G.N.W.T. departments and federal agencies, in the administration and management of the park.

5. Potential for maximizing economic and social benefits via local and regional policies, programs, and initiatives.

6. Scope and orientation of potential interpretive programs.

7. Seasonal impact on park programming.

8. Availability of staff re. administration, operations and maintenance.

9. Enforcement of the management plan (site, maintenance, and supervision).

10. Park potential for bugetary self-sufficiency (i.e. a user-pays system versus an operations subsidy formula).

Although the above listing of issues is not exhaustive, it establishes the context for developing planning solutions and provides a method by which the final recommended plan can be refined over time to meet changing circumstances. This is of particular importance in the Campbell Hills case where individual interest group objectives, environmental objectives, and park and tourism development objectives form a complex and overlapping web of issues and concerns.

As a step towards identifying specific potential opportunities and constraints to development, Exhibit 2 shows site-specific planning issues within and adjacent to the proposed park area on the accompanying map.

3. PHYSICAL INVENTORY

3*1 Introduction

Initially, natural resource attributes are examined. Climate, terrain and hydrography, or what are frequently termed the **abiotic** supply foundations, are discussed first. The biotic dimensions including vegetation, wildlife, fish and insects, are then evaluated. Subsequent parts are devoted to human geographic aspects including history/culture, nonconforming land uses and noise disturbances.

A standard format is adopted in the discussion of each natural or cultural resource phenomena. Initially, the general pattern of conditions within the area is presented. In this case, the intent is to identify the essential elements which are significant to park planning and development rather than to present an exhaustive scientific treatise on the subject. For each element of the physical inventory, a summary of the major implications for planning is presented in Chapter Seven and serves the purpose of an introduction to the formulation of alternative development concepts. In effect, the treatment is highly pragmatic in nature and intent.

3.2 Climate

3.2.1 General Pattern

At the outset, seasonal length is examined. Attention is then directed to a consideration of some of the major climatic parameters including daylight hours, temperatures, precipitation, and wind speed. Finally, climate is assessed in terns of its tourist and recreation capability.

The evaluation of this natural feature is based largely upon a comprehensive applied tourist and recreation study completed for the **N.W.T.** in 1976.* Additional records were obtained from the meteorological office at the airport in **Inuvik.**

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* Crowe, R.B. 1976: A Climate Classification of the **N.W.T.** for Recreation and Tourism, Project 25, Meteorological Application Branch, Atmospheric Environment, Toronto, Pg. 231

In the aforementioned study, the 37year record for Aklavik weather station was used in determining the patterns for that part of the Delta in which Inuvik is situated. Only minor differences between the climate patterns of Inuvik and Aklavik are considered likely. In some cases values were taken from isoline maps which may have resulted in a slight but not consequential error. Finally, conditions on the higher elevations of the limestone formations which form the central core of the study area may differ slightly from those at the Aklavik and Inuvik weather stations.

It is important to note that the analysis is based on mean values. It is known that there is great variation from the mean in the Inuvik area as in other parts of the Northwest Territories. A climatic event such as spring break-up or fall -freeze-up, may vary from the mean by as much as 30 days or more. There may be wide deviation from rainfall or snowfall in any season. It would be useful to determine the probability of the occurrence of the mean values shown in this study.

3.2.1.1 Seasonal Length

In the source study, seasons were defined in terms of travel mobility on land and water as indicated in the following table:

TABLE 1

SEASONAL DEFINITION BASED ON MOBILITY

Autumn Freeze-Up:

short transitional period between summer and winter in which ground is wet with fall rains and melting snow.

ice on rivers and lakes is too thin to support travel but thick enough to hinder or inhibit boat' traffic.

Winter:

begins when ground is permanently snow covered and lakes, rivers and inlets are fast frozen; ends when snow cover has melted or with the initial break-up of ice on lakes, rivers and inlets; whichever comes first.

Spring Break-up:

short transitional period between winter and summer when travel conditions are similar to those in Autumn.

Summer:

begins when the lakes, rivers, and inlets are ice-free and the ground is no longer snow covered (excepting permanent ice and snow fields).

From a general inspection of Table 2 below, it will be evident that winter is the primary season for the study area covering 213 days from October 22nd to May 22nd, which is 58% of the year. In contrast, summer that begins on June 23rd and extends to September 30th covers only 100 days or about 27% of the year. The spring and fall transitional break-up and freeze-up seasons occupy about 52 days or about 15% of the year (based on mean seasonal values from which variations may occur).

TABLE 2

MEAN SEASONAL LENGTH FOR CAMPBELL HILLS STUDY AREA*

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Ott	Nov	Dec	Days
Fall Freeze-Up										—			21
Winter	—	—	—	—	—						—	—	213
Spring Break-Up					—	—							31
Summer							—	—	—	—			100

Winter freeze-up and fall break-up on the East Branch of the Mackenzie River and on the lakes and ponds is discussed in the section of the physical inventory dealing with hydrography.

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* Crowe, R.B. 1976: A Climate Classification of the N.W.T. for Recreation and Tourism, Project 25, Meteorological Application Branch, Atmospheric Environment, Toronto.

3.2.1.2 Some Critical Climate Parameters

(a) Daylight Hours

While local residents may enjoy snowmobiling under a bright moon, it is generally considered that a minimum of 6 hours combined daylight and civil twilight is required for a satisfactory outdoor recreation and tourist activity day. Since the latitude of the study area is about 68 degrees 15 minutes north, there is less than 6 hours minimum requirement from mid-November to the 3rd week in January. From December 6th to January 6th, the sun is below the horizon for the entire 24 hours of each day. This darkness period coupled with low temperatures and sometimes high winds place a strong restraint upon recreational cross-country skiing and snowmobiling beyond the immediate community area. In comparison, it is useful to note that there is at least 6 hours of daylight and civil twilight in Yellowknife throughout the entire winter season.

TABLE 3

DAYLIGHT HOURS*

DATE	SUNRISE	SUNSET	HRS. OF SUN	CIVIL TWILIGHT MORNING	CIVIL TWILIGHT EVENING
Jan 15	12:34	15:33	2:58	10:45	17:24
Feb 15	10:13	18:03	7:50	9:11	19:06
Mar 15	8:14	19:52	11:38	7:16	20:52
Apr 15	6:00	21:48	15:49	4:59	22:59
May 15	3:31	24:09	20:38	All sun and twilight	
Jun 15	Sun always above horizon		24:00	All sun	
Jul 15			24:00	All sun	
Aug 15	5:12	22:45	17:33	All sun and twilight	
Sep 15	7:11	20:27	13:17	6:14	21:30
Ott 15	9:00	18:19	9:20	8:02	19:14
Nov 15	11:12	16:05	4:53	9:46	17:29
Dec 15	Sun always below horizon		0:00	11:15	16:29

* Inuvik Weather Office, Atmospheric Environment Service, Department of the Environment

In the late winter, (mid March to May) and spring break-up seasons, long daylight hours are ideal for outdoor activity. In the summer, virtually "around the clock" outdoor recreation and tourism is feasible.

(b) Temperature

The temperature regime is summarized in the accompanying table. It is important to note that substantial deviations from the mean are common.

The severity of the winter temperature regime from December through to February is obvious from a quick perusal of the statistics. By mid-March, the temperatures begin to increase rapidly towards an ideal regime in April and May and it is important to note, however, that the extreme minimum values for Aklavik during the high and late winter season indicate variability of conditions that can be encountered (February -52.2° C, March -48.9° C, April -52.2° C, May -25.9° C).

Equally important, the cold temperatures often persist for long periods as shown by the longest consecutive day periods for Aklavik with temperatures at -34.4°C: 12 days; at -40.0°C: 5 days; at -45.6°C: 1 day.

TABLE 4

TEMPERATURES (CELCIUS)*

Month	Inuvik			Aklavik		
	Mean Daily	Mean Daily Max	Mean Daily Min	Mean Daily	Mean Daily Max	Mean Daily Min
January	-29.3	-24.1	-34.5	-28.6	-24.7	-32.6
February	-29.4	-23.9	-35.0	-27.4	-23.3	-31.4
March	-23.8	-17.7	-30.0	-22.3	-17.4	-27.1
April	-14.6	- 7.9	-21.2	-12.7	- 7.2	-18.3
May	- 0.8	3.9	- 5.7	- 0.4	4.2	- 5.1
June	9.8	16.0	3.7	9.6	14.4	4.7
July	13.3	19.2	7.4	13.8	18.3	9.2
August	10.3	15.5	5.0	10.8	14.9	6.8
September	2.7	6.8	- 1.3	3.6	6.6	0.6
October	7.2	- 3.8	-10.7	- 7.1	- 4.4	- 9.7
November	-20.6	-16.5	-24.7	-19.5	-16.3	-22.8
December	-27.1	-22.1	-32.1	-27.3	-23.8	-30.9
Yearly Average	- 9.7	- 4.6	-14.9	- 9.0	- 4.9	-13.1

* Inuvik Weather Station, Atmospheric Environment Service, Department of the Environment.

The summer temperature regime is of short duration, 60-65 days, and relatively weak on the average as shown by the July mean daily 13.3°C; the mean daily maximum of 19.2°C and the mean daily minimum of 7.4°C for Inuvik. Values of this magnitude are indicative of the middle to late spring period in southern Canada. While there are a few hot days each summer, opportunities for beaching are few from the temperature standpoint. Conditions are ideal, however, for rigorous outdoor activities such as hiking.

(c) Winds

From the table presented below and the wind rose diagram in Exhibit 3. the essential features of the pattern can be readily discussed.

TABLE 5

WIND RECORDINGS FOR INUVIK*

PERIOD 1960-72 — HEIGHT OF ANEMOMETER 35'

	JAN	FEB	MAR	APR.	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
PERCENTAGE FREQUENCY													
N	1	3	3	5	9	8	7	6	3	3	2	2	3
NNE	1	1	2	3	5	6	4	4	3	6	2	1	3
NE	3	3	5	6	7	11	9	8	8	7	5	3	6
ENE	8	10	8	13	14	10	10	11	11	22	10	7	10
E	12	16	13	14	12	10	10	10	10	13	15	11	12
ESE	3	4	7	4	3	4	4	3	4	4	6	6	4
SE	7	8	5	4	4	3	6	3	5	5	4	5	5
SSE	3	2	3	3	3	2	3	3	4	3	3	4	3
S	4	3	4	5	4	4	6	7	8	3	4	5	3
SSW	2	1	1	2	2	2	3	3	2	2	1	2	2
SW	1	2	1	1	2	2	3	3	2	1	1	1	2
WSW	1	1	2	1	1	2	2	2	1	2	1	1	1
W	6	6	6	3	4	6	5	6	6	6	3	4	6
WNW	8	8	10	1	7	8	7	1	8	8	6	9	8
NW	7	8	10	11	11	12	11	11	9	7	6	8	9
NNW	2	2	4	6	7	6	6	6	4	4	3	2	4
Calm	29	27	16	10	5	4	6	7	10	12	28	29	15
AVERAGE WIND SPEED IN MILES PER HOUR													
N	7.0	5.7	7.5	8.2	9.0	8.7	8.1	8.0	7.3	7.1	6.8	3.2	7.4
NNE	5.2	5.3	5.9	7.0	7.6	8.6	8.1	7.2	7.3	6.4	4.8	4.5	6.5
NE	4.3	4.4	5.2	6.7	8.1	8.5	7.7	7.1	7.2	6.3	3.8	4.4	6.3
ENE	5.2	4.8	6.1	7.5	8.0	8.1	7.5	7.1	7.4	6.6	6.0	5.1	6.6
E	3.0	5.1	6.1	6.4	6.6	7.6	6.9	6.8	6.5	6.1	5.2	3.1	6.1
ESE	5.5	5.3	7.0	5.6	3.8	0.2	7.1	7.0	6.6	3.9	5.7	5.2	6.2
SE	3.3	6.2	7.1	6.9	6.7	8.7	6.7	6.6	6.9	6.2	6.0	6.2	6.6
SSE	6.9	6.3	7.4	7.3	7.0	8.0	7.0	6.4	7.7	6.2	6.9	6.4	7.0
S	6.9	6.0	7.1	6.7	6.5	7.9	1.3	1.8	8.2	6.9	7.8	6.6	7.2
SSW	6.2	4.9	6.3	5.3	7.3	0.0	7.6	7.5	7.5	6.4	7.9	6.1	6.8
SW	4.4	4.7	4.1	4.1	5.8	6.6	7.2	6.9	6.3	4.6	4.3	4.5	5.3
WSW	3.9	4.0	4.3	4.6	5.7	6.8	7.2	6.8	6.1	4.7	4.0	4.2	3.2
W	4.6	4.8	5.3	5.7	6.5	7.8	7.2	7.5	6.9	6.4	4.8	4.2	6.0
WNW	7.9	7.4	7.8	8.4	9.3	9.5	8.9	9.11	8.8	1.9	6.3	8.2	8.3
NW	10.1	8.1	9.6	9.9	10.4	9.8	9.7	9.9	9.0	8.1	7.9	10.2	9.4
NNW	8.7	6.2	9.2	9.8	9.8	9.5	9.8	9.0	7.9	8.3	7.1	8.9	8.7
All Dlfwc?.l-	4.4	4.2	5.8	6.1	7.6	8.2	1.5	7.2	6.8	5.9	4.4	4.5	6.1

STATION INFORMATION

The station is located at the Inuvik Airport which is situated 8 miles south-east of the Town of Inuvik. The surrounding country is rolling Arctic lowlands on the eastern edge of the Mackenzie Delta. There are sparse small trees. This location is conducive to accurate wind recording as there are no obstructions. (Obstructions have been interposed. Relocation likely in 1974).

Maximum Observed Hourly Speed	40 MW
Maximum Observed Gust Speed	68
Probable Maximum Gust for Maximum Hourly Speed	57

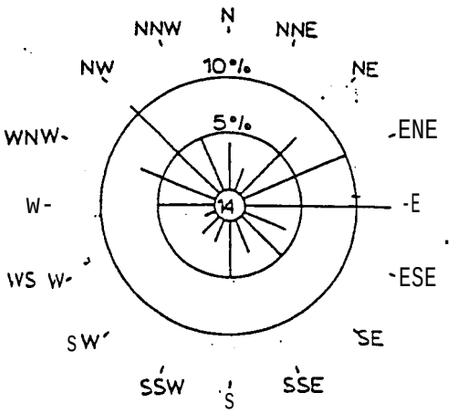
* Inuvik Weather Station, Atmospheric Environment Service, Department of the Environment.

EXHIBIT 3*

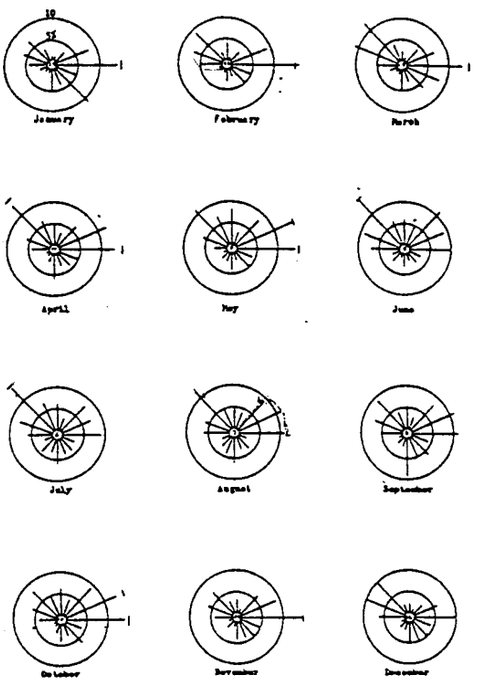
PERCENTAGE FREQUENCY OF WIND - INUVIK

(1961 - 1966)

ANNUAL



MONTHLY



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* Inuvik Weather Station, Atmospheric Environment Service, Department of the Environment.

In the summer months of June, July and August, winds from the east to the northeast at average speeds between 11.0 and 13.7 km/hr dominate. Coming from the warmer land mass to the east, they raise summer temperatures considerably.

In the winter months, winds from the aforementioned direction at speeds of 8.2 to 11.3 km/hr are dominant. In these months, winds from the northwest at speeds of 11.3 to 16.1 km/hr also are frequent. Winds coming from the cold northern quadrants depress winter temperatures considerably.

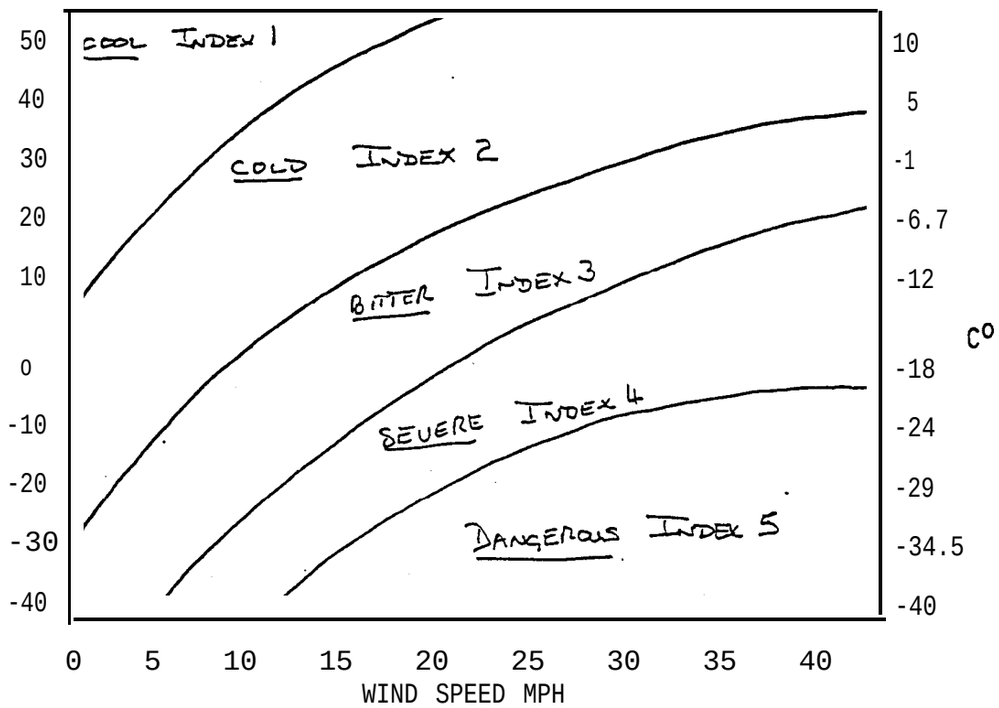
Wind chill, a measure of degree of coldness resulting from the combination of wind speed and air temperature, is an important measure in northern latitudes. The mean wind chill units for Aklavik and Inuvik in January total about 1,550 which is similar to the conditions at Yellowknife. Considering the accompanying wind chart in combination with average wind speeds and temperatures previously noted, it is evident that dangerous wind chill conditions are present for only a short period of time when temperatures in the order of -20°C or lower occur in conjunction with wind speeds of 20 to 30 km/hr.

EXHIBIT 4*

TEMPERATURE WIND CHILL INDEX CHART

As the temperature drops and the wind speed increases, the "coldness" feeling becomes greater. Other factors, such as physical activity, humidity, solar radiation, and type of clothing, also effect "coldness".

The degree of "coldness" resulting from the combination of wind and temperature is called WIND CHILL. To judge the degree of WIND CHILL, estimate the temperature and windspeed and locate them on the side and bottom of this chart. Follow inward at right angles to the WIND CHILL INDEX.



WIND CHILL INDEX DESCRIPTION

COOL	Index 1 -	Comfortable with proper clothing and normal precautions.
COLD	Index 2 -	Heavy clothing required. Travel uncomfortable on overcast days.
BITTER	Index 3 -	High activity required for warmth. Travel uncomfortable even on clear sunny days.
SEVERE	Index 4 -	Travel becomes disagreeable. Exposed flesh freezes.
DANGEROUS	Index 5 -	Survival efforts required. Exposed flesh freezes in less than one minute.

* INUVIK RESEARCH LABORATORY, INUVIK,N.W.T October 1975

(d) Precipitation

The pattern of snowfall and rain at Inuvik and Aklavik is summarized in the following table:

TABLE 6

MEAN PRECIPITATION*
(millimeters)

	INUVIK			AKLAVIK		
	Rain	Snow	Total	Rain	Snow	Total
January	0.3	21.6	20.3	0.0	11.9	11.9
February	0.0	11.9	10.4	0.0	10.7	10.7
March	0.0	18.5	16.5	0.0	11.2	11.2
April	T	15.0	14.0	T	8.1	8.1
May	5.1	14.0	7.5	1.5	6.6.	8.1
June	10.7	2.3	13.0	17.3	1.0	18.3
July	34.0	0.3	34*3	33.5	T	33.8
August	38.4	4.3	46.2	35.1	1.0	36.1
September	10.9	11.4	21.1	10.4	9.7	20.1
October	2.0	34.5	33.8	1.0	31.2	32.3
November	T	18.5	1407	1.0	21.1	21.1
December	0.0	21.8	18.5	0.0	24.4	24.4
Yearly	101.4	1/39	2603	99.1	136.9	236.1

As in all northern locations, snowfall is modest, but ample to support winter outdoor recreation activities continuously from late October until late April or early May.

Summer rainfall conditions are satisfactory from the standpoint of tourist and outdoor recreation activity, being below those for the Boreal forest to the south. Moreover, cloud cover conditions are good in both summer and winter compared with the coastal settlements of the arctic archipelago and the Boreal forest.

* Inuvik Weather Office, Atmospheric Environment Service, Department of the Environment

3.2.1.3 Outdoor Recreation and Tourism Climate Classification

The assessment is based on information contained in the previously noted 1967 study conducted for the entire N.W.T.

(a) Winter Season

A winter outdoor recreation day is defined as ideal, marginal, and sub-marginal from a climate standpoint when the following conditions and limits prevail:

Conditions and Limits

Climate Parameter	Ideal	Marginal	Sub-Marginal
Daylight hours	>12 hours	6-12 hours	<6 hours
Temperature (Mean Daily Maximum)	> -17°C	-26.1°C to -17.8°C	< -17.8°C
Wind Speed	<16.1 km/hr	16.1 km/hr to 24.1 km/hr	724.1 km/hr

The above conditions and limits can be combined to produce a Winter Outdoor Recreation - Tourism Climate Classification as indicated in the following table.

TABLE 7

WINTER OUTDOOR RECREATION-TOURISM CLASSIFICATION SYSTEM

Class or Grade	Factor Combinations	Capability for Outdoor Recreation and Tourism
A	Ideal all factors	Excellent for non-residents and residents. No significant restrictions
B	Two ideal, one marginal	Generally satisfactory for non-residents and residents. Length of daylight may be close to lower limits and wind-chill factor may approach lower limits for comfort and safety
C	Two ideal, one sub-marginal or one ideal, two marginal.	Generally unsatisfactory for non-residents but considerable activity possible by residents in local areas.
D	One ideal, one marginal and one sub-marginal or more than two marginal, or more than one sub-marginal.	Highly unsatisfactory for non-residents and extremely restrictive for residents,

The application of the foregoing classification system to the weather records for Aklavik and Inuvik yields the following statement of the winter climate capability of the study area.

TABLE 8

WINTER OUTDOOR RECREATION - TOURISM QUARTERLY CLASSIFICATION FOR STUDY AREA

Time	Climatic Class or Guide	Limiting Factors
Nov 1	B	daylight hours marginal
Nov 15	B	daylight hours marginal
Dec 1	D	daylight hours sub-marginal mean daily maximum temperature marginal
Dec 15	D	daylight hours sub-marginal mean daily maximum temperature marginal
Jan 1	D	daylight hours sub-marginal mean wind speed marginal
Jan 15	D	daylight hours sub-marginal mean wind speed marginal
Feb 1	c	sunlight hours marginal. Mean daily maximum temperatures marginal
Feb 15	c	sunlight hours marginal. Mean daily maximum temperatures marginal
Mar 1	c	sunlight hours marginal. Mean daily maximum temperatures marginal
Mar 15	B	wind speeds marginal
Apr 1	A	all conditions ideal
Apr 15	A	all conditions ideal
May 1	A	all conditions ideal
May 15	A	all conditions ideal

While local residents snowmobile and cross country ski during the entire winter season, the classification clearly indicates that conditions are unsatisfactory much of the time in comparison with opportunities available in other parts of Canada. This is an important consideration from the standpoint of the development and promotion of winter tourism based on outdoor recreation activities. Moreover, southern Canadians recently moving to Inuvik will tend to rate outdoor recreation opportunities in a similar manner.

It is equally obvious that superb climate conditions are present in the late winter (mid-March to May) and spring break-up seasons when opportunities in southern Canada have disappeared. This has important implications for winter tourism since southern Canadians are on Easter holidays and mid-winter school breaks at this time. Local resident activity should reach its peak in April.

(b) Summer Season

The summer outdoor recreation is defined as ideal, marginal or sub-marginal when the following conditions and limits prevail.

Climate Parameter	Conditions and Limits		
	Ideal	Marginal	Sub-marginal
Temperature Mean Daily Maximum	10°C and>	<1 O°C	(no sub-marginal conditions)
Cloud cover Monthly frequency 8/10 to 10/10 Cloud	<50% of day	Between 50% and 70% of the day	>70% of the day
Wind Mean Monthly Wind Speed	< 17.7 km/hr	> 17.7 km/hr	No sub-marginal Conditions

The above limits and conditions can then be combined to produce a summer outdoor recreation-tourism climate classification as shown on Table 9.

TABLE 9

SUMMER OUTDOOR RECREATION-TOURISM CLASSIFICATION SYSTEM

GRADE	FACTOR COMB I NATIONS	CAPABILITY FOR RECREATION AND TOURISM
Al	Ideal all factors	Excellent for non-residents and residents. No significant restrictions and most southern Canadian activities possible
A2	Two ideal, one marginal'	Generally good for non-residents and residents. Restrictions not particularly severe .
B	Two ideal, one sub-marginal or one ideal, two marginal	Generally satisfactory for non-residents. Reasonably good for residents in local areas
c	One ideal, one marginal and one sub-marginal, or three marginal	Generally unsatisfactory for non-residents. Generally satisfactory for residents in local areas.
D	Two marginal, one sub-marginal	Highly unsatisfactory for non-residents. Limited activity for residents.

The application of the foregoing system to the summer record of Aklavik and Inuvik yields the following statements of the strengths of the summer climate of the study area.

TABLE 10

SUMMER OUTDOOR RECREATION TOURISM DAILY CLASSIFICATION FOR THE STUDY AREA

TIME	QUALITY GRADE	CLASS
July 1	B	Generally Satisfactory
July 15	A2	Good
Aug 1	A2	Good
Aug 15	B	Satisfactory
Sept 1	B	Satisfactory
Sept 15	c	Generally Unsatisfactory

From the foregoing table, it will be clear that summer climatic conditions are modest in terms of the requirements of many of the traditional outdoor recreation and tourist activities of North Americans, including, camping, beaching, and boating. Cold water conditions as noted in the discussion of hydrography confine swimming and bathing to a very limited segment of-the population for a few days in the summer season.

3.3 TERRAIN CONFIGURATION

3.3.1 General Pattern

Geological, physiographic and pedological patterns are dealt with under the general concept of terrain configuration in which the central focus is upon morphology or landform as it relates to park development considerations. In effect, the primary emphasis is upon surface and near-surface terrain patterns and characteristics such as rock outcrop, till cover, delta formations and permafrost.

The extent and distribution of terrain patterns is shown in Exhibit 5 on the opposite page and in Exhibit 6 on page 27. Each is discussed in the following commentary. Hydrography is discussed in a separate section of the report. While the topic obviously is related to terrain configurations, the complexity and significance of water patterns demand individual treatment.

3.3.1.1 Limestone Rock Uplands

The overall bedrock and structural patterns of the study area are summarized in cartographic form in the accompanying diagram taken from a paper recently prepared for the Canadian Society of Petroleum Geologists.* This inclusion is intended to supply supporting insight into the discussion that follows.

"The limestone rock uplands rising about 30 meters above the East Channel of the Mackenzie River Delta formation on their western margin and terminating in a sheer rock fault cliff 135 meters above Campbell Lake on their eastern boundary are the most visually striking and aesthetically pleasing feature of the terrain configuration of the study area. The highest elevations are about 152 meters above sea level. Moreover, this geological /geomorphic structure is unique for the vast Mackenzie River Delta region, a fact that adds a major element of natural science interest. It is the nesting potential of this formation, together with the flanking hunting areas that attracts the strong raptor population and the peregrine falcon in particular. Finally, rock uplands in northern subarctic regions provide the site locations for rare plant communities."

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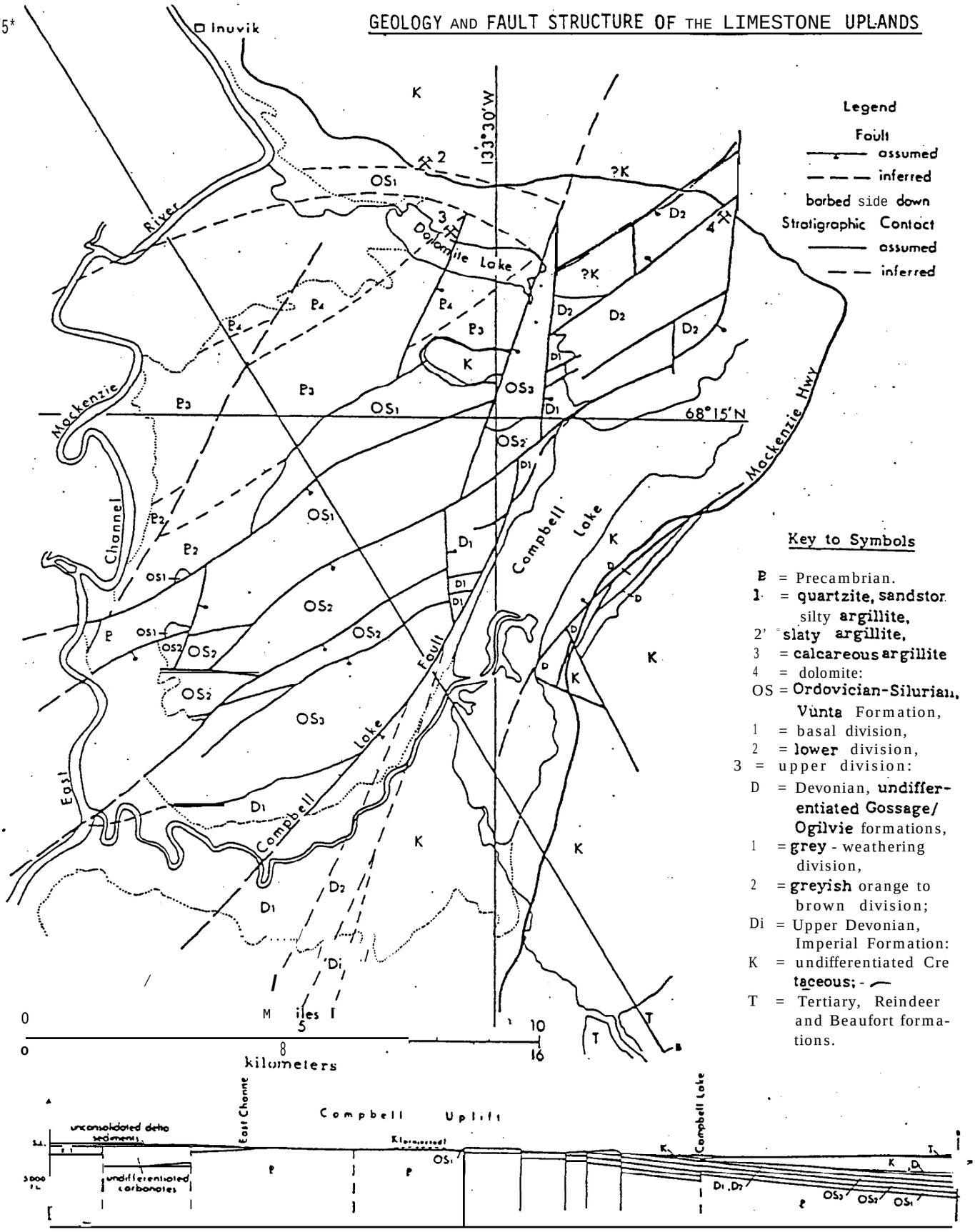
* Young, F.C. 1978, Geological and Geographical Guide to the Mackenzie Delta Area, Canadian Society of Petroleum Geologists, Calgary, Alberta

HIBIT "5*

GEOLOGY AND FAULT STRUCTURE OF THE LIMESTONE UPLANDS



* Young, F. C., ~~Geological and Geographic Guide to the MacKenzie Delta Area~~, Canadian Society of Petroleum Geologists, Calgary, Alberta, 1978, p.59

"The western portion of the area of rock outcrop (labelled ROP on the accompanying map prepared for this report) is composed of dolomites with associated quartzites and argillites all of shallow marine origin - laid down in the Proterozoic Period of the Precambrian Era. - Perhaps belonging to the Helikian Formation."

"The limestones and dolomites of marine origin in the eastern sections of the area of rock outcrop are of the Paleozoic Era. The older rocks of the Vunta Formation (1 abell ed ROV on the accompanying map) are roughly dated as belonging to the Cambrian or Devonian Period (55 to 80 million years old) while the Gossage Formation (labelled ROG on the accompanying map) is considered to be of the Lower and Middle Devonian Period (about 40 to 50 million years old)."

"Most of the fault scarp overlooking Campbell Lake and the rock uplands immediately to the west belongs to the Vunta Formation. The Gossage Formation is encountered in the northern portion of the escarpment and the rock outcrop immediately to the rear. Some of the finest and most accessible scenic resources of the limestone uplands are found here."

"There is a small patch of the Horton River Formation composed of marine silty shales of the Cretaceus Period. (Mesozoic Era) in the interior section of the Limestone Uplands. It is buried below the glacial till cover and is of no significance from a park planning and development standpoint."

TABLE 11

STRATI GRAPHIC COLUMN FOR STUDY AREA

ERA	PERIOD	EPOCH	FORMATION
Cenozoic	Quaternary (1M)	Pl ei stocene & Holocene (1 0K)	**Fluviatile** silt, sand, gravel fan and fan apron deposits of sandstone
			Lacustrine clay, silt, sand, gravel
Mesozoic	Cretaceus (70 M)	Lower	Horton River Marine silty shale
Paleozoic	Devonian (55M)	Lower to Middle	**Gossage** Marine limestone and dolomite
	Cambrian to Devonian (80- 55 M)		**Vunta** Marine limestone and dolomite
Precambrian (4.5B)	Proterozoic		**Helikian** Marine argillite agal, dolomite and Quartzi te

B Billions of years ago
M Millions of years ago
K Thousands of years ago

"The unique geological features and the highly scenic qualities of the limestone rock outcrop uplands are attributable to the tectonic activities. The Campbell Hills are an integral component of the Aklavik Arch, a northeast trending tectonic element about 600 km in length that underwent intermittent uplift erosion and division from late Paleozoic to early tectonic times. The Sitidgi Graben in which Campbell Lake is located lies immediately to the east of the uplift. In turn, the east flank of the Graben abuts the vast interior platform that includes the Anderson and Horton Plains. On the west, the uplands are flanked by the Mackenzie Delta."

"The Campbell Hills underwent a complex history of compression, relaxation, strike and slip faulting probably in the early tertiary period. Today the area presents a mass of flat lying, strongly jointed and occasionally brecciated limestone bedrock that is laced with an . intricate pattern of vertical curvilinear and longitudinal faults that 'create local relief in the order of 30 to 60 meters.'[1]

"Some local karst topography is present including "sink hole lakes . . . caves (some of which contain stalactites), grikes, solution ripples and solution notches. Two meromictic sink hole lakes are of special interest. Scientists have discovered that these contain laminated sediments which should yield a record of the past 13-14000 years of vegetation and climatic history."

Evidence of glaciation is widespread. As shown in Exhibit 5, a thin veneer of till or ground moraine covers some portions. Over much of the Proterozoic rocks, a discontinuous overburden of colluvial and alluvial material occupies the depressional areas. Glacial meltwater channels, possibly associated with earlier fault structures are obvious, as between Dolomite and Campbell Lakes.

The northeastern portion of the limestone uplands associated with the Gossage Formation requires special mention. It is highly scenic, reasonably accessible to the Highway and highly representative of the terrain of this distant structural unit. Field inspection indicated that it has been used to some degree by hikers and campers.

Mention should also be made of the outlier of limestone outcrop of the Gossage Formation on the mid-portion of the east shore of Campbell Lake. Traversed by the Dempster Highway and modest in scale, the area cannot impart the vastness of the limestone uplands. It is, however, a miniature representation of many features including sinkholes and fault structures. Moreover, superb views are obtainable within a short distance of the Highway.

3.3.1.2 Dolomite Lake

Structurally, this lake area is an integral component of the limestone rock uplands previously discussed. However, from a park planning point of view, it represents a distinct unit by virtue of the size of the water body and its relatively convenient location in relation to Inuvik and the Dempster Highway. The water body is discussed in greater detail in the section dealing with hydrographic patterns.

3.3.1.3 The Campbell Lake Trench

This fault trench structure or graben in which Campbell Lake is situated and along which the eastern flank of the Dempster Highway is located is sharply demarcated from the limestone uplands to the west. Its distinctive structural geology and terrain configuration is clearly reflected in any evaluation of potentials for park development and the subsequent preparation of development plans.

It is distinct and detached in terms of the pattern of tourist and local resident outdoor recreation potentials and opportunities present. To a degree, it represents a buffer area of considerable extent through which terrain access to the limestone uplands in the summer season presents difficulties in terns of cottage lease development due to the fragility of its vegetative cover. In many respects it must be viewed as a separate multiuse tourist and recreation unit with only weak linkages to the limestone uplands.

