

LEGISLATIVE ASSEMBLY OF THE  
NORTHWEST TERRITORIES  
8<sup>TH</sup> ASSEMBLY, 67<sup>TH</sup> SESSION

TABLED DOCUMENT NO. 31-67

TABLED ON March 29, 1979

T.D. 31-67

Tabled March 29, 1979

DEMPSTER HIGHWAY  
INTERIM MANAGEMENT PLAN  
NOVEMBER 16, 1978

Prepared by:

The Dempster Highway Working Group

Government of Yukon/  
Government of Northwest Territories

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## Summary of Interim Management Recommendations

1. That with respect to land use and disposition, the Dempster Highway Corridor, for a distance of 8 kilometres either side of the centre line of the Highway and from mile Km 0 to Inuvik, be declared a "development area" under the respective territorial Area Development Ordinances. It is further recommended that a block land transfer of the Dempster Corridor from the federal to the territorial governments, making the corridor Commissioner's land, be investigated as the long-term approach.
2. That spur road development be regulated through a permit system under the Area Development Ordinance.
3. That off road vehicle use be allowed within the Dempster Corridor by permit only.
4. That the discharge of firearms within the Dempster Corridor be prohibited within the Dempster Corridor from kilometre 67 to the Yukon/N.W.T. border. In addition, that the pros and cons of having barren ground caribou declared endangered in Yukon be further investigated and that a program of consultation, public relations and education be initiated in the communities affected.
5. That with respect to the summer management period, 30 May to 15 October, promotion of the Dempster Highway be limited to providing information on road conditions and availability of facilities and services.
6. That with respect to the winter management period, 30 November to 15 April, the Highway be closed for the winter of 1978/79 from Km 29 to the Peel River Crossing but that the Commissioner may issue a permit for use of the highway under special conditions.
7. That with respect to the spring and fall caribou migration period, 15 October to 30 November and 15 April to 30 May, the Highway be closed from Km 29 to the Peel River Crossing but that the Commissioner may issue a special permit for use of the highway under special conditions.

## Introduction

The Dempster Highway is being constructed by the Federal Department of Public Works for the Department of Indian and Northern Affairs and is subsequently being turned over in stages to the Governments of Yukon and the Northwest Territories for maintenance of the route and for management of the complete highway corridor. Transfer of final segments of the highway are expected to be made upon completion of the highway in September, 1979.

The completion and management of the highway have been the subjects

of much discussion among businessmen, conservation groups, communities and representatives of government agencies. Each of these groups has different reasons for supporting the adoption of a particular management policy, however, one point which most agree on, is the lack of information presently available from which potential benefits, costs and social and environmental impacts of the completed highway can be determined.

It is the aim of the Governments of Yukon and the Northwest Territories to develop a long-term management policy for the Dempster corridor which considers all forms of land and resource use and which guides development in adjacent areas. It is necessary at this point to deal with existing use of the corridor on an interim basis until sufficient data and information are available to allow rational decisions with respect to a more comprehensive, long-term management policy.

The purpose of this report is to present and rationalize, within the data limitations, interim management alternatives.

#### Establishment of the Dempster Highway Planning Committee

Recognizing the need to develop a comprehensive management plan for the Dempster Highway following its completion, the Yukon Government made a commitment during the Lysyk inquiry to establish a working group to coordinate interim management guidelines and to prepare long-term management policy.

This group was formed in November 1977 and contact was made with officials of the NWTG. Following an initial meeting with NWTG representatives, a formal joint Dempster Highway Planning Committee was formed this spring, consisting of four representatives from each territorial government. The terms of reference for this committee are as follows:

The YTG/NWTG Dempster Highway Planning Committee recognizing:

- (a) the YTG/NWTG interest in protecting the Porcupine caribou herd and other natural resources along the Dempster Highway Corridor, and
- (b) the NWTG interest in providing continued road access to the Mackenzie Delta Communities.

The Planning Committee will:

1. Objectively analyse existing data and information and prepare a proposed interim management plan for the highway corridor by September 30, 1978.
2. Identify information requirements and propose research projects needed for development of a long-term management plan.

3. Liaise with other organizations and/or agencies conducting research throughout the corridor.
4. Determine management responsibilities in order to achieve the kind and level of management desired.
5. Prepare a comprehensive, long-term management plan by September 30, 1982.

### Background

The original impetus for construction of the Dempster Highway arose in the late 1950's and early 1960's, at which time it was the policy of the Federal Government "to encourage the economic development of the Yukon and Northwest Territories by constructing a network of permanent roads connecting existing communities and leading to specific resource developments and areas of promising resource potential." Specifically, the Dempster Highway was to provide access to the Eagle Plains and Peel Plateau areas, which were described as "highly mineralized" and having what "could be the greatest reservoir of oil on this continent..." Long-term goals of the road were to provide access to Mackenzie Delta communities, and Old Crow. The residents of the latter community have subsequently decided against such access to their village and as a result none was provided.

The Dempster Highway began as a winter tractor trail built in the winter of 1954-55 on behalf of Conwest Exploration Co. Ltd. When the Conservative government came to power in 1957, the decision was made to construct a permanent, all-weather road to the Arctic Coast under the "Road to Resources" program.

Although construction has been interrupted by shifting federal government policy since that time, the road has advanced steadily on its prescribed course as follows:

<u>LOCATIONS</u>	<u>YEAR COMPLETED</u>	
Km 0 - 72	Approaching North Fork Pass	1960
Km 72 - 126	To Chapman Lake	1962
Km 126 - 198	Chapman Lake to Ogilvie River	1970
Ogilvie River Bridge		1972
Km 198 - 267	Ogilvie River to Eagle Plain	1972
Km 267 - 287	Eagle Plain	1973
Km 554 - 610	Ft. McPherson to Arctic Red River	1973
Km 675 - 736	Mackenzie Hwy. Jct. to Inuvik	1975

<u>LOCATIONS (Cont'd.)</u>	<u>YEAR COMPLETED</u>
Km 287 - 382	Eagle Plain to Eagle River 1976
Km 610 - 675	Arctic Red River to Mackenzie Hwy. Junction 1976
Eagle River Bridge	1977
Km 382 - 409	Eagle River North 1977
Km 467 - 554	YT/NWT border to Ft. McPherson 1977
Km 409 - 431	To Rock River 1978
Km 431 - 467	Rock River to YT/NWT border 1978

The first section of the road (Km 40 - 126) is currently being reconstructed to bring it up to the standard used in the remaining portion. The entire highway is expected to be open to traffic in September 1979.

Construction contracting has been by public tender with the exception of the two bridges which were built by the Department of National Defence. On completion of a contract, the section of road is handed over to the Territorial Government for maintenance under the Engineering Services Agreement. Under this agreement, maintenance costs are shared with IAND paying 85% and YTG paying 15%.

Turnover to the Territorial Governments of the final section from Rock River to Peel River is not expected until September 1, 1979.

#### Physical Description

The Dempster Highway junction with the Klondike Highway (Km 0) is 40 Km east of Dawson City. The completed road will be of 8 metre width, properly aligned and built to all-weather standards. The load-limiting factor is bridging, which will permit travel by 5-axle rigs of 37,649 kilograms GVW, which is the same as for the Alaska Highway.

Construction has had to contend with permafrost for nearly the entire length of the road, resulting in the extensive use of gravel and rock pads. Terrain varies throughout the length of the road. The first 72 kilometres lie in the wooded south-facing slopes of the North Klondike River Valley. The road then climbs across the height of land of the Ogilvie Mountains in sub-alpine meadows to the valleys of the Ogilvie River at Km 198. The road ascends again at Km 250 to the barren ridge tops of the Peel Plateau, and from there travels north eastward across the eastern edge of Eagle Plains to the Richardson Mountains, the boundary

between Yukon and Northwest Territories. East of the Richardsons, it descends to the low-lying delta at Fort McPherson, then proceeds through Arctic Red River to meet the Mackenzie Highway eight miles south of Inuvik.