The underlying fluvial fan and fan apron deposits of the Quaternary Period are almost entirely masked by a covering of Pleistocene till or ground moraine, often consisting of only a thin veneer. The quarry to the rear of the northeast shore of Campbell Lake at the base of the "Big Rock" offers good sections of bedrock sandstone for inspection.

Campbell Lake occupies the central portion of the structural graben within the study area. This feature is fully discussed in the section of the report dealing with hydrography. (Section 3.4).

A broad terrace sloping from the base of the limestone cliffs at an elevation of about 76 meters a.s.l. to the western shoreline of Campbell Lake at an elevation of about 7 or 8 meters a.s.l. is the most striking feature of the western flank of the graben. The slope is something in the order of 65 meters in 1200 meters or 1:18 which is fairly steep. The entire terrain, which is likely a sandstone fan formation, is overlain with a till deposit.

Along the eastern side of the graben that was examined in greater detail, since it is the corridor through which the Dempster Highway passes, terrace formations were less well demarcated. Here is a fairly thick deposit of ground moraine in many points as can be seen from the banks of the tributary streams entering Campbell Lake. Moreover, there are patches of hummocky till on the flanks of the limestone outcrop as noted on the map of terrain configuration. These lines of hummocks separated by low wet depressions are much akin to beaded eskers but much smaller in extent. They are topped with a thin veneer of sand and gravel deposits that have been used for highway construction in some cases.

It is important to note that this area was mapped at the reconnaissance level. The till overburden varies greatly in depth. Bedrock sandstone may not be as extensive and continuous as field observation suggests. Considerable intensive physiographic field research is necessary to unravel the detail of the pattern.

On the accompanying map of terrain conditions, an extensive area of silt and clay plain is shown running from the northern end of Campbell Lake up Campbell Creek. This poorly drained willow covered area is scenically unattractive, poorly drained and probably heavily insect infested in summer. It is interesting to note that the most intensively used outdoor recreation location in the study area, is situated in this terrain unit at the intersection of Campbell Creek and the Dempster Highway. Easy accessibility and the spring run of pike and whitefish explain the anomaly from a terrain quality standpoint.

3.3.1.4 Delta

This distinct terrain unit, largely aquatic in nature, is described in the chapter dealing with hydrography. In essence, it will function as a buffer to the central limestone uplands, a foraging area for its raptors population and a flanking travel corridor from which access may be gained in some points.

3.3.1.5 Permafrost

The study area lies in the Zone of Continuous Permafrost. In the general vicinity of Inuvik, ground temperatures at a depth of 7.6 to 30.5 meters are about 3.9°C. Moreover, the penetration of the frozen layer exceeds 91.4m. Massive ground ice up to 95% water with intermixed silt may occur in pondings that have taken place in postglacial times.

There are some notable exceptions to the foregoing generalization. The bedrock outcrops of the limestone uplands contain no free ice. The bottoms of some lakes, rivers and wet bogs that do not freeze solid to depth in winter (parts of Campbell and Dolomite Lakes) are not underlain by permafrost. An unfrozen interface may occur in a strip around the margins of waterbodies and the banks of watercourses. However, thermal erosion may be severe in places with masses of soil collapsing at periods of low water. Some evidence of this was encountered in the field trip through Campbell and Dolomite Creeks.

3.3.1.6 Soils

With the exception of a few localized areas along the valley walls and shorelines of lakes and ponds, all soils in the study area are of the Cryosolic Order in that permafrost is encountered within one meter of the surface and two meters if strongly cryoturbated. These soils occur in both organic and till parent materials with the mean soil temperature at permafrost depth being less than 0°C as would be expected.

Cryosolic soils are associated with deep deposits of organic material are unsatisfactory sites for the construction of park facilities. The ice content is high, commonly up to 60% being segregated ice by volume within the peat. Removal of vegetation quickly can lead to subsidence in the order of 1.5 to 3.0 meters.

The unfrozen organic material is highly compressible and of low bearing strength. If used as a construction site, very deep layers of overlying earth fill and gravel or crushed rock are required, making construction costly.

The location of major organic deposits is shown on the terrain map. It is noted, however, that smaller pockets of these deposits are encountered in the till ground moraine areas and the depressions of the limestone uplands.

The Cryosolic soils developed on mineral ground moraine deposits of silty to clayey texture overlying sandstone bedrock deposits have a moderate ice content up to 10% segregated ice in the first 1.3 to 3.0 meters. When the vegetative cover is removed, the soil is subject to thermokarst subsidence, ground ice slumping and a minor degree of gullying.

The current condition of the borrow pits at points along the Dempster Highway within the study area provides excellent evidence of the nature and scale of the problems that can arise. The truck trail leading from the Highway to the sandstone quarry at the base of the northern end of the scarp paralleling Campbell Lake offers a good example of road construction problems on these soil materials. Over much of the route way, the ground moraine is extremely shallow and thaws out quickly each summer. Water runs in channels through the upper layers of the sandstone and bubbles up as "springs" on the roadway. In the spring and fall, the route is an impassable quagmire of deep ruts in many places and conditions are becoming progressively worse.

3.4 Hydrography

3.4.1 General Pattern

This discussion of the hydrographic pattern is organized in relation to the major structural units of the study area. Initially, attention is directed to the small lakes and ponds of the limestone uplands. The rivers, lakes and ponds of the Delta area are then discussed including the East Channel Mackenzie River, Gull River, Campbell River, and the channel leading to Dolomite Lake, often termed Dolomite Creek. Finally, the two major lakes of the area, namely Campbell and Dolomite, are examined. Refer to the "Terrain Map", page 27, for the locations of water bodies.

3.4.1.1 Lakes and Ponds of the Limestone Uplands

There are about 150 small lakes and ponds in the limestone uplands and their interpenetrating areas of till cover. Almost all have surface drainage leading to the surrounding Mackenzie and Campbell River lowlands or to Campbell Lake proper. The majority of the water bodies are essentially small shallow ponds, some of which warm up sufficiently for short periods of the summer season to permit bathing and swimming. Many probably occupy Pleistocene ice sculptured troughs while others are clearly associated with faulting in the limestone rock structure. Some of the latter may be deep and perhaps contain fish or might be stocked in the future.

Most of the larger water bodies are found in the tongues of till that overlie a portion of the Vunta dolomite and limestone. The largest of these however is only about 2 kilometers long by 3/4 kilometers wide.

The lakes and ponds materially enhance the scenic quality of the limestone upland terrain. This is particularly true in the Gossage and Vunta rock formations which are situated immediately to the rear of the scarp on the west shore of Campbell Lake.

These water bodies freeze up in early October, and sometimes in early September, ice begins to appear on the margins. Break-up probably occurs somewhat later than on the Campbell Lake because of the higher elevations (possibly as late as June 10th). While there will be some fluctuation in levels throughout the open water season, the small water bodies are fairly well contained within defined rock wall basins, so that large shifts in shoreline contour do not result. This situation contrasts sharply with conditions in the Delta region as noted subsequently.

3.4.1.2 Delta Rivers, Lakes and Ponds

The area is characterized by a maze of shallow lakes and ponds through which the well defined channels of the East Branch of the Mackenzie River and the tributary streams to Campbell Lake and Dolomite Lake meander.

(a) Ponds and Lakes are essentially of the flood plain type, some being interconnected while others are self-contained, at least insofar as surface drainage is concerned. In general, they are broad, smooth-margined shallow water basins with a maximum depth of about 3 meters and frequently in the range of 1.5 to 1.8 meters. Some of the deeper water bodies offer reasonable angling opportunities. The area is comparatively easy to travel about in winter but difficult to access in summer by foot or by boat, except when the deeper channel entrances are clearly defined. A guide is required to effectively exploit the maze of channels and ponds present.

In the spring flood season, the area is a sea of water. It is almost impossible for any person except for local trappers to find their way around, because all but a few of the landmarks and lake outlines have been obliterated.

Apart from fishing and hunting on a few select locations, the recreation potential of this essentially aquatic terrain is limited in the summer season. To be fully appreciated, the area must be viewed from the air. Boaters and canoeists contained within the levees of the main river channels gain little or no appreciation of the situation. Without a topographic map of the district, they would be totally unaware of the profuse lake and pond systems so close at hand. Moreover, little appreciation can be gained in landing and moving inland across the levees.

In contrast, the area is completely accessible in winter. It would make extremely interesting snowmobile terrain if well marked trails were present. Without these aids, there is a danger that the snowmobile would become lost which is a very precarious situation, particularly in periods of short daylight and intense cold.

(b) The East Branch of the Mackenzie River, which represents the western margin of the study area, is a typical meandering delta river contained within well demarcated levees about 4.6 to 6.1 meters above the low flow levels of the late fall season.

While there is a certain lore associated with boating on the far northern reaches of the Mackenzie River, the East Channel is not impressive overall with much of the scenery soon becoming repetitively boring. It seems like a never ending journey between mud banks topped with spruce and clothed in dense willow communities on every major slip slope of a meander.

The open water season varies from about 135 to 160 days, so far as can be judged from 9 years of observations between 1972 and 1980.

TABLE 12

FREEZE-UP AND BREAK-UP ON THE EAST BRANCH
OF THE MACKENZIE RIVER AT INUVIK 1972 - 1980*

	Freeze-Up	Break-up
1980	October 18	May 28
1979	October 23	June 1
1978	October 9	May 28
1977	October 23	June 3
1976	October 20	June 1
1975	October 13	May 28
1974	October 19	May 29
1973	October 23	June 1
1972	October 18	June 7
Average date	October 18	May 31

* Water Survey of Canada, Inuvik sub-office

At the freeze-up dates shown there will be ice of varying thickness on the margins of the river, but there may be open water patches where there are deep holes. Boating can be said to have finished at the dates indicated in the foregoing table. Snowmobile travel begins a couple of weeks later when the ice reaches a depth of 7.6 to 10.1 centimeters. The natives, however, may travel when ice on the East Channel is half the foregoing depth, in order to reach fishing areas on the main channel. Considerable risk is involved, however, and a high degree of experience with local conditions is necessary.

Two situations associated with freeze-up can delay winter travel. If a cold period without snow follows the first advance of freeze-up, the ice will thicken quickly and recreational travel within a week to 10 days thereafter is feasible. If the initial thin ice cover is followed by a heavy snowfall, a 'thermal blanket' effect is produced that impedes ice thickening sufficiently to delay travel by as much as a month.

At times, an overflow condition develops. The water in the river is held up by the ice layer and rises up through cracks spreading over the ice surface to a depth of 15 cm. or more. While underlying ice will remain frozen, the water may persist at the surface for up to 30 days. This condition delays recreational travel and can hold-up opening the winter truck road to northern communities that requires about 36 cm. of solid ice. At the dates for spring break-up indicated in the table, the East Channel of the Mackenzie River is completely free of ice and pleasure boating can begin. This event occurs between the last week in May and the end of the first week in June (May 28th - June 7th) .

During the open water season from mid-May or early June to mid-October, there is considerable fluctuation in the level of the East Channel of the Mackenzie River - something in the order of 3 meters (Table 13). Discharge variation in the same period is in the order of 553 cubic meters per second. The river remains navigable to pleasure boats of all sizes during this period in the entire 87 kilometer stretch from Inuvik to the Little Gull River. There is only one hazard to navigation, namely a limestone rock pile in the general vicinity of the Norris camp. This can be dangerous when partially hidden at high water periods and requires a navigation buoy.

TABLE 13

AVERAGE WATER LEVELS AND VOLUME DISCHARGE OF THE EAST CHANNEL OF THE MACKENZIE RIVER AT INUVIK 1975 - 1981*

Date	Elevation Meters	Discharge M3 per second
June 12	6.76	632
June 15	5.70	416
Aug 10	4.80	248
Aug 18	4.68	168
Sept 10	4.28	154
Sept 22	3.96	106
Ott 14	3.70	79
Variation	3.06	553

The East Channel floods each spring as ice jams hold back flow of the River. The average rise in water levels at break-up is 5.5 to 5.8 meters in many pl aces. Floods can be extensive if persistent large ice jams coincide with heavy spring rains. When the ice clears, levels drop 1 to 1.2 meters a day with the river returning to its initial early season open water level in the first week to 10 days in June. The impact of spring floods is less on the Gull and Campbell Rivers.

* Water Survey of Canada, Inuvik sub-office

Strong continuous north winds can increase water levels several centimeters in a few hours. The effect is sometimes sufficient to open channels that have been too low to permit small boat traffic just a few hours before.

(c) Little Gull Rivers small stream skirting the south flank of the rock uplands between the main East Channel and Campbell River, is reasonably scenic. This is a much used waterway to the Campbell Lake until levels drop too low sometime in late August or early September. On a return trip from the East Channel to Campbell Lake, a circular route using both streams can be followed to provide variety.

(d) Campbell River (sometimes locally called Big Gull River) is the principal waterway from the East Channel to Campbell Lake and is navigable for the entire open water season. In late August and September, water levels may drop so low that it is impossible to enter the upper portion of the Campbell Lake by the main channel. A number of alternative routes often must be used to reach the deeper channel alongside the rock outcrop on the east side of the Lake. It would be most difficult, and sometimes impossible, for a stranger to find the necessary deep water channel suitable for travel by a power boat at this season. Canoe travel would be possible but some lining and much shallow water paddling would be required.

(e) Dolomite Lake entrance waterway from the East Channel to Dolomite Lake is relatively heavily travelled by local residents since it is so close to Inuvik. The channel is deep enough for travel all season with the exception of the delta at the western entrance to Dolomite Lake when the water level drops after mid-August and early September. This entrance to Dolomite Lake is restricted to a narrow channel of about 20 feet wide or less. It shifts position often in response to the inflow and outflow of water from the Lake and is therefore difficult to find. A marker in the form of an iron rod with a ribbon tied to the top has been in place to aid boat operators.

3.4.1.3 Campbell Lake

The major water body of the study area, has a surface of about 4200 hectares. It is essentially a long narrow water body 21 kilometers long and 3.2 kilometers at its widest point. Overall, the shore configuration is relatively smooth.

The Lake is essentially two basins separated by a massive willow and mud delta about 2.5 kilometers wide. In this respect, it offers an excellent example of the bifurcation process which is characteristic of many lakes and ponds of the delta region having reversing inflow and outflow channels depending on the level of the Mackenzie River. With each massive inflow of silt and mud in the high water period, the delta formation builds up until the lake is bifurcated.

The northern basin where the main boating potential is focussed is about 14 kilometers long and 3.2 kilometers at its widest point. Much of the northern part, however, is only about 1.2 kilometers in width - scarcely more than a pond. The small basin to the south of the dividing delta is much smaller in area and circular in configuration being about 4.5 kilometers long and 3.2 kilometers wide.

No depth contour map is available for the Lake. It may be 9 m. in a couple of deeper holes opposite the main cove on the northwest shore containing the excellent beaches and off the limestone outcrop on the east shore opposite the delta formation. Much of the lake, however, is very shallow. The entire southern basin is difficult for travel by motor boat particularly after mid-August when extensive mudflats stretch for 50 m. or more offshore making landing difficult if not impossible. This basin is essentially a bird paradise approachable only by canoe. The northern basin, while larger and deeper, is plagued by low water levels after mid-August and it is difficult to enter the Lake from the Campbell Creek boat launching area due to sand bar formations at the mouth. Many parts of the shore including the sand beaches discussed later cannot readily be approached by boat. On occasion, motors are damaged by striking submerged bottom rocks.

Shoreline conditions were assessed on the basis of inspection from a boat in the last week of September 1981, a time when the water levels were abnormally low. Three general shoreline conditions were encountered; only the sand beaches are shown on the map.

(i) Rock, rubble, stone, and boulder shore

This was the most extensive shoreline condition encountered. Here a 6 to 9 meter wide strip of rock, rubble, stone, and boulders intermixed, with sand and soil fronts a cut bank shore sometimes up to 3 meters in height. In the spring high water period and throughout much of the summer, the water covers all or most of these gently sloping strips. From an aquatic oriented development standpoint, this shoreline is of limited value. It is often very difficult to access by boat in low water periods and does not lend itself to beaching. It does, however, provide an excellent hiking trail that can withstand heavy usage without serious deterioration.

(ii) Low wet willow shoreline

This type dominates the south shore of Campbell Lake and the infilling delta area across its mid portion. Here level mud and silt bottoms several hundred feet wide that are covered in a high water period, but fully exposed in the fall season, are characteristic. The area provides excellent habitat for shore birds but it is virtually impossible to gain access to the shoreline by boat in low water periods.

(iii) Beaches

Several sand beaches were located at the northern end of Campbell Lake as shown on the terrain configuration map accompanying this report. Most were composed of medium grained light coloured sand. During low water periods they ranged between 90 and 180 m. in width. However, many would be partially or completely covered by water for much of the summer season.

From a total summer and fall season perspective, the best beaches appear to be located in the major cove on the north shore of Campbell Lake opposite to the major valley joining Dolomite and Campbell Lakes. By comparison with conditions within the area, these beaches are rated class 1 and represent the yardstick by which all others are assessed. Here there are two strips of clean suitably textured sand about 1,750 m. long and 180 m. wide. Reasonably dry backshores are present in both cases. Ready access by boat is possible throughout the open water season due to the deep water conditions present along the rock shore of the inner portion of the cove which separates the two sand strips.

Good beaches were also observed immediately to the south of the main cove. It would appear, however, that they are largely inundated during much of the summer season or at least reduced to a narrow strip.

All sand beaches can withstand fairly heavy pedestrian traffic making them excellent shoreline trail prospects.

While the water temperatures of the lake is considered warm from the standpoint of fish productivity, it is too cold for swimming during most of the summer. In some sheltered locations, the top 1 m. warns up sufficiently after a few days of steady sunshine in mid-July for a 'brief dip'. While children and youths take advantage of this opportunity, adults consider the temperature prohibitive.

3.4.1.4 Dolomite Lake

Locally known as Airport Lake, this modest sized body of water about 5 km. long and just over 1 km. in width has a surface area of approximately 500 hectares. There are no sand beaches on this Lake. Much of the shoreline is rock outcrop particularly along its northern portions while the remainder is till. At low water periods most of the shoreline can be traversed on foot without difficulty offering excellent trail opportunity.

The waters of this Lake are sufficiently cold to support a lake trout population. In shallow sheltered bays, some bathing occurs as in Campbell Lake, but it is generally too cold for swimming.

The western portion of the Lake is quite shallow due to the formation of a delta from deposits brought in from the East Channel of the Mackenzie River in flood water periods. Boaters encounter trouble entering the Lake as early as mid-August but a narrow channel is present. With continuous strong north winds backing up waters on the East Channel, entrance conditions improve for short periods of time.

There is no depth contour map available for the Dolomite Lake, therefore, the precise locations and depths of the holes remain unknown.

The Lake, due to its scenic rockland setting and close proximity to Inuvik, has been a popular picnic site and the setting for several private cabins. It is fished regularly in both the winter and summer seasons. It is a popular snowmobile and cross-country ski destination area with a routeway through the valley at its eastern extremity to the mid-portion of the western shore of the northern basin of Campbell Lake.

3.5 VEGETATION

3.5.1 Major Forest/Vegetation Aggregates

3.5.1.1 General Pattern

The previously noted structural/physiographic patterns of the study area are clearly reflected in the major divisions of the vegetation pattern. The assemblages of trees, shrubs and plants encountered within the zeric rocky limestone uplands, on the fair to poorly drained till covered flanking sandstone formations and in the deltaic lowlands of the Mackenzie River, are readily discernible.

In the landscape under examination, the vegetation patterns of the northern limits of the Boreal Forest Zone interface with those of the southerly limits of the Tundra Zone. In this zone of contact, differences in elevation, aspect, parent material, and human interference tend to favour the vegetation/forest cover types of one or the other of these major zones.

While it was a relatively simple matter to identify the major vegetation units and note various points at which they were encountered, the complexity of the pattern and the scale and quality of the air photography available make it virtually impossible to define the extent of each with any degree of accuracy. The problem was particularly acute along the contact edges where upland and delta vegetation cover units merged, or where subtle soil changes give rise to secondary divisions. This situation accounts for the somewhat generalized vegetation classification employed in the map prepared for this study.(Exhibit 7)

(a) Delta Area

The vegetation is typical of the southwest portion of the Mackenzie Delta region where the forested areas are dissected by a sinuous maze of river channels, lakes/ponds and sedge meadows.

On the relatively more elevated and better drained bank and ridge sites of the Delta, white spruce (Picea glauca) is the dominant species, and often is of log and saw timber scale. In the vicinity of the East Channel, however, black spruce (Picea mariana) was often encountered and possibly hybrid species are present which is a common occurrence where black and white spruce overlap.

Moving away from the higher better drained alluvial soils towards the lower more poorly drained and, frequently inundated sites, the hypothetical sequence of dominance is in evidence. Included are willows (Salix SP), green alder (Alnus crispa), sedge (Carex aquatalis), water horsetail(Arctophilla fulva), field horsetail (Equisetum arvense) and Water Horsetail (Equisitum fluviatille).

Most of the slip slopes of the meandering East Channel and the Campbell River are covered with dense willow stands. Extensive areas of willow are found at the southern end of Campbell Lake and on the alluvial deposits of the delta formation separating the Lake into two basins. There is also a heavy concentration of continuous willow at the northern end of Campbell Lake and extending up Campbell Creek.

(b) Limestone Upland Areas

About a century ago, a major fire burned the vegetation off most of the north central part of this limestone uplands flanking Campbell Lake as evidenced by the fire-scarred remains. The bedrock ridges and colluvial slopes are treeless, supporting only discontinuous patches of herbs and shrubs with considerable species variety.

Tree covered areas are associated with the moderate sloping lands (10^0 to 300) flanking the outcrops, the valley bottoms and the poorly drained peat filled depressions.

Black spruce (Picea mariana) with small pockets of tamarack (Larix laricina), willow and birch dominate the depressions. A continuous ground cover of sphagnum is present in association with labrador tea (Ledum groenlandicum) and bog cranberry (Vaccinium uliginosum).

North facing slopes are also occupied by black spruce with the odd patch of white birch and tamarack. The spruce are only about three meters high with bushy bottom growth and at times multiple trunks. Dwarf birch and alder are common, along with lichen and many low shrubs.

South facing slopes combined with deeper soils support open stands of white spruce, some up to two meters high. Scattered groves of birch are encountered fairly regularly. Small clumps of trembling aspen poplar (Populus tremuloides) is present in the mid portion of the north shore of Dolomite Lake where there are limestone outcrops.

"The ground vegetation consists of a continuous cover of Dryas integrifolia, Arctostaphylos uva-ursi, Cladonia alpestris, Juniperus communis and Rhytidium rugosum. These examples of this Picea-Dryas-Junperus-Rhytidium associations are rare, partly because of the local occurrence of these calcareous habitats and partly because of the prevalence elsewhere of forest fires."*

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* Windsor, J. and Gill, A., A Proposal to Establish the Campbell Lake Hills National Wildlife Area, Canadian Wildlife Service, Edmonton 1975

(c) Campbell Lake Till Covered Sandstone

In this area to the east of the Limestone bluffs, open stands of black spruce (Picea mariana) with a carpet of sphagnum moss are characteristic. Occasionally, climbs of birch (Betula papyfifera) and tamarack (Larix naricina) are present.

3.5.1.2 Vegetation Cover Along the Dempster Highway

As part of an intensive examination of biophysical patterns along the Dempster Highway, vegetation cover was mapped in as much detail as the air photography would permit. The results are shown in Exhibit 7.

From Caribou Creek northward to the southern margins of the limestone outcrop midway up the east shore of Campbell Lake, the entire area is characterized by a dense cover of black spruce of modest size and sphagnum. As the crest of the slopes to the east leading to the Anderson uplands is approached, paper birch are present and lichen is noticeable on the forest floor.

Cover on the limestone outcrops of this area is black spruce of moderate density, with white paper birch and tamarack intermixed. The cover here is generally pleasing to the eye, particularly when the tamarack and birch add a little rust and gold colour in the fall.

For about five miles to the north of the rock outcrop, tree cover is only of moderate density and markedly less than to the south. Moreover, there is considerable species variation, as tamarack and paper birch are frequently intermixed with the black spruce. Over some small areas, these are actually the dominant species. Sphagnum moss is present throughout, and alder are frequently found in the wetter locations.

The northerly part of the highway area contains an open cover of dwarf black spruce with occasional clumps of tamarack or small birch. It is a typical tundra vegetation spilling down from the Anderson uplands to the east. Dense willow is encountered on the sand and clay plain of Campbell Creek and at the northern end of Campbell Lake. Due to the open nature of the vegetation in this area, the steep scarp faces of the Campbell Hills fault line are almost continuously in view enticing the highway traveller to "come over and explore".

The vegetative cover is fragile in the extreme. When removed, the trails and affected areas will quickly develop into a quagmire of mud. This can be clearly evidenced from borrow pits alongside the Highway and on a road leading from the Highway to a sandstone quarry on the northwest side of Campbell Lake. Any concentration of pedestrians along trailways and walkways will destroy the cover in one or two seasons of use.

3.5.2 Rare Plant Assemblages

Under the International Biological Program, three locations were recognized within the study area as possessing rare plant communities worthy of designation and management, within an Ecological Site encompassing 120 square miles and designated as No.48 Dolomite Lake/Campbell Lake Area.* The general locations of these sites are on the north shore of Dolomite Lake, in the structural valley between Dolomite and Campbell Lakes and on the east shore of Campbell Lake to the west of Kilometer 1521.6 of the Dempster Highway. To date, no action has been taken to establish Ecological Sites in Northern Canada.

No new rare plant assemblages were located in the intensive investigation of terrain conditions on either side of the Dempster Highway within the study area. These communities are associated with limestone-dolomite outcrops and may occur at points in the limestone rock uplands in addition to sites already identified.

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* Under the Terrestrial Communities Subcommittee of the Canadian Committee for the International Biological Program (I.B.P. - C.T.), ten regional panels were set up across Canada to record significant sites. The work of the Sub-arctic Panel 10 formed in 1969 is pertinent to this study.

The purpose or value of Ecological Sites has been expressed as follows:

* "to preserve representative examples of significant natural ecosystems for comparison with those managed by man;

* to provide educational and research areas for the scientific study of successional trends, evolution of species, inter - and intra - species relationships, and the balancing forces in relatively undisturbed ecosystems;

* to provide educational and research areas for the scientific study of other aspects of the natural environment such as meteorological, geomorphological and pedological processes;

* to provide education and research areas for the scientific study of recovery processes in ecosystems that have been modified by man;

* to serve as natural gene pool for the preservation of species of plants and animals." (*)

"The relief and base rich soils of the dolomite limestone rock outcrops and associated scree slopes of the three aforementioned locations provide habitat for rare assemblages of arctic and subarctic Beringian plant elements. Moreover they display an unusual "living fossil" assemblages of plants that are the modern analogies of late Pleistocene and pioneer species of the North American continent."

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* Beckel, D. K. B., (Editor), 1975: IBP Ecological Sites in Sub-arctic Canada, Areas Recommended as Ecological Sites in Region 10, Yukon and Northwest Territories Boreal Forest to the Treeline, University of Lethbridge, Production Services, Lethbridge, Alberta

"The concept 'megaberingia' was introduced formally by Yurtsev (1974) to describe the area occupied by amphiberingian species, extending throughout arctic-subarctic latitudes from approximately as far east as long. 100°W in North America, and as far west as long. 100°E in Siberia. The central role of this area of extensive plant refugia in ice free lowlands was first recognized by Hulten (1937) and is summarized by Yurtsev (1974) as follows: "The conception and term Megaberingia are introduced to cover a block of adjoining phytochoria (continental, oceanic and transitional, with a center in the Beringian sector) which were closely interconnected throughout late Cenozoic time by floristic exchange; as a result, the whole of Megaberingia functioned as a huge laboratory which gave rise to much of the flora of the northern Holarctic region . . . . . ."

"It is of remarkable significance that not only is Campbell- Dolomite uplift one of the few localities for megaberingian species in the entire Mackenzie watershed, but . . . . . , it contains rare late Pleistocene sediments which throw light on the history of these phytogeographical elements."

The following megaberingian species occur:

Boschniakia rossica

Castilleja caudata

Myosotis alpestris

Oxytropis nigrescens

Phlox sibirica

Plantago canescens

Polemonium pulcherrimum

Saussurea angustifolia

Selaginella sibirica

A small number of North American species, restricted to the northwest occur here, and the Campbell-Dolomite upland must be considered one of the few stations in the Mackenzie watershed where the following can be found:

Senecio hyperborealis

Bupleurum triradiata

Senecio lungens

Anemone drummondii

Saxifraga reflexa

Many species of wide-ranging arctic alpine type occur in the area, and while they occur elsewhere in the northwest, few localities offer such an accessible concentration of these interesting species; the range of types is illustrated by this incomplete list:

Andromeda polifolia
Androsace septentrionalis
Anemone parviflora
A. multifida
Arenaria obtsifola
Arnica alpina
Astragalus alpina
Carex glacialis
c. gynocratges
C. membrancea
C. repestris
Cassiope tetragona
Castilleja hyperborea
Draba alpina
Drosera rotundifolia
D. octopetala
Erigeron elatus
Gentianella propinqua
Hedysarum alpinum
H. mckenzii
Juncus castaneus
Juniperus communis
Kobresia simpliciuscula
Lesquerella arctica
Linum lewisii
Lupinus arcticus
Lycopodium salago
Oxytropis campestris
Parnassia palustris
Pedicularis capitata
P. labradorica
P. lapponica
Pinguicula vulgaris
Potentilla fruticosa
Rhododendron lapponicum
Salix reticulate
Shepherdia canadensis
Tofieldia pusilla
Woodsia glabella
Zygadenus elegans

The following megaberingian species occur:

Boschniakia rossica
Castgilleja caudata
Myosotis alpestris
Oxytgropis nigrescens
Phlox sibirica
Plantago canescens
Polemonium pulcherrimum
Saussurea angustifolia
Selaginella sibirica

"..... Certain unstable surfaces, particularly on the north shore of Dolomite Lake, bear interesting, rare plant communities resembling, at least qualitatively, what must have been a widespread zonal community in many areas of Canada during the early Postglacial period. These are local stands of Picea glauca, associated with Shepherdia canadensis (soapberry), Artemisia frigida (sagebush) and 'llow and grass species. Such an assemblage is widespread in the pollen strati graphic record of the entire Western Interior of Canada (CF. Ritchie 1976). These 'living relics' provide essential clues to the paleologist in the quest to reconstruct past vegetation from pollen assemblages which have no modern zonal equivalent."* .

A synopsis of the quaternary veqetation and floristic history of the Campbell-Dolomite Uplands is presented below.**

Radiocarbon yr BP	Pollen Assemblage Type	Vegetational and Floristic Reconstruction
13,000 to 11,500	Sagebrush-grass-willow	Described as "steppe-tundra" by some; an extinct zone, found also in Pleistocene sediments from interior Alaska.
11,400 to 10,300	Dwarf birch	Shrub tundra replaces the earlier tundra, as in Interior Alaska.
10,200 to 9,700	Dwarf birch with poplar	Dwarf birch shrub tundra on drier exposed si tea; extensi ve poplar groves i n valley and S-facing habitats.
9,600 to 9,000	Dwarf bi rch-Juniper	Ful l y developed dwarf shrub tundra; early herbs, several megaberi ngian, increasingly restricted by competition to unstable, exposed sites.
8,900 to 4,900	Spruce-birch-juniper	Development of boreal forest, further restricting calciphilous herbs to open, unstable habitats.
4 ,800 to present	Spruce-birch-alder	The modern vegetation and flora, essentially stable for the last 5 millinia.

* Beckel, D. K. B., (Editor), 1975: IBP Ecological Sites in Sub-arctic Canada, Areas-Recommended as Ecological Sites in Region .., .Yukon and Northwest Territories Boreal Forest to the Treeline, University of Lethbridge, Production Services, Lethbridge, Alberta

** Ritchie, J.C., 1976, The Campbell Dolomite Upland Near Inuvik N.W.T., A Unique Scientific Resouce, Muskox, No.10, Summer, 1976

3.6 Wildlife Resources

3.6.1 General Pattern

The raptor populations in general and the density of breeding pairs of peregrine falcons, now unfortunately in a state of collapse, are the unique aspects of the wildlife resources. Apart from the above, it is the variety and representative characteristic of the avian and mammal populations relative to patterns in the Mackenzie Delta region that is most significant from the standpoint of park planning. In almost every case, the study areas lies outside the main breeding and staging areas of a species. Much of the diversity of mammals is a matter of 'strays' wandering in. For some species, however, there is reasonable habitat which suggests that the development of a breeding area would be feasible given proper management and curtailment or abolition of hunting, at least until populations build up.

3.6.1.1 Mammals

Big game resources are generally weak due to extensive hunting pressures around Inuvik and general human disturbance associated with recreational snowmobile travel, aircraft and more recently, highway traffic. Essentially, big game is limited to a few strays which wander into the area for short periods of time rather than the presence of a breeding boundary. Many are quickly shot by native hunters.

No big game were seen in the area during the field work associated with this study, but black bear and moose tracks were encountered frequently. The following commentary is based essentially on written evidence and discussions with wildlife officers.

Moose (Alces alces) is reported to wander into the Campbell River and Campbell Creek areas at times but the animals quickly fall prey to native hunters. There appears to be reasonably good habitat here suggesting that populations could be increased somewhat under protection programs.

Barrenground caribou (Rangifer arcticus) occasionally wander off the Anderson Plateau to the west into Campbell Creek. These occasions are rare and limited to the winter season.

Woodland caribou (Rangifer caribou) have been seen on rare occasions by trappers in the Delta opposite the study area. They were probably strays moving in from Arctic Red River area or the slopes of the mountains to the west. This mammal scarcely qualifies for inclusion in the park big game populations.

Reindeer (Rangifer tarandus) have not been reported in the area for many years when the odd small group of 3 to 5 animals were occasionally sighted. This mammal also scarcely qualifies for inclusion in a listing of big game animals for the park.

Much of the study area lies within the boundaries of the Reindeer Reserve. Up to about 1967, the animals were herded south to Inuvik where some were slaughtered and the meat sold locally. Some animals that strayed from the herd apparently wintered in Long Lake (Shell Lake) in 1967. Since the animals no longer are herded south, with all slaughtering being done in the coastal region, the reindeer has essentially disappeared from the Inuvik area.

Black bear (Ursus americanus) are very common in and around the study area. The barren ground grizzly bear (Ursus arctos) coming off the plateau lands to the east may be encountered. Some long standing residents claim to have seen brown bear (Ursus middendorffi) on past occasions but this species is not likely tobe encountered.

Among the small mammals, beaver (Castor canadensis) muskrat (Ondatea zibethica) and mink Mustela vison) are common in the Delta area and along Campbell and. Dolomite Creeks. The red fox, red squirrel, weasel and rodent populations typical for these northern areas are present. Lynx are occasionally trapped in the Delta and probably wander into the park area on occasion.

3.6.1.2 Avian Resources

With the exception of the raptors, for which the study area is unique, the strength of its avian population in relation to park development is largely attributable to the diversity and representative sample of sub-Arctic fauna present. Many birds are at, or approaching the extreme northern limit of the range e.g. (Townsend solitaire - Mydestes townsendi). The waterfowl present are much more strongly represented elsewhere - whistling swan.

The diversity of the avian population can be readily appreciated by an examination of the list of birds observed by Windsor and Gill in 1974. Further comment will be restricted to a few selected species, i.e. the larger waterfowl and the peregrine falcon.

TABLE 14*

NOMENCLATURE AND STATUS OF BIRDS OBSERVED
(June to October 1974)

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
Gaviidae	*Gavia immer*	Common Loon	Breeder
	Gavia arctica	Arctic Loon	Breeder
	Gavia stellata	Red-throated Loon	Breeder
Podicipedidae	*Podiceps grisegena*	Red-necked Grebe	Resident-Nesting Suspected
Anatidae	*Olor columbianus*	Whistling Swan	Breeder
	Branta canadensis	Canada Goose	Resident-Nesting Suspected
	Chen caerulescens	Snow Goose	Migrant
	Anser albifrons	White-fronted Goose	Migrant
	Anas acuta	Pintail	Breeder
	Anas carolinensis	Green-winged Teal	Breeder
	Marecа americana	Baldpate	Breeder
	Aythya marila	Greater Scaup	Breeder
	Aythya affinis	Lesser Scaup	Breeder
	Bucephala clangula	Common Goldeneye	Resident-Nesting Suspected
	Bucephala albeola	Bufflehead	Resident-Nesting Suspected
	Clangula hyemalis	Oldsquaw	Breeder
	Melanitta deglandi	White-winged Scoter	Breeder
	Melanitta perspicillata	Surf Scoter	Breeder
	Oidemia nigra	Common Scoter	Breeder
	Mergus serrator	Red-breasted Merganser	Breeder
Accipitridae	*Accipiter gentilis*	Goshawk	Migrant-Potential Resident and/or Breeder
	Accipiter striatus	Sharp-shinned Hawk	Resident-Nesting Suspected
	Buteo jamaicensis	Red-tailed Hawk	Breeder
	Buteo lagopus	Rough-legged Hawk	Breeder
	Haliaeetus leucocephalus	Bald Eagle	Breeder
	Aquila chrysaetos	Golden Eagle	Breeder
	Circus cyaneus	Marsh Hawk	Resident-Nesting Suspected
Falconidae	*Falco rusticolus*	Gyrfalcon	Breeder
	Falco peregrinus	Peregrine Falcon	Breeder
	Falco columbarius	Merlin	Breeder
	Falco sparverius	American Kestrel	Resident-Nesting Suspected.
Tetraonidae	*Lagopus lagopus*	Willow Ptarmigan	Breeder
Gruidae	*Grus canadensis*	Sandhill Crane	Migrant-Potential Resident and/or Breeder
Charadriidae	*Charadrius semipalmatus*	Semipalmated Plover	Breeder
Scolopacidae	*Capella gallinago*	Wilson's Snipe	Resident-Nesting Suspected
	Numenius phaeopus	Wimbrel	Migrant-Potential Resident and/or Breeder
	Actitis macularia	Spotted Sandpiper	Breeder
	Tringa solitaria	Solitary Sandpiper	Resident-Nesting Suspected
	Totanus flavipes	Lesser Yellowlegs	Breeder
	Erolia minutilla	Least Sandpiper	Resident-Nesting Suspected
	Ereunetes pusillus	Semipalmated Sandpiper	Breeder
Stercorariidae	*Stercorarius longicaudus*	Long-tailed Jaeger	Migrant

* Following Godfrey *(1966)*.