There are no communities or commercial facilities along the entire route of the Dempster Highway in Yukon. A commercial lodge and filling station exists at the Klondike Highway intersection. The next community is Fort McPherson, NWT, at Km 554. Some key points along the route of the Highway are listed below and are shown on Figure 1.

Km 0	Klondike Lodge - commercial travel facilities
Km 66	Klondike YTG Highway maintenance camp
Km 72	YTG Tombstone Mountain campground
Km 126	Emergency airstrip
Km 163	Emergency airstrip
Km 198	Ogilvie YTG Highway maintenance camp and G.A. Jeckell Bridge across the Ogilvie River; emergency gasoline available to the public; temporary YTG campground
Km 242	Emergency airstrip
Km 288	Temporary Highway maintenance camp - to be taken out of service when facilities at Km 372. are completed.
Km 328	Emergency airstrip
Km 372	Eagle Plain: a Highway maintenance camp and commercial travel facilities will be located here by November 1978
Km 466	Yukon/Northwest Territories boundary
Km 554	Fort McPherson
Km 671	Intersection with the Mackenzie Highway - 61 kilometres south of Inuvik

#### Legislation and Policy

In the development of an effective management plan for the Dempster Highway, the Yukon and Northwest Territorial Governments will make use of existing territorial and federal legislation which provides the Territorial Governments with the statutory authority to establish regulatory mechanisms to control traffic, hunting and development along highway corridors and permits the imposition of necessary restrictions.

Section 46(c) of the Yukon Act gives to the Commissioner-in-Council the right to maintain, control and regulate the use of roads in the Territory. All public roads and their rights-of-way are subject to the control of the Territorial Government and the right to legislate respecting these roads and, in relation to ancillary uses of public roads in the Yukon, is vested in the Commissioner-in-Council.



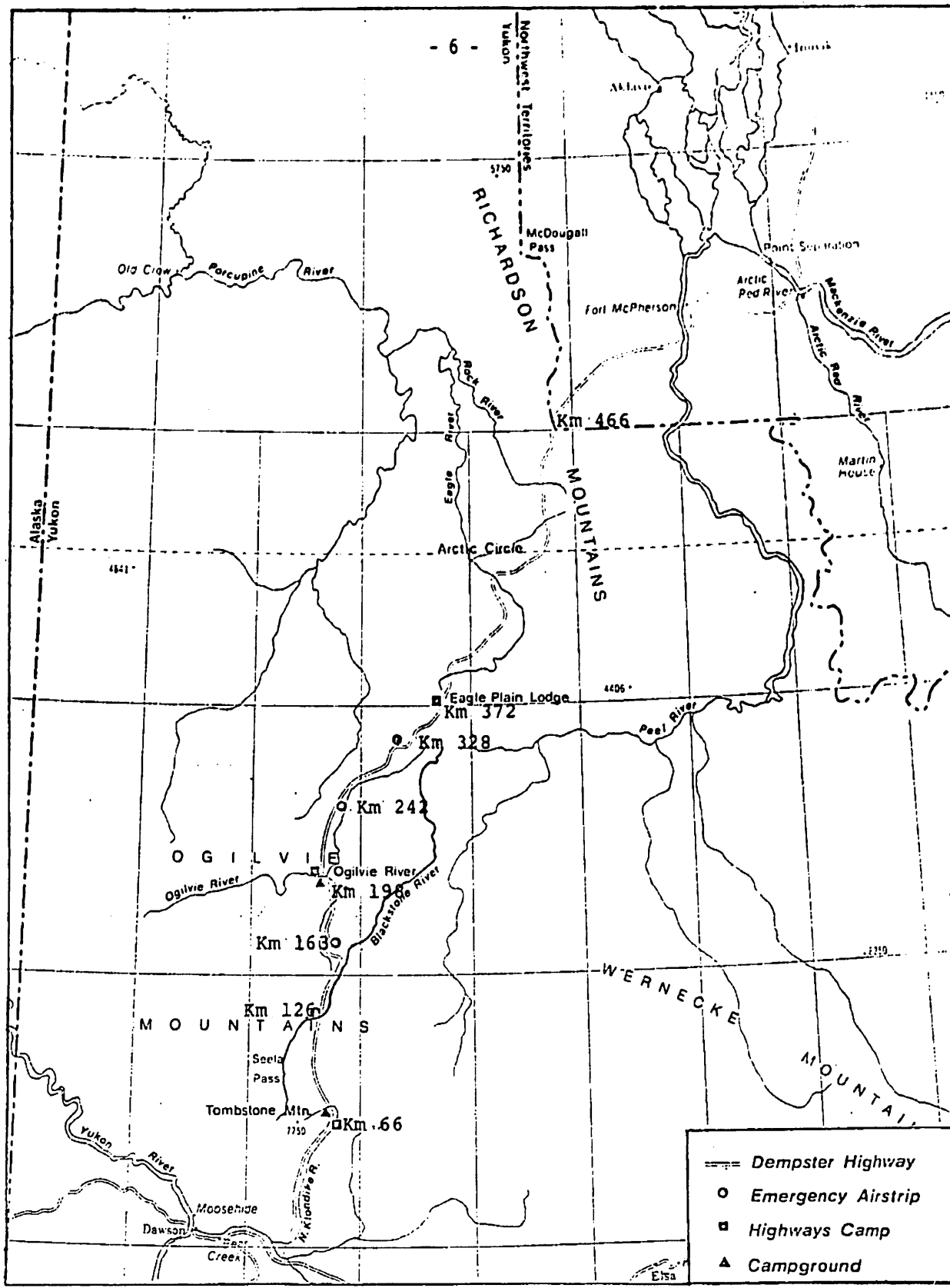


Figure 1. Existing facilities along the Dempster Highway.

The legislative control in respect of highways is vested in the Commissioner-in-Council and has been exercised by enactment of the Highways Ordinance. By virtue of the legislative authority contained in section 46(c) of the (federal) Yukon Act and in the (territorial) Highways Ordinance, the Yukon Government has full jurisdictional authority over all highways in Yukon and the management and regulation of such highways, including the control of the establishment of access roads.

Under the (federal) Territorial Lands Act, all lands in Yukon, except land in municipalities, organized areas and in areas where land has been transferred to the Territorial Government for specific purposes, is under federal jurisdiction. To prevent the proliferation of uncontrolled development along remote highways, the Federal Department of Indian and Northern Affairs implemented a policy in 1975 which effectively gives the Yukon Government the authority to control all development along a remote highway such as the Dempster. This federal policy states in part: (see details Appendix V).

- (a) Transfers of Federal land along highways in remote areas of the Yukon for government-based services will be restricted to the Territorial Government.
- (b) At such sites the Territorial Government will in future have direct responsibility for the provision of all required facilities. Such facilities will include those installations required for the maintenance of the roads and for other Territorial purposes, those required by Federal government departments and agencies and, where necessary at these locations, those services which would be provided normally by the private sector, for example, service stations, accommodation and so on.
- (c) The disposition of lands for private services and facilities at locations other than highway maintenance camps will be subject to zoning regulations and other criteria as established by the Territorial Governments.

Development along the Dempster Highway can also be controlled under the respective Territorial Area Development Ordinances which enable the governments to designate the corridor, as a "development area". The prime intent of the Area Development Ordinance is to enable municipal rules to be imposed in an area of Crown land where development is foreseen but where there is not an adequate regulating mechanism to control matters such as: zoning, fire protection, erection of billboards, public health, keeping of domestic animals, regulation of building, garbage collection, carrying and discharge of firearms, untidy and unsightly premises, and abandoned vehicles. Regulations are made pursuant to the Area Development Ordinance for each different type of zone

identified, for example, a commercial zone, a hinterland zone and a parks and recreational zone would have different regulations. Regulations under the Area Development Ordinance are applicable to everyone with the exception of the Crown itself, but not excluding lessees of Crown lands. The regulations made pursuant to the Area Development Ordinance are in addition to other applicable regulations such as those under the federal Territorial Lands Act. If and when a municipality is created in the area the orders under the Area Development Ordinance are revoked and the municipality assumes legitimate functions and substitutes bylaws in their place. The area traversed by the Dempster Highway is a prime target for designation as a development area.