(Table 14 continued)

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
Phalaropodidae	*Lobipes lobatus*	Northern Phalarope	Migrant
Laridae	*Larus hyperboreus*	Glaucous Gull	Breeder
	Larus argentatus	Herring Gull	Breeder
	Larus canus	Mew Gull	Breeder
Strigidae	*Bubo virginianus*	Great Horned Owl	Resident-Nesting Suspected
	Surnia ulula	Hawk Owl	Resident-Nesting Suspected
	Asio flammeus	Short-cared Owl	Resident-Nesting Suspected
Alcedinidae	*Megaceryle alcyon*	Belted Kingfisher	Breeder
Picidae	*Colaptes auratus*	Yellow-shafted Flicker	Breeder
	Picoides tridactylus	Northern three-toed Woodpecker	Resident-Nesting Suspected
Tyrannidae	*Sayornis saya*	Say's Phoebe	Resident-Nestipg Suspected
	Empidonax minimus	Least Flycatcher	Resident-Nesting Suspected
Hirundinidae	*Riparia riparia*	Bank Swallow	Breeder
	Petrochelidon pyrrhonota	Cliff Swallow	Breeder
	Iridoprocne bicolor	Tree Swallow	Breeder
Corvidae	*Perisoreus canadensis*	Gray Jay	Breeder
	Corvus corax	Common Raven	Breeder
Paridae	*Parus hudsonicus*	Boreal Chickadee	Resident-Nesting Suspected
Turdidae	*Turdus migratorius*	American Robin	Breeder
	Ixoreus naevius	Varied Thrush	Migrant-Potential Resident and/or Breeder
	Hylocichla minima	Gray-cheeked Thrush	Breeder
	Hylocichla guttata	Hermit Thrush	Resident-Nesting Suspected
	Myadestes townsendi	Townsend's Solitaire	Breeder
Bombycillidae	*Bombycilla garrulus*	Bohemian Waxwing	Breeder
Lanuidae	*Lanius excubitor*	Northern Shrike	Migrant
Vireonidae	*Vireo philadelphicus*	Philadelphia Vireo	Resident-Nesting Suspected
Parulidae	*Vermivora celata*	Orange-crowned Warbler	Breeder
	Dendroica petechia	Yellow Warbler	Breeder
	Dendroica coronata	Myrtle Warbler	Breeder
	Dendroica striata	Blackpoll Warbler	Breeder
	Seiurus noveboracensis	Northern Waterthrush	Breeder
	Wilsonia pusilla	Wilson's Warbler	Breeder
Icteridae	*Euphagus carolinus*	Rusty Blackbird	Breeder
Fringillidae	*Pinicola enucleator*	Pine Grosbeak	Migrant
	Acanthis hornemanni	Hoary Redpoll	Breeder
	Acanthis flammea	Common Redpol	Breeder
	Passerculus sandwichensis	Savannah Sparrow	Breeder
	Junco hyemalis	Slate-colored Junco	Breeder
	Spizella arborea	Tree Sparrow	Breeder
	Zonotrichia querula	Harris" Sparrow	Breeder
	Zonotrichia leucophrys	White-crowned Sparrow	Breeder
	Passerella iliaca	Fox Sparrow	Breeder
	Calcarius lapponicus	Lapland Longspur	Migrant
	Plectrophenax nivalis	Snow Bunting	Migrant

Overall the waterfowl population appears to be modest with a reasonably representative composition. There is no suggestion here, however, of the magnificent concentrations of waterfowl and shore birds found in the nesting and staging areas of the arctic shoreline portion of the Mackenzie Delta. Moreover, the snow goose, that is the foundation species of Delta waterfowl hunting, overflies the study area in spring and fall as a general rule.

Whistling swans (Olor columbianus) enter the study area to nest as soon as the ice begins to break up, usually about mid-May. They stay until freeze-up in early to mid-October, delaying their southward migration as long as possible to enable their young to strengthen up for the strenuous flight. This bird breeds by the thousands up the Sitidgi Trench (Sitidgi and Eskimo Lakes). By comparison, the study area contains only a minor element for this overall regional population.

It is noted, however, that the delta areas at the south end and the middle portions of the Campbell Lake and the eastern end of Dolomite Lake are considered to be traditional staging areas for the fall migration of the whistling swans. Moreover, a significant number of swans nest in the delta areas of Campbell Lake. The bird therefore represents a significant component in a natural history interpretation program.

The flesh of the whistling swan is good to eat especially in May. It is illegal, however, to hunt this species.

As noted previously, the snow goose generally overpasses the study area. If open water conditions are delayed on the coast in May or June, the birds may "drop into" the delta off Campbell Lake for a short period but occurrences appear to be very rare. Under the Migratory Birds Convention Ate, it is illegal to hunt the snow goose in the spring but thousands are taken by general licence holders at the mouth of the Delta 65 to 80 kilometers north of the study area. There is also an extensive fall hunt in this area.

The Canada Goose occurs in the area as do common arctic and red-throated loons. From the listing previously presented, shore and songbirds appear to be plentiful. Songbirds are likely to increase as the coming of the Dempster Highway provides suitable habitat. Ptarmigan are extremely plentiful in the willow areas and they come onto the roadside in the fall to obtain gravel which is necessary for their craw.

The study area is ideal for raptors which nest on the cliffs and limestone uplands and hunt the nearby surrounding lowlands. It is the presence of the large concentration of nesting peregrine falcons which has attracted the attention of ornithologists to the area for some time. This species together with rare plant communities noted in the discussion of vegetation has led to the identification of the Campbell Hills and surrounding area as a candidate I.B.P. site and a possible wildlife management area.

There has been extensive literature, much of it receiving limited circulation, produced on the peregrine falcon, in the Campbell Hills area. It is noted, however, that the gyrfalcon, bald eagle, golden eagle, red-tailed hawk, roughed-legged hawk and merlin are all well represented here. Eagles, which were observed during the field work associated with this study, stay in the area until freeze-up or close to that event.

The general location of the peregrine falcon nesting areas is not mapped due to publishing restrictions requested by the Canadian Wildlife Service. Apparently there were as many as 18 nesting pairs in the area some years ago. A 1973 census revealed that "population varied from 9 breeding pairs and two (possibly three) non-breeding pairs, to 11 breeding and two non-breeding pairs."* At the greater numbers noted, the population represented the highest known density of breeding peregrine falcons in North America and approximately one-quarter of all known breeding pairs of the Anatum sub-species in the Yukon and N.W.T. It also maintained a high annual productivity rate for breeding pairs, that may be attributed to the lowest known recorded pesticide levels in North America. Considering these attributes and the present plight of the peregrine falcon, preservation of this area was considered important to the national and possibly the international survival of the species.

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* Windsor, J., and Gill, A, A Proposal to Establish the Campbell Lake Hills National Wildlife Area, Canadian Wildlife Service, dmonton, Canadian Wildlife Service, Edmonton, 1975

Unfortunately, there has been a staggering collapse of breeding peregrine falcons in this area in recent years. Moreover, the causes of the decline are uncertain.

The decline may be due to factors external to the study area over which no local control can be exerted, mainly D.D.T. and predation activities during migration. Local birds have shown significant pesticide levels in recentg times to indicate a potential cause of decline.

Among the local detrimental impacts is noise from rock blasting in the nearby limestone quarries. This may be a factor in the nesting area at the extreme north end of the escarpment known locally as Big Rock where an active quarry is only a couple of miles to the north. Blasting is terminated, however, during the critical breeding season. The noise of large and small aircraft landing and taking off at Inuvik has been cited as an injurious factor. This may have been of significance in the case of the birds nesting in the limestone outcrop on the north shore of Dolomite Lake, but it is doubtful that it has had an effect on any other locations. Harassment by helicopter and fixed wing aircraft skirting the escarpment face to sight falcons probably exerted a profound detrimental impact at times. Some claim that nests have been destroyed by hikers and climbers after the birds have left; a major detrimental action considering its perennial nesting habits and short nesting season. Finally, investigations by well intentioned ornithologists making scientific observations and sometimes removing an egg for analysis may have been a deterrent to breeding.

There is a possibility of rehabilitating the area through the introduction of breeding pairs raised by the Canadian Wildlife Service in southern Alberta. The success of any such project obviously depends upon whether the cause for the collapse was external or internal, and whether the Campbell Hills can be controlled by management programs of the latter in this case. If the birds are introduced into the area in this manner, it will be necessary to ensure that good management of the nesting sites be provided in the park planning program.

3.7 Fish

3.7.1 General Pattern

It is noted at the outset that no creel census and no limnological studies are available for the lakes and rivers of the Campbell Lake area. This reduces the discussion to subjective evaluation and opinions to a large extent.

There are both sport and domestic fisheries in the study area. While the latter is modest in scale, it places a strain on limited resources in some cases, as noted subsequently.

The domestic fishery takes place in winter, summer and spring and at various points within the area. Licences are issued to both natives and non-natives for participation in the winter domestic fishery. In the winter of 1980, there were 10 licences issued for Campbell Lake (5 to natives and 5 to non-natives). Fishing is sporadic as the need for food arises. The target species are whitefish [Coregonus nasces) and inconnu $tenodus leucichthys nelma). Two licences were issued to natives for Dolomite Lake where the target species are lake trout (Salvelinus namaycush) and pike (Esox lucius). No domestic licences are issued to non-natives for this Lake which is now in a stage of decline. About 8 to 10 licences were issued to trappers and native people for domestic fishing in the Delta. Again, fishing is sporadic and ceases after a month's supply of pike, whitefish and inconnu have been obtained. No strain is placed upon the resource of the Delta by the domestic fishery.

There is a spring domestic fishery for natives only on Campbell Creek with the target species being pike and whitefish. There may be 3 to 5 nets set in the general area on weekends from about May 15 to May 30. The licence holders are mainly native government employees who fish for food while enjoying a bit of outdoor recreation activity in their off work time.

Summer domestic fishing in Campbell Lake is confined to natives who sporadically place a few nets in the deeper waters off the limestone cliffs adjacent to the Dempster Highway and the main cove on the northwest shore. Whitefish and pike are the target species.

About 90% of the sport fishery of the study area is in Campbell Creek and Campbell Lake. The remaining 10% is focused on Dolomite Lake. There is no angling in the small lakes of the upper limestone plateau nor in the Mackenzie River where the waters are too muddy for fishing with lures.

The principal sport and domestic fishery for Inuvik lies outside the study area, specifically in the Husky and Eskimo Lakes areas (fly-in sport fishing) and the Delta region (domestic), and this pattern will continue. With the coming of the Dempster Highway, angling interest in Campbell Lake and Campbell Creek has grown steadily. Dolomite Lake, a primary trout angling resource, while still of significance, has declined in relative importance.

There are no sport fishing camps in the study area. It is notable that there are perhaps some reasonably good prospects in the Delta but these are situated beyond the boundaries of the study area. The Park, however, might present an important added scenic "side attraction" for any sport camp operation nearby.

3.7.2 Sport Fishing of Campbell Lake and Campbell Creek

In the spring fishery at the Dempster Highway crossing of Campbell Creek, there may be 150 anglers congregated at one time around the culverts and immediately up and down the stream. This is the major sport fishing event of the Inuvik area. Angling begins in mid-June immediately after winter ice break-up, peaks in late June and terminates in early July. This is primarily a local fishery since the tourists have not arrived by that date.

Target species are pike and whitefish. The pike which often have a muddy taste are probably in their spawning run following the whitefish for food. They average 1.4 to 1.8 kilograms in weight, a fair number being 4.5 kilograms and the odd specimen up to 13.6 kilograms. There are few trophy fish (over 8.2 kilograms). The whitefish that take the hook and fly (many local anglers apparently are not aware of this fact) are largely snagged as they pile up against the culverts and road fill of the highway crossing. The whitefish are fall spawners so it is not known why they run up Campbell Creek in the spring. After the main run is over, only tourists, children, and the "die-bards" continue to fish Campbell Creek. However, there may be 2 or 3 tourist campers at this location all summer and sometimes as many as 5.

The summer sport fishery on Campbell Lake is essentially a boat fishery and is steadily increasing. Five to seven years ago, only a few angled the Lake from boats in the summer. It has now become an important recreational past-time for Inuvik residents. Pike is the main target species followed by inconnu that weigh up to 13.6 to 18.2 kilograms at times. This species is taken on a shallow troll. A few lake trout may be caught but this body of water is too shallow and warm for this species. Moreover, they do not appear in the nets of domestic fishermen during the summer season indicating that they must be scarce.

In March and April, some snowmobiles jig through the ice for pike and burbot (Lota iota), a mid-winter spawning species. There are no ice fishing houses on the Lake as yet. .

Campbell Lake is the strongest of the angling resources in the study area as it is the largest body of water and the pike, one of its major target species, can withstand greater angling pressures than lake trout. It is notable, however, that pressures are steadily increasing and the time is at hand to complete a full scale creel census and limological study as a prelude to sound management planning. Moreover, it may prove necessary to terminate the net fishery which probably would not cause great hardship to local fishermen, as they could fish alternate locations in the nearby Delta area.

3.7.3 Sport Fishing on Dolomite Lake

This small water body offers essentially a pike and trout sport fishery. The trout apparently are now almost wiped out due to over-exploitation. Surveys are required in Dolomite Lake to lay the foundations for sound management planning. It may be necessary to terminate or "slack-off" sport angling on this water body to allow the species to recover.

3.7*4 Sport Fishing in the Delta

This is essentially a potential rather than an actual sport fishery. While fish are not attracted by lures to any extent because of the opaque muddy waters, it is said that whitefish (3.6 to 4.0 kilograms in weight) and inconnu (6.8 kilograms) come to the surface for insects in the summer season (July and August). There could be an excellent fly sport fishing potential here for both local residents and tourists. Moreover, the fishery will probably sustain heavy pressure.

There is some excellent pike and inconnu sport fishing in the deeper clear lakes to the west of the East Channel, but the area involved is located outside the bounds of terrain covered by the study area. Visitors to the Inuvik region, however, would require guides to penetrate these delta lakes where excellent spin tackle fishing is available.

3.7.5 Sport Fishing in the Cabin and Caribou Creeks

While some grayling fishing is said to take place in Cabin Creek, the main stream within the study area is Caribou Creek at the juncture of its southern boundary and the Dempster Highway. The Rengling River farther south on the Dempster Highway about 60 miles from Inuvik is, however, a superior resource.

There is a spring fishery on these streams about mid-June when the ice cover is breaking and the fish run up to spawn. There is a fall fishery in which there may be about seven good days between September and freeze-up. Runs are high-water and water-temperature-dependent and may vary by as much as a month each season. The grayling average 1 to 1.5 kilograms with the occasional larger fish about 2.4 kilograms.

3.8 Insects

3.8.1 General Pattern

A wide range of conflicting evidence was obtained through discussion of this topic with local residents and government scientists. Obviously, much depended upon personal tolerance limits and experience with the problem over a period of years. Field investigations associated with this study were conducted during the fall period when the infestation had terminated.

The native population has learned to contend with the problem. Inuvik residents frequently use liberal applications of insect repellents and nets when traveling outside the Town. Some never visit the tundra or delta marsh in the summer season. Tourists recognize the constraint and many come on bus tours equipped with nets, a sure indication that the package tour operators have received complaints.

There is no question, however, that insect infestation can seriously detract from an outdoor tourist and recreation activity experience at various times of the summer season. Moreover, the constraint can be experienced at any point within the study area and particularly on calm muggy days. This includes the delta marshes, the shoreline lakes, and limestone uplands. When traveling in a boat at a fair speed, no problems are usually encountered. During a vigorous hike across the tundra or the limestone uplands, vast hosts of pesky insects are usually stirred up to the attack. At times, cooking can be virtually impossible and eating reduced to an "up-net, pop in food, down-net" proposition.

It is noted that insect infestation fortunately comes after the main spring sport fishery on Campbell Creek. When the mosquito and black fly period is at its height, many anglers use boats on Campbell Lake where there is no, problem as long as the craft keeps moving.

(a) Mosquitos usually appear in the last week of June and persist until the initial frost in mid or late August. They are said to be severe in the Delta and in the proximity of marshy willow covered areas of the shorelines. It is probable that small ponds on the limestone uplands are excellent breeding sites and hence heavy infestation areas, at least in part.

(b) Black flies become numerous in the first few days of August and persist until about the end of the second week in September.

The large deer flies or horse flies are also present in the study area. Their period coincides roughly with that of the black flies.

3.9 Archeological/Historical Associations

3.9.1 General Pattern

There are no known prehistorical sites in the study area. Some archeologists have cemented to the effect that the area has sufficient potential to justify further field investigations, stating "I have no doubt that a serious survey would expose such sites on the hills themselves, along Gull (Campbell River) and on the higher bluff on the east side of Campbell Lake".*

* Windsor, J. and Gill, A., 1975: A Proposal to Establish the Campbell Lake Hills National Wildlife Area, N.W.T., Canadian Wildlife Service, dmonton (mimeographed) p.34

A number of historic associations of local interest may be incorporated in an interpretive park program. Although this was not researched due to time constraints, there may be traditional Inuit or Dene associations with the area, for example, legends and folklore.

3.9.2 Exploration and Transportation Routes

3.9.2.1 Alexander Mackenzie and John Richardson

Alexander Mackenzie and John Richardson both passed by the study area as indicated in Exhibit 7.

On his return trip from the Arctic in 1789, Alexander Mackenzie travelled upstream on the East Branch of the River, passing along the western boundary of the study area. However, Mackenzie made no specific reference in his diary to this portion of his journey.

In 1826, Richardson travelled up the East Branch of the River past Inuvik on his journey to Kugmallit from where he proceeded to explore and map the Arctic coast to the east. Richardson described the western boundary of the study area in the following passages (brackets are explanations by RMC):

"About 35 miles (55 Kilometers) from Ft. Separation, or in latitude 68° 10' N, the channel washes the foot of a low dome-shaped bluff (the small hill located at about 1/3 of the study area's length from its southern boundary), in which the intrusion of a mass of trap (a dark, fine-grained igneous rock), which now forms the top of the hill, has tilted up a bed of limestone and separated it from one of sandstone... . .."

"In the afternoon we passed another considerable affluent from the hills in latitude 68° 18' N (a tributary from the west at the same latitude as Dolomite Lake); some hours later, another one of less size (possibly Dolomite Creek); and very soon afterwards crossed a channel which bounds Harrison Island on the south." *

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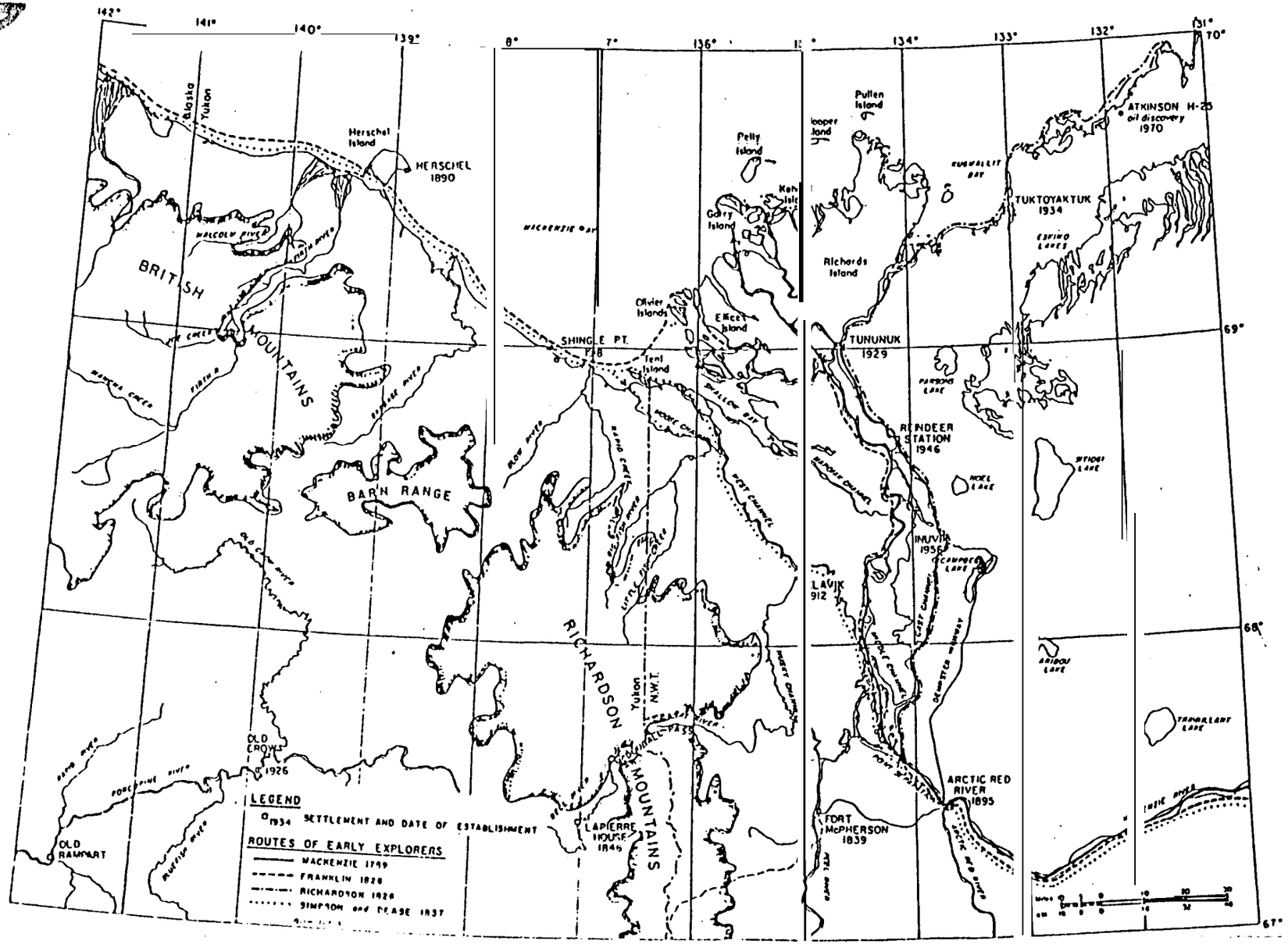
* Arctic Searching Expedition, Sir John Richardson, 1826, p.140

EXHIBIT 8

ROUTES OF EARLY EXPLORERS



Source: Windsor and Gill, 1975

3.9.2.2 The Sitidgi Route

The Campbell River, Campbell Lake, Sitidgi Lake and Eskimo Lakes corridor is said to be a traditional alternate route to Liverpool Bay in the Beaufort Sea that was used by natives and early explorers. It avoided the necessity of traveling eastward from the mouth of the Mackenzie River across the open hazardous waters of the Arctic Ocean.

Little or no evidence of this period is present on the landscape. An archeologist (Miller, personal communication) found three historic cabins at the northeast outlet of Campbell Lake which he believes dated back to the turn of the century or earlier; Canadian Wildlife Service personnel found 2 suspected sites near the southeast end of Campbell Lake and Campbell River".*

'Following the discovery of free lead and zinc in a creek near the east shore of Campbell Lake, the Todd Mining Company of Vancouver (1968) and Mr. F.H. Semmler of Inuvik (1969) established claims near the south end of Rocky Hill. Drilling activities failed to reveal any veins of these minerals and both claims were eventually allowed to elapse. The present day legacy of these operations is a caterpillar trail from the west shore of Campbell Lake to an unnamed lake in the hills, minor alterations in stream flow caused by bulldozing activity, and three abandoned tent frames surrounded by widespread litter''.**

These sites were not inspected during the field work associated with this study.

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* Windsor, J. and Gill, A., 1975,, pg. 34* These structures were not seen in the field investigations associated with this study.

** Ibid, pg. 34-35

3.9.3 Place Names*

Inuvik means "the place of man" in Inuktitut, appropriately reflecting the multicultural nature of the town. The name was selected from among a few suggestions and officially proclaimed on July 18, 1958.

The history of the naming of Campbell Hills is vague. It was possibly named by James Anderson of the Hudson Bay Company in the nineteenth century after Robert Campbell, a chief factor of the Bay.

The official name Big Rock is alternatively titled Rocky Hills. Chitsi Hills is the Loucheux (the local Dene Band) word for "big rock".

3.9.4. Development of Present Inuvik Townsite

Although the Inuvialuit and the Dene traditionally hunted and fished in the region of Inuvik, the site of Inuvik was seldom visited until 1954. Problems of erosion and flooding at Aklavik prompted the Department of Indian and Northern Affairs to establish the new site as a base for development and administration, and as a centre for education and medical care for the Western Arctic.

Construction began in 1955, and by 1961, the school, hospital and nursing stations, bank, government administration offices, RCMP, and radio station were all open and functioning.

On July 21, 1961, Prime Minister John Diefenbaker unveiled a plaque which reads:

> "This was the first community north of the Arctic Circle built to provide the normal facilities of a Canadian town. It was designed not only as a base for development and administration, but as a centre to bring education, medical care and new opportunity to the people of the Western Arctic."

The plaque is part of a monument whose three-curved form symbolizes the multicultural (Inuvialuit, Dene and white) character of Inuvik.

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* Personal Conversation, Cathy O'Brien, Toponymy Division, Energy Mines and Resources, Government of Canada

In 1964, Canada's first permanent scientific research laboratory north of the Arctic Circle opened at Inuvik.

The Dempster Highway, completed in 1979, linked Inuvik to Dawson City in the Yukon.

Today Inuvik serves a population of approximately 3000 people, functioning as regional headquarters of the Government of the Northwest Territories. It is the major commercial, communication and transportation centre for the Mackenzie Delta and also provides supplies for the oil and gas exploration activities in the area.

The Northwest Territories' first modern planned town, Inuvik is the largest Canadian community north of the Arctic Circle.

3.9.5 Reindeer Grazing Reserve

The Reindeer Grazing Reserve has a relatively lengthy history. The 1919 Federal Royal Commission, established to investigate the possibility of reindeer herding, presented its findings to the Government in ?922. In 1929, the Government purchased a reindeer herd from Alaskan breeders and in 1935 this herd was transferred to the Delta and herding commenced.

In 1955, a Federal order-in-council officially established the limits of the current Reserve, measuring 240 km. east to west and 208 km. north to south with an area of 4,900,000 hectares (47,000 sq.km.). The southwestern tip encompasses the study area.

In 1978, the Federal Government sold the herd to a private individual in Tuktoyaktuk. The reindeer now graze in the Tuk and Parsons Lake region but have not been seen in the Inuvik area for at least 10 years. The reindeer are herded twice yearly when they are castrated and slaughtered.

3.10 LAND USE PATTERNS

3.10.1 Current Patterns

Within the study area, current and prospective land use patterns can be conveniently grouped under the following categories.

* Construction; including quarries, gravel pits, borrow pits supplying materials for road construction and building sites.

* Trapping and Outpost Cabins.

* Recreation and Tourism: including government camp sites, picnic sites, and recreation areas, primarily along the Dempster Highway and private commercial hunting and fishing camp operations that may be. entering the area shortly.

* Miscellaneous; including sites for the storage of explosives, oil drilling, mining.

Land allocation in the Northwest Territories for the above use is administered through a permit and lease system that includes:

Leases are granted for periods ranging from 3 to 27 years. In the Inuvik area, they are mostly short term, being in the range of 5 years.

Land use pennits are granted for 2year periods with an option to continuously extend it every year. These are common within the study area.

Non-Land Use Permits are given where short term operation (less than 100 days) is involved and no large heavy equipment is being used. They are intended primarily as a device to keep the administration aware of what is transpiring in the landscape.

The lease is the preferred instrument where considerable development capital is involved and hence security of tenure is needed over a period of time. Land use permits are used where temporary occupancy is required. They are the common instrument for exploration, seismic, construction, campsite and quarrying work and serve the purpose of informing GNWT of activities in the area.

Trappers are issued permits permitting them to construct cabins in alloted trapping areas. Permits of this type have been issued on the margins of the study area.

There are cottages and cabin structures on Dolomite and Campbell Lakes as shown in Exhibit 9 (Site Inventory). The Dolomite Lake area is now under jurisdiction of the GNWT according to the NWT Inuvik Block Land Transfer. The Town Planning and Lands Department of GNWT advises there is only one cabin lease issued in this area. Designated as a lease for recreational purposes, a local resident renews his lease every 5 years. (last renewed November 1, 1978).

3.10.1.1 Land Use Permits

The following land use permits related to construction have been issued for locations within the study area.

Permit #N76Q268 is an expired quarry permit. Clearance was issued about 1-1/2 years ago.

Permit #N77Q686 is a land use permit in good standing issued to Gordon Campbell, North Star Service and Construction Ltd., Inuvik. This quarry permit can be extended indefinitely.

Permit #78X888 is an expired permit issued to the Town of Inuvik. No work was actually conducted.

Permit #N79Q120 was issued to Public Works Canada and this permit is now closed. These sites were Dempster Highway quarries but are employed presently only for stockpiles. Apparently, GNWT wishes to apply for this permit.

Permit #N81Q461 was a quarry permit issued to Cam Construction Ltd. of Inuvik. This permit is now closed.

3.10.1.2 Non-Land Use Permits

The following non-land use permits had been issued in the area. All have expired.

Permit #N219N78 issued to the Department of National Defense for Explosive Cratering Trials has expired.

Permit #N282D79 issued to Hardy and Associates was for a 3 month period and it is currently closed.

Permit #N305N79 issued to Foothills Pipelines has also expired.

3.10.1.3 Leases and Land Applications

Only one lease has been issued within the study area.

Lease document #3391 (adjacent to #3699) was issued to Explosives Ltd. of Calgary on December 1, 1979 for a 25 year period. It covers an area of 150 x 300 meters, or 2.79 hectares.

Document #1136 is an old GNWT campsite and picnic area located near Campbell Creek. Its status is holding.

Lease document #3699 (adjacent to #3391) is issued to another explosives company. It is located on the south side of the Dempster Highway at km. 1534.11.

Several lease applications are on record as listed below:

Application #3017 is a lease application from the Department of Local Government, GNWT for 5 temporary campsites which would include picnic tables and garbage disposal facilities.

Application #1696 was made by the Department of Recreation, GNWT and covers a small area on the east shore of Campbell Lake.

Application #1809 by Van Buskirk has been dormant since 1974. This file has now been terminated.

Application #3036 by Margaret McLeod (now Margaret Norris) is for a Tourism Wilderness Camp, at the present Norris Camp, on the west side of the Mackenzie River East Channel.

The study area is listed with the International Biological Program (IBP) (Site 48-19). An alert was given to the Land Administration Program which simply indicates an interest in the area by the IBP. No legal status is involved.

It is important to note that according to the Mining Recorder, Yellowknife, there are no mining leases or claims presently in this area.

3.10.1.4 Hunting and Trapping Use and Outpost Cabins

The Campbell Lake area is currently used by a few local and Arctic Red River hunters and trappers. As water levels are at the lowest in 40 years, some of the muskrat lakes are drying up. The Campbell Lake area is generally at a higher elevation than the Delta area west of the Mackenzie River East Channel and is thus a good hunting and trapping area.

Mrs. Norris has the only registered trapping permit in the region. Her area is on the west side of the Mackenzie River East Channel. The Norris cabin was constructed in about 1930 and is now the permanent residence of Mrs. Norris.

Jimmy Adams cabin (circa early 1930's) is an all year facility used as a trapping base. Joe Adams cabin is presently vacant. Bob Hurst also has an all year trapping cabin. He traps the Big and Little Gull Rivers. The Coyen boys trap an area to the south of the study region. All cabins are indicated in Exhibit 9.

3.10.2 Quarries

Given the concern of the Town of Inuvik with respect to their continuing supplies of aggregates, fill and crushed rock, the following discussion of present quarries is quoted directly from the current Underwood McClelland Associates Town Plan. According to David Allman, Executive Assistant, Town of Inuvik, the quarries presently in use are the only ones known. As quarry identification requires financial investment, no entrepreneur has been searching for potential quarries. Similarly, the Town has given no consideration to quarry planning. The Town passed a motion on June 1981 stating that no further quarry permits were to be issued within the Town boundaries.

Existing quarries are described as follows:*

"Site 1: The "Town pit", designated by RKL as source I 400, is located nearest the townsite, being about 1 mile south of the centre of town. To date, most of the common fill used in Inuvik has been taken from this pit. It contains silts, sands and gravels, and some ice, in a wide range of combinations. Finer materials predominate. As common fill for road building and lot development, materials selected from this pit with reasonable care are acceptable, but not excellent. In the winter of 1972-73, RKL estimated that 250,000 cubic yards of material remained. Since that time, in excess of 450,000 cubic yards have been removed. Indications are that the pit may yield the same amount again. (RKL probably excluded the more silty materials from their calculation, reporting only material which would qualify under standard road building specifications).

Site 2: The Beattie Pit, or Shell Lake Pit is approximately 9 km (6 miles) east of Inuvik. About 15m (50 ft) of medium gray, massive, platy, weathering, bentonitic shale has been exposed. The pit was used extensively in the re-construction of the airport by-pass roads. More recently, large quantities of fill have been taken from this pit which yields a low strength shale which is suitable for common fill. Material is removed by ripping. The volume of material remaining is very large; certainly more than 2 million cubic yards. This source is not 1 isted by RKL.

Site 3: The Inuvik Airport Quarry or MOT Pit, designated I 402, is at the west end of the runway. More than 150m (500 feet) of Proterozoic rocks have been exposed in the course of quarrying operations for runway construction. The bulk of the Proterozoic succession is made up of interbedded, shallow water, red, green and grey argillite, gray quartzite and silty, greyish-red, fine grained dolomite.

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* Underwood McClelland Associates, Town Plan, 1980

This source, yields a hard, dense, fairly durable shale, and some limestone. The distance from Inuvik is 8 miles by road. RKL report that the material from this pit may be used for general fill, and with crushing, screening and blending, for concrete and bitumen aggregates. It has been used for road surfacing, blended 50% with crushed limestone. Calcium chloride is added to the blend to reduce the dust when travelled.

In the winter of 1972-73, RKL estimated that 6,000,000 cubic yards of material remained in pit I 402. It is not known how much material has been removed since, but the aggregate withdrawal is probably less than 1,000,000 cubic yards.

Site 4: Some surfacing material has also been recovered from Source I 407, located 38 miles northwest of Inuvik by airport road. RKL estimate that 6,000,000 cubic yards of sand and gravels remain in this source. However, since it is located at the end of a critical wildlife area, RKL recommends that further development of the pit be deferred until wildlife studies are done.

Site 5: Source I 403 is a limestone quarry, originally developed for construction of the Dempster Highway, located 13 miles, by road, from Inuvik. Material is loosened by blasting. It may be used for general fill, or, with crushing, screening and blending, for surfacing and for concrete and bitumen aggregates. In the winter of 1972-73 it was estimated that 2,500,000 cubic yards of material remained in this pit, and it is believed that little of this material has subsequently been removed.

Site 6: Pit I 404 is a soft sandstone exposure, located 21.7 km. from Inuvik along the Dempster Highway. This pit was also developed for highway construction. Potential yield was estimated in the winter of 1972-73 to be in excess of 100,000 cubic yards; probably much of this material still remains. The shale from I 402 (MOT Pit) is of better quality than the sandstone from this source, so I 404 will not be particularly useful to the Town for many years.

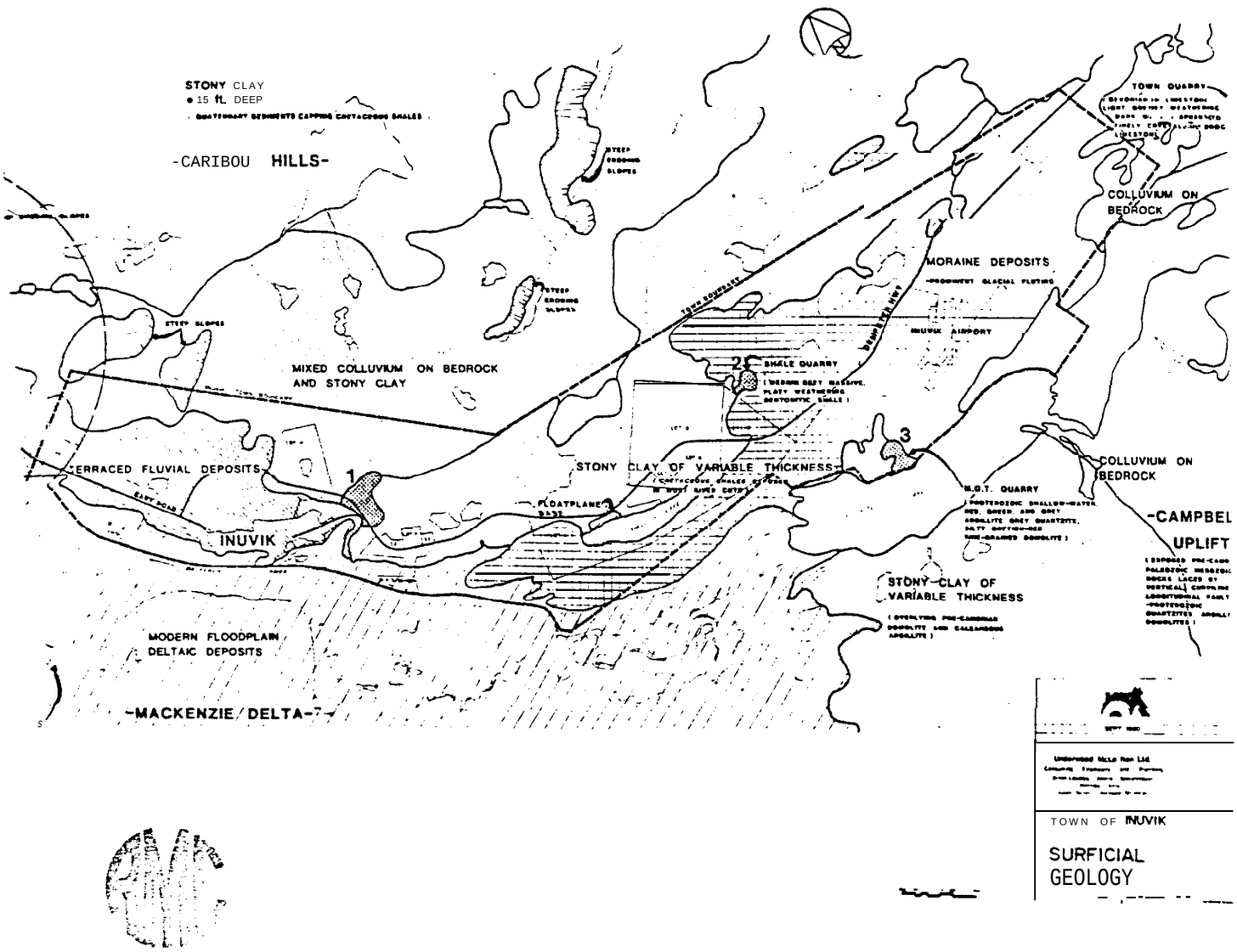
Quarry Sites 1, 2, 3and 5 are shown on Exhibit 10,

Other sources are either of inadequate quality or too distant from the town to be worth considering within the foreseeable future.