The Area Development Ordinance states in part:

2. (1) In this Ordinance "development area" means an area designated as such by the Commissioner.
3. (1) The Commissioner may designate as a development area any area in the Territory where he considers that it will be necessary in the public interest to regulate the orderly development of such area as contemplated by this Ordinance.
4. (1) The Commissioner may make regulations for the orderly development of a development area respecting
  - (a) the zoning of the area, including the allocation of land in the area for agricultural, residential, business, industrial, educational, public or other purposes;
  - (b) the regulation or prohibition of the erection, maintenance, alteration, repair or removal of buildings;
  - (c) streets, roads, lanes, sidewalks, parks, street lighting and street transit;
  - (d) public health, including the supply, treatment and purification of water, the collection and disposal of garbage and other sewage, hospitals, and the burial of destitute persons;
  - (e) fire protection;
  - (f) animals;
  - (g) the regulation or the prohibition of the discharge of guns or other firearms within a development area.

Other pieces of legislation which will be used in Yukon in developing a highway management plan are the Game Ordinance and the Motor Vehicle Ordinance.

In the Northwest Territories enabling legislation is:

The Northwest Territories Act

An Ordinance Respecting Public Highways

An Ordinance Respecting the Preservation of Game

An Ordinance to Provide for the Orderly Development of Unorganized Areas

An Ordinance Respecting Travel, Tourist Establishments and Outdoor Recreation

Other Ordinances which may also be applicable to the management of the Dempster include:

An Ordinance to Provide for the Protection of the Environment of the Northwest Territories

An Ordinance Respecting Parks in the Northwest Territories

#### Interim Management Issues

Several preliminary studies have been conducted or are ongoing in the Dempster region (Appendix I & II), however, deficiencies in basic data, including inventory information, still exist and these (Appendix III) must be corrected before an effective and comprehensive long-term management plan can be prepared for the Dempster Highway. The aim of the Interim Management Plan is to regulate activity and development in the 16 kilometre wide Dempster corridor pending preparation and implementation of a long-term plan.

The width of the corridor was set at 16 kilometres, for the interim management period, based primarily on wildlife concerns, especially visibility of caribou and sheep from the highway. The corridor width is to be flexible so that, if studies carried out during the interim period indicate that the corridor should be broadened or narrowed in some places or along the whole length of the highway, this can be done. Thus, the corridor in the final long-term Dempster Highway Management Plan may differ considerably from that identified initially and may in fact be of varying width.

In the following section, management issues of immediate concern are addressed and alternative interim management positions discussed. Management of the Highway has been divided into three management periods, based primarily on the concern expressed for the Porcupine caribou herd: summer, winter and migration seasons. Issues which are of equal concern in all three periods are dealt with first, followed by a presentation of seasonal management matters.

The recommendations made in the following section are not all

applicable throughout the corridor from kilometre 0 to Inuvik. For example, it is felt that several of the recommendations contained in the following section are not applicable from kilometre 0 to Km 67 or from the Peel River Crossing to Inuvik. These exceptions are noted.

Year Round Management Concerns

1. Land Use and Disposition

Foothills Pipe Lines Ltd. is currently conducting an inventory of existing and potential land uses in the Dempster corridor. Available information indicates that there is little existing land use activity along the Highway. There are two outfitting areas with associated facilities and livestock and most of the region is divided up into registered traplines. Department of Highways facilities and emergency airstrips, as described under the heading Physical Description of the Highway, are the only other major existing facilities. Aquitaine Company of Canada Ltd., an oil exploration company, has been working on the Eagle Plain for a number of years. Squatting is the only apparent existing land use problem, with some individuals living in the area year round and others having built "summer homes". Regulations are essential to ensure proper planning and orderly development of the corridor area. Under the (federal) Territorial Lands Act, all lands in Yukon, except land in municipalities, organized areas and areas which have been transferred to the Territorial Government for specific purposes are under federal jurisdiction, including the land within the Dempster Highway corridor beyond the 91 metre highway right-of-way. Use and disposition of federal land is administered in Yukon and the NWT by DIAND. YTG and NWTG serve in an advisory capacity on the respective Federal Territorial Lands Advisory Committees and the Federal Territorial Land Use Advisory Committees. As previously discussed, to prevent the proliferation of uncontrolled development along remote highways, the Federal Department of Indian and Northern Affairs implemented a policy in 1975 which effectively gave the Yukon Government the authority to control all development along a remote highway such as the Dempster. The fact remains, however, that the land outside the narrow highway right-of-way is Crown Land and is under federal cooperation. Cooperation and coordination of land use permits is obtained in the NWT through the Federal Territorial Land Use Committee. Highways permits are referred to this committee as a matter of course.

The Territorial Governments could guarantee themselves control over the orderly development of the Dempster corridor by applying the Area Development Ordinance. The Ordinance is intended to be applied in just such a case as this, where development is anticipated but where there are no regulations to control it and it is in the public interest to ensure that adequate regulations are in place.

A case similar to that of the Dempster Highway exists in the NWT where the Mackenzie Highway corridor has been designated a development area under the Area Development Ordinance. The corridor incorporates the land for four miles either side of the Highway and the same regulations apply throughout. The regulations state that:

"No person shall, except with the permission in writing of an Area Control Officer,

- (a) cut or remove any trees;
- (b) erect, remove or alter any building or structure;
- (c) make any excavation or disturb the surface of the ground; or
- (d) pitch a tent or establish any camp."

Interim management alternatives with respect to land use and disposition are:

- (1) to maintain the status quo. As long as DIAND's policy regarding control of development along remote highways remains in effect, it puts YTG in a good position to direct land disposition along the Dempster Highway. How wide a corridor they may control is not stated. However, as YTG and NWTG only function in an advisory capacity on land use issues within the corridor, they have no direct control over land use activities. There are provisions in the Highways Ordinance through which the territorial governments could regulate some land use activities on federal lands adjacent to the Highway, such as regulations in relation to spur road development and all-terrain vehicles. In addition, there are matters of a municipal nature which are not covered by any legislation in the Dempster corridor at present.
- (2) to declare the Dempster Highway corridor, for a distance of 8 Km. on either side of the center line of the Highway, as a development area under the Area Development Ordinance. This alternative places the Territorial Governments in a position to control development within the Dempster corridor. They may freeze further development pending proper inventories and land use planning and permit only developments which are approved by the Planning Committee during the interim period. Regulations under the Area Development Ordinance could be amended, cancelled or added to as necessary following comprehensive planning.
- (3) to request a block land transfer of the Dempster corridor land from the federal government to the respective Commissioners so that the corridor then becomes Commissioner's lands. This transfer would allow

the territorial governments complete authority over the area in question. In this case, the federal government requires that the need for a block transfer be demonstrated, which may be difficult given the amount of legislative control YTG and NWTG already have over the area. In addition, this alternative is more suitable as a long-term solution than an interim management alternative because it remains to be determined, during the interim period, what the optimum corridor width is and whether the corridor should be wider in some places than in others.

### Recommendation

That alternative (2) be adopted for the interim management period and that alternative (3) be considered as the long-term approach. It is also recommended that the federal government be approached concerning the immediate initiation of a joint federal-territorial land use planning study.

Matters closely related to land use and disposition but requiring individual attention are spur roads and off road vehicle use.

### 2. Spur Roads

A few spur roads have already sprung up along completed sections of the Dempster Highway, some of which were legally established by mineral and oil exploration companies and some of which were illegally developed by squatters. Potential negative impacts of spur road development include: terrain and habitat destruction; increased access to backcountry areas by hunters; and, harassment of wildlife by spur road users. Both Territorial Governments have full jurisdictional authority over all highways including control over development of access roads. Section 12(6) of the Yukon Highways Ordinance states in part that "No person shall construct or maintain a means of access to or from a Territorial Highway unless a permit authorizes the construction, maintenance and use thereof as a means of access". In addition, if the Dempster Highway corridor is designated as a development area under the Area Development Ordinance, the Commissioner may make regulations respecting roads and allocation of land.

Interim management alternatives with respect to establishment of spur roads are:

- (1) to suspend all spur road development. This alternative would allow time to carry out proper land use planning for the Dempster corridor; however, it could also force the shut-down of ongoing activities in the area, most notably Aquitaine Co. of Canada Ltd.'s exploration work.
- (2) to maintain the status quo with the proviso that the Department of Highways seeks advice from the Dempster

Highway Planning Committee before issuing any permits for development of spur roads off the Dempster Highway. This alternative would permit existing activity in the area to continue and could provide an effective mechanism for controlling establishment of additional access roads.

- (3) to regulate spur road development through a permit system under the Area Development Ordinance. This alternative would require the designation of the Dempster corridor as a development area and regulations requiring a permit for development of a spur road. Advice would be sought from the Dempster Highway Planning Committee on issuance and terms and conditions of permits.
- (4) to permit uncontrolled spur road development. A proliferation of spur roads in the hinterlands adjacent to the Dempster Highway would greatly increase the area over which impacts of the transportation corridor are felt. Detrimental effects on wildlife could include direct loss through increased hunting pressure and indirect loss through unwitting disturbance, harassment and habitat destruction. Negative socio-economic impacts resulting from loss of wildlife would be felt by native people who are dependent on this resource.

#### Recommendation

That alternative (3) be adopted and that it be put in effect from kilometre 67 to the Peel River Crossing.

### 3. Off Road Vehicle Use\*

Indiscriminate off road vehicle use within the Highway corridor could result in terrain and habitat destruction and harassment of wildlife. Although it is difficult to predict the amount of off road vehicle traffic in the Dempster area, if uncontrolled, it could have a considerable negative impact. There are individuals such as trappers and outfitters who use all terrain vehicles during the normal course of their work and these people must not be discriminated against.

Off road vehicle use is not covered by the federal Territorial Land Use Regulations which only require permits for operation of vehicles that exceed 5 t in weight or that exert pressure on the ground in excess of 35 kilopascals. However, it would be possible to regulate their use in Yukon through provisions in the Highways Ordinance and the Game Ordinance which deal with closure of access to highways and harassment of wildlife with a vehicle. Section 12 of the Highways Ordinance states:

12. (1) The Commissioner may designate any Territorial

\*"Vehicle" is defined as conveyance of any kind other than a boat, aircraft or helicopter, without restricting the generality of the foregoing, includes a carriage, rig, wagon, car, sleigh, hayrack, bicycle, motorcycle, automobile, tractor, snowmobile and all-terrain vehicle.



Highway or any portion thereof as a controlled access highway.

- (2) Where, on a controlled access highway, there is a sign indicating a location at which vehicles are permitted to enter, no person shall drive a vehicle onto the highway except at that location.
- (3) Where on a controlled access highway there is a sign indicating a location at which vehicles are permitted to leave, no person shall drive a vehicle from the highway except at that location.
- (4) The Commissioner may in accordance with the regulations close
  - (a) any highway providing access to or from a Territorial Highway, or
  - (b) any means of access between a Territorial Highway and land adjacent to the highway.

The Yukon Game Ordinance states:

- 8.(2) No person shall operate a vehicle at any time in any manner intended or reasonably to be expected to harass, drive or pursue any game or other animal wild by nature.

Regulation of off road vehicle use is covered in the NWT by the Public Highways, Motor Vehicles and Game Ordinances.

The Area Development Ordinances are also applicable here. They state that the Commissioners may make regulations respecting the allocation of land for virtually any purpose.

Interim management alternatives with respect to off road vehicle use are:

- (1) Allow uncontrolled off road vehicle use of the Dempster corridor.

Harassment of wildlife by off road vehicles could lead to subsequent avoidance of the area by the animals. Terrain and habitat destruction, aside from being aesthetically displeasing to highway users, if it is substantial, could reduce the carrying capacity of the range. Loss of winter range would ultimately lead to a reduction in the size of the caribou population.

- (2) Prohibit "recreational" (to be clearly defined) off road vehicle use within the Dempster corridor. This

alternative would effectively restrict use of off road vehicles to people who rely on them for work. Although there is no legislation, either federal or territorial, which specifically provides for control of off road vehicles of less than five tons, there are provisions as noted above in the Highways and Area Development Ordinance for regulation of their use. However, it is not the intention of the controlled access regulations in the Highways Ordinance to deal with off road vehicles. The intention is rather to ensure an orderly flow of traffic by designation access and egress from a Highway. As off road vehicle use is land use, it would be dealt with more properly under the Area Development Ordinance. A precedent for this type of control was set when controls were put on operation of motor vessels on McLean Lake in Yukon.

- (3) allow off road vehicle use within the Dempster corridor by permit only. A permit system would make it possible to consider each case individually and to control the total number of off road vehicles using the area. In addition, terms and conditions of use of the off road vehicles could be put on the permits. If this alternative were selected either new regulations would have to be incorporated into the Highways Ordinance or regulations would have to be made under the Area Development Ordinance. In addition, in either case a permit issuing body would have to be established. Another possibility would be to suggest to the federal government that they address off road vehicle use in the land use regulations. If the land use regulations were amended so as to require permits for the operation of off road vehicles under five tons, the end result would be the same except that off road vehicle control would become a federal responsibility.

#### Recommendation

That alternative (3) be adopted for the interim management period and that it be put in effect from kilometre 67 to the Peel River Crossing.

#### 4. Regulation of Hunting

Potential negative impacts of hunting within the highway corridor include overhunting of several species, most particularly caribou, but also sheep, grizzly bears and moose. The alteration of the behaviour and movements of wildlife, especially caribou, resulting from shooting in the vicinity of the highway are considered as potentially adverse effects.

The Yukon Act and the Game Ordinance give the Yukon Territorial

Government jurisdictional authority over game. Similarly, jurisdiction in the NWT comes from the NWT Act and Game Ordinance. The authority to regulate harvests in both territories is subject to sections of the Yukon Act and the NWT Act which guarantee Indians and Eskimos unrestricted hunting on unoccupied Crown Lands. Existing hunting regulations in Yukon include a closure of sport hunting for sheep in Game Management Zone I, which includes the Dempster Highway from approximately kilometre 288 to the NWT border. In addition, all sport hunting has been prohibited from 15 October to 31 October within a five-mile corridor on either side of the Dempster Highway starting from kilometre 67 (the Highway Maintenance Camp) and extending to the NWT border. The NWTG does not have the authority to create zones under their present Game Ordinance. Both Territorial Governments have the legislation to declare a species of wildlife endangered. The NWTG has declared barren ground caribou endangered and may, therefore, regulate all hunting of the species in the NWT as management requirements dictate. This puts the NWTG in a better position to manage caribou than the YTG which has not declared caribou endangered in Yukon and, therefore, cannot regulate all harvests if deemed necessary. Aside from caribou, the two territorial governments are in similar positions with respect to management of the other species of concern.

There are two active big game outfitting areas traversed by the Dempster Highway in Yukon - one extending from kilometre 0 to Chapman Lake and the other from Chapman Lake to approximately kilometre 298. The hunting closure in effect from 15 to 30 October does not affect these outfitting businesses as they are only in operation until about 15 September.