It will be seen from the foregoing that Inuvik has more than sufficient granular-materials resources to provide for any foreseen development. It is most probable that most of the common fill used in future works will come from the Shell Lake pit, while surfacing will come from the MOT pit and a variety of other sources".

EXHIBIT 10

LOCATION OF QUARRIES



4. ENVIRONMENTAL CAPABILITY AND SUITABILITY

4.1 Introduction

The items examined in the previous chapters form the basis for classifying the study area into appropriate capability/ suitability components. In essence, this classification attempts to synthesize previous subject areas discussed and project the complete issue into capability/suitability terms.

The study region is divided into four main components which are closely linked to the physical resource discussion, particularly to the terrain considerations, and hydrographic and vegetative material.

It incorporates and brings into focus present land use patterns, development constraints, and issues and problems noted in the discussions of the implications of the various physical patterns. The four major components are subdivided into several segments.

In the classification system presented, primary capabilities/ suitabilities are denoted explicitly in the nomenclature. Secondary values are noted in the accompanying text. For example, the Mackenzie River East Channel is classified and labelled according to its primary functions as a buffer to the central rock uplands, and as a travelway and access route. However, it could serve secondarily as an angling area.

Each of the four components is introduced by a discussion focussing on capability. Each component is then subdivided into appropriate segments and segment suitability is examined. Finally, development facilities and infrastructure are described for each of the major components.

The capability/suitability map (Exhibit 11) should be employed when reading the following discussion.

4.2 Delta Buffer, Travel and Access Component

4.2.1 Capability

The Mackenzie River East Channel traverses the entire western boundary of the study region and physically connects Inuvik to the Delta buffer area which borders the study region on the northwest, the west, and on the south. At this perimeter area, it forms an ideal buffer zone, in particular during the summer and in winter to a lesser degree for the sensitive area extensive use central rock upland component of the study region (refer to Section 4.4). The reasons are as follows:

Initially, it is of sufficient width and difficult to traverse, so that access to the central component is restricted to a few easily manageable points close to the waterways. The resources in the buffer area are not desirable.

This Delta buffer zone is also an integral component of the local resident and tourist/recreation Mackenzie River waterway travel corridor and a regional contact medium for the proposed park, in both summer and winter seasons.

The area may possess a substantial sport fly fishery, including whitefish and inconnu during the summer season.

The Delta buffer is ideally suited to the development of private hunting and angling sport and tourist camps on the western bank of the East Channel. These could exploit summer angling and hunting and take advantage of winter snowmobile, dogteam, ice fishing and trapline potential in the vast Delta to the west. No conflict is envisioned with respect to this buffer section of the proposed park. In actuality, a complimentary relationship could be established as camp operators could exploit the added viewing and general interest attractions of the park while tourists visiting the park could become informed and enjoy the nearby sporting activities.

4.2.2. East Channel Travelway Segment Suitability

The Mackenzie River East Channel travelway segment is suitable in summer for commercial boat tours, visitor and resident boating; tourist camp operations on the west bank; and sport fly fishery. It is presently used only for boating.

In winter, it is suitable for, and currently employed, as a snowmobile route and as an ice road.

4.2.3 Campbell River and Gull Creek Access Segment Suitability

In summer, these two waterways provide access to Campbell Lake. The scenic Gull Creek is traversable only during spring high water periods, whereas Campbell River is also employable during fall lower water periods. Gull Creek provides access to the western escarpments of the central rock uplands and acts as a landing point for hiking to the summit of these escarpments thereby affording scenic vistas.

During winter there is virtually unlimited snowmobile travel in this segment.

4.2.4 Dolomite Creek Segment Suitability

Dolomite Creek connects the Mackenzie River East Channel with Dolomite Lake and thus supplies boat access from Inuvik to Dolomite Lake in the summer. During winter, it functions as a snowmobile route to Dolomite Lake and thence via the gorge connecting the southeast tip of Dolomite Lake to Campbell Lake.

There is no angling potential of importance on the Campbell River, Gull Greek, or Dolomite Creek segments. Moreover, it is our opinion that wildlife viewing would be limited with steady traffic volumes. We also believe that the hunting in these areas is not important. Hunting could be discontinued as the wildlife resources are essentially depleted with only the odd stray wandering into these areas. In addition, there are plenty of alternative areas where game is more abundant.

4.2.5 Development Facilities and Infrastructure

Limited development would be required in this component. Furthermore, due to the annual flooding that can change waterway courses, many of the facilities and travelway infrastructure components must be reset annually. All the logistical requirements including gas, oil, tour and boat rental facilities are presently based in Inuvik, which is the most centrally and conveniently located staging point for Inuvik residents and visitors. This also would eliminate all concession leasing development and operation problems for park management and operation.

The following facilities and materials are required:

(a), Preparation of a guide leaflet cross-referenced to site markers explaining interesting natural history features such as levees, vegetation on the river banks and slipslopes, history of the route, etc. A modest cost of production making this available free of charge is recommended.

(b) Placement of navigation channel markers to indicate submerged rocks, channel directions and passageways through the deltas of Dolomite and Campbell Lakes.

(c) Installation of picnic sites, either at the foot of a path leading up to viewpoints on the limestone uplands or at the top of these escarpments. Placement at the summit could minimize summer insect infestation and avoid the flooding at the Delta level although winter winds could detract from usefulness to skiing and snowmobiling travelers.

(d) Evaluation of fly-fishing potential and promotion.

4.3 Campbell Lake Trench Multiple Recreation Use and Dempster Highway Corridor Component

4.3.1 Capability

The Campbell Lake trench and Dempster Highway corridor component comprises the eastern boundary area of the study region. It possesses a moderately strong multiple outdoor recreation use and development potential within a visually attractive landscape setting. It includes opportunities for water based activities such as boating, canoeing, angling, shoreline beaching and picnicking, and hiking and walking. There is excellent shorebird and waterfowl observation in the southern basin of Campbell Lake. As well, there are scenic viewpoints and interpretive potentials, possible camping and picnicking sites and visual contact for the highway traveller with the limestone/dolomite central uplands component. The fragile nature of the terrain and the limitations of the angling potentials in relation to demand, require sophisticated facility planning and environmental management, if productive capacities and potentials are to be sustained under anticipated pressures arising from future use.

This component is sharply demarcated from and functionally distinct from the central limestone/dolomite rock uplands to its western margin. Its integration within the total development scenario requires great skill.

4.3.2 Upper Campbell Lake Recreation Segment Suitability

The Upper Campbell Lake segment is suitable for a variety of recreational activities. In summer, boating, canoeing and angling are popular and there is a possibility of small boat sailing and wind surfing using wet suits to protect against the cold water. As well, beaching employing shoreline picnic facilities and hiking is appropriate as the beach shoreline can sustain moderately heavy usage without deterioration.

In winter, it now functions and is suitable as a snowmobile and cross-country ski route to access the more sheltered valley travelways. Future uses include ice fishing and possible ice boating.

4.3.3 Lower Campbell Lake and Delta Natural History Segment Suitability

Lower Campbell Lake and its delta comprise an ideal shorebird and waterfowl viewing area. There is a strong potential input to the natural history interpretation program including, in particular, aspects of bird life and the physiographic phenomenon of lake bifurcation.

4.3*4 Campbell Creek Recreation Segment Suitability

The Campbell Creek crossing at the Dempster Highway is now the most intensively used site within the study area. It is an excellent site for boat launching, picnicking, camping and angling development. Major redevelopment will be required to preserve and fully exploit the potentials present.

4.3.5 Dempster Highway Travelway Segment Suitability

The Dempster Highway corridor provides excellent views of Campbell Lake and the scarps of the limestone/dolomite rock uplands to the west. It offers some interpretation possibilities including vegetative types and terrain destruction resulting from the removal of surface vegetative cover.

Some excellent scenic lookout points are available from the uplands on its eastern flank. However, the terrain is not suitable for cottage development, hiking trails or any form of concentrated intensive use due to the fragile nature of the ground cover.

4.3.6 Rock Outcrop Viewing and Sensitive Area Segment Suitability

The rock outcrop uplift area, between the Highway and Campbell Lake adjacent to the bifurcation of Campbell Lake, offers excellent potential for the development of a scenic lookout and interpretation point. This is because it is close to the Highway and it can sustain moderately strong pedestrian traffic in the limestone rock area without terrain destruction. It has strong interpretation prospects associated with geology, rare plant communities, shore birds and waterfowl in the delta and southern basin of Campbell Lake.

4.3.7 Development Facilities and Infrastructure

(a) A multiple use recreation area at the Dempster Highway Crossing of Campbell Creek should include a boat launching site and channel deepening, a new passageway for fish beneath the Dempster Highway, a picnic site including toilets and water supply, and an historic marker describing the alternate canoe route to the Arctic Ocean.

Incorporation of camping facilities are not recommended at this time. Although the Inuvik Happy Valley Campground 18 site facility occupancy rate is virtually 100%, the future occupancy of the new Chuk Park facility (20 campsites), to be officially opened in 1982, should be evaluated. As expansion of a further 20 sites is also possible at Chuk Park, camping requirements at Campbell Creek may not be necessary in the short range.

(b) An interpretive centre/display at the limestone outcrop area should include a display of the major features to be seen, and a walking trail to the edge of the cliff overlooking Campbell Lake and to overlook the site of the rare plant community. In addition, a parking area adequate for tour bus use and private cars and the inclusion of toilet facilities are required. A picnic site is a possibility, however, it is optional and possibly undesirable. Interpretation pamphlets should be prepared at a modest cost.

(c) Interpretive signs are required at points along the Highway to explain the natural history and vegetative features. Small car pullover pads are needed at these sites. Perhaps current picnic areas could be redeveloped for this purpose.

(d) An interpretive area is required to view the wildlife area (shorebirds/waterfowl) in the south basin and delta portion of Campbell Lake.

(e) A creel census and 1 imnological survey of Campbell Lake are necessary as a prelude to preparation of a management plan to sustain angling potentials at a satisfactory level for reasonable sporting enjoyment.

4.4 Central Rock Upland Sensitive Area/Extensive Use Component

4.4.1 Capability

The central rock upland component contains the central core of the spectacular viewpoints and scenic terrain. The bulk of the peregrine falcon nesting sites and rare plant communities are located here. The majority of this component is suitable primarily for extensive recreation use including hiking, snowmobiling and skiing. The preservation/conservation aspect of park development is critical in this component of the park.

4.4.2 Eastern Escarpment Sensitive Area/Viewing Segment Suitability

The eastern escarpment area is suitable as a natural history reserve as it contains the principal peregrine falcon nesting sites. There are excellent scenic lookouts along the cliff tops. The northerly extension is particularly picturesque along the scarp and immediately to its rear. Some of the best aesthetic values of the study region are located here and it is reasonably accessible from the Highway via an abandoned road from a former sandstone quarry.

4.4.3 Dolomite/Campbell Lakes Corridor Segment Suitability

This corridor traverses a valley joining the southeast tip of Dolomite Lake with the Teachers' cabin on a bay of Campbell Lake. It is a natural and currently used winter travelway corridor for snowmobiling and cross-country skiing, to a lesser degree due to the distance from the Town. This passageway is unsuitable for summer travel because the valley floor is a sheltered maze of bogs, muskeg and wet terrain, making it an ideal breeding territory for insects. This summertime travel unsuitability is fortunate as the area is also appropriate as a conservation and preservation area for the numerous rare plant communities present in the floor of the fault and glaciated structure.

4.4.4 Rock Expanse Extensive Use Segment Suitability

This large segment stretches from the delta area in the southwest corner of the study region to the Dolomite to Campbell Lake corridor in the northeast sector. It is a vast expanse of rock upland with interspaced wetland and tree cover patches that is suitable only for summer hiking and winter snowmobiling and skiing. As defined trails will quickly lead to destruction of the fragile ground cover, trail making for summer use requires either; dispersed use, maximizing use of rock surfaces, or accepting (sacrificing) concentration and wear on defined trails. There is a danger that recreationists will become lost in this vast area.

4.4.5 Western Escarpment Viewing Segment Suitability

The western escarpment segment possesses scenic and interpretive potential in relation to the delta component. It could be effectively utilized in conjunction with boating and boat tours in the delta area, as already discussed in 4.2.5.

4.4.6 Development Facilities and Infrastructure

Scenic viewpoints and interpretation displays are required on:

a) the western escarpment close to Little Gull River,

b) the northern extremity of the eastern escarpment. Some short trails to the picturesque portions of the area immediately to the west are essential.

A well marked winter trail through the corridor joining Campbell and Dolomite Lakes is required. This trail could be employed by both skiiers and snowmobiles. A basic shelter could be constructed here for the use of these and possibly other groups.

A management program is necessary for the restoration of the peregrine falcon population and protection of the rare plant communities.

4.5 Dolomite Lake Multiple Recreation Use Component

4.5.1 Capability

The Dolomite Lake component has been a popular site due to its water (Dolomite Creek) and road (MOT airport) accessibility and its proximity to Inuvik. In a relatively scenic setting, this component is presently utilized for, and offers on a moderate scale, a variety of recreational activities including boating, canoeing, angling, wading, picnicking and cottaging. Several private cabins have been built on the shores of the Lake and there appears to be some further minor development potential.

Current and future use and development is restricted by the airport property boundary. Intensive management of terrain and fish populations is necessary if outdoor recreational opportunities are to be sustained at a reasonably high level.

A few peregine falcon nesting sites were present along the cliffs of the north shore but have apparently now been abandoned. Nesting pairs might be reintroduced here.

4.5.2 Dolomite Lake Component Suitability

This component is not sub-divided into segments for . suitability purposes as it is one cohesive unit. Dolomite Lake is suitable for boating; canoeing and possible limited wind surfing; picnicking and shoreline hiking; and angling. It is a winter snowmobiling and skiing destination area and corridor travelway to Campbell Lake. Although on a limited scale, it is the only potential location for cabin subdivision within the study area.

It possesses some natural history interpretation potential including geology (folded rock outcrops on the north shore), vegetation (trembling aspen patch on the north shore), and waterfowl as it is a fall staging area. Peregrine falcon nesting pairs might be reintroduced.

4.5.3 Development Facilities and Infrastructure

It is essential to negotiate an agreement with MOT for recreationists to use the airport road for access to the north shore of Dolomite Lake.

A picnic area at the end of the airport road on the mid-point of the north shore is recommended. It would be utilized by both summer and winter activity groups.

A creel census and limnological study of the Lake are necessary as a prelude to the restoration of trout angling potentials.

5. RECREATIONAL USE AND DEMAND

5.1 Introduction

Current recreational use will be discussed by activity. Throughout, comments on intensity, shortfall of supply of facilities to satisfy demand, conforming versus nonconforming uses, constraints, and environmental impact will be considered.

Recreation activity per capita (resident and tourist), and total number of visitors, are both growing rapidly. The total supply of recreational facilities should likewise expand. Table 15 summarizes the demand for and supply of recreational activities and facilities.

It employs as a basis the items set forth in the study terms of reference. The demand aspects are derived from interviews conducted with informed and active recreationists including individuals detailed in Appendix 1 - "List of Contacts".

Every individual interviewed at length commented that the major deficiency limiting recreational involvement within the study area is the lack of shelter facility(ies). The second most mentioned requirement was the need for marked trails to be used by a variety of activity groups such as hikers, picnickers, snowmobiles, skiiers, etc.

5.2 Inuvik Residents, Activity and Needs

The importance of outdoor recreation for the local population is even more pronounced than in the south. A high proportion of the non-native population are relatively short-term residents and accustomed to southern lifestyles. Many have trouble coping with the north and its way of life and recreation is an important outlet for coping with what for them, is a relatively stressful environment. The native population who live in the Town desire outdoor activity to meet their recreational needs.

A more common complaint in the north is that life is boring and that there is nothing to do. Certainly in Inuvik, there is a lack of big-city amenities and diversions. For example, there is no pool, movie theatre, active live theatre group, nor bowling alley. An inventory of Inuvik recreation facilites was recently conducted* and concluded that:

> ". ..it was stated by Committee members that accessibility by the community-at-large was limited in certain respects."

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* Gaudet and Pieper, Inventory of Recreation Facilities in Inuvik, August 1981

RECREATION ACTIVITY OR FACILITY	PRESENT DEMAND	PRESENT SUPPLY	DEMAND-SUPPLY DEFICIENCY	POTENTIAL LOCATIONS
Primitive Campsites	Not cited as required due to freeform set isfaction. Residents mainly.	People construct own freeform style.	Supply would aid management. Probably 2-3 locations would be sufficient.	Virtually anywhere shel tered, at hiking distance, n.e. sector, beaches of Campbell Lake, Big Rock area.
Semi-serviced Campsites	High demand by both residents and visitors.	Happy Valley in town - 18 sites. Explosives Hill - 20 sites (CHUK PARK). Freeform at Campbel 1 and Caribou Creeks, elsewhere.	Assess occupancy rate of Chuk Park before expanding.	Chuk Park, Campbell and Caribou Creeks expansion, however, scenic quality medium here. More scenic at Campbell Lake lookout of Dempster at Campbel 1 Lake bi furcation.
Afr Access	High demand by both residents and visitors.	International Airport - Float Plane base - Shell Lake. In town smal 1 craft.	No deficiency.	
Water Access	High: with 500 boaters, residents and some visitors.	East Channel , Gul 1 and Campbel 1 Rivers, Dolomite and Campbell Creeks Dolomite Lake.	None for launching, Campbel 1 Creek - sufficient access. Caribou Creek - flow insufficient. Need channel markers at entrances to Dolomite and Campbell Lakes.	
Gas and Oil for cars and boats	Town of Inuvik water-front (boat) and gas service station adequate - residents ma inly.	Same as "DEMAND".	No deficiency.	
Equipment Rentals	Medium, visitors mostly, locals own equi pment.	Sufficient outfitters	Increased recre-ation will increase deficiency gap to be filled by entrepreneurs.	Increased boating at Campbell Lake especially by visitors may necessitate a Campbell Creek rental suppl fed by existing or new entrepreneurs.
Primitive Rental Accommodation	Not cited due to free form satisfaction.	None - could be same as below.	Only if demand increases greatly, now no gap.	
Multi-Purpose Shelter	Limited number of cabins.	● Nest mentioned item-by everyone responding in detail.	High gap.	n.e. sector. Big Rock area.
Group Tour Facilities	Little if any, could increase, especially tourist groups could be promoted.	None	Little now	Less rigorous trails, n.e. sector Campbe I 1 Lake lookout.
Long-Term Parking	Medium, freeform off road now used.	Dolomite Lake, MOT, Campbel 1 & Caribou Creeks, but not "secure" although minimum vandal ism due to "buddy" surveillance system.	Small	By access trail to n.e. sector (to hiking and shelter, etc.) Other pull-over locations along Oemps ter Highway.
Picnicking	High	Campbel 1 & Caribou Creeks, Dolomite and Campbell Lakes.	Medium gaps - more tables, garbage facil i ties needed.	n .e. sector. along Dempster on Campbell Lake beaches, etc.
Swimming	Low, due to climatic constraints.	Boot Lake in town #1 location, free-form in small lakes.	No improvements possible nor needed.	
Fishing	High	Good, virtually everywhere.	Minor improvements possible such as improved water access discussed above, cleaning and disposal facility at Campbell Creek,	
Cross-Country Skiing Trails	High, 500.1000 parts.	In town OK, but repetitive and unscenic.	Out of town trails required. Shelter limiting factor on distance possible.	n.e. sector, Big Rock area,
Snowmobiling Trails	High.	Good, everywhere.	No gap on trails, but shel ter mentioned frequently.	
Hiking Trails	High. ● Second most mentioned item. By skiiers, snowbilers, hikers, etc.	Freeform only	High deficiency,	n.e. sector, Big Rock area, along lake shores - could have many trails, help disperse concentration.
Interpretive Areas	Medium	None	Medium, promo tion would induce demand.	Along trails, at lookouts.

"Conclusions

1. While there are eight (8) gyms in the community,
   3 gyms are restricted to the community-at-large.
   2 gyms are closed.
   2 gyms are available to the community organizations but use of equipment is not allowed.
   1 proposed gym is available to the community at times when other functions are not being held and is primarily for use by families.

2. School gyms are closed for the summer.

3. The majority of gym time is used by sports organizations and therefore little time is available for free-time gym activities.

4. Use of gym equipment is extremely limited.

5. There is limited public skating time available at the Town arena.

6. The only swimming pool in Town is not available to the public.

7. Swimming at Boot Lake is dependent on the weather and is used for a short period in the summer only.

8. Since the Arena does not have a cement floor at present, it can only be utilized in winter and is therefore not available for rollerskating or other uses".

There is much alcohol related social activity mostly in bars and homes during winter, and in bars and outdoors in summer. Thus, there is a comparative lack of southern type of indoor recreational activities.

A useful generally accepted model to employ in a discussion of recreational need satisfaction is Maslow's general hierarchy of life needs. These five needs, in order of satisfaction, are:

(a) physiological (sufficient food, sleep, exercise, etc.);

(b) safety (protection from the environment, predators, etc.);

(c) belonging (bonding, connection, social, etc.);

(d) self-esteem;

(e) self-actualization (existence as a person, fulfillment of potentialities, exploring one's contact with the world, fulfilling opportunities to experience different lifestyles and environments than the community ones).

It is argued that these needs must be satisfied in ascending order, i.e., lower level needs of physiological, safety and belonging must be satisfied before higher level needs of self-esteem and self-actualization can be addressed.

Current recreational pursuits in the study area satisfy various aspects of all five needs. Although debatable as in any discussion of resulting costs and benefits, any improvements made to facilitate satisfaction of these five needs will most likely result in consequential benefits which greatly outweigh any perceived or real costs; for example those resulting from concentrated overuse, which should be minimized through proper management.

For park development planning and strategy purposes, minor improvements (access corridor, marked trails, etc.) would facilitate achievement of:

(a) physiological needs, such as, exercise requirements (other physiological needs such as food, sleep, etc. are satisfied in town);

(b) safety needs (a multi-purpose basic structure for protection from severe weather conditions, insects, bears, etc.);

(c) belonging (specific areas of concentrated use and social aspect, connection and binding with respect to involvement in management aspect);

(d) self-actualization needs (facilitating achievement of even a glimpse of the wilderness (re. lookout points, trails, etc.);

(e) appreciation and knowledge of the wilderness (partial ly addressed through an interpretation program).

5.2.1 Quantitative Definitions

A statistical summary of demographic characteristics (and their relationship to demand) indicating factors such as historical and projected population, ethnicity, age and sex distribution provides a suitable starting point for discussing local recreation.

5.2.1.1 Historical and Projected Population

Since the Town of Inuvik construction was completed in 1961, the population has increased from the 1200 level to a peak of 3600 in January 1973. The abandonment of the proposed Mackenzie Valley pipeline led to a decline in the Town population to about the 2900 level (1977 and 1978) as compared to the present estimate of 3200. Current forecasts vary widely with the source. The most recent Underwood McClelland Associates Town Plan, November 1980, calls for a population of 15,000 although the date for which this figure is predicted is not stipulated.

Unpublished, preliminary population forecasts for Inuvik project a high rate of growth due to predicted Beaufort Sea development. Inuvik's population is forecasted to increase to 5200 by 1985, 9400 by 1990 and to 30,000 by the year 2000. Mr. Gordon Harrison, Senior Vice-President of Dome, has forcasted Inuvik to grow to 15,000 by 1990.*

However, Inuvik's present outlook can most aptly be described as one of anticipation. A sizeable number of accommodation units are vacant, the schools and hospital have excess capacity, and a number of businesses in the commercial and industrial areas continue to seek buyers. Concerning the series of events in the 1970's which resulted in a "miniboom and bust", the current atmosphere can partially be termed as one of "once bitten, twice shy." At best, present population growth is marginal.

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* Gordon R. Harrison Sr., "What We Are" a presentation to Northwest Territories Association of Municipalities conference Yellowknife, February, 29, 1980.

If it is indeed a lull before the storm, there is little evidence to indicate that the storm will happen in 1982 or 1983. Knowledgeable residents predict only moderate growth during the next two or three years. A few years will be required for delineation drilling and regulatory hearings before the rapid development phase is possible. If there is a need to quickly realize the full potential of the Beaufort/Delta region, a more rapid population growth during the latter half of the 1980's may very well occur.

With this in mind, it is our professional opinion that population from 1981 to 1991 will increase according to estimates presented in the following Table 16.

TABLE 16

Historical and Projected Population

Source and Date	Population
June 1, 1961, Census of Canada*	1248
June 1, 1966, Census of Canada*	2020
June 1, 1971, Census of Canada*	2669
January 1973, GNWT	3600
June 1, 1976, Census of Canada*	3170
December 31, 1977, GNWT	3127
December 31, 1978, GNWT Estimate	2938
December 31, 1979, NWT Data Book	2892
October, 1981 Town of Inuvik estimate	3250
1983 Estimate (3% growth from 1981)**	3400
1986 Estimate (5% growth from 1983)**	4000
1991 Estimate (10% growth from 1988)**	6400

* Census Canada data as presented in Northwest Territories Statistical Abstract 1975 (1961 and 1966) and Population Estimates Statistical Cross Tabulation, Northwest Territories December 31, 1978 (1971 and 1976) Government of the Northwest Territories.

** RMC forecast.

5.2.1.2 **Ethnicity**

GNWT population estimates indicate a minor increase in the Dene and Inuit population and a decrease in the "other" category. This short term estimated effect most likely will be reversed with the influx of "others" to supply the demand for oil and gas related experienced personnel.

TABLE 17

Inuvik Population Ethnicity

Source and Date	Dene No.	Dene %	Inuit No.	Inuit %	Other No.	Other %	Total No.	Total %
Pop. Estimates GNWT, Dec 31/78	196	6.7	510	17.3	2232	76.0	2938	100
Pop. Estimates GNWT, June 1980	216	7.4	553	19.0	2149	73.6	2918	100

5.2.1.3 Age Distribution

Current age distribution statistics (GNWT) as are outlined in Table 18 below. Statistics for Canada (Statistics Canada, 1980 values) are presented for comparison purposes. It is important to note that Inuvik residents are generally younger than the Canadian averages.

TABLE 18

Inuvik Population Age Distribution

Source and Date	Age Group 0-14 No.	0-14 %	15-24 No.	15-24 %	25-44 No.	25-44 %	64 No.	64 %	65+ No.	65+ %	Total No.	Total %
GNWT Dec 31/78	999	34.0	630	21.4	1027	35.0	244	8.3	38	1.3	2938	100
Stats.Can. 1980		23.0		19.6		28.8		19.1		9.5		100

5.2.1.4 Sex Distribution

The current male-female percentage distribution of 52.6% male versus 47.4% female is assumed to continue.

5.2.2 Qualitative Definition

5.2.2.1 Short Term and Long Term Residents

In general, residents can be divided into two categories, the short term and the long term citizens. Short term people stay for a period of up to two or three years. These are individuals usually employed at governmental, hospital or educational positions or at the Canadian Forces Station (CFS) and at the lower levels of the support services. Many of them accept a transfer or promotion after their two to three year exposure to the north.

A minority of these 'short-termers" learn to cope with and love the north and become avowed long term residents. Other "long-termers" are the native and non-native individuals who are born and raised in the area and business people who have a long term financial investment and personal commitment to the area.

There is a general consensus among long-term residents that people, over the recent past, appear to stay longer in the area. As migrants stay longer and their residency becomes more permanent, their desire to experience a wider range of local activities also increases. Simultaneously, an increase of oil and gas activity has resulted in a higher economic standard of living for some. These two factors stimulate the purchase of recreational equipment such as hiking and camping gear, boats and motors, snowmobiles, skiing and hunting equipment. Also the closely knit community spirit results in a flow of recreational equipment from owner to non-owner users.

Institutions such as the CFS and the schools and hostels also make equipment available to members so that virtually any resident seeking recreational pursuits can obtain the equipment to fulfill these desires.

Many of the short-term residents maintain their southern recreational practices during their stay in the north. These people are satisfied with typical southern outdoor recreational activities such as a drive on the Dempster Highway combined with a picnic or short hike, a short boat ride, or a ski on the groomed trails.

5.2.2.2 Non-Native vs Native Residents

Inuvik residents can also be divided into native and non-native ethnic groups. Native peoples (Dene plus Inuit) comprise 26.4% while others (Metis, Whites, etc.) make up 73.6% of total population.

It is important to consider motivating factors governing each groups use of the outdoors. Native peoples use it for hunting, fishing, trapping or generally for traditional living off the land activities. They use the present study area and most likely will continue to use it regardless of whether any change in status is made or improvements and facilities installed. They utilize the bush individually and in small groups. The native population will continue to employ their traditional use areas, the majority of which occurs outside of the study area, particularly in the Delta region.

Many individuals in the "Other" bracket go to the bush to get away from the Town and/or to socialize. They seldom go to the bush individually. They utilize services such as campgrounds more frequently than the native people.

Thus, there is a strong indication that local recreation users will be predominately non-native. (Visitor users are overwhelmingly in the non-native category). However, any future development concepts should cater to and be applicable to both non-native and native residents.

5.2.3 Evolution of Outdoor Recreational Involvement

Transportation infrastructure such as the Dempster Highway has greatly transformed the once relatively isolated community.

The road between the townsite and the airport combined with the MOT access road to Dolomite Lake provided Inuvik citizens with one of their first exposures to the northern wilderness. Dolomite Lake was the original campground site. When MOT closed the access road due to increasing incidence of vandalism and stricter adherance to safety regulations, locals became cut off from their only formal campground.

The opening of the Dempster Highway in 1979 greatly increased the range of outdoor recreational possibilities. Suddenly, Campbell Creek and Lake and areas up to Caribou Creek and beyond became considerably more accessible due to vehicular access.

Simultaneously, increasing disposable incomes and the desire to take advantage of road routes has resulted in a substantial increase in the number of vehicles in Inuvik.

Besides the basic Mackenzie River East Channel route, an original water portage route employed Boot, No Name and Mile Lakes in a south-easterly direction towards the study area.

Easier transportation to the south combined with the difficult and dangerous aspect of the Delta to the west and the high inaccessibility of the north and east, the COPE claims to the north, resulted in a growing attractiveness of land to the south of Inuvik.

The trend to longer residence by both short and long-termers has increased the importance of outdoor recreation. There is an increasing desire to take advantage of a wide spectrum of activities including outdoor recreation, instead of waiting for one's contract to expire.

5.2.4 Summer and Winter Classification of Activities

The fall and spring transitional seasons are not well defined in the north. Thus, summer and winter are the two pronounced seasons and outdoor recreation is therefore discussed as occurring during summer and winter.

All-year outdoor recreational pursuits include camping, picnicking, hiking, fishing and driving, although the incidence of these activities is much greater in the summer. Climatic dependent interests include summer only; boating and swimming, and winter only; cross-country skiing, snowmobiling and snowshoeing.

5.2.5 Motivation for Seasonal Activity Variation

For many residents, especially those accustomed to southern climates, the coming of winter brings a sharp curtailment of outdoor activities. Weather factors such as the increasing darkness and cold play a significant role in limiting activity for these residents. They have not yet learned the art of preparing to enjoy the harsher northern weather or are inexperienced in skills such as cross-country skiing, winter hiking and snowshoeing, snowmobiling and pleasure driving on ice roads.

When summer arrives, these individuals suddenly become very active as they desire to cure "cabin fever" resulting from prolonged indoor activity. Any activity in the outdoors helps cure their winter doldrums. However, the summer season also has its own constraints such as insect infestation, reduced accessibility, and fear of cold water and occasional bears.

5.2.6 Summary of Seasonal Variation and Constraints on Recreational Activities

January

The first sunrise (it sets on Dec. 6) occurs on Jan. 6. Temperatures are in the -200 to -40°C range. The incidence of "cabin fever" increases as outdoor activities are seriously curtailed.

February

Cold weather and indoor recreation continues. Small game is plentiful. The sun returns quickly. Ice fog occurs i n and near the Town, limiting visibility.

March

More moderate weather and daylight until 11pm are conducive to increased outdoor activity, such as skiing, snowmobiling, ice fishing and picnicking. Muskrat season commences. The International Curling Bonspiel occurs.

April

Long, warner, sunnier days close the ice roads. Outdoor activities keep increasing. The Top of the World Cross-Country Ski Championships are held.

May

Twenty-four hour daylight commences on May 21 and outdoor activities occur at all hours. Spring melting in late May brings rubber boots out of the closet. Muskrat Jamboree takes place in spring.

June

The Peel and Mackenzie Rivers break up closing the Dempster Highway and signify the coming of summer. Midnite sun-and mosquitoes hail the start of the tourist season.

July

Canada Day celebrations are on July 1. Sun, mosquitoes and tourists continue. Tundra flowers blooming, vegetation at its peak, fishing, camping, cabining, picnicking, hiking and boating flourish during occasional +20°C days.

August

Cloudy, cool, wet season begins. Birds migrate, fishing continues, and leaves change colours. Black flies replace mosquitoes.

September

Hunting and berry picking seasons are at their peaks. Snow showers and flurries accompany preparations for winter. Delta Daze celebrations are held.

October

The start of river freeze-up closes the Dempster. Winter takes grip, cloudy weather due to freeze-up of lakes, rivers and the Beaufort Sea, although outdoor recreation still possible.

November

Weather gets colder, clearer, and darker as outdoor recreation continues to diminish.

December

Twenty-four hour darkness commences on Dec. 6 and remains for one month. The Mackenzie River and other ice roads open increasing outdoor accessibility. Indoor activities flourish also.

5.2.7 General Outdoor Recreation Accessibility

Summer activity centres around water and road corridors. Summer travel to the north and west into the Delta is limited due to the relative inaccessibility of these regions. There is a fair amount of boating on the East Channel, the Big Gull (Campbell River) and Little Gull Rivers and Campbell Lake. The Dempster corridor is a popular access route.

The winter season suddenly "opens-up" the land. All summer routes can be employed with the addition of snowmobile, skiing and ice road routes greatly increasing accessibility. Travel to the north increases from a minimal amount in the summer to about one quarter of all travel as snowmobiling and the ice road to Tuk make access easier.

Delta traffic increases considerably as snowmobiling to the settlements is relatively easier than summer water travel.

Snowmobiling routes to the south within the study area also greatly increase accessibility to this region.

5.2.8 Specific Outdoor Recreational Activities

Specific pursuits will be discussed according to the following format; organized group year round participation; other all season interests such as cottaging, picnicking, camping, and driving; summer only activities such as year-round hiking, swimming, boating; and winter only sports of cross-country skiing, snowmobiling, and snowshoeing.

5.2.8.1 All Year Activities

Organized groups involved in recreational activities are outlined in the Table 19; each major group was interviewed. There are some other groups not included, for example church groups were not identified or contacted due to time constraints.

As can be determined by glancing at the table and supported by cements from several citizens, there are plenty of organized groups for younger people, whereas adults have considerably less organized recreational activities.

TABLE 19

ORGANIZED GROUP RECREATIONAL ACTIVITY

Group and Interviewee	Number and Age of participants	Summer: Areas Used Decreasing order of Priority and Activity	Outings per Season	Length of Outings	Participants per Outing	Winter: Areas Used Decreasing Order of Priority	Outings Per Season	Length of Outings	Participants Per Outing	Participation-Occasions Per Year	Constraints Cited	Demand for Facilities and Suggestions	Importance of Study area with respect to other areas
Canadian Forces Station Captain Jackson, Operations Officer	200 total Wide age range	1) northeast corner, hiking, military training 2) repelling cliffs near potential lookout over Campbell Lake	1 per week for 4 months	dayoutings	8 - 15	Same area, very limited winter camping pro-rem				200	Environmental constraints are desirable for programs	None	Study area important due to vehicle access via Dumpster
Army Cadets, George Roach, Commanding Officer	30 - 50 teens	1) hiking to CFS cabin on Dolomite Lake 2) rappelling - CFS cliff	N/A	day	Small groups from total membership of 30 - 50	Survival exercises and ice fishing near CFS cabin area	N/A	day		25	Minor environmental constraints desirable	Wish to maintain use of CFS cabin	Prime area due to vehicle access
Pagoma Hall Friendship Centre, Peter Westaway Executive Director	40 - 60 non-native and native; 6 - 12 yrs.	1) Dolomite Lake, via boat from town, or vehicle via MOT road 2) hiking in northeast corner 3) Caribou Creek - hiking and picnicing	2 times total between 3 areas	day	Small groups	Presently no winter use				20	MOT regulations governing access road use	Need more accessible areas for exploring activities (just Dumpster and water routes now) Cleared area for games at end of access	Prime area due to vehicle access
Top of the World Sportsmen Association Dave Lowe	45; wide range	1) Fishing - Campbell Creek, Husky and Eskimo Lakes 2) Hunting, small game mostly Shell Lake whale pit shooting range with clubhouse				Snowmobiling, hunting, ice fishing				Included in D.E.20 Participation-Occasions	Shooting range only safe area in vicinity	Be provided only if firewood available and regular cleanup of garbage. Dolomite Lake good camping site as scenic some fishing access	Prime Area
Beavers Cubs Boy Scouts Boyce Rice - Chairman	24 (5 to 7) 20 (12) 12 (years)	1) East Channel canoe trips (11-13 yr. olds) Campbell Creek Bay Scout Site	4/summer	day	Small Groups	Skidooing all over (8-13 year olds) Skiing to the west to Delta as more accessible than study area	6 last winter	day day	Small 20 - 28	40	In-town recreation facilities inadequate	A basic cabin type facility would be sufficient but scheduling and supervising required. A dirt road or trail into-interior would access	Very important due to insufficient supply of intown and other areas
Brownies Girl Guides Pathfinders	30-40; 6-9 yrs 12-15; 9-12 yrs 8; 12-14 yrs	Lion Den, Boat Lake picnicing, swimming Boy Scout Campbell Cr. Camp Hiking - ski trails and Boat Lake areas	3 - 4	day outings day hikes and picnics		Prime Season, mostly indoor in town Indoor in winter				20	Not much winter activity in area due to access.		Can ... important

(a) Cottaging

A few local residents enjoy the outdoors through the use of a recreational cottage or cabin. There are a number of these located within the study area, mainly around Dolomite Lake. Cabins are shown on the map in Exhibit 9, pg. 73.

Many citizens expressed a desire that cottage land be made available through a lease as opposed to the current non-official squatter type arrangement in effect in Inuvik. Most individuals are reluctant to construct a cabin on land for which they have no security of tenure especially considering the conflicting land interests in the area.

Some of the long-term residents cherish the idea of leasing a small plot of land outside of town (almost all housing units in town are let via rental arrangements). Many locals leave the town on weekends and this activity would probably increase if more cabins were available. Presently, as is the case with recreational equipment, cabins are loaned often to friends in this closely knit community.

Using a cottage as a base for weekend recreation facilities allows the less hardy outdoors-people to satisfy their basic physiological needs such as eating and sleeping. Safety needs (protection from insects and the odd bear) may be more easily met, allowing the higher level needs of social, self-esteem and self-fulfillment to be partially satisfied through participation in a wide range of outdoor activities.

(b) Demand for a Multi-Purpose Public Use Shelter/Cabin

Although mentioned in other areas of the report, it is valuable to reiterate here the desire for residents to employ a new multi-purpose shelter facility within the study area. Besides those on Dolomite Lake, the Teachers' cabin on Campbell Lake is the only other facility for this use. Another structure somewhere within hiking (combined with vehicle access on the Dempster), skiing and snowmobiling range would be of great benefit to residents.

The building need not be an elaborate one but something in the range of the functional "512" unit (16 ft x 32 ft or 5m. x 10 m.).

However, it must also be virtually indestructible as vandalism is rampant. It must contain no glass, easily removable wood furnishings (for burning) and should have a permanently unlocked door to prevent mystery and resulting break ins. A wood stove would be desirable, however, it must be strongly secured and an adequate wood supply provided.

This facility would be a valuable addition to the year round recreational picture, although its importance in winter would be more pronounced due to the considerably harsher climatic constraints restricting outdoor activities.

(c) Picnicking and Camping

There is also a high interest in picnicking and camping activities. The vast majority of these outings occur during the summer season, although winter use is growing as residents take advantage of vehicular access via the Dempster. The areas of greatest use (order of importance not known but area of magnitude conjectured) are: Happy Valley Campground (in town, mostly tourist use), the new, unopened Explosives Hill campsite, Campbell Creek Highway Crossing, Dolomite Lake, and Caribou Creek.

(d) Hunting and Fishing

Hunting and fishing are examined in detail in Sections 3.6 Wildlife and 3.7 Fish and need not be included here.

(e) Recreational Wheel ed Vehicle Transport

One must not underestimate the importance of wheeled vehicular travel in the area. The great increase in the number of vehicles combined with transportation infrastructure has facilitated the achievement of outdoor recreational activities particularly for those individuals not wishing to take part in more participatory activities such as skiing and hiking (as well as for those who wish to combine vehicle access with other activities).

For some, a simple Sunday drive on the Dempster during the summer and on the ice roads during the winter can satisfy their need for outdoor involvement and help combat the isolated, cabin fever effects.

5.2.8.2 Summer Recreational Activity

Although the summer season is short and there are a number of constraints to be dealt with (e.g. climate and insects), its importance in the overall recreational picture should not be underrated. In fact, the harsher constraints imposed by winter (cold, darkness and length) result in the placement of equal importance on summer recreation, partially because of and despite the fact that summer is only one half as long as winter.

Much of the summer participation occurs at a reasonable distance from town, with a high proportion to the south within the study area. One important constraint is the need for a vehicle to facilitate access to areas located adjacent to the Dempster Highway.

Many individuals utilize the area on a day use basis as the short vehicular distances are conducive to this. However, an increase in vehicular campers and tenting equipment is increasing overnight use.

(a) Hiking

There are currently no formal trails in the study area although concentrated use is occurring along the sandstone quarry truck access road in the northeast, on Dolomite Lake and at the Campbell and Caribou Creeks areas.' Scenery is pleasant, some wildlife is present and berry picking is rewarding.

Hiking is often an arduous task in much of the study area due to the difficult terrain, much of which is either rocky, spongy lichen and tundra (ankle twisting terrain) or hilly and broken up by cliffs.

(b) Swimming

As there is no publicly accessible indoor pool in Inuvik, residents take advantage of every climatically favorable opportunity to go swimming. However, due to greatly variable weather and cold water temperatures, some summers (1 981 is a prime example) offer virtually no opportunity for a dip while others have a sufficient number of warmer days. Many of the native people do not swim as they have spent much or all of their life in the north with little opportunity to learn this skill.

During an ideal warm summer day, there may be as many as 100 individuals at the local, Boot Lake swimming hole. This pond is shallow and smaller than most of the lakes within the study region. Although there are many lakes there, cold water temperatures usually prohibit swimming. However, attempts have been made, in fact an abandoned helicopter blade serves as a diving board at one of the lakes in the study area.

(c) Boating and Water Routes

Although total participants can only be estimated, some residents commented that there is about one motorboat or canoe for every four households. Assuming four people per household, this yields about 200 boats.

Outside of the study area, boaters travel west and south to Aklavik and Fort McPherson. Within the study region, some boaters travel down the Mackenzie River East Channel to either the Little Gull (or Gull Creek) or the Big Gull (Campbel 1 River) , and into Campbell Lake. If they return via this route, they can travel on whichever Gull they missed on their entrance.

This route has one advantage in that it is more difficult to become lost (versus travel on the Mackenzie Delta which is suitable only for those experienced). Another advantage is that the final destination of Campbell Lake is the largest body of water in the area.

One constraint is the approximately 80 km. one-way distance from Inuvik to Campbell Lake, necessitating a long day of boating. Some boaters minimize this constraint by employing the buddy system whereby a friend meets them at the Campbell Creek boat launch with a vehicle for the return trip via the Dempster to Inuvik. Constraints of this system include timing synchronization between the boater and buddy, and the Campbell Creek channel clearance which can be low in the fall.

Similarly, the reverse route is popular, i.e., placing a boat on a vehicle in Inuvik, driving the Dempster to Campbell Creek, and launching the boat for the one way voyage to Inuvik.

Although this long route is quickest with a power boat, a weekend canoe excursion is becoming more popular. Canoes are launched at Campbell Creek and canoers paddle with the current to Inuvik. Canoes have an advantage at shallower times over larger, heavier power boats as their draft is considerably less. Of course their main disadvantage is the increased time requirements, although it does make for a pleasant weekend camping trip.

A shorter popular boating route from Inuvik via the Mackenzie East Channel traverses Dolomite Creek into Dolomite Lake. Boats are also launched from vehicles accessing the MOT road (although theoretically closed to public access) to Dolomite Lake.

Although there are only 8 years of hydrological data available (Water Survey of Canada, East Channel water levels), the current water levels are the lowest ever recorded and all knowledgeable residents have commented that levels are at their lowest in 40 years.

In the fall, water levels are lower in Dolomite Lake, the Little Gull channel and at the entrance to Campbell Lake. Hydrographic charts at these critical locations indicating depths and channel markers would facilitate boating during these difficult periods, as many boaters (including the study team) experience the frustration of both becoming grounded and losing the narrow channels.

Access via Caribou Creek is not advisable due to constantly low water levels in that tributary.

5.2.8.3 Winter Recreational Activity

(a) Snowmobiling

Participation in this winter activity is greatly increasing. Although there are no available statistics for the total number of participants, rising popularity is substantiated by the fact that one of the major dealers claims to retail more than 100 new machines each year. A ballpark figure mentioned by a few residents is that there are about 1000 snow machines in Inuvik. However, this seems to be an over- exaggeration and a figure of 500 may be more accurate. Sales are made to both Inuvik and settlement citizens. In the settlements (Fort McPherson, Aklavik, Tuk), the snowmachines outnumber wheeled vehicles.

Inuvik machines are employed for recreational purposes about 60% of the time, and the rest for semi-commercial use. Settlement machines are utilized much more for commercial uses such as hunting and trapping. Increasing popularity is a result of the factors of multi-purpose use, relatively low cost, a long season, and greatly increased accessibility to recreational areas.

Participation rates are claimed to be high as many residents are out almost every weekend and night (snowmobiling is facilitated by moon and starlight and the luminosity of the snow cover). However, frequent cold weather and the possibility of breakdown necessitates use of going out in pairs.

The lengthy seven month season commences in early October when minor snowfalls make land travel possible. Freeze-up of lakes and rivers in October and November increases accessibility. The season continues until the beginning of the final melt in early May.

An avid snowmobile will travel 1000 miles during an average season. They generally will form their own trails as this nonconformity aspect is one of the perceived benefits of this activity. Portions of the free form trails will include common trails such as water routes, seismic lines, and bombardier trails. Common trails are indicated on the Site Inventory map, (Exhibit 9). Free form use is more beneficial to environmental protection than concentrated use as deterioration of the snow cover and consequential exposure of the fragile tundra is minimized.

Avid snowmobiles travel to the north to enjoy overnight camping and ice fishing for lake trout and whitefish. Winter fishing to the south is less successful. A popular route traverses the Finto Valley to the east, south down Campbell Creek to Campbell Lake, and north via the Teachers' cabin and Dolomite Lake, or the reverse direction. This 50 to 65 km. route can be accomplished in 3 to 4 hours. Another popular route employs the mainly water route traversing the East Channel, the Gulls, Campbell Lake, and the Teachers' cabin to Dolomite Lake route.

All snowmobiles interviewed expressed a desire for a shelter facility somewhere in the study area. This would facilitate day or overnight use and be excellent for emergency use, warming up, picnicking, changing clothes, etc.

(b) Cross-Country Skiing

The Federal Department of Health and Welfare initially provided funding for the Territorial Experimental Ski Training (TEST) program in the 1960's. The Canadian champion Firth twins participated in the TEST program. The Recreation Division of Local Government, GNWT, has since taken over funding and the program has evolved from one of training racing participants towards the broader spectrum of a developmental program.

The present Cross-Country Ski Club (founded circa 1964) has a formal membership of about 100 of which only a few are racing competitors. Many of the 900 school children also ski and it is conjectured that there are perhaps a few hundred non-club member skiiers. Thus an estimate of total participants would be between 500 to 1000 people, a healthy participation rate in a community with total population of about 3200.

The increasing popularity of this sport (across Canada as well as in the Inuvik area) is substantiated by the observation that a greater percentage of new members (i.e., new arrivals from the south) are knowledgeable about the sport. This sport is enjoyed either by the lone participant or in a group, although loners usually employ the groomed trails adjacent to town for safety purposes rather than the more distant routes.

The skiing season is almost as lengthy as the snowmobiling season. It commences in mid October to early November and finishes at the end of April yielding a 6 to 7 month season. The early and late winter periods are the most conducive to skiing as the dead of winter months of December and January are relatively dark and cold. Skiiers are active generally on any day warmer than -25°C.

The Ski Club developed anti maintains the groomed trails at the ski club site (refer to Exhibit 9). There are about 8 km. of groomed trails, 3 of which have lighting . A '512" (16' x 32' or 5 m. x 10 m.) ski lodge facilitates changing and warming up. These trails are conveniently located for residents. However, much of this area has been damaged by forest fire and its scenic qualities are considerably less than other more distant areas within the study region.

Other areas are used less frequently. These are generally routes which have been travelled by snowmachines compacting the trail and facilitating passage by skiiers. Thus there is an indication that the typically nonconforming/ conflicting aspect of multi-purpose trails for both snowmobiles and skiiers is less of a problem in the north. As well as satisfying a trail blazing function, their periodic presence supplies a safety factor for skiiers, who if they become injured, tired, etc. can be assured that a snowmobile will soon pass the route.

A popular touring route is via the water pipeline to the reserve water supply at Three Mile Lake, and/or partially traversing the snowmobile route via the Finto Valley.

Vehicle drop-off along the Dempster or the MOT access road provides access to the scenic areas in the vicinity of the Teachers' cabin.

The basic constraint here is the distance involved so that safety considerations prevail. All skiiers interviewed expressed a strong desire for a basic shelter facility within the study boundary. This would greatly facilitate day use touring, introduce the possibility of overnight touring and expand the geographical range, and satisfy the important safety factor by supplying a resting, warmup, changing and picnicking facility.

Another constraint is the distance from Inuvik to the hills in the study area, necessitating use of a vehicle or the overland Dolomite Lake to Campbell Lake corridor. Cold weather also poses vehicle start-up problems for those left along the Dempster Highway.

5.2.9. Town of Inuvik Recreation Administration

The Town of Inuvik Recreation Coordinator is responsible for coordinating various recreation activities. This position was initially one of Secretary to the Recreation Board and evolved into the Town Recreation Coordinator about 4 years ago. It is theoretically a half-tine paid position although the present employee's commitment approaches full time.

The Coordinator is responsible to a seven member Recreation Board who is in turn responsible to the Town Council for budget approval. Both the Board and Council have been supportive of recreation program development given financial constraints and should continue to be supportive of recreational involvement within the study area.

5.2.10 Participation - Occasions Quantification

An attempt must be made to quantify the number of participation-occasions within the study region. A participation-occasion is defined as an outing by one participant. At best, figures presented for unorganized participant activity are guesstimates as there is no available data concerning participant numbers and activity rates. Statistics for organized group activities are less speculative.

The total number of resident participation-occasions is in the range of 39,000 per year. Of this, 15,000 is represented by cross-country skiing (mostly at the Ski Club trails) and the balance by other activities. Visitor participation-occasions are impossible to estimate due to lack of published data; it would however, represent a fraction of the resident catetory. The breakdown is provided in Table 20.

TABLE 20

PARTICIPATION-OCCASIONS FOR VARIOUS ACTIVITIES

ACTIVITY GROUP	NUMBER OF PARTICIPANTS	AVERAGE YEARLY OCCASIONS PER PARTICIPANT	TOTAL YEARLY PARTICIPATION-OCCASIONS
Cross-country skiing (in town mostly)	750	20	15,000
Snowmobiling	500	20	10,000
Boating and Fishing	400	1 0	4,000
Picnicking, Hiking Camping, and Swimming	1,000	10	10,000
Organized Group Participation-Occasions (From Table 19)	-----	---	300
Total Participation-Occasions	-----	---	39,300

5.3 Non-Resident Visitation, Activity and Needs

5.3.1 Introduction

Interviews were conducted with travel and tourism industry operators as tabled in the Appendices 1. - List of Contacts. However, due the very low tourist activity at the time of field investigation (late September), there was . very little direct contact with visitors to Inuvik. Therefore, their activities and needs must be determined from information presented from the operators, residents and data gathered from previous studies. The information provided and opinions expressed by these tourism and travel operators and other residents who have extensive contact with visitors must be assumed to be reliable.

5.3.1.1 Visitation to NWT and the Inuvik Area

Non-resident visitors (or travelers) can be grouped as either business visitors (main travel purpose is business) or pleasure visitors (tourists whose main purpose is pleasure, such as partaking in recreation activities, sightseeing and visiting friends and relatives). Tourism in the Northwest Territories is in the early stages of development. In the Inuvik area, it is a very new activity.

Construction of the Town of Inuvik was only completed in 1961; Beaufort Sea oil and gas exploration and development commenced in the mid 60's and is only now approaching an active stage; and the Dempster Highway was completed in 1979 opening the area to vehicular traffic.

5.3.1.2 Benefits and Costs of Visitation Accruing to Inuvik

(a) Benefits

There are wide ranging socio-economic benefits resulting from visitors to Inuvik. Economic impacts are discussed in Section 5.4. Social benefits arise from the interaction between Inuvik residents and visitors. For some, living in a small isolated community tends to result in excessive familiarity. The addition of new faces and ideas from both business and pleasure travelers yields stimulation and rejuvenation. Meeting other Canadians can also have beneficial effects on the Canadian national issues.

(b) Costs

Naturally, having too many visitors can be overwhelming and result in disruptive effects and affect community character, particularly for native and long-term residents. Lifestyles can be transformed from a slower, quieter one in tune with the natural environment, to a rapid, busier, more economically centred lifestyle.

One might speculate that while visitation is in a stage of relative infancy, now is an appropriate time for residents to assess its associated benefits and costs and develop programs to manage impacts.

5.3.1.3 Constraints and Rewards for Tourists Visiting the Inuvik

(a) Constraints

The cost of living (COL) in the area is from 25% to 50% higher than in the south. Visitors pay $60 for a single motel room, $20 to $30 for a dinner and $2 for a bottle of beer. This has a limiting effect on both the quality and quantity of visitors. Lower income bracket people are less apt to visit the far north, and many of those that do economize by camping, picnicking and hitchhiking. The cost Of traveling to Inuvik is also a limiting factor. A n economy return flight from Edmonton is $525.50.

The road distance from Edmonton to Inuvik is 3372 kilometers (2095 miles). Much of this route is gravel surface, so the journey is both costly in terms of gasoline and vehicle maintenance (estimated at about $560 in fuel cost alone for a round trip from Edmonton). The cost of gasoline is $2.34 per gallon ($0.51 per litre) in Inuvik.

Other Dempster difficulties include: “few and far between gasoline and service stations”; a “very slippery road after heavy rainfall”; break-up and freeze-up (resulting in highway closure) of the Peel River and Mackenzie River crossings; “fall, winter and spring...periods when traffic . ..will be restricted to avoid disturbance of caribou herds west of the Peel River” (quotations from Explorers’ Map, TravelArctic, GNWT); a very short northern peak summer tourist season mainly due to climatic restrictions; and only a one way route between Dawson, Yukon and Inuvik.

(b) Rewards

Despite these costs and constraints, the Inuvik area possesses a number of benefits and rewards which result in the Town being an attractive tourist destination.

Inuvik is situated; north of the Arctic Circle, with its corresponding midnight summer sun and midday winter darkness; at the present terminus of the Dempster Highway, the first North American all weather highway crossig the Arctic Circle (Alaska now has one to the north slope); one of the world's most interesting and largest deltas (the Mackenzie Delta is a labyrinth of river channels, oxbow and bifurcated lakes, and islands) which is a nesting site for a large percentage of migratory waterfowl and shorebirds in North America' and a healthy wildlife habitat; near the Beaufort Sea with its oil and gas exploration activity; and near the native communities of Tuktoyaktuk, Aklavik, and Fort McPherson.

The north appeals to many pleasure travelers who are seeking the ultimate unique northern wilderness experience off the beaten tourist track. "Almost 34% of all visitors indicated that the main reason for choosing a northern holiday was to experience the north or Arctic areas. Those expressing a desire for a unique, adventure area, where they could explore, represented 16.6% of tourists sampled in 1980".* Their contact with a comparatively virgin northern environment versus a more trampled southern outdoors is often reward enough for their effort.

The beauty of the north on its own terms is undebatable as those who have travelled and seen the Dempster and its wide variety of terrain, or those who have seen the wilderness environs around Inuvik, will readily admit.

The north also interests a hardier brand of tourist, those that reflect on the success of; accomplishing the arduous and lengthy Dempster drive; a difficult hike (probably few have this experience) in the great outdoors; and surviving extreme weather conditions and fearsome insects.

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* Highlights of Tourism Surveys, 1980, p.5, AKAY Tourism Consulting.

5.3.1.4 The Future of Visitation to Inuvik

Business visitation to Inuvik and region will largely depend upon oil and gas exploration and development success. Inuvik has already weathered a miniboom and bust during the 1970's as a result of the moratorium on the Mackenzie Valley pipeline, and an uncertain climate currently exists concerning the Beaufort. There is no planned change in status of Inuvik as the GNWT and CFS regional headquarters.

The amount of pleasure tourist visitors will depend upon a number of factors. The prices of gasoline and airline tickets will be important.

As the Dempster is only 2years old, there are no estimates for growth of vehicular visitation. Promotion and visitor experience and satisfaction will be major determinants. A small percentage of travelers on the Alaska Highway (300,000 per year through Whitehorse) could be either lured to tackle the Dempster instead of going to Alaska or could add the Dempster to their vacation route. "The major portion of travelers, 83%, decided before their trip, to drive the Dempster Highway, while 14% decided to travel the Highway after they started their vacation." *

In addition, improvements in visitor facilities and , available activities will help lengthen and increase enjoyment of their stay.

Long range developments include an all-weather road extension of the Dempster to Tuktoyaktuk. Although proposed for years, the uncertainty caused by COPE land claims and conflicting opinions from residents concerning its desirability have pushed it further into the future.

The Tuk extension most likely will result in either or both of; a greater number of vehicles traveling the Dempster, a greater percentage of vehicles spending less time in Inuvik in lieu of visiting the Inuit settlement of Tuktoyaktuk, seeing the Arctic Ocean, and Beaufort Sea oil and gas activity.

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* Highlights of Tourism Surveys, 1980. p.5, AKAY Tourism Consulting

Another long term road development is the potential completion of the Mackenzie Highway providing an attractive alternate/circular route for vehicles on the Alaska, Dempster, Mackenzie and Liard Highways. Although requiring great sums of money to complete, this project has been extensively studied and Prime Minister Trudeau, speaking on behalf of the Government of Canada, stated that its discontinuation was a postponement rather than a cancellation.

A general opinion shared by all those who commented on pleasure tourism growth is that it is a constantly growing industry for Inuvik. Besides increasing in overall quantity, visitors are becoming more foreign (both U.S. and overseas), they are spending more money and are more adventurous with respect to activities.

In summary, the completion of the Dempster Highway, greater public (i.e. southern) awareness of the study area arising from the publicity generated by oil and gas exploration and development and travel by hydrocarbon industry employees will all tend to assist the small yet growing tourist industry in the area. Sections 5.3.2.5 and 5.3.2.6 attempt to identify the magnitude of the industry.

5.3.1.5 Seasonality of Tourist Season

Business travelers visit throughout the year, especially those involved with government. The oil and gas business peak season is during the summer. This season is being extended, and year-round operations are predicted in the near future. However, pleasure travelers visit mainly during the short summer season.

Distributing tourism visitation and impact would be beneficial in many respects. A major problem exists with infrastructure facilities (mainly accommodation and dining capacity), with operators overloaded during the prime season. Lodgings are frequently full and it has been reported that some people are even forced to camp in vacant areas about town.

Some tourism operators have difficulty catering to tourists during this short, 3 to 4 month, season as they must balance it with other employment. Few can accept a full time commitment to tourism at this time. A more even distribution would facilitate and help improve tourism operations.

A general indication of the order of magnitude of seasonal variability is a comment by the Tourism Information Operator (also the Town Librarian) that greater than 10 tourists per day visit the centre during June to July peak, whereas only about one per week visits during the winter.

As detailed in earlier sections, the short summer with its moderate temperatures and lengthy days (June-August) is an ideal season for outdoor activities. However, there are other periods which appeal to different types of tourists and indeed, Tourism and Parks, GNWT, is now investigating these opportunities.

5.3.2 Visitor Profile

5.3.2.1 Mode of Journey

Although it is also accessible via boat and snowmobile from the local settlements (employed mainly by regional residents), there are basically only two methods of visiting Inuvik; via air or road.

Pleasure visitors utilize the Dempster Highway or plane. Business visitors mainly use the airways due to time constraints.

5.3.2.2 Purpose of Visit

Visitors to Inuvik generally can be grouped according to trip purposes as follows; principally pleasure travel or chiefly business travel. Most people traveling to the area on business are in the oil and gas field, or with the Federal or Territorial Governments. They have limited time constraints to take advantage of pleasure tourist related opportunities.

Although no statistics address these two components, motel managers commented that a great majority of their customers are business people. This results partially from the seasonality aspect of visitation. Pleasure travelers visit mostly during the summer season, whereas business travelers (although somewhat more active in the summer) visit throughout the year.

Another indication of the order of magnitude of business versus pleasure visitors is a statement made by an official of the only travel agent in Inuvik that they are so busy with commercial and resident travel outside of town, that they have very little time and contact with incoming pleasure tourists.

5.3.2.3 Active and Passive Visitors

In considering the development of improvements with respect to the study area, one must consider that there are generally two different groups (both enjoying nature) whose outdoor needs must be addressed.

One represents less active individuals who, because of age, physical condition, time or equipment constraints, can only manage a superficial visual contact with the wilderness. This can best be accomplished via scenic lookout sites, short, easily hiked trails and easily accessible picnic areas.

The other group consists of hardier individuals who seek a more intensive exposure to the outdoors. They wish to experience longer more rugged trails and less accessible areas.

5.3.2.4 Origin of Tourists

The origin of tourists visiting the Inuvik region cannot be accurately determined due to the lack of statistical data. The surveys which have been conducted are very limited in scope. Most likely, the best indication of this area of investigation would presently be available from guest registration books.

Motel managers understandably would not permit examination of their records. A brief perusal of the Library Tourism Information Centre guest register indicated an origin of approximately 65% from Canada, 25% from the U.S. and 10% from overseas. (This is generally in conformance with data from the Happy Valley register).

The only source which examines this with any degree of accuracy is the Happy Valley Campsite register. However, this register is also limited as it basically represents the origin of Dempster Highway pleasure tourist vehicular traffic. Only 52 out of 592 (8.8%) arrivals were by means other than vehicular. Most of these were designated as "on foot". In addition a registration represents a "camping party" as no record was kept of the number of individuals per registration party.

Furthermore, although a vast majority of tourists remained only one night, some of these tourists were involved in multiple visits, i.e. they would stay one night, visit a settlement, camp elsewhere off the Dempster or in the area, or stay at another lodging site and then return to Happy Valley. Study time constraints necessitated that only the number of registered parties be analyzed (versus the actual number of vehicles), so in the final analysis, these statistics represent the number of camper party days by origino

However, it is theorized that registry statistics would closely approximate vehicular statistics, as multiple visits were observed to be approximately independent of origin.

The results of the " Inuvik Region 1980 Auto Survey" (July 1 - August 31), conducted by AKAY Tourism Consulting, are presented for comparison purposes, and it can be observed that results are quite similar. The 1980 survey had a total market response of 608 vehicles.

The results are tabulated in the following Table "Origin of Happy Valley Campsite 1981 Camper Group Days Compared with 1980 Survey". Canadian registries represented 62%, with B.C. (24.0%), Alberta (11.7%), and Ontario (10.6%) being the highest origins. No tourists originated from the . Maritimes, a lengthy and expensive driving proposition. Only 4 registries were from the NWT as most of the NWT vehicular tourists have relatives and friends with which to stay.

TABLE 21

ORIGIN OF HAPPY VALLEY CAMPSITE 1981 CAMPER PARTY DAYS COMPARED WITH 1980 SURVEY

ORIGIN	NUMBER OF HAPPY VALLEY CAMPER PARTY DAYS, 1981	PERCENTAGES HAPPY VALLEY 1981 [1]	1980 SURVEY [2]
British Columbia	142	24. 0%	24.1%
Alberta	69	11.7%	12.3%
Ontario	63	1006%	12.5%
Yukon	44	7.4%	10.0%
Saskatchewan	20	3.4%	1.9%
Manitoba	16	2.7%	1.3%
Quebec	9	1.5%	0.7%
N.W.T.	4	0.7%	0.7%
P.E.I., NFLD., N.B., N.S.	0	0.0%	0.5%
CANADA TOTAL	367	62.0%	64. 2%*
California	29	4.9%	5.9%
Alaska	18	3.0%	3.5%
Washington	17	2.9%	2.0%
Illinois	10	1.7%	1.6%
Connecticut	9	1.5%	0.2%
Minnesota	9	1.5%	0.2%
Oregon	7	1.2%	1.3%
New York	7	1.2%	1.5%
Ohio	6	1.0%	1.8%
Nevada	6	1.0%	0.2%
Michigan	6	1.0%	1.6%
Georgia	6	1.0%	0.0%
Colorado	5	0.8%	1.0%
Texas	4	0.7%	0.5%
Arizona	4	0.7%	0.3%
Wisconsin	4	0. 7%	1.3%
Rhode Island	3	0.5%	0.2%
Maryland	3	0.5%	0.2%
Virginia	3	0.5%	0.0%
Pennsylvania	3	0.5%	0.5%
Iowa	3	0.5%	0.5%
Massachusetts	2	0.3%	0.3%
Tennessee	2	0.3%	0.2%
Hawaii	2	0.3%	0.0%
Utah	2	0.3%	0.3%
Florida	2	0.3%	1.3%
Montana	2	0.3%	0.3%
North Carolina	2	0.3%	0.0%
Missouri	2	0.3%	0.7%

ORIGIN OF HAPPY VALLEY CAMPSITE 1981 CAMPER PARTY DAYS
COMPARED WITH 1980 SURVEY (continued)

ORIGIN			
Nebraska	1	0.2%	0.2%
New Jersey	1	0.2%	0.0%
Vermont	1	0.2%	0.0%
Oklahoma	1	0.2%	0. 2%
Washington, D.C.	1	0.2%	0.3%
Maine	1	0. 2%	0*0%
Indiana	0	0.0%	003%
Kansas	0	0.0%	0.3%
Louisiana	0	0.0%	0.3%
Idaho	0	0.0%	0.1%
U.S.A. TOTAL	184	*31.1% (34 states + D.C.)	*29.1% (31 states + D.C.)
Germany	22	3.7%	3.0%
Switzerland	5	0.8%	1.6%
France	7	1*2%	0. 2%
Austria	4	0.7%	0.3%
Engl and	0	0.0%	0.5%
Holland	0	0.0%	0.5%
Australia	1	0. 2%	0.0%
Japan	1	0.2%	0. 0%
New Zealand	1	0.2%	0.0%
Bahamas	0	0.0%	0.2%
Guatemala	0	0.0%	0.2%
Sweden	0	0.0%	0.2%
Denmark	0	0.0%	0.2%
OVERSEAS TOTAL		* 6.9% (7 countries)	* 6.7% (10 countries)
GRAND TOTAL	592	100.0%	100.0%

* Totals do not add due to rounding.

1. Happy Valley Campsite 1981 Guest Registration Book.

2. Inuvik Region 1980 Auto Survey, AI(AY Tourism Consulting.

U.S. registries totalled 31.1% with California (4.9%) being the number one origin. Thirty-four states and the District of Columbia are represented. Seven overseas countries sent visitors (6.9%) with Germany being the number one origin (3.7%).

Therefore, concerning overall origin of pleasure tourists, one could speculate that; foreign pleasure tourists may represent more than 6.9% of total pleasure tourists as they are more likely to journey via plane than the Dempster Highway, and they may be more apt to stay in a motel as they are generally in higher income brackets (although some foreign tourists are seeking a wilderness vacation and are more likely to utilize campgrounds).

5.3.2.5 Guided Tour Groups

A number of tour companies operate group tours which visit Inuvik as part of a multiple destination northern tour. All tours visit during the summer season, between mid-June to late September.

The participants are generally older (37% from 51 to 65 years, 46% are 66 years plus *), retired people (55% *), mainly female (68% *), originating mostly from cities across Canada. The tours travel by airplane, in groups of 30-40 people under supervision of a guide knowledgeable with the north, and are in Inuvik for periods from 2 to 4 hours (Midnite Arctic Tours) to one to two days. Their time is mainly scheduled with activities leaving little free time. The cost of the tours is i n the range of $2000 to $3000, and an extended stay in Inuvik would raise the price considerably.

However, although these tourists are older, they are also generally adventurous for their age group and would appreciate being provided with a taste of the northern wilderness, albeit on a limited scale of ruggedness.

The following Table 22 indicates tour visitation to Inuvik.

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* Inuvik Region Package Tour Survey, June - August, 1980, AKAY Tourism Consulting

Table 22

'SUMMARY OF TOUR GROUPS VISITING INUVIK

GUIDED TOUR COMPANY (ORIGIN)	HISTORICAL PATTERN OF VISITATION	1981 VISITATION NUMBER OF GROUPS	1981 VISITATION PEOPLE PER GROUP	1981 VISITATION TOTAL OF PEOPLE	PREDICTED 1982 VISITATION NUMBER OF GROUPS	PREDICTED 1982 VISITATION PEOPLE PER GROUP	PREDICTED 1982 VISITATION TOTAL OF PEOPLE
HORIZON HOLIDAYS (TORONTO)	- 1971 first year - first tour group to Inuvik region - day trip to Tuk for 4-6 hours	28	32	896	28	32	8 9 6
ATLAS TOURS (WHITEHORSE)	also involved in bussing Horizon and Maupintour - day trip to Tuk for 4-6 hours	12	20	240	12	20	240
MAUPINTOUR (LAWRENCE, KANSAS, U.S.A.)	only few years in NWT - day trip to Tuk for 4 hours	2	28	56	12	28	336
DE WEST TOURS (VANCOUVER)	- 1981 was first year in NWT - day trip to Tuk for a few hours	4	7	28	15	10	150
ALBERTA WHEAT POOL (CALGARY)	- have visited Inuvik for about 10 years - do Tuk sidetrip 50% of the time, weather dependent - 2-3 hour visit	1	90	90	1	90	90
MIDNITE ARCTIC TOURS (INUVIK)	- visit Inuvik and Tuk each for a few hours only	6	49	294	12	49	588
MAJESTIC TOURS (EDMONTON)	- 1982 will be first season optional sidetrip to Tuk will be offered	-			4	45	180
TOTALS		53	-	1604	84	-	2480

'The approximate number. of 1604 package tourists in 1981 amounts to a 34% increase in this market compared with the 1980 figure of about 1200 people.* The 1982 predicted tour volume of 2480 people amounts to a 55% increase from 1981. However, this forecast is very speculative.

GNWT FERRY LOG STATISTICS

Table 23

		NUMBER OF VEHICLES CARRIED							NUMBER OF PASSENGERS CARRIED						
		A1	A2	B1	B2	B3	C	D	A1	A2	B1	B2	B3		
		Light Passenger Vehicles - Autos, Campers Pick-up trucks up to 1 Ton capacity	Light Passenger Vehicles Drawing a Trailer	Commercial Vehicles Single Unit Truck with Carrying Capacity over 1 Ton	Commercial Vehicles Semi-trailers up to Maximum G.V.W. 110,000 lbs.	Commercial Vehicles Oversize Semi-Trailers	Buses - School Bus, Charter Bus, Scheduled Bus	Miscellaneous	Light Passenger Vehicles - Autos, Campers Pick-up Trucks up to 1 Ton Capacity	Light Passenger Vehicles Drawing a Trailer	Commercial Vehicles Single Unit Truck with Carrying Capacity over 1 Ton	Commercial Vehicles Semi-Trailers up to Maximum G.V.W. 110,000 lbs.	Commercial Vehicles Oversize Semi-Trailers	Buses - School Bus, Charter Bus, Scheduled Bus	Miscellaneous	Total Trips
COLUMN		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
JUNE	FM										Ferry not Operating					
	ARR	481	-	9	-		2	-	1371	-	1	2	-	-	-	3	531
JULY	FM	32	-	4				-	64	-	5	------Ferry open July 31-----				45
	ARR	662	3	4	36	8	14	42	1983	3	20	47	13	168	45	562
AUG	FM	796	12	9	42	1	3	33	2087	21	18	48	2	8	45	930
	ARR	1524	24	52	74	1	27	10	3781	61	1081	89	8	78	10	130s
SEPT	FM	303	12	5	66	1	-	7	66'3	28	9	72	1	-	13	558
	ARR	806	5	27	109	-	19	29	1864	11	53	197	-	72	33	718
OCT	FM	41	2	6	30	-	-	10	33	2	6	34	-		10	125
	ARR	250-	-	19	192	-	6	16	569	-	25	201	-	42	17	293
TTLS	FM	1172	26	24	138	2	3	50	2903	51	39	154	3	9	68	165R
	ARR	3723	37	111	471	9	68	97	9568	7s	218	534	21	360	108	3409
JUNE	FM	331	14	-	31	-	1	5	890	35	-	38	-	12	-	382
	ARR	951	25	5	5	1	B	11	2247	65	14	79	1	47	11	676
JULY	FM	936	24	7	151	-	8	0	2419	70	5	157	-	133	65	1005
	ARR	1824	51	44	201	0	2)	13	5060	156	73	291	0	347	13	1137
AUG	FM	970	17	B	108	-	9	20	2469	31	10	133	-	113	23	923
	ARR	1842	6	13	142	0	11	13	4596	1s	19	222	0	210	]4	1059
SEPT	FM	437	5	14	105	-	0	20	1002	9	23	201	-	0	724	787
	ARR	965	10	39	353	0	10	24	2098	22	67	4)6	0	153	25	6
OCT	FM	106	0	9	54	-	1	17	197	0	1s	61	-	1	23	241
	ARR	465	4	25	50	0	0	8	976	6	34	72	0	0	8	1601
TTLS	FM	2780	60	38	529	-	19	62	6997	145	53	590	-	259	135	3338
	ARR	6047	96	126	751	1	50	69	14977	264	207	1080	1	757	71	4479
JUNE	FM	B32	20	24	119	3	13	43	2073	41	34	143	4	297	716	913
	ARR	]481	8	13	]44	2	17	14	3667	12	19	181	12	S74	23	1012
JULY	FM	1216	44	34	19B	5	16	121	3323	139	46	273	7	164	311	1186
	ARR	2581	36	34	26B	0	23	51	7008	90	63	394	31	618	64	1288
AUG	FM	1147	21	19	246	1	14	46	2925	69	32	340	2	395	112	1232
	ARR	2072	18	32	316	1	16	20	5s73	38	55	490	11	607	19	1306
SEPT	FM	516	11	9	272	0	2	53	1266	24	14	319	0	31	56	854
	ARR	1251	13	54	304	0	7	7	3205	28	111	426	0	210	7	1164
OCT	FM	284	5	23	148	0	0	18	710	6	43	197	0	0	20	502
	ARR	811	2	71	355	0	6	20	2124	5	125	451	0	240	20	907
TTLS	FM	3995	101	109	983	9	45	281	10297	279	169	1272	13	887	1215	4687
	ARR	8196	77	204	1387	3	69	112	21577	173	373	1942	54	2249	133	5677

[1] Source: GNWT Marine operations, Ferry Log Statistics for Fort Mc Pherson

5.3.2.6 Visitor Volume

All pleasure and business visitors arrive by either the Dempster Highway or via the airways.