Interim management alternatives with respect to the regulation of hunting along the Dempster Highway are:

- (1) to open hunting to everyone. This alternative could lead to the rapid demise of the Porcupine caribou herd as well as a number of other wildlife species, including sheep, moose and grizzly bears, because of the ease of access to prime range. Consequent negative socio-economic, political and environmental impacts could be serious and far-reaching.
- (2) to maintain the status quo. Although the existing 15 October to 31 October hunting closure effectively protects the caribou from sport hunting in most years because the animals do not return to the area until after 15 October, it does not provide adequate protection for sheep, moose and grizzly bears, and it does not affect hunting by natives. If the road is eventually to be promoted as a tourist route based on its unique wilderness qualities, efforts should be made to maintain viable wildlife populations along it. A consistent approach to wildlife management should be considered on both sides of the border.

- (3) to close hunting on a year round basis within the 16 kilometre wide Dempster Highway corridor. This alternative could insure the continuation of wildlife populations along the Dempster Highway if it could be made applicable to all segments of the population, thereby enhancing the area as a tourist attraction. The outfitters operating along the Dempster Highway would be adversely affected by a no hunting corridor.
- (4) to declare barren ground caribou endangered in Yukon. This alternative would permit the greatest latitude for management of the Porcupine Caribou Herd, including the ability to control presently unregulated harvests in Yukon. This may be a promising course of action with respect to the continued survival of the Herd. However, it may be difficult to do and it will probably take some time to accomplish, therefore, this alternative could not constitute part of the interim management plan. Furthermore, this alternative does not deal with the other species of concern so it could only form a partial solution.
- (5) to prohibit the discharge of firearms within the Dempster corridor under the Area Development Ordinance. This regulation is applied in almost every designated development area in the Yukon. It would effectively control all hunting in the corridor area.

#### Recommendation

That alternative (5) be adopted immediately, that it be put in effect from kilometre 67 to the Yukon/N.W.T. border. and that the pros and cons of having barren ground caribou declared endangered in Yukon as indicated in alternative (4) be further investigated. It is further recommended that a comprehensive consultation, public relations and education program be implemented in the communities affected and that contact be established with the International Caribou Task Force.

#### 5. Normal Operations

It is not the intention of the Management Plan to preempt existing mandates and responsibilities of other departments but to coordinate activities and to fill gaps. It can be assumed that unless a management issue is of special concern and is dealt with in this report, normal highway operation procedures will be followed. Efforts will be made to coordinate the activities of departments on both sides of border where deemed advantageous, for example, game law enforcement, highway maintenance, placement of campgrounds and fire suppression.

### Seasonal Management Concerns

For the purpose of the interim management plan, the dates of each management season, based primarily on caribou movements, are set as follows:

Summer	30 May - 15 October
Fall caribou migration period	15 Oct.- 30 November
Winter	30 Nov.- 15 April
Spring caribou migration period	15 Apr.- 30 May

### Summer Management Period

The Dempster Highway has gone into service section by section, as construction has been completed. The entire highway is now completed but the stretch between the Rock and Peel Rivers requires restoration work and gravelling and a ferry service is needed on the Peel before it can be opened to through traffic. Summer use of the Highway to date has consisted primarily of weekend recreationists from Dawson, highway maintenance and construction related traffic, hunters and some tourists. It is anticipated that once the road is open to through traffic, summer use will be the heaviest and will be comprised largely of tourists. The YTG Department of Tourism roughly estimates a total of 1,000 - 2,000 private vehicles travelling the Dempster Highway in a given summer, plus a few dozen tour buses and commercial and residential traffic to and from the Mackenzie Delta. The YTG Department of Highways' projections of 100 vehicles per day, closely coincide with those of Tourism. Thus, the feeling is that traffic for the first few years that the Dempster is open will be relatively light.

The only existing services and facilities on the Highway in summer are: emergency gas and tire repair at the Highway Maintenance Camp at kilometre 198; and two small campgrounds, one at kilometre 72 and a temporary one at kilometre 198. Complete travel facilities will be available at Eagle Plain Lodge, kilometre 372, which is scheduled to be in operation by 1 February, 1979. In addition, there will be a first aid station and ambulance at the Lodge. Emergency medical evacuations could be carried out by air - aircraft can be called in from Inuvik or Dawson and there are emergency airstrips strategically located along the Highway. The RCMP and Conservation Officers carry out regular patrols along the route. The complete Yukon Highway system is served by a highly sophisticated V.H.F. mobile communication system. The system is an integrated one and is shared by the Yukon Government's Departments of Highways and Game, the RCMP, the Northern Operations Branch of DIAND, and the Department of Fisheries and Environment. The system is

managed and operated by the Territorial Department of Highways and is presently in operation on the Dempster Highway. Yukon and NWT communication networks are linked by telephone.

The YTG Department of Highways believes that the Eagle Plain Lodge and emergency services at kilometre 198, will provide adequate services for some time to come. Facilities for campers and other recreationists are inadequate, however.

Interim management alternatives with respect to summer traffic are:

- (1) promote summer use of the highway. Potential adverse effects of summer traffic, assuming that it consists primarily of recreationists, include habitat destruction, accumulation of garbage and human waste, increased fire hazard, disturbance of nesting raptors, disturbance of sheep on their lambing grounds and the attraction of bears to garbage dumps. Promotion of the Dempster Highway before adequate campground facilities are in place will intensify these negative impacts. Information from the studies described in Appendix III will provide the basis for development of well located and adequately serviced facilities. Once good campgrounds are built and random camping is discouraged, most of the negative impacts of summer use will probably be mitigated.
- (2) to provide information on the Highway with respect to road conditions and availability of facilities and services. This alternative would avoid much of the pressure on the wildlife, land and recreational resources along the Highway. Establishment of two or three temporary campgrounds in Yukon for use during the interim management period would further minimize negative impacts. Care must be taken to avoid placement of interim facilities near critical wildlife sites.
- (3) close Highway to traffic in summer. Although this alternative would obviously negate any potential adverse effects of highway operation it is not felt that such extreme measures are necessary. With proper planning negative impacts of summer use are mitigable.

#### Recommendation

That alternative (2) be adopted for the initial part of the interim management period, that proper, permanent campground facilities be developed as soon as possible and that promotion be undertaken as availability of services and facilities permit, and summer wildlife management programs are implemented. If high priority is given to establishment of facilities and management programs, the Highway could be promoted by the summer of 1980.

### Winter Management Period

The Dempster Highway has not yet been maintained in winter by government. However, in past years a few permits have been issued to private companies allowing them to maintain and use the highway. During the winter of 1977/78 three permits were issued; one to BACM Construction so that they could supply their highway construction camp; one to Aquitaine Co. of Canada Ltd. to use a portion of the road to move an oil rig; and, one to General Enterprise who planned to transport oil rigs out from the Mackenzie Delta but were unable to do so because of lack of snow near the NWT boundary. Thus, winter traffic to date has been comprised primarily of highway maintenance equipment and transport trucks. For reasons of safety it has been common practise for vehicles to travel in convoy on the Highway in winter.

There are no existing services and facilities on the Highway in winter. If the route were maintained in the winter of 1978/79 the Ogilvie Maintenance camp could be kept open and emergency gas and tire repair could be made available. The Eagle Plain Lodge is now expected to be completed and operational by November 15, 1978. There are no plans to develop any more facilities along the Dempster Highway as it is felt that the Eagle Lodge complex will meet demands for several years. The Yukon Department of Highways' winter traffic projections are 30-50 vehicles per day. It is expected that winter traffic would continue to consist primarily of transport trucks and maintenance vehicles.