(a) Dempster Highway Vehicular Traffic Volume

An accurate record of total Dempster Highway vehicular traffic is available from the GNWT Marine Operations ferry log report for Fort McPherson (FM) and Arctic Red River (ARR) crossings as presented in the Table 230n the opposite page. These ferries have been operating for the past 3 summers.

As there is no record of vehicle origin, these statistics can only provide an upper limit for vehicular visitors. The Arctic Red River ferry figures are approximately twice that of the Fort McPherson statistics, reflecting the higher amount of local traffic between Arctic Red River, Fort McPherson and Inuvik. As well, this ferry traverses a triangular course, between Arctic Red River and two points on the Dempster Highway. As records only indicate total passengers carried, some passengers are counted twice as they remain on board for two trips of the triangular circuit. Therefore, it is most appropriate to examine Fort McPherson statistics re total, business and pleasure travel figures.

Fort McPherson is located on the east bank of the Peel River (i.e. Fort McPherson residents must only cross the Mackenzie River to visit Inuvik and Inuvik residents must only cross the Mackenzie River to visit Arctic Red River and Fort McPherson), whereas the Arctic Red River is situated on the west bank of the Mackenzie River.

There has been considerable growth in overall Dempster traffic. Arctic Red River ferry passengers carried (in light passenger vehicles, column 8) grew from 9,568 in 1979 to 14,977 in 1980 (57%) to 21,577 in 1981 (44%).

An indication of non-regional visitors can be gained by examining the Fort McPherson statistics. These represent traffic between areas south of Fort McPherson (Yukon, Alaska and the south) and the north (mainly Inuvik, being the terminus of the Highway and number one destination). Again, it is not known how many of these are tourists visiting the Inuvik region and how many are Inuvik region residents visiting points south of Fort McPherson.

The number of round trips through Fort McPherson also grew substantially from 1,451 (light passenger vehicle, passenger one way crossings divided by 2, column 8) in 1979 to 3,499 in 1980 (141%) to 5,149 in 1981 (47%). Light passenger vehicles (column 1) grew from 586 in 1979 to 1,390 in 1980 (137%) to 1,998 in 1981 (44%). (About 600 vehicles registered at the Happy Valley Campsite in 1981). Light passenger vehicles drawing a trailer (column 2) increased from 13 in 1979 to 30 in 1980 (131%) and 50 in 1981 (67%).

The vehicular season is quite short with July and August being about equally busy and traffic tapering off considerably in September. The ferries commence operations about mid-June.

(b) Inuvik Airport Passenger Traffic Volume

Passenger traffic volume at the Inuvik airport is presented in the following two tables. Statistics were received from the two scheduled airlines serving Inuvik, Northward Airlines (1976 to 1979) and Pacific Western Airlines (1976 to 1980).

There is no component breakdown to indicate business and pleasure visitors and resident travel. There was no growth in volume from 1976 to 1979. However, there was sizeable growth (14.6%) in PWA traffic from 1979 to 1980.

TABLE 24

INUVIK AIRPORT TOTAL PASSENGER TRAFFIC STATISTICS

	INBOUND		OUTBOUND	
YEAR	Total Northward Plus PWA	Percent Change from Previous Year	Total Northward Plus PWA	Percent Change from Previous Year
1976	19,947		20,439	
1977	20,453	+2.5%	21,210	+3.8%
1978	18,554	-9.3%	19,218	-9.4%
1979	18,300	-1.4%	18,905	-1.6%
1980 (PWA only)	16,573	+15.1%	16,762	+14.1%

There is considerably more traffic volume at the Inuvik airport (business and pleasure visitors) than on the Dempster Highway (mostly pleasure visitors).

For example, 1979 total inbound passengers at the airport were 18,300. By comparison, total Dempster Highway passengers in 1979 crossing on the Fort McPherson ferry were 1,612 (3,224 divided by 2 crossings per passenger, columns 8 to 14).

Another indication of the magnitude of visitors arriving by air is the fact that the Tilden vehicle rental occupancy rate is usually close to 100% of their total of 78 vehicles. In addition, there are 25 taxicabs in Inuvik. At the current population of 3,250, this represents 1 taxi per 130 people. The usual ratio is 1 taxi per 300 to 500 persons.

The following table details the seasonality of airport passenger traffic. The months of June, July and August are the busiest months. In 1980, 35% of PWA volume at Inuvik occurred during these months. In addition, PWA maintains statistics for group travel (15 or more passengers traveling together constitute a group). Group travel during these 3 months is also a relatively high percentage (compared to the other 9 months) of total traffic.

TABLE 25

SEASONALITY OF INUVIK PASSENGER TRAFFIC

	NORTHWARD AIRLINES 1979		PACIFIC WESTERN AIRLINES 1980		PWA - 1980 GROUPS	
MONTH	Total Inbound Plus Outbound	Percent of Total	Total Inbound Plus Outbound	Percent of Total	Number of Oneway Passengers	Percent of Total
Jan	568	.0	,	.b		8.8
Feb	488	6.0	2,064	6.2	33	1.6
Mar	518	6.4	2,577	7.7	31	1.2
Apr	560	6.9	2,988	9.0	111	3.7
May	665	8.2	2,393	7.2	89	3.7
Jun	899	11.1	3,512	10.5	460	13.1
Jul	1,101	13.5	4,109	12.3	542	13.2
Aug	981	12.1	4,078	12.2	351	8.6
Sep	630	7.8	2,884	8.7	0	0
Ott	605	7.4	2,579	7.7	15	0.6
Nov	584	7.2	2,068	6.2	33	1.6
Dec	524	6.4	1,890	5.7	0	0
Total	8,123	1 00%	33,335	1 00%	1,858	-----

(c) Volume of Business and Pleasure Travelers

As only an upper limit on the total number of visitors arriving via airplane and an upper limit on the total number of road visitors are known, the relative component breakdown into pleasure and business travelers can only be speculated.

Dempster Highway total ferry passenger two-way crossings at Fort McPherson in 1981 were 7,066 people (columns 8 to 14). Of this, 727 were commercial passengers (columns 10 - 12) and 6,339 were non commercial passengers (columns 8, 9, 13, 14).

The 1980 Auto Exit Survey, July 1 to August 31, (AKAY Tourism Consulting) administered at the Peel River ferry crossing to all tourist vehicles leaving the Inuvik Region counted 1,468 people in 595 vehicles. About 600 vehicles registered at Happy Valley Campground in 1981. Most of the tourist vehicles entering from the south would have stayed there as it was the only officially open campsite in Inuvik.

Therefore, the best conjecture that can be made concerning road tourists is that total 1981 road tourists visiting Inuvik from points south of Fort McPherson would most likely be in the range of 2000 to 3000 individuals.

Total airport two-way passenger traffic at the Inuvik ' Airport in 1980 was about 20,000 people. Of these, approximately 1000 were in groups of over 15 people. About 2095 package tourists visited in 1981 (by air and road).

There is no means of determining how many of these approximately 20,000 airplane visitors were pleasure or business visitors or local residents visiting or doing business in the south. Other indications previously discussed suggest that a high percentage are businesspeople. However, as these components can only be conjectured, the best estimate that can be presented would suggest that yearly pleasure visitors arriving by plane would number in the range of 2000 to 4000 people. Business visitors would be in the range of 10,000 to 12,000 people. Resident travel is estimated to be 6000 people, assuming one round trip per person per year.

(d) Visitor-Days Quantification

Road visitors (mostly pleasure) remain in the region about 3.25 days (1980 Auto Survey). Therefore, total road visitor-days number in the range of 6,500 to 9,750. Individuals in this group presently have sufficient time to become involved in activities within the study area.

Many plane visitors are in guided tour groups and currently have little free time for study area involvement. They remain in the region one to two days. Thus a guesstimate for the amount of airplane pleasure visitor-days would be in the range of 3000 to 6000 people. In total, the best conjecture for pleasure visitor-days would be in the range of 10,000 to 15,000.

There are no available statistics on the length of time businesspeople spend in Inuvik in order to speculate upon the number of business visitor-days. Although we do know that their time constraints are demanding, a small percentage of this large segment could be encouraged to remain an extra day (i.e. a partial pleasure visit incorporated into the main trip purpose of business).

5.3*3 Constraints and Possible Solutions

In this section, current constraints together with possible solutions including the identification of entrepreneurial opportunities, are discussed.

5.3.3.1 Accommodation

Visitors stay year-round in motels, and in campsites during the summer. There are a total of 304 beds in 150 rooms available in Inuvik, distributed as follows:

Motel	Number of Beds	Number of Rooms
Eskimo Inn	158	79
Finto Motel	56	31
Mackenzie Hotel	90	40
TOTALS	304	150

The occupancy rates of the 3 motels are very high, with the summer rate approaching 100%. Managers stated that a majority of their business was from the commercial market. One operation was planning an expansion of 15 beds for the 1982 season.

There appears to be a need for more hotel rooms in the Town and/or innovative solutions such as the Bed and Breakfast accommodations.

5.3.3.2 Outdoor Recreational Needs

Many tourists visit the north in order to experience the northern wilderness on its own terms. To facilitate this, they desire participation in outdoor recreational activities such as overnight camping, free-form and guided hiking, and boating excursions. These recreational activities are discussed individually.

(a) Camping Facilities and Needs

As discussed in the visitation section, the majority of campers utilizing designated facilities are from out of town. However, this is not to discount the importance of camping by residents who **mainly** use unorganized areas/ facilities, but have expressed a desire to be able to use organized, serviced areas.

* Happy Valley Campground

Initially constructed by the Town about 3years ago, it is now leased to a local manager. Conveniently located in Town, this 18 site facility operates from June 16 to August 25. It overlooks the Twin Lakes and the East Channel of the Mackenzie River. The fee of $8 per site may appear to be high, but in comparison to $60 for a single motel room, it is relatively reasonable. The occupancy rate is virtually 100%.

Facilities provided include washrooms, toilet-paper, water, garbage collection, a confectionery and souvenir store, and information centre. Showering facilities are planned for the 1982 season.

An interesting comment by the Manager was that the majority of campers desired plane charters to visit Tuk.

* The Defunct GNWT Campground

A lesson can be learned from the abandoned GNWT campground constructed in 1977-78 at a cost of $35,000. This 8 site facility was abandoned before it was opened for various reasons. These include, heavy vandalism rendering it unusable; the presence of insects and lack of a scenic viewpoint; engineering problems; and an unsuitable location. Some residents remarked that it was too close to town for them to use and to satisfy effectively their need to get away from town; too close for vandals; too far away for tourists without vehicles; and too distant for surveillance by RCMP . Therefore, it could be suggested that future campground developments should be located either close to, or in town, or at a sufficient distance from the town. The Chuk Park site is sufficiently close to town, whereas the Campbell Creek site is some distance away.

* The new Dynamite Hill Campground (Chuk Park)

This new GNWT campground, located at a distance of 3.5 km from Inuvik, is scheduled to officially open for the 1982 season, although it was partially in use in 1 ate 1981.

Picnic tables are constructed of solid logs greater than one foot in diameter and bolted together, to discourage vandalism and theft.

Proximity to town and a sufficient breeze to deter insects will make this a popular site. At this time, the occupancy rate for the 20 campsites can only be speculated, although it could be quite high. Moreoever, this site has an additional capacity for another 20 campsites of equal attractiveness so that future demand could be satisfied at this location.

* Campbell Creek Site

Located 24 km. from Inuvik at the northeast corner of the study area, this picnic site has tables, firewood and a boat launch. Although not designed as such, it is employed as a camping area and is a potential location for camping facilities.

Due to an excessive demand coupled with limited maintenance and supervision, this site can often be quite unattractive due to strewn garbage and a high incidence of vandalism.

* Caribou Creek Site

Located about 50 km. from Inuvik, at the southeast corner of the study region, it has 6 picnic tables, fire places, wood and toilets. It is also used unofficially for camping.

(b) Boat Rentals and Tours

Inuvik Marina offers boat rentals and tours and another three operators offer boat charter guided tours from Inuvik. One of the popular routes is the East Channel, Gull River, Campbell Lake cruise.

Operators commented that improvements could be made in the following areas; having a basic shelter facility somewhere along the East Channel for protection from unpredictable weather, and directional indicators and channel markers, as even experienced boatspeople can become lost.

(c) Hiking Tours

There could be a demand for guided hiking tours within the study area. No official tour guides of this nature were identified, and there is no official hiking group.

(d) Winter Activities

One operator was considering the possibility of renting snowmobiles to tourists and residents. Indeed, as tourism activity grows during this period, their demand for activities could result in entrepreneurial opportunities in areas such as; vehicle rental to drive on ice roads, dog team rides and excursions, including traplines, hunting and ice fishing, cross-country ski equipment rentals, etc.

5.3.3.3 General Tourist Activities in Inuvik

"The average stay in the Inuvik Region was 3.25 days". * This could be partially due to the lack of activities, as in fact the major complaint expressed by operators is that there are insufficient services and activities for tourists visiting Inuvik.

The dearth of activities becomes obvious by the fact that the number one activity for tourists traveling to Inuvik is to visit a nearby settlement. It was often expressed that Inuvik's number one attraction was its proximity to Tuktoyaktuk, the Beaufort Sea and Arctic Ocean, as well as the other native communities in close community.

It is of prime importance therefore to realise that IMPROVEMENTOF FACILITIES WITHIN THE STUDY AREA AND THE PROVISION OF A RANGE OF POSSIBLE ACTIVITIES WOULD BE IMMENSE BENEFIT TO TOURISTS AND QUITE POSSIBLY PROVIDE THEM WITH ONE EIR MOST REWARDING -.. .- ---- ----- .JRING EIR NORTHERN VISIT.

Some people suggested the coordination of settlement festivities during late winter under a festival umbrella entitled, for example, as the Mackenzie Delta Easter Carnival. Promotion of this event could concentrate on the traditional northern aspects which could be witnessed by tourists.

An entrepreneurial lesson could be learned from our American neighbors who know how to exploit tourist possibilities, albeit sometimes to an excess. However, a unique Canadian northern approach could be developed for the following concepts suggested by local tourism entrepreneurs; a native village including historical habitats, crafts, etc. (Inuvik is a meeting point for the Dene and Inuit cultures); a northern wildlife farm, zoo, etc.; as many tourists expect to witness wildlife and are disappointed in not doing so.

Although not necessarily best satisfied in this fashion, this general need is verified by the responses to "What areas or activities would you have liked to see or visit but were unable to?" (Inuvik Region Package Tour Survey, 1980). After "generally satisfied" (44%), the most cited answers were "native cultures and activities" (15%) and "wildlife, flora, fauna" (12%).

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* Highlights of Tourism Surveys, 1980, p.5, AKAY Tourism Consulting.

One problem mentioned often was the unattractive visual appearance of the Town, specifically the presence of scattered garbage. In fact "appearance of communities" was the number one area of disappointment cited, (12%) (Inuvik Region Package Tour Survey, 1980).

Although garbage control is difficult due to ravens, dogs, public habits, etc., some form of clean-up could be developed such as that employed in Yellowknife where a street cleaner is hired for the summer months by the Town office.

A problem experienced by the Midnite Arctic Tours is the lack of bathroom facilities available. to the public at 2:00 a.m.

A combined information centre utilizing human and material resources of the Town of Inuvik, Tourism and Parks, GNWT, the Western Arctic Visitors Association (WAVA), and the tourism industry may result in a coordinated, efficient effort.

A minor problem was experienced by those Dempster Highway visitors wishing to camp outdoors or in their own unit, as public showers were unavailable. Apparently, the Happy Valley Campground is planning to introduce showers, but their availability to the general public is undetermined?

Some tourism industry individuals expressed that there should be a better coordinated effort among industry, governments and local citizens to increase the awareness and benefits of tourism. Some citizens commented that some residents are generally apathetic to tourism, whereas Tuktoyaktuk people are cited as being more receptive to this industry.

An educational effort could take the form of an awareness and hospitality program involving businesses and the public. On the other hand, some tourists require educating as well. Some arrive with no prior briefing and are naturally surprised and somewhat displeased by the differences they encounter such as; local cost of living, the visual appearance of Inuvik including garbage, utilidors, unpaved streets and mud, and the lack of facilities and activities. Information brochures could discuss these areas.

6. INTERPRETIVE PROGRAM POTENTIAL

6.1 Methodology

Interviews pertaining to the Interpretive Program Potential were conducted with; the acting Assistant Deputy Minister, Programs Branch, Department of Education, the Regional Superintendent of Education, the two Principals of the local public and high schools, the administrator of the local hostel, and the Town librarian. Additional information was gathered from interviews with other local residents.

6.2 Objectives, Themes and Constraints

6.2.1 Objectives and Themes

The primary objective of an Interpretive Program and a centrally located Interpretation Centre would be to increase public awareness of natural environmental dimensions of the Northern living experience. One objective would be to maximize the benefits of a park interpretive program through coordination with current social study and natural science education programs. In this respect, the study area could partially function as an outdoor laboratory for school related studies.

The public and high schools currently employ the study area on a very limited scale, with perhaps a few excursions per year. The two principals and the Regional Superintendent of Education are all receptive to discussing and developing interpretive programs into the regular curriculum. For example, 40% of the total program budget is alloted to social studies, an area of significant latitude and one that is particularly applicable to many of the potential programs discussed subsequently. The natural sciences also includes some interpretive subject areas. If considerable alterations in the present program are required to include interpretation possibilities, the Regional Superintendent of Education has initial review authority.

The Department of Education headquarters also has program responsibility. They are receptive to interpretive possibilities, in particular those with direct application to the Territorial curriculum and with subject areas that can be expanded from a specific micro level to a more general macro level. Specific subject areas applicable locally are the responsibility of regional programming in Inuvik. Facilities such as a multi-purpose centre/shelter and trails were mentioned as being important to an interpretive program.

There are a wide variety of educational program possibilities, as detailed below, pertaining to both the general region (the Delta, treeline, tundra and Beaufort Sea) and the specific Campbell Lake study area. Most residents live in Inuvik for only 2 to 3 years, arriving from the south with little prior knowledge of the area. An Interpretive Program could greatly improve their awareness and appreciation of their local environment.

An Interpretive Program could benefit many groups of people, including native and non-native residents, and business and pleasure tourists.

A critical problem which could possibly be alleviated is the homesickness experienced by native children from the regional settlements who stay in Inuvik at the Grollier Hall Hostel during the school year. These children do not have the opportunity to experience the wilderness to the same degree as in their home community. An Interpretive Program intermingled with the regular vocational program (grades one to twelve based on the Alberta educational system) could be of benefit to them and increase their educational program survival rate.

Although business visitors comprise a majority of the total travelers to Inuvik, their time constraints are more demanding than those of the pleasure tourist who remains.. two to three days. A highly visible and accessible Interpretation Centre in town could facilitate and encourage their outdoor participation within the study area, or at least increase their general knowledge of the region and the north.

The Interpretive Facility would be a central component in the overall program for pleasure tourists who wish to utilize the study area, but are not aware of the methods available to do so.

The Program would benefit from the involvement of native peoples (who could develop and participate in the Cultural Inclusion Program aspects) and the wide variety of other residents, including school teachers and scientists at the Northern Scientific Research Centre, who could present seminars and produce pamphlets on some of the subjects detailed below.

6.2.2 Constraints

The basic constraint concerning present involvement of the schools in outdoor activities is the lack of funds. Therefore, if an Interpretive Program is developed, the number one requirement' for the schools would be the provision of sufficient funds to the Department of Education to enable the school's participation.

For example, the schools do not currently own a bus and either rent from local business people or borrow from the Administrator of Grollier Hall.

6.3 Interpretive Programs

The following subject areas of an Interpretive Program could be addressed via various media, including information pamphlets, seminars, lectures and discussions, combined with field trip guided tours.

6.3.1 Cultural Inclusion Program

A cultural inclusion program is a natural one for Inuvik, a community of three cultures, Inuit, Dene and Caucasian. By educating people about the various cultures, overall understanding, preservation of the native way of life, appreciation of and interrelationships among the cultures could be improved.

Areas of study could include; local northern history, traditional northern foods and games, local languages, and bush skills, i.e. living off the land or northern wilderness survival. Members of the older generation who are still familiar with the traditional ways could be involved in organizing these programs.

6.3.2 Life in a Northern Resource Town

Life in a northern resource town such as Inuvik can be quite different than that in a southern community. This topic could be an interesting focus for an exchange of ideas.

6.3.3 Oil and Gas Exploration and Development

There is a great deal of oil and gas exploration and development in the Delta and Beaufort Sea areas. Pleasure tourists in particular wish to become familiar with this aspect of their northern visit. The oil and gas companies have become increasingly more involved at the community level and could be encouraged to participate in this facet of the Interpretive Program.

6.3.4 Physiography and Geology

The regional landscape possesses many uniquely northern landforms such as pingos, bifurcated and oxbow lakes, multiple river channels, mountains, delta and tundra, and geological structures and resources.

6.3.5 Ecology, Resource and Environmental Conservation ,

The fragile northern environment is governed by a relatively slow regenerative process. Therefore, the consequences of random tree cutting, forest fires, garbage littering, intensive hiking, etc. are very severe. Emphasizing the subject of ecology, resource and environmental conservation could increase participants awareness of the delicate nature of the land. This could have a positive impact upon the effects of involvement . within the study area.

6.3.6 Astronomy

The clear skies of Inuvik are very conducive to astronomical study. The small nature of the community minimizes the interference of urban light. As well, the incidence of smog and other particulate matter is very minimal. Also the hours of darkness are long during winter but very short in summer. The northern phenomenon of the aurora borealis (the northern lights) can be witnessed often, especially during the fall and spring seasons, although there are few visitors during these periods.

The movement, angle and duration of the sun at such an extreme northern latitude is also an interesting subject area. Non-technical pamphlets of interest to both locals and tourists could be prepared on all these subjects.

6.3.7 Flora and Fauna

The region possesses a wide variety of northern flora and fauna species. Flora include boreal trees and tundra species such as lichens (Inuvik is a few kilometers from the treeline). Rare plant communities also exist within the study area; however, the observation could be limited to scientific studies as discussed in detail elsewhere.

Wildlife includes many waterfowl and raptor birds, including the endangered peregrine falcon, and northern game such as moose, bear, muskrat, and ptarmigan.

6.3.8 Skill Development

Participation in and appreciation of recreational activities could be facilitated with the aid of skill development programs. The Town, Government of the Northwest Territories, the two schools, and the Canadian Forces Station all possess sufficient personnel to operate such programs.

6.4 Tours

Guided interpretive tours could provide residents and visitors with a better appreciation of the surrounding environment. Local entrepreneurs currently operate boat and limited bus tours and could be encouraged to expand this service if a catalyst such as an Interpretive Program were initiated.

6.4.1 Inuvik Townsite

The Inuvik townsite is already a featured attraction of any visit and the informative aspect of a tour would add to this experience. Certainly, the utilidors, pilings, modern structures, beside older, quainter ones; ravens and husky dogs, are all ingredients of a unique tour.

6.4.2 Park Winter Tours

Winter tours within the study area could contain the northern flavour of experiencing a drive on the ice road down the Mackenzie River East Channel, and/or via snowmobile or dogteam on the many common or non-organized inland trails. Access into the Campbell Lake uplift areas is considerably easier in winter than in summer.

6.4.3 Mackenzie River East Channel and Delta Boat Tours

Four entrepreneurs currently operate boat tours in these areas and commented that their business has been increasing yearly. This mode of summer travel is popular due to the prevalence of water access routes.

6.4.4 Delta to Aklavik and Fort McPherson

A few operators conduct lengthier boating and camping excursions to these two settlements. These tours are popular as participants are also able to experience camping in the northern wilderness.

6.4.5 North Shore, Beaufort Sea and Tuktoyaktuk

The Beaufort Sea and Tuktoyaktuk are the primary sub-destination of visitors to Inuvik and tours to this area would help satisfy this need.

6.4.6 Dempster Highway

The Dempster Highway, the first North American highway to cross the Arctic Circle, is an interesting topic due to the northern engineering problems encountered and solved. The Dempster corridor skirts the northern and eastern boundaries of the study area.

6.5 Facility Location and Personnel

For economic considerations, a small rentable area in a prominent, centrally located building is preferable to constructing a new facility. There are two suitable locations for an Interpretation Centre, i.e. in the Town Library and in the GNWT Department of Information trailer.

While neither facility has an abundance of floor space and an Interpretation area would be limited to a display wall and a small display case and counter, this would probably be sufficient, at least in the short range.

The current manageresses of these facilities are both active in other functions and could not afford sufficient time to, also, operate the Interpretive facility. The Town Librarian is also the summer Tourism Information Officer, and the GNWT Information Officer is involved in regional travel. The facility could take the form of a self-serve one with people helping themselves to pamphlets and reading displays; however, personal assistance would be preferable. Local volunteers and summer employment program personnel could be utilized to staff it. It would be best, however, to staff the Interpretation Centre with a Park Interpretation Officer.

Some residents commented that there are a surprising number of citizens who are experts in various subject areas including those outlined in the preceding discussion. These knowledgeable people could be involved in developing pamphlets and conducting seminars and discussions.

7. PHYSICAL DEVELOPMENT, JURISDICTION/MANAGEMENT AND FINANCING ALTERNATIVES

7.1 Introduction

In this section of the report, alternative physical development, jurisdiction/management and financing alternatives for the study area are presented for discussion and comment by government agencies and local resident interest groups. The discussion essentially is confined to the conceptual level with the intent being to expose the full range of feasible alternatives in a format conducive to effective response with the minimum of effort.

7.2 Alternative Physical Development Concepts

7.2.1 Introduction

The discussion of alternative physical development concepts commences with a summary of the implications of the supply and demand analysis that sets the broad framework for the identification of feasible options. Within this introductory section, some specific future research and facility development needs are indicated. A background framework of issued-based concepts of major significance for the preparation of alternative development strategies is then presented. Finally, a set of alternative development strategies is outlined for discussion and final choice.

Each strategy is described in terms of the physical development opportunities consistent with the user-oriented thrust expressed in each strategy. Furthermore, each strategy has been developed in the context of what may be termed general development strategies (see below) and with reference to the implications for park planning outlined in section 7.2.2. of this chapter.

The alternative strategy options presented, are site specific in their designation of future development locations, but do not include a detailed schedule of facility requirements. These will be developed subsequent to the review of alternative options and the selection of a preferred strategy.

Also, it is important to note that the final selection of a preferred development concept does not necessarily imply a choice between the options presented. The preferred strategy most probably will be comprised of elements of each of the three alternatives consistent with emerging local objectives respecting user orientation, local economic impact, environment protection, target development cost, and financial self-sufficiency.

7.2.2 The Background Implications of Supply and Demand Analysis for Feasible Development Options

The preparation of alternative development plans requires consideration of implications of the various supply foundations including climate, terrain configuration, hydrography, vegetation, wildlife, fish, insects, historical aspects and transportation infrastructure. Competitive forms of land use, particularly quarrying, must be assessed. Economic and social factors related to resident/visitor use and demand, and interpretive programs require note.

7.2.2.1 Climate

At this northern latitude, climate imposes important constraints on the traditional outdoor recreation and tourism activity patterns of Canadians. This demands adequate recognition and accommodation in park planning.

Winter is the major season in terns of length and strength. Winter programs and facilities must occupy a correspondingly important position in park planning and operation, something that contrasts sharply with the situation in southern Canada.

The northern landscape in general, including that of the study area, is most readily accessible in winter by snowmobile, cross-country skiing, and snowshoeing. Moreover, most of the area could be readily accessible by truck and car over the ice surfaces of the rivers and lakes, if they were plowed. No expensive road construction is required to obtain access at this season and minimal destruction of the vegetation and the terrain ensues, if travel is restricted to times when the ground is adequately snow covered and firmly frozen.

From a climatic quality standpoint, late winter (March to early April) represents the prime portion of the season when the area possesses a degree of a climatic comparative advantage by virtue of length of daylight hours, good snow quality and an attractive temperature regime. A tourism market in southern Canada should be exploitable at this season which corresponds with the late winter and Easter holiday periods.

A substantial portion of the winter is harsh and restrictive due to short daylight hours and cold temperatures which are sometimes coupled with cold winds. Recent migrants to Inuvik together with less hardy tourists would undoubtedly support this limiting evaluation. It is noted, however, that it might be possible to "sell" the novelty of the period of 24 hours darkness to tourists. Use of the park for moonlight snowmobile travel along well marked trails, perhaps with overnight camping at selected sheltered points, could be an important supply foundation in such a promotional effort.

Recent migrants to Inuvik, of which there are always a 1 arge number due to high 1 abour and professional staff turnover, are often apprehensive of winter travel, and rightly so. This group would undoubtedly find increased recreation opportunities in a well structured winter program including marked trails, shelters with firewood, trail maps, etc. The local snowmobile association might assume an important leadership role in the development of this program. Winter survival courses could prove to be an attractive and useful element of the park program.

There is an important element of danger involved in outdoor recreation that must be recognized in the park program. Early and late winter travel on thin or deteriorating ice can be disastrous, with great skill and caution being required. It is dangerous to "become lost". Strenuous outdoor activity in extremely cold weather can cause physical damage to the lungs.

Summer is decidedly a secondary season of limited length and strength from the standpoint of outdoor recreation and tourism. Park development is uneconomic if use is restricted to this season.

Travel and contact with the park area in summer is much more difficult and demands a high degree of capital investment and artificiality. While the area may be skirted by boat travel through the Delta and into Campbell and Dolomite Lakes, it is difficult to move across the rock upland and through the west muskeg and marshy valleys. Road and trail construction is costly and highly destructive of terrain quality. During this season the landscape will not sustain heavy volume use of trails without landscape damage which cannot recover within decades. In effect, the combination of intensive, localized activities characteristic of park planning and development in more southerly areas, is not practical in this northern latitude.

There is a danger with the coming of the Dempster Highway that an attempt will be made to introduce the facilities and programs of southern parks based on heavy vehicular traffic. Climate and terrain conditions demand new approaches and techniques if the landscape is to "survive".

7.2.2.2 Terrain Configuration

For the Mackenzie River Delta Region, the study area is structurally unique in terms of the combination of elements in juxtaposition (Delta Lowlands, Campbell Lake Trench and the Central Limestone Uplands, including Dolomite Lake). The Central Limestone Uplands component (the most striking topographic feature of the Aklavik Arch Complex) is unique for the region. The strength and variety of this assemblage of geological and structural phenomena is ideal in relation to the requirements of a Territorial Natural Environmental Park.

In terms of inherent tourist and local resident outdoor recreation activity potentials and accessibility considerations, the aforementioned major structural elements are highly disparate. While their visual distinctiveness is an asset from the standpoint of aesthetics and the development of interpretation programs, it confronts park planning, development and operations with serious problems. In effect, it is difficult to weld the units into a cohesive total park facility.

The Campbell Lake Trench is clearly the main outdoor multiple use recreation activity resource in terms of variety of opportunity, ease of accessibility and intensity of current and prospective use. It also possesses strong interpretive potentials.

The Limestone Uplands, containing environmentally significant and sensitive assets (rare plant communities and raptor nesting sites including peregrine falcons) together with the core of the scenic attributes, demand a strong element of preservation and management control. They are difficult to assess, especially in summer, and can sustain only dispersed low density use. The core of the scenic assets is located in the Gossage Formation at the northern end of the fault scarp overlooking the west shore of Campbell Lake. The rock outcrop (Gossage Formation) on the east shore, by virtue of its accessibility to the Dempster Highway and the excellent lookouts that if offers across Campbell Lake and its mid-section delta, is a valuable scenic and interpretative resource.

The Delta component is essentially a flanking or fringing buffer and water travelway and access area. At a limited number of points where contact is made with the base of cliffs on the western margins of the central rock uplands, access trails can be developed to scenic viewpoints and interpretation displays. Moreover, it offers a waterway to the Campbell Lake Trench that is used considerably by local residents and might form the basis of a commercial boat tour operation.

Dolomite Lake can be considered a sub-unit of the Limestone Uplands. It is a multiple use area having good access for local residents but decidedly limited in scale and ability to withstand pressures of heavy utilization. This appears to be the only unit with a possible potential for modest scale private cottage/cabin development.

Building construction and travel development will be confronted with and constrained by continuous permafrost conditions and Cryosolic soils. This must be recognized and adequately accommodated. These conditions will increase costs, require dispersed rather than concentrated use planning, and necessitate intensive examination of conditions at each site, for there is considerable local variation. In this regard it is noted:

* Rock outcrops pose no construction problems.
* Organic soil areas are useless for development.
* All areas of till plain can be expected to slump severely if the vegetative cover is removed in construction or through the wear and tear of heavy summer pedestrian or vehicular traffic.

7.2.2.3 Hydrography

Overall, the aquatic resources of the study area display only moderate to weak strength from the standpoint of the requirements for traditional summer and winter outdoor recreational activities. However, they are capable of attracting considerable current and prospective local use by virtue of their relatively convenient location and the absence of nearby alternative opportunities.

No extensive beach developments in the study area are feasible. Cold water temperatures generally prohibit bathing and swimming for adults throughout the entire summer season. Children and youths can swim in selected locations for a few days in mid-July when the top meter of water heats up after a few consecutive days of bright sunshine. Opportunities are limited to some small lakes of the upland limestone outcrop and the shallow sheltered cove waters of Campbell Lake and to some extent Dolomite Lake.

Boating and canoeing are the primary summer based activities, and park development planning should recognize this and include the following:

a) Channel improvements in the form of routeway markers in Gull and Campbell Creeks and the channel through the delta formation in the mid-portion of Campbell Lake.

b) A navigation buoy in the East Channel to identify the rock pile present in the general vicinity of the Norris camp. This would be of value to local resident and tourist, boaters and canoeists traveling up the East Channel and to some extent to commercial barge traffic.

c) Picnic facilities on the sand beaches of Campbell Lake are required to meet boater needs. Those beaches with dry back shores are best suited for these purposes.

d) The preparation of depth contour charts for Campbell and Dolomite Lakes to assist boaters. 'This would be part of the limnological research recommended in the discussion of the fishery resources.

e) Improved boat launching and boat trailer parking areas on Campbell and Dolomite Lakes.

The shorelines of Campbell and Dolomite Lakes offer excellent opportunities for hiking trails, particularly as water levels begin to drop after mid-July. They provide a scenic shore/water interface, lead to the foot of the central part of the scenic limestone scarps, and above all can withstand heavy pedestrian traffic without terrain destruction, an attribute in scarce supply in this area.

Winter cross-country ski and snowmobile trail layout should keep lake travel to a minimum because the wind chill factor is highest in these exposed locations. Routeways should make maximum use of protected ravine and valley areas.

There are opportunities for the development of commercial boat tours for tourists in the study area. While much of the waterway of the East Channel is monotonous, there is a lure to travel in the delta portions of the great river. Moreover, as parts of Gull Creek and Campbell Creek are attractive, this aspect should be exploited in park development planning and operation.

Three outstanding opportunities for inputs into an interpretation program are associated with aquatic resources including:

a) The lookout from the southwestern edge of the limestone outcrop across the complex of connected and closed shallow lakes and ponds and their associated levee formations and vegetative communities that are characteristic of the delta formation of the Mackenzie River, provides excellent opportunities for interpretation.

b) The lookout from the limestone outcrop along the east shore of Campbell Lake alongside the Dempster Highway, from which the process of lake bifurcation associated with delta formation and reversing lateral channel flow from the Mackenzie River in the delta region, provides excellent opportunities for interpretive programs.

c) The exploitation of the shallow portions of the south basin of Campbell Lake, that are-well populated with waterfowl and shore birds, offers excellent resources for an interpretive program.

7.2.2.4 Vegetation

There is no commercial timber of any major consequence in the study area. Prohibition of domestic cutting in the delta lowlands included in the area would cause no hardship for there are many conveniently located alternative sources.

The vegetation of the delta area is reasonably attractive for the boat traveller and offers numerous interpretation opportunities.

The vegetation cover of the limestone uplands, especially on the hillside slopes, is aesthetically pleasing, particularly where in addition to the dominant black spruce, there is also a presence of tamarack, birch, white spruce and lichen ground cover. Unfortunately, it is difficult to reach these areas and they cannot be visually appreciated from the distance of the Dempster Highway.

The vegetation cover of the Campbell Lake Trench in general and along the Dempster Highway in particular, offers numerous opportunities for interpretation and provides for clear open vistas to the limestone cliffs along many fairly extensive stretches of the Highway. While it is not scenically attractive in many places, it does impart a sense of limitless spaciousness typical of the open expanses of the tundra stretching across the uplands.

The rare plant assemblages are not visually arresting or spectacular and would remain unnoticed by the average tourist and recreationalist. Site attributes are related to the intellectual interpretation and the conservation/ preservational dimensions of park values.

No new rare plant assemblages were located in the intensive investigation of terrain conditions on either side of the Dempster Highway within the area. These communities are associated with the limestone-dolomite outcrops and may occur at points in the limestone rock uplands in addition to sites already identified.

The fragility of the shrub and ground cover is an attribute of major consequence. It cannot sustain even moderate pedestrian traffic in the order to 250 to 300 passes per summer season without serious to total destruction. It will not recover to its original state for a generation or more. Once the crisp, well-defined edge between a trail, a scenic lookout or a recreation area is destroyed through overuse or "sloppy" development practices, a serious deterioration in aesthetic impact ensues. The vegetation pattern demands extensive dispersed outdoor recreation use in the summer season as opposed to a concentrated intensive use pattern that is characteristic of and encouraged by park planning in southern Canada. Winter travel over frozen ground with a reasonable depth of snow cover is not damaging to vegetation.

7.2.2.5 Wildlife Resources

Wildlife patterns are sufficiently strong to support an interesting natural history interpretation program, largely because the diversity of the species provides a reasonable representative sample of the patterns of the Mackenzie Delta and the surrounding upland tundra to the east.

Apart from the bird life, the chances of visitor contact with wildlife may be limited to black bears and smaller mammals. It appears that big game enter the area only sporadically, therefore, visual contactive interpretive programs could not be relied upon.

The southern shallow basin of Campbell Lake with its delta development should support an excellent population of waterfowl and shore birds which makes it ideal for integration into a natural history interpretive program.

The position of future prospects for the peregrine falcon must be clarified immediately. If rehabilitation is possible, the park management and operation program should accommodate such action. If the peregrine falcon is apparently doomed to extirpation and there is no intention of a rehabilitation program, this should be stated immediately for it has important implications for the planning and development of park facilities and programs.

As a prelude to the development of an interpretation program, an intensive census and habitat wildlife study should be made of the area, specifically designed for this purpose. Introductory to this inventory, all studies undertaken to date should be identified and carefully evaluated. Field operations should be completed in one season. An experienced wildlife program graduate could direct the work. One or two native residents of the Inuvik area could provide support, particularly in relation to the identification and qualitative assessment of habitat potentials.

7.2.2.6 Fish

The sport fishery potential for lakes, rivers and streams of the study area can be classed as moderate overall, with Campbell Creek and Campbell Lake now being the major focus of activity.

As a prelude to park development and fisheries management, a creel census and limnological study is required immediately. Current knowledge is inadequate for the preparation of a sound management plan required for any park development in the study area. Dolomite Lake, which was previously a lake trout sport fish area of focus, is now in serious decline and perhaps close to collapse. Pressures are mounting steadily on Campbell Lake and it may soon exceed the sustained productive limit.

Curtailment of the domestic fishery in Campbell Creek or Campbell Lake would probably be an important element in a management program, particularly if pressures continue to mount as expected.

The present culvert of the Dempster Highway at Campbell Creek is inadequate to meet the needs of the spring whitefish run. A replacement for this should be provided.

The rehabilitation of sport fishing at Dolomite Lake would be a central feature of any management plan. Cessation of the domestic fishery here is probably an indispensable initial step to restore the strength of the stocks.

The possibility of a sport fly fishery on the East Channel of the Mackenzie River should be investigated as an integral part of the development of a management plan.

Consideration should be given to integrating a commercial sport fishing operation on the ponds and lakes to the west of the East Channel with the general tourist development opportunity in the Inuvik area.

7.2.2.7 Insects

Insect infestation can seriously constrain the use and enjoyment of the park for a portion of the summer. This is particularly true with respect to tourists and in-migrants to Inuvik who are not accustomed to conditions.

Trail and picnic shelters should be screened and sited to take advantage of prevailing wind directions.

Low lying mosquito ridden willow and muskeg areas should be avoided in the placement of facilities.

Spraying to control insects should not be undertaken as the benefits will not last for long, and the damage to bird life could be substantial.

7.2.2.8 Archeological/Historical Associations

The historical association of the area should provide some input into the development of interpretive programs. Historic markers should be erected at the Campbell River/ Dempster Highway crossing to commemorate the alternate route through the Sitidgi trench to the Arctic shoreline, and at the site of the former lead/zinc mine.

Consideration should be given to the conduct of an exploratory prehistorical/archeological research program. If the result: are encouraging, further work could be undertaken.

In the development of the historic/cultural aspect of an interpretive program, consideration should be given to all possible advantages associated with the incorporation of a somewhat wider perspective which would include Inuvik and surrounding regions. In effect, the interpretive aspect could reach well beyond the narrow boundaries of any park development to the benefit of the tourist and the local residents.

7.2.2.9 Quarries

Quarry development in the past has been consistently based on local demand. Current data reveals that future demand should be well supplied by present quarries that are developed for use.

In relation to environmental aspects, there has been a good relationship between users and those companies and agencies involved with supply. This desirable situation should be preserved in park planning and development considerations.

7.2.2.10 Resident and Visitor Outdoor Recreation Use and Demand

The virtual absence of current, reliable quantitive demand information for resident and tourist outdoor recreation activity and visitation, combined with the uncertainty with respect to the growth of Inuvik:

- imposes a qualitative scenario type approach to the consideration of facility requirements, and

- suggests that the gradual introduction of facilities to meet the potential growth in demand may be the prudent course to follow as opposed to adopting a construction program based on "guesstimated" final demand statistics.

For park planning and development, residents should be given preference, because they represent, now and in the future, the majority of users. However, consideration also must be afforded to visitors. While both groups participate similarly in some activities, there are a number that are mainly confined to one group or the other. For example, while boating is popular on the East Channel with both groups, visitors will be much more interested in guided tours. Similarly, during winter, there are a very few tourists to take advantage of snowmobiling and skiing. However, effective promotion could change both these examples and introduce other activity patterns. .

From a demand point of view, local resident social benefits are the major justification for park development and operation. The program and facility requirements of this client constituency therefore must dominate planning, especially with respect to the road terminal.

The park development must recognize the needs of both short-term residents (who maintain their southern Canadian habits) and of long-term residents whose northern habits are slightly different. Moreover, the majority of the people who will use the park will most probably be non-native.

The resident demand for an official block of land designated for cottage development is an important factor. The southern perimeter of Dolomite Lake is the only suitable area within the study region.

The park proposal should have a beneficial impact upon the growing volume of tourist traffic to the region. In this regard, it is important to note that Inuvik enjoys a renewed interest as evidenced by air and surface travel data. It is worthy of note that if and when the Mackenzie/ Dempster Highway is completed to Tuktoyaktuk, the vehicular tourist could more quickly travel through Inuvik, in a dash for the glamour of the Arctic Ocean shoreline. Their closest contact with Inuvik could be the by-pass highway. Given this situation, the proposed Campbell Hills Park development assumes a new, important role in future tourist development and economic impact considerations.

Although travelers visit Inuvik for both pleasure and business purposes, the pleasure visitor has more time for park related activities. However, promotion should be aimed at extending the length of stay of both groups. Growth of business visitors will be influenced largely by oil and gas development. Increase of pleasure visitors will be dependent upon factors such as vacation costs, other alternatives and promotion. Visitation from both of these groups could increase significantly, perhaps in the order of 10 to 20% per year.

It is our professional opinion that total recreational involvement within the study region, without improvements or additional facilities, will most likely continue to increase at a substantial rate, probably in the range of 10-20% per year. This will naturally increase pressures on the environment and its resource base.

Both residents and visitors are becoming more involved in a wide range of outdoor recreational activities, including both the more passive recreationist as well as the active, hardier type. Park facilities must, therefore, be oriented to a wide spectrum of activities.

Many unorganized and organized groups presently use the study region. These will most likely increase in number and include both resident and visitor groups. Therefore, it may be appropriate to employ a co-operative approach towards any park operation. For example, snowmobiles and skiers may be using mutual trails and various groups would be utilizing shelter facilities. Thus, a co-operative and participative approach could be required in these and other examples.

7.2.2.11 Interpretive Programs

The area offers very substantial opportunities for an interesting diversified natural history interpretation program that should be a major attraction for tourists and local residents. There are enormous resource potentials for the "field" components of science programs in the schools of Inuvik and possibly some surrounding communities in the general region. The exploitation of these opportunities could be one of the major beneficial impacts on the part of the residents of Inuvik.

Interpretation programs and guided tours can do much to increase local respect for the natural assets and developed facilities of the park. They can be a major influence for the reduction of vandalism.

It is noted that the interpretive programs and tours within the study area may result in more concentrated land-use with corresponding negative effects. Fortunately, these can be minimized through appropriate management techniques, such as program pamphlets and tour guides, suggesting the "proper" use of the area.

7.2.3 Issue-based Planning Guideline Framework

The following issue-based concepts form a background framework of planning guidelines for the development of alternative development strategies presented subsequently.

7.2.3.1 Protection of the Unique Natural Environment vs. Outdoor Local Resident and Tourist Activities

As expressed in previous Chapters, the study area is noted for its rare and, in some cases, unique floristic and avian resources. It offers a reasonably strong undisturbed, natural arctic environment that relatively speaking, is easily accessible to a wide variety of potential users.

Future recreational facilities development may capitalize on the site's natural assets but must recognize that extensive intervention into recognized environmentally sensitive areas could severely compromise natural potentials and attractions. In the consideration of various park development scenarios presented in this study, the retention of the proposed park area in as natural a state as possible should always be an underlying objective.

As an extension of the overriding concern for the protection of the natural environment, it is important to ensure that unique environmental areas are afforded sufficient protection to ensure their integrity for purposes of ongoing scientific investigation. The protection and conservation of the natural park environment as a whole should make allowances for special restricted use areas to guard against damage or destruction of unique scientific resources.

7.2.3.2 The Accommodation of Non-Conforming Land Uses in the Study Area

Consistent with GNWT policy, resource exploitation (e.g., gravel quarrying) is not necessarily viewed as being inconsistent with park development objectives. However, given that extensive resource-related impacts may affect the image or quality of the environment associated with the proposed park, they should be evaluated both in terms of physical effects on the environment and in terms of defined park development objectives. In simple terms, resource development should be restricted to areas sufficiently removed from the defined environmentally sensitive precinct (see Option A). Furthermore, these areas should be situated so as to minimize visual impact from heavily travelled routes, thereby minimizing damage to the wilderness experience impact that is so important to visitors.

There are a number of approaches to the solution of the issue of non-conforming uses, current and future development potentials and resource demands within the study area.

There are two obvious alternative approaches to the solution of the issue of non-conforming resource use. Current and prospective resource demands and development site and area potentials within the study area may be accommodated through regulations designed to minimize detrimental landscape impacts. Alternatively, these areas may be removed from the boundaries of any proposed park development.

Because of the number of interest groups and resource potentials involved, the definition of park boundaries is subject to a variety of interpretations. The ultimate designation inevitably will reflect these situations. It should be based primarily upon user requirements co-ordinated with the natural physical boundaries as defined by the distinct physiographic features of the area.

7.2.3.3 Summer vs. Winter Seasonal Emphasis on Park Development

As discussed in Background Implications, climate impacts heavily upon traditional southern recreation patterns. Because of the short summer tourist season, every effort should be made to integrate tourist-oriented facilities (*e.g.*, accommodation, interpretative and day-use facilities, etc.) with the year-long, primarily winter-oriented use patterns of the local residents. Wherever possible, facilities should be shared or seasonally complementary in the interests of maximizing recreational and tourism opportunities while minimizing the cost. Strategically located, well designed, multi-purpose, all season facilities also have the added benefit of potentially extending the relatively short tourist season into the winter months.

7.2.3.4 The Community Social & Economic Impact Issue

Extensive inventory work has identified the need for a wide range of recreational programs and facilities for the residents of Inuvik. In the planning for these needs, however, it should be recognized that the proposed park is not a substitute for intensive facility-oriented recreation most economically and conveniently provided within the town itself. The park offers, by virtue of its particular and valuable site characteristics, a complement to urban recreation and can, in combination with in-town facilities, provide a rich diversity of recreational experiences for the Inuvik resident. To encourage park usage by the important local component of the total user market, attempts should be made to provide linkages between the town site and the adjacent park area with convenient access points to intensive day-use facilities.

The location of the primary administration and Interpretation Centre for the park is an important tangible manifestation of this general issue. It would appear that there are major economic and social benefits to be achieved by placing these facilities within the Town of Inuvik rather than within the park itself. Moreover such a procedure could materially enhance efficiency and effectiveness from the standpoint of the park administration by the Territorial Government.

7.2.3.5 Park Image/Design Issue

The image/design theme chosen must be a function of both tourist and local resident expectations if the user potential is to be realized. The local resident tends to view the park as an extension of the immediately available recreation opportunities. The tourist is generally looking for the wilderness experience, and the opportunity to stand at the edge of civilization to view the remoteness of the north that the arctic venue offers.

The creation of an image therefore may vary considerably depending upon the user emphasis but should, in any case, be built upon the strong physical features of the site. The image should complement the drama of the site and, as such,. be understated to reinforce the primacy of that idea. In accordance with the above, specific facility development should be selective and correspond to major site features, use patterns, and recreational opportunities. Particularly upon the heavily travelled Dempster Highway, "damaged areas" (i.e. abandoned quarries, etc.) should be rehabilitated to restore the visual integrity of the park area.

7.2.4 Alternative Development Strategies

In theory, a continuum of options is available extending from a "do nothing/leave as is" proposition; reservation as a single use/purpose natural history reserve, preserve or management area, through to an intensive use local and immediate regional outdoor recreation area of the Town of Inuvik. Between the latter two extremes, a considerable range of alternatives can be formulated that seek to combine the objectives of preservation of unique natural environmental values and the utilization of local resident and tourist outdoor recreation opportunities.

On the basis of supply, demand and local interest/ attitudinal investigations conducted to date, it appears that the development of an Extensive Use Natural Environmental Park, as defined under Territorial legislation and regulations, is the most practical and feasible strategy. Within this general concept, a number of variations placing varying degrees of emphasis upon various aspects of the issue-based planning guideline framework (Sec. 7.2.3) can be formulated readily. Three that appear to be most attractive and offer a good base for discussion purposes are presented now.

7.2.4.1 Alternative Concept A: Natural Environmental Emphasis

In this option for an extensive use/natural environmental park, the preservation of natural environmentally significant landscape units occcupies a critical central position in planning procedures. While maintaining and expanding upon outdoor recreation opportunities, access to the interior rock uplands is restricted to hiking access. This concept is visually portrayed on the accompanying map (Exhibit 12).

The main administrative and operational centre for the park would be located in Inuvik proper. The centre would contain all major interpretation facilities and be coordinated with existing educational programs. It would provide a convenient focal point for information dissemination and tour scheduling. These functions could perhaps be accommodated in under-utilized school (classroom) space if available within Inuvik.

Along the Dempster Highway corridor flanking Campbell Lake, the following improvements/facilities are proposed.

* Caribou Creek Campground: Upgrade and maintain the existing day-use area in keeping with the wilderness park image. Develop a park entrance/gateway. A small information/display area highlighting park features could be installed here but would be decidedly secondary and essentially “field” supportive of the major facility in Inuvik.

* Provide for observation points coordinated with picnic sites along the Highway facing the escarpment (see Exhibit 12). A highway-related interpretive program using signage and small information kiosks to identify the major site features, history, physiography, wildlife, etc. of the area, could be an added feature of development in this area.

* Campbell Creek Day-Use Area: Retain and upgrade visual appearance of the existing day-use facilities (primarily for local resident use).

Along the east/west portion of the Dempster Highway north of the airport, it is proposed that the existing MOT road be developed as a recreational access to Dolomite Lake, with boat launch facilities and shore line trails provided.

To meet the perceived demand for further cottage development in the area, it is also suggested that a restricted development zone, 200 metres in depth along the south shore of Dolomite Lake, be reserved for this purpose. Access to this area would be maintained by boat along an improved Dolomite Creek waterway (with channel markers) and via an improved MOT road with docking facilities on Dolomite Lake as described above.

The East Channel of the Mackenzie River would be designated as the primary waterway access to the site, with improvements by way of channel markers and landing sites to provide points of departure for wilderness camping trips.

For the interior of the site, an extensive trail system is proposed. This system, developed by J. Windsor in his report entitled "Campbell Lake Hills National Wildlife Area", traverses the site and establishes a number of circuits connecting points of visual interest while bypassing sensitive environmental areas. This system has been extended to provide a link to the town site and is coordinated with the proposed Dolomite Lake shore line trails and, in the vicinity of Inuvik, with established snowmobile routes.

Cross-country ski and snowmobile trails are also proposed for the area, with modifications to the existing use patterns to bypass the rare plant communities. In conjunction with the proposed routings (which provide for a circuit through the town site), a winter shelter is proposed.

To preserve the visual integrity of the site, and reduce the impact on environmentally sensitive areas, it is suggested that the "Teacher's cabin" facility be removed.

Boating access to Campbell Lake would be maintained via the East Channel and Gull River to the south end and Campbell Creek to the north. Landing restrictions are proposed for the west shore of Campbell Lake, with minor landing facilities to be provided along the east shore as demand warrants. Lower Campbell Lake would be subject to restricted boat access to protect the migratory bird staging area.

7.2.4.2 Alternative Concept B: Resident Recreation-Oriented Emphasis

In this option, park development proposals are concentrated within the primary local use zone, generally defined as the northern portion of the study area centering on the Dempster Highway from Inuvik to the Campbell Creek day-use area. This option is visually described on the accompanying map (Exhibit 13).

As in Concept A, the East Channel of the Mackenzie River is designated as the primary waterway access to the southern portion of the site. It is proposed that a "base camp" facility, providing winter shelter and camping access to the uplift area, be established in the vicinity of the existing Norris camp. The utilization of the East Channel ice road would add significantly to the recreational potential of this facility.

In the vicinity of Inuvik, it is proposed that a recreational corridor to accommodate hiking, cross-country skiing, and snowmobile trails, be developed as a link between the town site and Dolomite Lake. As a terminus of the trail corridor, Dolomite Lake may absorb increased cottage development and provide the water-based recreation activities. Consequently, the MOT road should be improved to provide direct vehicular access from the Dempster Highway to Dolomite Lake.

Between the Dolomite Lake recreational area and the Campbell Creek facility, it is proposed that the old quarry road be upgraded to provide access to a new day-use area at the northern edge of the uplift area. This facility could provide a point of origin for a series of short trails to attractive lake destinations and view points within a zone representative of the physical features of the larger uplift area.

The popular and extensively used Campbell Creek facilities represent an additional significant component of this option. It is proposed that existing day use facilities would be upgraded and expanded within the limits of site development capacity. Additional recreational vehicle parking is required, and the primary boat access via Campbell Creek to Campbell Lake should be maintained and improved if possible to maximize the boating potential at the site.

In an attempt to maximize local use of Campbell Lake, a multipurpose site to accommodate picnicking, hiking, and boating is proposed in a location south of the existing "Teacher's cabin". This site will also provide access to beaches on the west shore of Campbell Lake and could accommodate a winter shelter at the terminus of an established snowmobile and cross-country ski trail.

Given that the facilities proposed under this option impinge upon the previously defined environmentally sensitive areas, considerable care must be taken to limit the extent of trail development and control seasonal usage of prescribed facilities.

7.2.4.3 Alternative Concept C: Tourism-Oriented Emphasis

This option emphasizes intensive facility development in the Dempster Highway corridor within the context of a natural wilderness park. The Caribou Creek gateway facilities and the Campbell Lake promontory area would, under this option, both warrant a high degree of development. This option is visually described on the accompanying map (Exhibit 14).

At Caribou Creek, highway service functions (e.g., food, fuel, etc.) could be incorporated with the campground and visitor centre facility if demand requires.

At the Campbell Hill promontory, interpretive hiking trails (located adjacent to the Highway at the south end of the main portion of Campbell Lake) to an observation point overlooking the site and interpretive program facilities may be developed. Adjacent to the promontory, on the west side of the Highway, there is further potential for development of a recreation vehicle campground on the site of an abandoned quarry.

Between the promontory and an upgraded Campbell Creek day-use centre, a number of rest areas combined with picnic facilities could be developed utilizing existing sites and areas cleared during the construction of the Dempster Highway.

The proposed new day-use facilities, accessed from the old quarry road west of the Campbell Creek day-use area, could be developed as outlined in Concept B, except that a more sophisticated infrastructure (e.g., paved or wooden trails) may be required to mitigate against environmental impact resulting from heavy visitor usage.

The Town of Inuvik itself could accommodate a major regional tourism centre promoting the park and providing visitor information facilities for the Delta region. Long term secure parking for park visitors embarking on extended boating, hiking, and camping trips to the interior would be a prerequisite for this facility.

As per Concept A, an extensive trail system would be developed over the park interior under the tourism emphasis with routes converging on the quarry road day-use area and the East Channel base camp.

To ensure a wide variety of recreational activity options, private tourist operators should be encouraged to participate in facilities development at the major activity focal points shown on the accompanying map.

For this tourism-oriented emphasis, the importance of the development of the Dolomite Lake area as a major recreational focal point may be reduced in favour of highway-related development, although the cottage development zone identified in preceding options could, perhaps, be redefined to accommodate tourist lodge-type facilities.

In any case, the adoption of a tourism-oriented concept for park development requires rigorous control over the quality of proposed improvements and new construction, and demands rigorous management and maintenance programs to ensure that the park offers a consistently high level of enjoyment to all visitors.

7.3 Alternative Jurisdiction/Management Concepts

7.3.1 Introduction

A comprehensive consideration of the jurisdiction/management aspect demands an initial recognition of the three major constituencies having varying degrees of interest in the study area. This is by virtue of legislative mandates, park research and development activity and current and future outdoor recreation and tourist use. Within each, several sub-groups or sub-constituencies are present as summarized in the following schematic.

Federal	Territorial	Local Municipal
1. Ministry of the Environment a) Canadian Wildlife Service (Edmonton) b) Parks Canada (Edmonton) c) Inland Waters Directorate (Inuvik) 2. Transport Canada Airport Administration (Inuvik)	1. Dept. of Economic Development & Tourism - Tourism & Parks 2. Renewable Resources Wildlife	1. Council of the Town Inuvik - Inuvik Recreation Board 2. Dept. of Education, GNWT 3* Non-Government Organizations (NGOs) - sports clubs and associations

The legitimate significant interest and concerns of the above jurisdictions and agencies varies considerably and hence their degree of involvement. Tourism and Parks of the GNWT Department of Economic Development and Tourism is clearly the central lead agency. Important sustained input from the Recreation Board of Inuvik and related NGO's on an advisory basis is clearly desirable.

7.3.2 Detailed Discussion

It is not the intention to finalize an administrative structure in this preliminary phase or report preparation but rather to present a framework for discussion as outlined in the preceding introduction (7.3.1). Some further detailed commentary, however, appears desirable and perhaps essential for effective response.

If a territorial park of any type is the choice, then the Tourism and Parks branch of the Department of Economic Development and Tourism must be the central responsible agency for budgeting, development and operation. In effect, the development would fall under the sphere of responsibilities of the parks agency of the NWT.

If an extensive use Natural Environmental park is selected, then strong inputs from the Fish and Wildlife branch of the Government of the NWT will be crucial both for basic research (limnology and wildlife inventories) and for continuous maintenance. The involvement of the Canadian Wildlife Service (Edmonton), particularly in relation to peregrine falcon populations, is also highly desirable, especially from a research standpoint.

With respect to the involvement of the CWS, two points are noted. Firstly, if the choice is for a wildlife preserve or reserve exclusively, something that does not appear likely at this point, then the CWS would be an obvious candidate for lead agency having primary jurisdiction and responsibility. Parks Canada would be another alternative choice under their program of Natural Areas of Canadian Significance.

Secondly, if the CWS were to make a sustained financial contribution to the planning, development and operation of an extensive use territorial natural environmental park, perhaps in relation to sensitive area aspects (peregrine falcon nesting sites and rare plant communities), then some accommodation of this group in the management structure could be necessary.

The involvement of some federal groups including Parks Canada (Edmonton) and the Inland Waters Directorate (Inuvik) would likely be solely of an advisory nature; the former essentially in relation to development planning and the latter in regard to water management and safety aspects.

The accommodation of the local/municipal interests and points of view into the operation of any park development in the study area appears desirable and essential to achieve effective and efficient operation. It is important to note that this would represent a new thrust for territorial park administrative organization and hence will require extensive discussion and consideration.

The Town of Inuvik Recreation Board appears to be a likely candidate for lead agency in the interface of the local/ municipal constituency with the administration structure. Their involvement might be purely advisory. In the case of the NGO's, active involvement in and responsibility for programs may be desirable. For example, participation by the Cross-Country Ski Club or the Top of the World Sportsman Association in maintenance and safety patrol may be very beneficial.

The involvement of the local educational agencies (in particular. the Territorial Department of Education) in the park administrative structure clearly depends upon the nature and extent of the natural and cultural interpretation programs presented in the park program. Under some possible arrangement, this local government department could be responsible for a very large portion of the program from planning through to delivery.

7.4 Alternative Financing Concepts

7.4.1 Introduction

It is almost impossible to deal effectively with this topic until discussions have been held with respect to the preferred physical development and jurisdiction/management concepts. However, a few useful general comments can be presented at this point.

7.4.2 General Comments

The central management agency obviously will assume primary or complete financial/budgetary responsibility for development, operation and maintenance of the preferred facility. In the long range, the operational/maintenance costs will be the major expenditure. This is particularly true in the case of this study area where physical development will be modest and graduated over a period to accommodate the probable increasing demand.

Financial contribution to any facet, including development, operations and maintenance, brings a degree of control, usually proportional to the scale of the inputs relative to total cost. In some cases, "sweat equity" or labour input may be considered as a form of financial input yielding some influence in management and operational decision making. The development and patrolling of cross-country ski and snowmobile trails by local clubs would represent a case in point.

If an extensive interpretation program is developed in cooperation with the educational authorities, a portion of the costs, particularly those related to transport, feeding and equipping, would appear to be the responsibility of those agencies. The contribution from park authorities presumably would be limited to the provision of the physical base for the programs and possible interpretation officer costs.

It is possible for local government authorities to assume the operational costs for park programs that essentially benefit primarily local residents. For example, the City of Yellowknife currently covers the costs of lifeguards for the beach at the Territorial park and campsite development on Long Lake, although the GNWT is totally responsible for the development proper Through this procedure, it is possible at times to introduce programs into a park operation, that while not damaging to resource values and objectives for the area, are outside the normal sphere of program responsibilities of the Territorial Government. In effect, financial contribution by local authorities can be a significant force for flexibility in program development.

Given the probable volume of activity in the park, particularly in the early years of operation and development, revenues can be expected to be virtually non-existent to minimal. With the possible exception of camping fees, the costs of collection would not be covered by the revenue received. Some charge might be levied upon tourists for local guided natural history tours. There may even be possibilities for a private entrepreneur in this field in the peak of the summer season.

8. THE PREFERRED STRATEGY: NATURAL ENVIRONMENT RECREATION PARK

8.1 Introduction

Natural environmental parks are integral and indispensible components in the comprehensively structured park system outlined in G.N.W.T. policy. However, to date no parks of this category have been established within the system of the Northwest Territories.

The need for parks of this type, which perhaps represent the essence of the park concept, have been clearly defined. They provide protection and preservation for natural and cultural landscape values, make available a quality setting for outdoor recreation activities, offer superb opportunities for natural history interpretation and education and in some cases represent excellent natural research laboratories.

8.2 Multiple Objectives

The planning, development, operation and maintenance of the park will be governed by four basic objectives including protection and preservation; low intensity, extensive use outdoor recreation activity; natural and cultural heritage appreciation and interpretation; and increased positive tourism impacts. Research activities consistent with and supportive of the foregoing objectives also will be considered legitimate undertakings within the park area.

8.2.1 Protection and Preservation

Territorially and internationally significant elements requiring protection and preservation include rare plant communities, raptor nesting sites, meromictic lakes, terrain with outstanding aesthetic values and elements of the cultural landscape of an archeological and historic nature which may yet be identified.

8.2.2 Low Intensity, Extensive Use Outdoor Recreation Activity

Within the proposed park, several opportunities exist within the capabilities of the landscape for the provision of recreation areas and facilities to meet the needs of Inuvik residents and the tourists. These include hiking, wilderness and conventional camping, cross country skiing and snowmobiling, angling, waterway travel by powerboat and canoe, windsurfing, iceboating and picnicking.

8.2.3 Natural and Cultural Heritage Appreciation and Interpretation

Interpretation facilities and programs will provide the opportunity for the appreciation and understanding of the natural and cultural landscape heritage of the area including its climate, geology, physiology, hydrography, biology, vegetation, prehistoric cultures and historic associations.

8.2.4 Economic Impact of Park Development and Increased Tourism

The objective in this case is to induce increased tourist visitation, length of stay and participation in the Inuvik and region economy, thereby generating increased income and employment opportunities for local residents.

The following is a general discussion on the economic impact of the park development. Detailed economic analysis cannot be developed until the preferred developmental alternative is selected.

8.2.4.1 The Supplier Perspective

This encompasses the impacts of the costs incurred to supply facilities and improvements, and to operate and maintain them.

8.2.4 .1(a) Economic Impact of Capital Development

This component most likely will not be large, as minimum development is envisaged. Facilities will be constructed using mainly local employment and where possible, local materials. However, there will be a large leakage factor due to the employment of some imported materials and perhaps imported labour. However, until a detailed development plan is finalized, it will be impossible to estimate such impacts.

8.2.4 .1(b) Economic Impact of Park Operations

Continuous park operation will produce benefits from employment created and materials and services required.

The creation of the positions to manage the park will result in increased employment. This would probably be satisfied by local people; however, if appropriate personnel are not available, some immigration would be necessary. Additional part time labour would be required for the maintenance of the park.

Materials and services would be required to produce information pamphlets, toilet supplies, etc. These could be satisfied mainly at the local level.

8.2.4.2 The Consumer Perspective

This encompasses the impacts of increased expenditures due to park development.

8.2.4.2(a) Economic Impact of Expenditures by Residents

Residential expenditures will be made for the purchase of equipment (snowmobiles, boats, etc.) and for goods and services (gasoline, oil, equipment repair). However, there is difficulty in determining what percentage of future purchases should be attributed to the establishment of a park. A further problem results from the leakage factor as imports represent a high percentage.

8.2.4.2(b) Economic Impact of Additional Visitor Expenditures

As visitor expenditures represent a direct addition of outside monies to the local economy, they are an important economic impact which benefits regional economic development. However, there is difficulty in quantifying this incremental increase resulting solely from the presence of a park.

As pleasure visitors remain in Inuvik for about about 3.25 days and possibly less because of a lack of defined activities, study area improvements could encourage some to remain an extra day or two. Also with the creation of the park, an incremental increase in the number of visitors would be experienced. Our estimate is that the 2500 road pleasure visitors would grow by 20 percent due to the park development. In addition, as business visitors have time constraints limiting their participation in non-business activities, a small percentage of them may be able to be encouraged to remain a day in order to partake in park related activities. These people would then be classified as airplane pleasure visitors.

The average visitor expenditure is in the range of $50 to $100 per day for accommodation, food, fuel, and entertainment. Therefore, if 10% of 3000 airplane pleasure visitors and 30% of 2500 road pleasure visitors were to remain an extra day due to the creation of a park, plus an increase of 20 percent in road visitors, total increased expenditures would be equal to about $116,250, per year calculated as follows:

3000 air pleasure visitors x 0.10 +
2500 road pleasure visitors x 0.30 + 2500 x 0.20

= 1550 extra visitors x $\frac{\$75}{day}$

= $116,250 extra expenditures per annum

This may not be a significant economic contribution to the Town at present, although growth of visitation and park promotion could increase this. An additional amount would accrue from residential expenditures.

8.2.4.3 Creation of Entrepreneurial Opportunities

Until park development takes place, it is only possible to outline the general scope of potential local business opportunities. Increased visitation will result in increased demand for accommodation, food, fuel, activities, souvenirs, tours etc. Local entrepreneurs will be provided with the opportunity to satisfy the gap between the demand and supply.

8.2.4.4 Multiplier Effect of Increased Expenditure

The multiplier effect is a function of consumer expenditure at final demand point (i.e. tourist and resident expenditures) for goods and services as distributed across the factor costs of production for the supplier; including inter-industry and imports of materials and services in a finished or semi-finished state, taxes, financial charges, wages/salaries and profits. A percentage of the wages/salaries and some of the profits are spent locally in Inuvik by labour and management for goods and services generating what is known as a recyling or multiplier . effect, which, in Town, results in additional expenditure, employment and income.

In remote northern locations where economic infrastructure is not well developed, or where a high percentage of the materials and services supplied to economy are imported, there is a high leakage factor. That is to say, a large percentage of the tourist dollars spent at final demand point flows out of the area. Often little more than wage payments to local labour are left to recycle, so that the multiplier effects are negligible.

There has been a wide range in the multiplier ratios employed in studies of the economic impact of tourism and outdoor recreation expenditures in Canada in recent years. Overall, the trend has been downward for local area impact and greater recognition given to the leakage aspect.

In the case of Inuvik, the general consumer expenditure multiplier may be in the order of 1.25 or less. In effect, $1 in tourist or local resident outdoor recreation expenditures in Inuvik probably generates total consumer expenditures in the order of 1.25 through the exchanging of wages and profits. The employment multiplier, that is the additional jobs created, and the income multiplier effects are likely even less.

8.3 Physical Development Strategy

8.3.1 Environmental Constraints

The recognition and accommodation of the fragile nature of the arctic delta environment is the fundamental starting point for any planning development and operating strategy for the proposed park. In this high northern latitude, facilities for dispersed extensive forms of recreation, interpretation and tourism activity must dominate the park development concept. Moreover, winter season use and travel is least destructive of terrain values and should be fully developed as a basic approach in overall operations. This contrasts sharply and dramatically with the parks planning and development in southern Canada where the focus is upon concentrated intensive summer use in highly serviced and organized campgrounds, beaches and trailways.

8.3.2 Master Planning, Zoning and Facility Approach

Master planning, developed through zoning of the site and implemented through facility development and supporting use regulations, provides a suitable framework for the attainment of the previously listed multiple recreation objectives and the preservation of the outstanding natural and cultural landscape attributes present. Areas of extreme sensitivity and significant established patterns of use are recognized in the general zoning of the park area. Appropriate facility development, and where necessary regulations restricting the time and intensity of use, are proposed for these areas to define and direct the use of the proposed park.

Initially, all land and water within the defined park area will be allocated to and designated as a park. All non-conforming physical improvements should be removed unless of a historic or cultural nature or are deemed useful for park purposes. No future leasing of land or water for private purposes should take place. In general, this park is divided into two zones which together will accommodate a wide range of facilities and activities.

The Rock Uplift area contains the bulk of sensitive resources in need of protection. Preservation and conservation are major concerns and in several limited areas are considered umcompromisable and inviolate. Low intensity, dispersed recreation, involving relatively minimal support infrastructure is the use and development strategy here.

The Campbell Lake trench, by virtue of the already established Dempster Highway corridor is, in contrast, much more appropriate for the provision of access, services and facilities for intensive outdoor recreation, highway camping accommodation, picnicking, and equipment and material storage for park maintenance and operation.

In contrast with more southerly parks in Canada, the landscape in the Campbell Hills area cannot sustain concentrated use without speedy deterioration due to permafrost conditions. Even moderate development invariably requires heavy investment for the construction of gravel and crushed rock pads several feet above the permafrost level and/or pilings for the support of permanent structures. The present plan therefore attempts to accommodate the existing use pattern as closely as possible to protect the significant investment in place and to reduce the requirement for further capital expenditures.

While these areas, including for example Campbell and Caribou Creeks, represent only a small percentage of the proposed park's area, they are of enormous significance for two reasons. First, their provision or retention represents a disproportionate share of total capital funding due to necessarily high service costs. Second, and perhaps more importantly, these features, by virture of their exposure and use, will more than any other, set character and precedent examples for the entire park area. The significance of this point for a preservation area, which from the outset will be virtually devoid of supervision or policing, cannot be overemphasized.

In order to achieve the multiple objectives of recreation, tourism attraction and environmental preservation numerous facilities are proposed for the park area.

Exhibit 15 on the following page details the location of:

a primitive rental cabin precinct (2 alternatives)

several semi-serviced day use areas (pit-toilets, firewood, fresh water)

Channel marking

a boat launch

an integrated trail system accommodating hiking, skiing and snowmobiling and support with all season overnight shelters

primitive campsites

a designated ecological preserve zone or area

signage

The primary access afforded by the Dempster Highway is recognized by a significant park entrance developed at the present Caribou Creek location. An additional 'entrance' sign should be posted at the northern park boundary and Dempster intersection.

The existing day use facilities of particular importance to local residents are retained in their current locations and upgraded. Campbell Creek in particular will be enlarged to accommodate additional parking and use during the short summer season. No additional day use sites are proposed.

A primitive rental cabin precinct is proposed which would initially accommodate approximately six rental units. This privately constructed and administered project is intended to increase the amount and variety of accommodation available to the tourists of the Inuvik area.

Wilderness hikers, and in particular winter travelers on snowmobiles, skis and snowshoes are provided with a marked trail system penetrating the unique rock upland. Two all weather shelters will initially be provided on these trails to serve as a destination for residents making winter day trips from Inuvik.