The Dempster Highway traverses the winter range of the Porcupine Caribou Herd which extends approximately from kilometre 66 to Fort McPherson. Research to date has indicated that there are locations along the route which are of particular importance to the animals and that there is considerable variation from year to year in which parts of the winter range the caribou utilize. Although investigations are incomplete, it is apparent that vehicular and aircraft traffic alter caribou movements and behavior. There is a fear that uncontrolled traffic along the Dempster could lead to a considerable loss of animals as a result of: collision with vehicles by running ahead of them along the Highway; increased vulnerability to natural predators; underutilization of winter range resulting from disruption of normal movements by highway traffic and abandonment of the highway corridor by the caribou (Appendix IV). Researchers are currently studying ways to mitigate the negative impacts of traffic on caribou. They estimate that four more years of investigations are required before they will be in a position to make long-term management recommendations respecting caribou.

It is anticipated that an application will be received from Aquitaine Co. of Canada Ltd. to maintain and use the Dempster

Highway to kilometre 330 during the winter of 1978/79.

There has been no money allocated for maintenance of the Dempster Highway for the winter of 1978/79.

Interim management alternatives with respect to the winter management period are:

- (1) to maintain the Highway and allow traffic to move unrestricted during the winter period. Some of the potential benefits of this alternative are: the possibility of lower freight costs for goods which must now be transported by air to Inuvik; lower winter storage costs for the Mackenzie Delta communities; an alternative mode of transportation for individuals living in communities serviced by the Dempster Highway; the strengthening of Canadian sovereignty in the north; year round surface access to the resources of the Dempster and Mackenzie Delta areas; and, the psychological benefit to residents of Inuvik, Fort McPherson and Arctic Red River of no longer being isolated from the South in winter.

A cost/benefit analysis of winter operation of the Dempster Highway should be conducted so that the many questions pertaining to the economics of the route may be answered. It has not been determined, for example, if truck transport is an economically competitive alternative to summer barging and subsequent storage of goods or if it is an economical alternative for transporting people in winter. Nor has it been determined whether the benefits of this new mode of transportation outweigh the costs of increased road maintenance, the provision of service facilities and a reaction capability to breakdowns and other traffic-related emergencies; the loss of caribou and the potential social impacts on small communities such as Fort McPherson.

Northern roads such as the Dempster Highway do not lend themselves to the classical southern formulae for determining whether or not a highway should be built, or utilized year round. Specific terms of reference for a cost/benefit study of operation of the Dempster Highway must be drawn up and the study undertaken as soon as possible.

Once the Highway has been opened to unrestricted traffic it will be virtually impossible to place controls on it or to close it if it is deemed necessary at a later date.

- (2) to maintain the Highway and institute a traffic control system. A traffic control system could include programs such as staggering traffic, convoying traffic or setting speed limits, if and when deemed necessary on the basis of constant field monitoring of the Highway. The system could provide for closure of the Highway on the recommendations of the Director of Game if he considered such action necessary



in order to avoid a serious negative impact on wildlife. The advantage of this alternative is that management could be directly responsive to changing requirements along the Highway. There is a fundamental problem, however, in that the background information on which to base an effective traffic control system has not yet been collected. It is not known whether staggering, convoying or setting speed limits are effective methods of mitigating the negative impacts of traffic. In addition, a traffic control system would require considerable commitments of money and manpower for the operation of a road which may or may not be of economic benefit. Another disadvantage of this alternative is the difficulties with which road users will have to cope because of the uncertainties in opening and closure of the route.

- (3) to close the highway for the winter of 1978/79 with the exception that the Commissioner may issue a permit for use of the Highway under special conditions. Although this alternative does not circumvent the need for a proper cost/benefit analysis of winter operation of the Highway, advantages are: reduced maintenance costs to the Government; the ability to put terms and conditions on use of the Highway; the ability to control numbers of vehicles and, the ability to fill the important requirement for a low use data base. A new permit issuing system would not have to be established as such a system is already in existence within the Department of Highways.
- (4) to close the Highway in winter during 1978/79. This alternative would negate all the adverse environmental effects of the Highway in winter with the exception of those arising from the physical presence of the road itself. It would allow time to conduct a cost/benefit analysis of winter operation of the road prior to a decision on how best to manage it in winter, and time to gather baseline data from a no-use situation so that a comparison can later be made between a "control" situation and a traffic-impact situation. A negative consequence of this alternative is that it would halt ongoing winter oil exploration activities in the area, and limit construction activities and direct access to the Mackenzie Delta to the summer season.

#### Recommendation

That alternative (3) be adopted for the Highway from kilometre 67 to the Peel River Crossing for the interim management period and that the Department of Highways seek the advice of the Dempster Highway Planning Committee on the issuance and terms and conditions of special permits for winter use of the road. It is further recommended that for the winter of 1978/79

only permit holders be allowed to use the road, and that a cost/benefit analysis of winter operation be initiated as soon as possible. The issue of winter operation should be reviewed and a decision made as to whether a new policy is needed for the winter of 1979/80 based on findings made between now and then.

#### Caribou Migration Management Period

The dates established in the spring and fall caribou migration seasons (15 April to 30 May and 15 October to 30 November) coincide closely with the dates of freeze-up (15 October to 1 December) and break-up (15 April to 15 May) of the Peel and Mackenzie Rivers when through traffic on the Dempster Highway is not possible.

The concern with respect to the Porcupine caribou during migration seasons is that traffic on the Highway could act as a barrier to caribou movements (Appendix IV). The road would thereby effectively cut off access to up to 30% of the animals' traditional winter range. The result would be a decline in the caribou population.

The spring season is also of critical importance to raptors nesting in close proximity to the Highway. Disturbance of the birds by traffic or people on foot at critical times could lead to disruption of normal activities and the risk of desertion of the nest site in subsequent years.

The caribou migration period is outside of the tourist season and at a time when through traffic is not possible, therefore, traffic is expected to consist of highway maintenance vehicles, some local traffic and possibly some oil exploration related traffic.

Interim management alternatives with respect to the caribou migration management period parallel those of the winter period with the exception that through traffic is not an issue. The alternatives are:

- (1) to maintain the Highway and allow traffic to move unrestricted during the migration period. This alternative would allow uncontrolled movement of local traffic which would probably consist of highway maintenance vehicles, vehicles supplying goods to the Eagle Plain Lodge and local recreationists. Traffic would probably be light; however, it would not appear to be essential that local recreationists, at least, use the road at all during these periods. These are critical times for both caribou and raptors and time should be allowed researchers to determine how to minimize the negative impacts of traffic on these species. As with the first alternative in winter management another concern is that once the Highway has been officially opened to unrestricted

traffic in a particular season it will be extremely difficult to place controls on access if such is deemed necessary at a later date.

- (2) to maintain the Highway and institute a traffic control system. As mentioned in the winter management section, a traffic control system could be the most effective way of mitigating negative impacts of traffic because it would have the capability to respond to various situations as they arise. In the case of the migration period, when caribou movements are erratic and unpredictable, if very few animals show up, or raptor nest sites alongside the Highway are unoccupied, the road could be opened to traffic. If wildlife concerns indicated the need for convoying or staggering traffic or some other method of traffic control, this also could be effected. However, as mentioned previously, the background data needed to develop a traffic control system has not yet been obtained and this alternative could be expensive to implement.
- (3) to close the road with the exception that the Commissioner may issue a permit for use of the Highway under special conditions. The advantage of a permit system for spring and fall maintenance and use of the Highway are the same as for the winter period. As with the winter period, a decision must be made as to what type of traffic would be considered. From available information it appears that during the interim management period the only traffic which could be justified would be highway maintenance vehicles, vehicles carrying supplies to and from Eagle Plain Lodge and ongoing oil exploration traffic.

The territorial Departments of Highways may wish to take over maintenance of the road from a permittee sometime during the spring period in preparation for summer season.

- (4) to close the Highway for the caribou migration periods. This alternative would avoid the negative environmental impacts of the operation of the Dempster Highway in spring and fall and would allow time for the necessary research to be conducted in a no-use situation. Negative consequences of a complete closure are: ongoing oil exploration activity in the Dempster area would be halted; Eagle Plain Lodge would find it difficult and expensive to receive supplies; and government highway maintenance would be halted just prior to and immediately following the heaviest traffic season.

#### Recommendation

That alternative (3) be adopted from kilometre 67 to the Peel River Crossing for the interim management period and that the Department of

Highways seek the advice of the Dempster Highway Planning Committee on the issuance and terms and conditions of permits for use of the Dempster Highway during the spring and fall caribou migration periods. It is further recommended that only permit holders be allowed to use the road. An agreement must be reached not to have ferry service available on the Peel River prior to May 30 even if ice conditions would permit river crossings.

### CONCLUSIONS

It should be pointed out that the recommendations have been developed for the interim period and that in some cases the proposed alternatives selected will act as a stepping-stone towards the development of the final Dempster Highway Management Plan. The present proposal has been designed to allow the Dempster Highway Planning Committee maximum flexibility towards its decisions in considering the alternative approaches to the various issues.

The Dempster Highway Working Group expects that the final Highway plan will evolve through a natural development of the interim management proposal by modifying, changing and adapting the proposal as additional information becomes available. Alternatives may become modified also. The recommendations are designed to present the best overall alternative available at this time with the information available.

The Dempster Highway Working Group feels that the best approach to take is to err on the side of caution during the interim period. We do not have adequate information to make hard-and-fast decisions. The proposed alternatives allow for a re-evaluation of the interim management recommendations which is required if the proposal is to be modified.

The Dempster Highway Working Group has prepared this proposal presenting the major issues, background material, management alternatives, and the research needs required for the final Dempster Highway Management Plan. The Dempster Highway Working Group awaits the conclusions and further direction of the Dempster Highway Planning Committee.

Respectfully submitted

THE DEMPSTER HIGHWAY WORKING GROUP

Pia Archibald      Michael Hawkes

Dempster Highway Bibliography

- Associated Engineering Services Ltd., (AESL), 1972. Report of highway design concept, construction and materials, Mackenzie and Dempster Highways, Inuvik Milepost 931, Fort Macpherson - Arctic Red River, Edmonton.
- Alaska Industry, 1973. Dempster Highway. Alaska Industry 5 (2): 34
- Arctic Land Use Research Program. 1971. Final Report, ALUR #1, DIAND, Ottawa.
- ALUR map series.
- Archer, Cathro and Assoc., 1972. Northern Cordillera mineral inventory, Yukon and Northwest Territories, Vol. I-IV and Maps. Whitehorse (up-dated annually, available only by subscription).
- Banfield, A.W.F., 1972. Northern ecology, pipelines and highways. Nature Canada 1(2): 14-16.
- Beak Consultants Ltd., 1977. Preliminary environmental overview for alternate gas pipeline routes - Fisheries. Prepared for Foothills Pipe Lines (Yukon) Ltd., Calgary.
- Beak Consultants Ltd., 1977. Preliminary environmental overview for alternate gas pipeline routes - Mammals. Prepared for Foothills Pipe Lines (Yukon) Ltd., Calgary.
- Beckel, Dorothy K.B., 1975. IBP ecological sites in subarctic Canada. CCIBP/CT. The Univ. of Lethbridge Production Services Alberta.
- Brunskill, G.J., D.M. Rosenberg, N.B. Snow, G.L. Vascotto and R. Wageman, 1973. Ecological studies of aquatic systems in the Mackenzie - Porcupine drainages in relation to proposed pipeline and highway developments. Vol. 1, 130 pp. Environmental - Social Committee, Northern Pipelines Task Force on Northern Oil Development. Report #73-40.
- Bryan, J.E., 1973. The influence of pipeline development on freshwater fishery resources of northern Yukon Territory. Northern Operations Branch, Fisheries and Marine Services, Dept. of Environment, Pacific Region, 63 pp.
- Bryan, J.E., C. E. Walker, R.E. Kendel and M.S. Elson, 1973. Freshwater aquatic ecology in northern Yukon Territory, 1971. Northern Operations Branch, Fisheries and Marine Service, Dept. of the Environment, Pacific Region.

- Canada Dept. of Environment, 1970. Temperatures and precipitation 1941-1970, the Northern Yukon Territory and North West Territories.
- Cinq-Mars, J., 1975. Mackenzie corridor and Dempster Highway; archeological reconnaissance. Archeol. Surv. of Canada, Paper 36, 1975, p 20-22.
- C.W.S., 1973. An inventory of wildlife habitat of the Mackenzie Valley and northern Yukon. Info. Canada R72-12273.
- C.W.S., 1973. Atlas of wildlife habitat inventory maps for Environmental Social Programme, Northern Pipelines, Info. Canada.
- Department of Indian Affairs and Northern Development, 1975. Northern roads fact finding committee background and current policy. September 1975.
- DFE, 1977. A preliminary review of environmental concerns associated with the Foothills pipeline proposal and selected alternative pipeline corridors. Dept. of Fisheries and Environment, Vancouver.
- DOE, 1974. Hydrologic aspects of northern pipeline development. Glaciology Division, Water Resources Branch, DOE, Ottawa. Environmental - Social Program Northern Pipelines.
- Dryden, R.L. and Jessop, C.S., 1974. Impact analysis of the Dempster Highway culverts on the physical environment and fish resources of Frog Creek. Can. Dept. of Environment, Fisheries and Marine Services. Technical Report Series, CEN/T 74-5.
- Envirocon Ltd. 1976. Fisheries impact study, proposed Dempster Highway ferry near Arctic Red River, N.W.T., D.P.W., Ottawa.
- Envirocon Ltd., 1977. Routes: An environmental comparison of alternative pipeline corridors in the Yukon Territory. Vol. 1 & 2. Submitted to: Environmental Assessment Panel Alaska Highway, Vancouver.
- Foothills Pipe Lines Ltd., 1977. Studies related to alternate methods of connecting Mackenzie Delta Gas, Foothills Pipe Lines, Calgary.
- Goinsiday 1973. Dempster Highway information. 2(10): 5.
- Harding, Lee, 1976. What are we doing to the northern Yukon? Canadian Geographic Journal. January-February 1976. p 36-40.
- Hettinger, L., A. Janz, and R. Wein, 1973. Vegetation of the northern Yukon Territory. Arctic Gas Biological Service. Vol. 1, prepared by Northern Engineering Services Co. Ltd. for Arctic Gas Study Ltd.
- Hill, R.M., 1972. The Dempster Highway-Benefits to the Arctic. Pamphlet.
- Hill, R.M., 1972. "Dempster Highway" At the crossroads. Proceed of 4th Northern Resources Conference, Whitehorse, 1972. Yukon Chamber of Mines and Whitehorse Chamber of Commerce. pp 135-138.
- Hoefs, M., 1976. The effects of the Dempster Highway on wildlife management. Paper presented at a seminar on the effects of the Dempster Highway. May 19, 1976. Yukon Conservation Society.