This trail system will enhance the prospects of preserving the sensitive terrain and resources of the site by directing interior access to those areas most able to accommodate it. Preservation will also be supported through the designation of an ecological preserve zone, access restrictions, (an example being restricted boat landings on certain parts of Campbell Lake), and through the development of a series of interpretive sites focussing on the sensitivity of the terrain and its constituents.

Cottaging is also thought to be inconsistent with development objectives and no sites are designated within the park for this purpose.

8.3.3 Proposed Boundaries

The principle aim in this case is to develop discrete and readily interpretable boundaries which lend themselves to the type of administrative structure envisioned and which adequately demarcate the areas of significance within the site.

Present commercial interests, in particular the existing active quarry operation adjacent to the Dempster, are excluded from the proposed park area.

The suggested park boundaries are shown in Exhibit 15. The northern boundary parallels the Dempster Highway and encompasses a control zone 200 metres beyond the highway. This 'buffer' zone increases along the eastern edge to coincide with a line following the top of the slope overlooking the highway. Dolomite Lake and a 200 metre strip south of the lake are excluded from the proposed area. Dolomite Creek bounds the remainder of the northern segment up to its junction with the Mackenzie River. The Mackenzie's east shore serves the western park boundary. This respects pending C.O.P.E. land claims to the west bank and thus leaves the river itself free from jursidictional claims. A line running on an approximate diagonal from Big Gull River to the Caribou Creek closes the proposed boundary.

8.3.4 Principal Facility Components

8.3.4.1 Entrance

Primary access to the park by both residents and tourists will be along the Dempster Highway. A major entrance sign and a posting of park rules and regulations at the Caribou Creek location constitutes the southern entry point. Information on the location of the park office in Inuvik, hiking trails and rental accommodation also would be appropriate. A small scale sign will be installed at northern boundary/highway intersection which is the closest point on the highway to Inuvik. Its primary purpose could be to increase resident awareness of the special area designation.

8.3.4.2 Highway Interpretive Site

A major interpretive site is proposed for an area midway down the east side of Campbell Lake on the Dempster Highway. This area will be sited to utilize both the views of the facing west shore cliffs and exposed bedrock at this location. A covered kiosk with exhibition surfaces should be provided adjoining a parking area for approximately twelve vehicles. In addition to the interpretive themes mentioned elsewhere a brief description of the unique process of northern highway construction could be exhibited here.

Essentially because of its popularity with local residents rather than any intrinsic natural qualities of the site, a secondary modest interpretive facility in the Campbell Creek day use area might be beneficial. This might include little more than the basic requirements for the , introductory phases of nature hikes.

8.3.4.3 Day Use Sites

The principle entry-way facility at Caribou Creek and facility at Campbell Creek, would be maintained in their existing layouts.

Campbell Creek serves as a primary Town of Inuvik day use area during the short summer season. The present picnic' facilities should be retained and an expanded parking facility, separate from the existing site is proposed. The combined parking area for 20 cars is divided to reduce its apparent scale and should be carefully developed to assure a crispness of edge between it and the undisturbed adjacent land. This can be reinforced through the construction of a low, single rail log fence.

Traffic safety concerns make a widening of the highway at this location desirable, along with stringent speed controls. Enlargement of the existing culverts should accompany the road widening to alleviate the congestion for fish during their spring migration.

Caribou Creek, at the designated southern entrance to the Park, will be maintained as a day use area. A vehicle lay-by adjacent to the entrance and information signage would be developed. Here, significant widening of the Dempster Highway should proceed as part of a comprehensive highway improvement program.

The present site will be maintained and upgraded to improve vehicle pull-offs from the Dempster. Maintenance will include the provision of garbage disposal and the provision of firewood.

8.3.4.4 Accommodation Sites

Proposed accommodation facilities within the park area are of two types; a primitive, unserviced walk-in campsite and primitive, semi-serviced rental cabins.

A total of six walk in campsites along the interior trail system are proposed. lhey will be sited adjacent to interior lakes and will consist of a raised wood platform, a site use regulation sign and a pit toilet. Firewood will be brought in by snowmobile sledge in the winter or alternately hikers will be required to pack stoves if open fires are to be prohibited.

Two alternative sites suitable for the private development of semi-serviced rental cabins have been designated. One to the east of the Dempster Highway, at the approximate midpoint of Campbell Lake and the other near the northern park entry point (Exhibit 15). This type of development is intended to provide an element of diversity to the accommodation available to tourists in the area. The selected development area will be offered to a private developer on a lease basis for the operation of summer season only cabins. The accommodation should be primitive in keeping with the objectives of providing diversity, harmony with the surrounding landscape and distinct contrast with the urban accommodation and development types in Inuvik. The prospective contractor should be required to maintain a close liaison with the Park Supervisor during the design, construction and operation phases to ensure these objectives are achieved.

8.3.4.5 Boating Facilities

The existing boat launch at Campbell Creek will be maintained. Boating access to Campbell Lake will remain constrained by fluctuations in lake water levels and the narrow Campbell Creek channel. The considerable distance from Inuvik via the Mackenzie channel represents another limiting factor for boating.

In general, the immediate shoreline and natural beach areas of Campbell Lake are some of the most resilient areas and serve as an ideal wilderness destination. However, the extreme degree of summer insect infestation, the fluctuation of water levels and the poor fishing in the lake preclude the development of permanent facilities in these locations.

In the interests of bird protection several isolated areas along the west shore of Campbell Lake are prohibited from boat landings at critical periods. These will be posted with appropriate signs.

Channel markers at the junction of Dolomite Creek and Little and Big Gull Rivers with the Mackenzie are also proposed. Similar improvements are proposed at shallow points in the East Channel, particularly in the general vicinity of the Norris Camp.

8.3.4.6 Interior Trail System

The interior trail system, like the park itself, serves several purposes. It will provide a carefully chosen route allowing campers and hikers the full range of the unique Campbell Hills landscape while avoiding the most environmentally sensitive areas. Exposed rock will be used as the trail base wherever possible and interpretive information will remind users that to leave the trail is to begin to destroy the area. The siting and layout of this trail system and its public acceptance are critical because damage due to negligence or overuse of an area will persist for decades, if not centuries.

The suggested trail alignment is shown in Exhibit 15. The system originates from the nearest point of road access, . adjacent to the existing rock quarry. There will be limited parking provided here.

Numerous interpretive themes can and should be developed along these routes including physiography and geology, wildlife and vegetation, climate and cultural history. Particular importance should be given to the vagaries of permafrost and the important role played by the vegetative covering of crysolic soils.

The demolition and removal of the derelict "Teacher's Cabin" is a component of this trail development. Two new facilities, comprised of full all weather shelters with firewood supplies are suggested at alternate locations to serve as destinations for winter day travelers from Inuvik.

While damage to terrain from travel in winter is negligible, the use of vegetation for firewood would create a problem. Typically, trees in this area are extemely small and take in excess of 100 years to reach their stunted maturity. Open fires should therefore only be permitted at interior sites provided with firewood transported to the site.

8.3.4.7 Central Administration Office

A separate Park Administration Building is not necessary at this time. The minimal complement of full time seasonal staff, the anticipated small number of tourist park users and the convenience of staff, residents, and tourists to facilities in Inuvik all dictate the use of the existing G.N.W.T. Tourism office for initial park administration purposes.

8.3.5 Interpretive Potential

The interpretive program potential has been discussed in Chapter 6. In the discussion, a wide variety of potential programs surrounding northern cultural and environmental interests are described. Specific programs could include Culture Inclusion, Life in a Northern Resource Town, Oil and Gas Exploration and Development, Physiography and Geology, Ecology Resources, Environmental Conservation, Astronomy, Flora and Fauna, and Skill Development. Tours could include the Inuvik Townsite, Park Winter Tours, Mackenzie River East Channel and Delta Boat Tours, Delta Tours to Aklavik and Fort McPherson, Tours to the North Shore, The Beaufort Sea, Tuktoyuktuk as well as the Dempster Highway. Private enterprise has an important and indispensable role in these programs.

The facility location for interpretive programming should be integrated within current community infrastructure such as the Town library and/or the Tourist information centre.

8.3.6 Park/Theme Motif

Although few structures are proposed, the motif for major signage should be constructed in a manner which makes man made intervention both purposeful and direct. Natural materials, such as heavy timbers for signage, can be obtained locally, thereby allowing an opportunity for local business to participate. The use of natural materials, as opposed to steel or plastic, keeps visual disruption minimal as well as promoting the ruggedness of the area.

At all constructed sites every attempt should be made to ensure a crispness of edge between the natural terrain and the recreation or observation area.

8.4 Operational Guidelines

8.4.1 Operations

The park will receive full time supervision during the peak summer season from a Park Supervisor. He will be responsible (either directly or through contractual agreement) for the operation and maintenance of the park, including: access and parking areas, day use areas, interior hiking trails and campsites, interpretive displays and programs, water supply, waste disposal, park security and the Inuvik administration office. The Park Supervisor would also be responsible for the coordination of a rental cabin site, if developed, and would serve as the immediate territorial liaison with local interest groups.

Assistants for the monitoring of interior primitive campsites are an example of local manpower which may be hired at the Supervisor's discretion.

Few opportunities for the collection of user fees exist within the park area and a Park Registration Officer position is not required.

A Territorial Wildlife Officer, a position already established in Inuvik, could be charged with the responsibility of supervising and advising on wildlife concerns as well as coordinating research programs.

Interpretive displays would likely be developed by Territorial Parks staff and installed under programs , directed by the Park Supervisor.

The capital construction and maintenance of park facilities could be undertaken by local contractors.

8.4.2 Maintenance

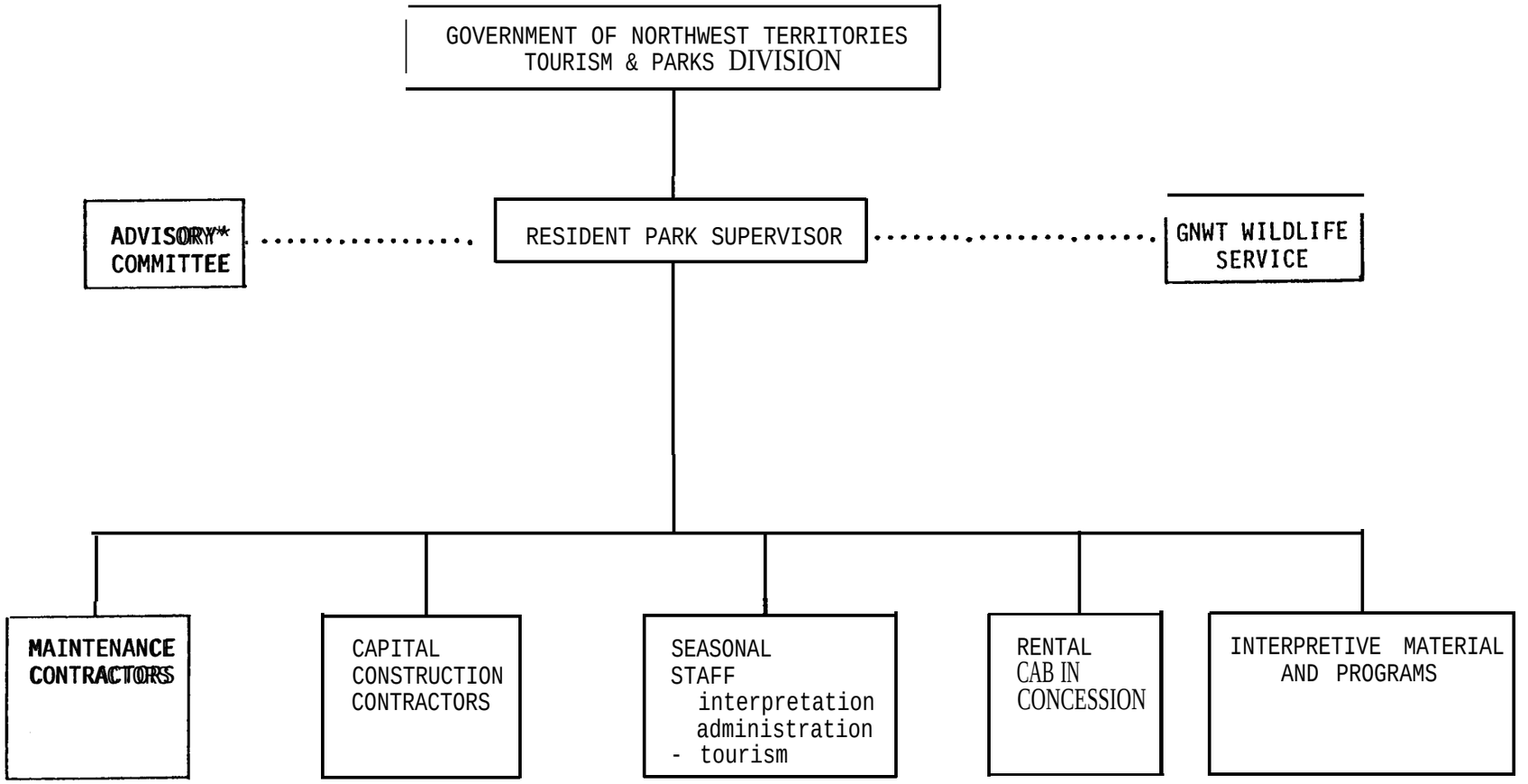
Maintenance work, would, as mentioned above, be undertaken by local contractors and would include day use areas, roads and parking areas and interior campsites. Capital equipment purchases will be minimal and storage requirements do not warrant a compound.

8.4.3 Administration

The recommended Administrative Structure is detailed in Exhibit 16: Proposed Administrative Structure.

EXHIBIT 16

PROPOSED ADMINISTRATIVE STRUCTURE



* See Exhibit 17

The appointed Park Supervisor will be the immediate Government contact for matters dealing with the park. He will serve as the liaison with local interest groups, including the Town of Inuvik, and in consultation with the GNWT Wildlife Service, will monitor the impact of Park operations.

Since the GNWT Wildlife Service is responsible for wildlife management in the NWT, its inclusion in park management should be closely coordinated with the Park Supervisor.

It is suggested that an advisory and consultative committee be established and meet on a regular, perhaps hi-annual, basis to ensure that the ongoing park development continues to satisfy the multiple objectives which initially precipitated the establishment of the Park.

As described in Exhibit 17, the proposed Advisory Committee would be chaired by an officer of the Parks Department of the GNWT and would have representation from the community and external government agencies.

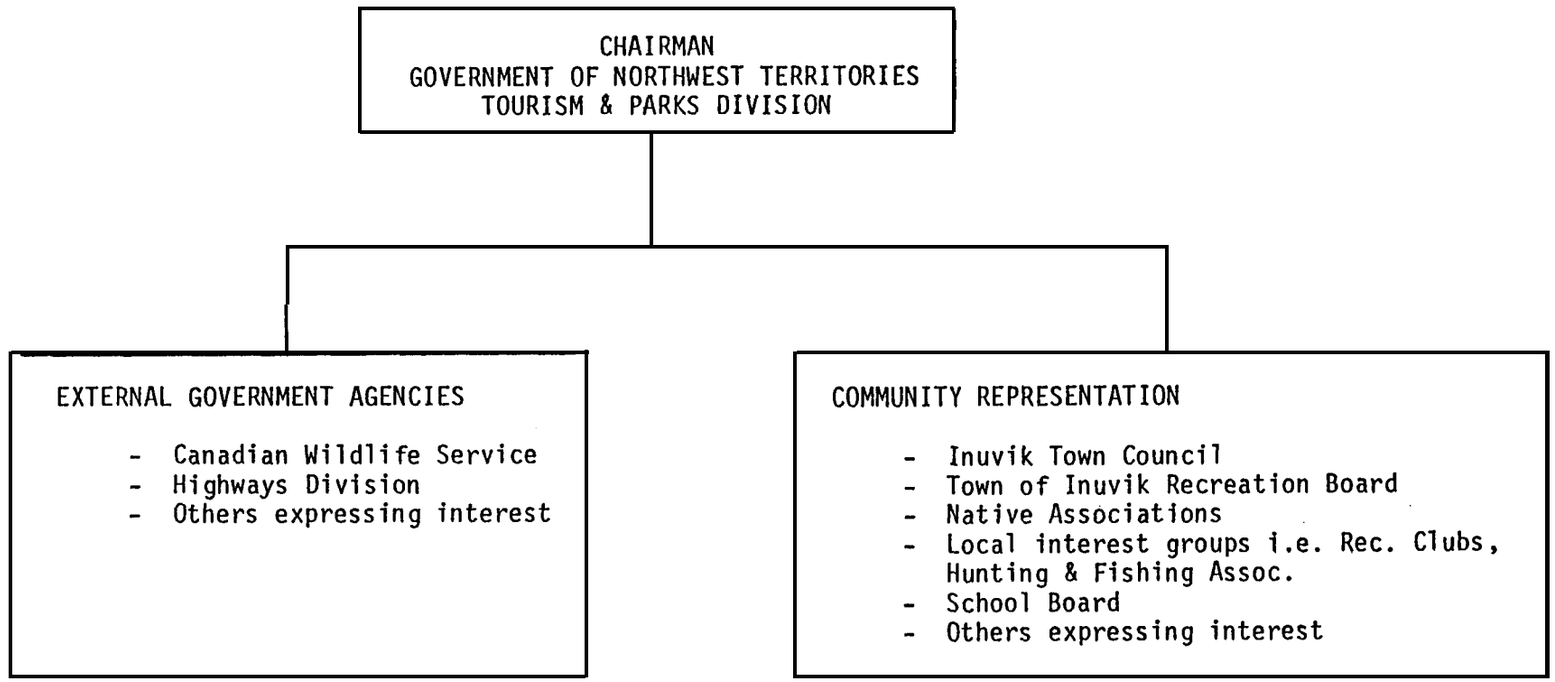
The Canadian Wildlife Service (C.W.S.) would only provide consultative input on the management and status of the site's sensitive resources, in particular the rare faunal and floristic species.

Local representation is required to promote discussion and awareness of the impacts of local recreational use on the site and to input local concerns into the park development process. The study process has identified intense interest from community groups and individuals. This diversity of' interest must be focussed in a collective fashion with representation from major areas of involvement.

In many respects the Campbell Hills Lake Park will serve as a municipal recreational resource for the Town of Inuvik. The Administration should, therefore, promote extensive participation by the local community in Park operations. Local groups such as the Town of Inuvik RecreationBoard and private ski and snowmobile clubs might therefore receive representation in return for their participation in park operations.

EXHIBIT 17

PROPOSED ADVISORY COMMITTEE STRUCTURE



8.4.4. Marketing/Promotion Strategy

A number of considerations must be taken into account when developing a marketing/promotion strategy for the park. Initially, promotion should be cost efficient and can be accomplished mainly by utilizing existing resources and information channels. For example, current publications by both the Government of the Northwest Territories (Travel Arctic, etc) and the Yukon Territorial Government (YTG) could promote the park as an additional integral part of current MacKenzie Delta and Dempster Highway attractions. These publications already enjoy a wide distrubtion with enquiries from across Canada, the U.S.A. and overseas.

As few visitors will travel to the area solely to enjoy the park, it would not be productive to promote the park entirely on its own merits in periodicals or other media. However, as a "lack of attractions" has been cited in conjunction with tourist activities in the area, the park should be a major attraction when integrated into a general area tourism strategy.

Primary emphasis should be placed on the tourism element, as local residents will quickly become aware of the benefits of the park via word of mouth and through the tourism promotion methods. Residents will likely utilize the park area regardless of promotion although the GNWT can act as a catalyst for the involvement of local clubs and groups in park related activities.

Although a majority of participation occasions will occur initially during the summer season and involve both visitors and residents, promotion should also mention the spring and fall shoulder periods as well as the winter seasons. Residents are the major participators at these times; however, visitor quantities could be increased here. The spring season could emphasize the suitable weather which is conducive to cross-country skiing, snowmobiling, dog team tours or observation of the northern lights. Promotion of the peak winter season could mention these aspects as well as the unique northern phenomena of twenty-four hour darkness, ice fog, and minus thirty to forty degree temperatures. These items are achieving an increasing appeal to those adventurers seeking a truly unique northern wilderness experience.

A number of tour groups which currently operate tours to the area could be encouraged to promote the park as an ingredient of their package tours. Optional side trips of variable duration conducted by local entrepreneurs could be offered to tour participants.

Indeed, local entrepreneurs should be encouraged to continue, expand and improve their guided tour operations to include boating, driving, and driving-hiking tours during the summer as well as the winter tour possibilities previously mentioned.

The presence of a diversity of potential park activities will result in an attraction to most segments of the overall tourism market. A majority of visitors will enjoy the park on a day use basis thereby reaping the benefits of a taste of the wilderness during the day and utilization of Inuvik's urban facilities by night. However, an overnight camping experience will appeal to a growing number of southern urbanites.

Local tourist organizations such as the Western Arctic Visitors Association and tourism entrepreneurs should be encouraged to help promote the park and would most likely be very receptive to this as it would result in some visitors staying longer in the area with consequential economic benefits.

As promotion is also accomplished naturally by word of mouth referral, positive experiences are one of the best promotional devices. Therefore, cooperation and consideration given by local operators to visitors is of prime importance.

The local media (radio, television, newspapers) could be employed economically to advertise park activities, particularly during the peak summer season.

It is recommended that a one or two page brochure on the park be produced. It could be developed and produced utilizing existing GNWT personnel and resources. It could be disseminated by the GNWT and the YTG, in particular to individuals requesting information on the Dempster Highway and MacKenzie Delta. Distribution to the Alaskan Government could also be considered as a large potential market, and could be approached. Local and non-local guided tour operators, Western Arctic Visitors Association, hotels, restaurants, campgrounds, the Chamber of Commerce and the airport could all be equipped with brochures.

A typical format for the brochure could be simply one page, placed on its side, and both ends folded to the centre. The front cover would contain the park name, an area context map and a brief introduction. The brochure would fold out from both sides to depict a detailed map of the area appearing in the centre of the 8-1/2 inch by 11 inch page. The map would be surrounded by comments on specific park attractions referenced by arrows to their locations. Specific attractions indicated could include hydrographic features (such as boating on the MacKenzie River) and angling opportunities, northern vegetation, possible wildlife and avian observation, geological features, historical background and interpretive sites.

The back of the brochure would provide details on these highlights as well as other general information necessary to facilitate enjoyment (such as suitable clothing) and protection of the sensitive northern environment (fire prevention, trail hiking, etc. suggestions) for those unfamiliar with the north.

The underlying marketing objective of the park should be to increase tourist and resident use of the park in a manner that results in the economic benefit from recreation expenditures accruing in the Inuvik and area business infrastructure. Obviously, stimulating local business in the area rather than economic spin-offs at the park itself, where few, if any avenues for such expenditures will be available, is the primary thrust of such a development as the park.

8.5 costs

The Park development process in large part represents an entrenchment of existing, primarily local resident, use patterns within a larger framework of environmental preservation. As such, only several minor additional capital projects are proposed and these are intended to generally reinforce and direct established patterns of use, not create new ones.

8.5.1 Description of Capital Improvements

Parking Areas
- Caribou Creek improvements (for an additional four cars)
- Campbell Creek increased parking area (for an additional 20 cars)
- interpretive lookout parking area (for ten cars)
- parking and trail origin on abandoned quarry road (for six cars)

Interpretive Site Development
- Kiosk display and signage
- other individual sites as trail system is developed

Trails
- interior trail alignment, construction and marking

Signage
- large interpretive entrance signs at park entrance, highway lookout and Campbell Creek
- directional and regulatory signs
- trail markers

Primitive Campsites
- includes construction of tent pad (wood platform)

Pit Toilets
- seven corresponding with interior campsites and winter shelter locations and one allocated for interpretive outlook

Site Furniture and Picnic Tables
- additional benches for Campbell Ceeek and Caribou Creek

Winter Shelters
- 12' x16' all weather shelter complete with wood stove at locations indicated on Exhibit 15

Channel Markers
- five; two on the Dolomite Creek waterway, one at the confluence of the East Channel and the Little Gull River, and two on the Big Gull/Campbell Lake waterway.

Single Rail Log Fence
- to define the limits of parking area, to prevent environmental degradation

TABLE 26

SUMMARY OF CAPITAL COSTS

CAPITAL ITEM	UNIT COST ($ 1982)	TOTAL COST ($ 1982)	STAGING YEAR 1	STAGING YEAR 2	STAGING YEAR 3
Parking Areas	3500m3 @ $20 m^3 (base material)	$70,000	$45,000	$25,000	
Interpretive Site Development	estimated total only	$3,000	$1,000	$2,000	
Trails	55km @ $650/km	$35,750	$5,750	$15,000	$15,000
Si gnage	35 @ $100; 3 @ $1,000	$6,500	$3,000	$3,000	$ 500
Primitive Campsites	6 @ $300	$1,800		$ 900	$ 900
Pit Toilets	8 @ $1,500	$12,000	$3,000	$6,000	$3,000
Site Furniture	5 @ $800	$4,000	$4,000		
Winter Shelters	2 @ $7,000	$14,000		$14,000	
Channel Markers	5 @ $400	$2,000		$2,000	
Rail Fence	estimated total only	$4,500	$4,500		
Supervisors Equipment	estimated total only	$20,000	$20,000		
Demolition: Teacher's Cabin	estimated total only	$1,000		$1,000	
		$174,550	$86,250	$68,900	$19,400

Supervisors Vehicle and Equipment
pick-up truck, snowmobile and sled, canoe and kicker
other miscellaneous supplies

Demolition "Teacher's" Cabin

Table 26 summarizes these capital improvements, the unit cost of each (where applicable), the estimated total capital cost of each (in 1982 $), and a breakdown of how much would be allocated per year over the initial three years of park development.

8.5.2 Operating Costs

Table 27 shows the estimated operating costs of the proposed Campbell Lake Park on a per annum basis. These costs are in 1982 dollars, therefore, an inflation factor will have to be applied to estimate operating costs in subsequent years. The addition of more staff and/or acquisition of a separate Park Administration facility will, of course, be reflected in an increased per annum operating cost.

TABLE 27

OPERATING COSTS

Item	Per Annum Cost (1982 $)
Maintenance contracts day use areas and interpretive highway site	$12,000
Park supervision salary plus benefits	35,000
Supervisor's vehicle and Equipment Operation and Maintenance	5,000
Firewood Supply 50 cords @ $215/cord (cut)	10,750
Other Contracts Trail maintenance etc.	5,000
TOTAL ANNUAL OPERATING COSTS	$67,750

8.5.3 **Staging**

In order to generate a 'park presence' and a recognition by both resident and tourist of the new facility which has been established, the proposed capital projects should be put in place as soon as possible. Given the relatively small magnitude of these facilities, it is suggested that the majority of this work be completed within the first three years of the development process.

Year One: On-site inventory and detail design (trail alignments, interpretive site locations and design, site furniture, and signage).

maintenance of major day use areas

major entry signage

interior trail marking

Year Two: Demolition of highway sites to be phased out.

vehicle layby at Caribou Creek

construction of initial tent pads

demolition of Teachers Cabin and construction of , all-season replacement facility

interpretive site development (individual sites as trail system is developed)

channel markers

Year 3: Highway interpretive site development

expansion of interior trail system

tent pads

trail marking

interpretive sites

Years 4 & 5: Facilities development should be basically completed. Primary activities will be maintenance, expansion of interpretive programs and displays and monitoring of the environment to determine if the expansion of facilities or greater accesss restrictions are in order.

A more specific and detailed staging plan can only be developed at a later date and with significant input from all involved parties.

APPENDICES 1.

INDIVIDUALS CONTACTED

The following list of individuals were the major persons contacted during the course of the study. As many discussions required follow-up conversations, the modes, locations, dates and participants are not included for the sake of brevity.

Local persons interviewed were generally long term residents of Inuvik employed in senior positions or owning and/or operating private enterprises. All were felt to be knowledgeable about the topics addressed. Unless otherwise noted, individuals reside in Inuvik. Telephone number area codes are (403) unless indicated differently.

Individual	Main Employment Position or Involvement	Telephone	Main Subject Area Discussed
Marjorie Allen	Assistant Manager, Happy Valley Town of Inuvik Campsite	979-3896	Camping and tourism
David Allman	Executive Assistant, Town of Inuvik	979-2607	Quarries
Staff Sergeant Avison	RCMP	979-2935	Nonconforming uses, vandalism, local problems
Richard Barnes Bill Ferguson	Fisheries and Oceans, Fed. Gov't.	979-3314	Fishing and hunting
Dave Buchan	Admin Assistant, Marine Operations, Highway Division DPW, GNWT, Yellowknife	873-7845	Ferry statistics
Blanche Buckle	Brownies, Guides, Pathfinders leader	979-2229	Recreation
Dave and Murna Button	Managers, The Fireweed Studio and the Milehouse	979-2655	Interpretive program, tourism, recreation, environmental capability, construction.
Gordon Campbell	Manager, Northstar Construction	979-2393	Construction in Inuvik area
Don Cave	Tilden Rent A Car	979-3383	Wildlife and recreation
Steve Clappison	Atlas Tours, Whitehorse	668-3161	Guided tours
Len Clark	Manager, Functional Programming, Design and Construction, Western Region, Public Works Canada, Edmonton	420-3157	Construction in Inuvik area

Individual	Main Employment Position or Involvement	Telephone	Main Subject Area Discussed
Barry Clarkson	Principal, Samuel Hearne High School	979-2811	Recreation use and interpretive potential
Nellie Cournoyea	Committee For Original Peoples Entitlement	979-2740	COPE claims
Peggy Curtis	Town of Inuvik Recreation Coordinator	979-2607	Recreation & general aspects of Inuvik life
Ed Duggan	Regional Superintendent of Education, GNWT	979-7130	Interpretive program potential
Will Dunlop	Head, Lands, Town Planning and and Lands, GNWT, Yellowknife	873-7571	Land use
Gwen Ewan	Psychologist, Chief, Policy and Planning, Dept. of Social Services, GNWT Yellowknife	873-7707	Recreational need satisfaction
Nan Forman Bev Elliot	WAVA - Western Arctic Visitors Association	979-3756	Tourism
Mr. Gaida	owner, Eskimo Inn	979-2801	Tourism
Bob Gamble	Public Involvement Officer, Parks Canada, Yellowknife	873-8477	Existing Federal Parks and current areas of interest
Leon Gattenbein	Maupintour, Lawrence. Kansas, U.S.A.	(913) 843-1211	Guided tours
Dr. Richard Geist	Faculty of Environmental Design, 'University of Calgary International Biological Program member.	(604) 656-2690	International Biological Program Site

Individual	Main Employment Position or Involvement	
Captain Jackson	Operations Officer, Canadian Forces Station	9
Paul Latour	Regional Biologist, Territorial Wildlife Service, Inuvik	9
Dave Lowe	Top of the World Sportsman Association	9
Anne Marie, Margaret	Mack Travel	9
Kevin McCormick	Habitat Biologist, CWS, Yellowknife	8
Troy McKerral	Inuvik Coastal Airways	9
Dr. A.H. McPherson	Regional Director General, Western and Northern Region, Environment Canada	4
John Marko	Director, Air Services Analysis Branch, Air Transport Committee, Ottawa	(
Al Molky	Public Affairs Officer, MOT, Edmonton	4
John Murray	Horizon Holidays, Toronto, Ontario	(
Dave and Sylvia Musselwhite	Organizers, Inuvik Cross Country Ski Club	9

Individual	Main Employment Position or Involvement	I
Ed Ness	Alberta Wheat Pool, Calgary	2
Danny Norris	Acting Regional Director, GNWT	9
Dwight Noseworthy	Executive Director, Aboriginal Rights and Constitutional Development, GNWT, Yellowknife	9
Don Patterson	Manager, Husky Stationery	9
	Informed Recreationalist	
Monika Pieper	Social Services, GNWT	9
Frank Pielak	Regional Tourism Officer, Econ. Dev. and Tourism, GNWT	9
Sam Ransom	Resource Development Officer Renewable Resources, GNWT	9
Dave Rayko	Acting Airport Manager (Maintenance Foreman), MOT, Inuvik	9
Father Reyunt	Administrator, Grollier Hall	9
Boyce Rice	Chairman, First Inuvik Scout Group	9
George Roach	Manager, Delta Trading and Outfitting Co., Commanding Officer, Inuvik Cadets	9

Individual	Main Employment Position or Involvement	Telephone	Main Subject Area Discussed
Gordon Robertson	Manager, East Three	979-3111	Recreation and Tourism ,
Len Sambell	Staff Vice-President, PWA, Calgary	261-7760	Inuvik Airport, PWA statistics
Tony Scheiwiller	Manager, Finto Motor Inn	979-2647	Tourism
Agnes Semmler	President, Hunters and Trappers Association	979-2575	Hunting and trapping
Peter Seage	Consultant and Expediter, President, Lions Den	979-2007	Recreation
Vince Sharpe	Manager, Happy Valley Town of Inuvik Campsite	979-3896	Camping, boat charters, tourism
Gord Sperling	Principal, Alexander Mackenzie Public School	979-2839	Recreation use, interpretive potential
Jean Sproule	Land Administrator, DIAND, Yellowknife	920-8171	Leases, land use permits
Larry Springgay	Manager, Midnite Arctic Tours	979-2333	Tourism
Pat Stevenson	Majestic Tours, Edmonton	429-0352	Guided tours
Dave Sullivan	Manager, RDR Sports	979-3102	Snowmobiling
Veronica Tatbault	De West Tours, Vancouver	(604) 684-5155	Guided tours

Main Employment Position or Involvement	Telephone	Main Subject Area Discussed
Manager, Inuvik Marina	979-3482	Tourism, boating aspects
Part owner, Inuvik Inn	979-2631	Tourism
Executive Director, Ingamo Hall Friendship Centre	979-2166	Recreation use, interpretive program potential
Archivist, Prince of Wales Northern Heritage Centre, GNWT, Yellowknife	873-7657	Historical associations
Officer in Charge, Water Survey of Canada	979-2621	Hydrographic aspects
Wildlife Officer, Area Wildlife Office, Renewable Resources, GNWT	979-7247/ 7232	Hunting and wildlife

APPENDICES 2

BIBLIOGRAPHY

Beckel, D. K. B., (Editor) , 1975: IBP Ecological Sites in Subarctic Canada. Areas Recommended as Ecological Sites in Region 10, Yukon' and Northwest Territories Boreal Forest to the Treeline, University of Lethbridge, Production Services, Lethbridge, Alberta.

. ...1975. Application to the Minister of Indian and Northern Affairs for Dolomite Lake - Campbell Lake Ecological Site (mimeographed) . Includes background correspondence, support description material and field chart sheets.

Crowe, R.B. 1976: A Climate Classification of the N.W.T. for Recreation and Tourism, Project 25, Meteorological Application Branch, Atmospheric Environment Toronto.

Explorers' Guide, 1981, TravelArctic, G.N.W.T.

Highlights of Tourism Surveys, 1980, AKAY Tourism Consulting

Inuvik Region Package Tour Survey, June - August, 1980, AKAY Tourism Consulting.

Inuvik Region, 1980 Auto Survey, Final Results and Analysis, A. Kaylo, AKAY Tourism Consulting, Inuvik, N.W.T.

Jensen, Christensen, 1979: A Preliminary Proposal to Establish Recreational Areas in the Campbell/Chitsi Lake Region, Department of Economic Development and Tourism, Inuvik Region, Government of the Northwest Territories. (mimeographed)

. . ...1976. Land Use Information Series Aklavik Map Sheets Northwest Territories, District of Mackenzie, Scale 1:50,000 prepared by the Department of Indian and Northern Affairs for the Department of the Environment, Ottawa.

Mackay, J.R., 1963, The Mackenzie Delta Area, NUT, Miscellaneous Report 23, Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa

NWT Data Book, 1981, M. Devine and D. Wood, Outcrop Ltd., Yellowknife, N.W.T.

. . ...1979. Regional Analysis of Natural Region 10, The Mackenzie Delta, Area Identification Group, Park System Planning Division, Parks Canada, Ottawa.

Ritchie, J.C., 1976: The Campbell/Dolomite Upland Near Inuvik Northwest Territories, A Unique Scientific Resource, Paper presented to the National Research Council of Canada, Ottawa.

Tyles, J.G. & Rampton, V.N., 1971, Surface Geology and Landforms, Aklavik Map Sheet 107B produced for the Department of Indian & Northern Affairs by Department of Energy, Mines & Resources as part of the Environmental Social Program Task Force on Northen Oil Development

. . . .1972. Terrain Classification and Sensitivity Series to Accompany Map Sheet 107B, produced for the Department of Indian & Northern Affairs for the Department of Energy, Mines & Resources as part of the Environmental Social Program Task Force on Northern Oil Development

Windsor, J and Gill, A., 1975: A Proposal to Establish the Campbell Lake Hills National Wildlife Area Northwest Territories, Canadian Wildlife Service, Edmonton.

Windsor, J., 1976: A Conceptual Management Plan for the' Proposed Campbell Lake Hills National Wildlife Area, preliminary Draft, Canadian Wildlife Service, Edmonton.

Young, F.C., 1978, Geological and Geographical Guide to the Mackenzie Delta Area, Canadian Society of Petroleum Geologists, Calgary, Alberta

. . . .1981. Geology Aklavik District of Mackenzie Map 1517A, Geological Survey of Canada, Department of Energy Mines & Resources

Zoltai, S.C. & Pettapiece, W.W., 1973, Studies in Vegetation Landform and Permafrost in the Mackenzie Valley: Terrain, Vegetation and Permafrost Relationships in the Northern Part of the Mackenzie Valley and Northern Yukon, Environmental - Social Committee on Northern Pipelines, Task Force on Northern Oil Development, Report No'. 73-4,-Information Canada Catalogue No. R72 - 7773'.

.....1974 - Vegetation Types of the Mackenzie Corridor and Appendix I Maps Showing Vegetation Types of the Lower Mackenzie and Yukon Corridors, Forest Management Institute, Canadian Forestry Service. Environment Canada. Ottawa. Information Canada Catalogue NO. R72-9073. "