- Hume, A., 1977. Dempster Highway - Disaster for northern wildlife, B.C. Outdoors, June 1977.
- Hume, V.E., 1977. Dempster Highway Environmental Management Program. Northern Roads and Airstrips Division, Department of Indian Affairs and Northern Development, Ottawa. July 1977.
- Inglis, J.T. (DIAND) and M. Tywoniuk, 1974 (DOE). Environmental Overview of the Dempster Highway. Dept. of Indian and Northern Affairs.
- Jackman, H.A. 1973. The impact of new highways on wilderness areas. Arctic 26(1): 68-73 March 1973.
- Jakimchuk, R.D., ed., 1974. A study of the Porcupine Caribou Herd. The Porcupine Caribou Herd, Arctic Gas Study Limited. Ch. 1 pp 1-111.
- Klohn Leonoff Consultants Ltd., 1977. Overview of Pipeline routes: Dempster lateral and Dawson realignment. Prepared for Foothills Pipe Lines Ltd. Calgary.
- Knox, R. and W. Knox, 1971. Yukon adventure roads, B.C. Outdoors April 1971, pp 35 - 41
- LeRoche, R.E., 1973. The international herds: present knowledge of the Forty Mile and Porcupine Caribou Herds. Proceedings of the First International Reindeer and Caribou Symposium. August 9-11, 1973. Univ. of Alaska, Fairbanks, pp 127-129.
- McCourt, K.Y., 1974. Distribution and movements of the Porcupine herd in the Yukon 1972. In R.D. Jakimchuk ed. 1974. The Porcupine Caribou Herd. Canadian Arctic Gas Study Ltd., Chapter 2 pp 1-89.
- Mollard, D.G., 1971. Office air photo search for granular and binder materials: Mile 0 to 166, and mile 166 to 275, Dempster Highway, Yukon, N.W.T. Prep. for Canada DPW. Unpubl.
- Northwest Hydraulics Ltd. 1972. Dempster Highway hydrology study Mile 250 to Mile 289.8. D.P.W., Whitehorse, October, 1972.
- Northwest Hydraulics Ltd. 1972. Mackenzie/Dempster Highway hydrology study, Inuvik to Northwest Territories - Yukon border. D.P.W., Western Region, Edmonton, November, 1972.
- Northwest Hydraulics Ltd. 1974. Review and update at Mackenzie/Dempster Highway hydrology study. D.P.W., Western Region, Edmonton.
- North, Stirling. 1976. The Dempster Road to a New North? North 23(4): 26.
- Oilweek, 1977. Dempster Highway Contracts to be called on 1977. Oilweek 28(6): 27.

- Pufahl, D.E., N.R. Morgenster and W.D. Roggensack, 1974. Observations on recent highway cuts in permafrost, Ottawa Task Force on Northern Oil Development, Report 74-32, 53 pp.
- Rennie, Peter J., 1977. An overview of northern pipeline issues- a statement of environmental concerns. Prepared for: Steering Committee of the Interdepartmental Committee on Oil, March 1977.
- Richardson, N.W. and E.K. Sauer, 1975. Terrain evaluation of the Dempster Highway across the Eagle Plain and along the Richardson Mountains, Yukon Territory. Canadian Geotechnical Journal 12(3): 296-319.
- Ricker, K.E. 1967. Quaternary geology in the southern Ogilvie Range, Yukon Territory, Canada. M.Sc. Thesis, University of British Columbia. (includes cover vegetation, permafrost and isolated notes on other natural history plus a 1:50,000 scale map of surficial deposits along the initial 110 miles of the Dempster Highway corridor).
- Schultz International Ltd., 1972. Environmental Impact Study of the Dempster Highway. Prepared for Dept. of Public Works of Canada, Vancouver.
- Schultz International Ltd., 1973. Environmental evaluation of borrow sites, culverts and development sites on the Dempster Highway - miles 290 to 344. Dept. of Public Works, Edmonton.
- Scott, Douglas, 1974. The migration of the caribou. B.C. Outdoors June 1974 p 24-29.
- F.F. Slaney & Co. Ltd., 1977. Yukon Resource Atlas. Prep. for DIAND. (DIAND) .
- Stevens, A.E. and W.G. Milne, 1973. Seismic risk in the northern Yukon and adjacent areas. Environmental Social Committee, Northern Pipelines Task Force on Northern Oil Development. Report #73-7.
- Theberge, J.B., 1973. Yukon's Dempster Highway and Environmental Impact. Nature Canada 2(2): 35-36. May, 1973.
- Vartnou & Sons Enterprises Ltd., 1977. Grasses, legumes and shrubs adjacent to the Dempster and Klondyke Highways of Yukon Territory. Prepared for Foothills Pipe Lines Ltd., Calgary.
- Wilmeth, Roscoe. Report of archaeological survey: Mackenzie Highway Mile 970.95 to 1060.6 (Inuvik to Tuktoyaktuk) and Dempster Highway Mile 289.77 to 336 (Yukon border to Peel River), N.W.T. Archaeological Survey of Canada, National Museum of Man.
- Wright, J. 1975. Yukon roads "Notes and tapes of lecture". January 1975. (Yukon Archives)
- Yukon Conservation Society, 1976. Dempster Highway Seminar, Whitehorse.



## APPENDIX II

### DEPARTMENTAL INVOLVEMENT

#### Recently Completed and Ongoing Studies on the Dempster Highway

##### Game Branch - YTG

Studies currently underway are:

1. Sheep inventories along the entire Dempster Highway route.
2. Falcon and other raptor inventories.
3. Preliminary work on bear distribution and abundance.
4. Some winter range work on Porcupine caribou herd.
5. Winter work on Porcupine caribou distribution and behaviour in relation to the Dempster Highway.
6. Mt. Cronin Sheep population monitoring on range use in proximity to the Dempster route.

##### Fish & Wildlife Service - NWT

7. A harvest statistics program has been proposed by the Inuvik region superintendent.
8. A review of literature from the environmental studies conducted for the Mackenzie Pipeline Inquiry is necessary to determine if further studies would be required along the Dempster lateral spur gas pipeline corridor.
9. Cooperative studies with the YTG Game Branch on raptors, ptarmigan & sheep are ongoing and future studies are under consideration.

##### Tourism - YTG

The Department of Tourism has conducted no special studies on the Dempster Highway, however, two exit surveys, one done in 1975 and one currently underway for 1978, contain some information relevant to the Dempster. In addition, the 1976 Dawson City Exit Survey contains relevant data such as visitor volumes and preferences. The Tourism Development Strategy which is currently being completed will apply in a general way to the Dempster Highway.

##### Economic Development & Tourism - NWT

The Department of Economic Development has a consultant studying the impact of the Dempster Highway on Tourism.

Highways

No studies have been done or are contemplated by Highways and Public Works.

Parks and Historic Sites

No specific studies on the Dempster highway-included in Yukon Campground Survey  
Health & Social Services - NWT

The Department of Health & Social Services has had little involvement to date.

Universities

Several thesis projects on botanical and pedologic considerations of the Dempster area are being carried out under the supervision of Dr. R. Brooker of Simon Fraser University.

CBA Engineering Co. (Vancouver)

CBA Engineering carried out geotechnical studies in conjunction with the Shultz reports and some were published in the Canadian Journal of Earth Sciences.

Canadian Arctic Resources Committee

Conducting an analysis of political developments with respect to the Dempster Highway since its conception and to public input into decisions regarding its construction.

Other agencies known to be working in the Dempster area are:

Department of Water Resources

Agriculture Canada

Department of Public Works

Department of Energy, Mines and Resources

University of Waterloo and University of Western Ontario,  
Departments of Geology

Geological Survey of Canada

# Foothills Pipe Lines (Yukon) Ltd.

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PHONE (403) 265-8100

August 11, 1978

Michael P.G. Hawkes, Ph.D.  
Supervisor, Environmental Management  
Department of Natural and Cultural Affairs  
Government of the Northwest Territories

Dear Dr. Hawkes:

Re: Foothills (Yukon) Environmental  
Studies on the Dempster Lateral Gas Pipeline.

In response to your request of July 19, following is a list of studies underway, or planned for the Dempster Lateral Gas Pipeline:

STUDY TITLE	CONSULTANT
Vegetation - Three revegetation test sites established in 1977, evaluation and new plantings continuing	Vaartnou & Sons Edmonton
- Reconnaissance level study of general vegetation types for disturbed areas along the corridor	Vaartnou & Sons Edmonton
Fish - Seasonal fish investigations (including chemical and physical water parameters) along Dempster corridor	Beak Consultants Calgary
Birds - Spring waterfowl concentrations proposed Klondike section, Dempster Lateral	Beak Consultants Calgary
- Summer waterfowl production survey for Klondike section, literature search for Mackenzie Delta.	R.L. Brown Fruitvale, B.C.
- Raptor surveys along Dempster corridor from Fort Macpherson to Whitehorse.	Yukon Government Game Branch
Mamals - Distribution and movements of Porcupine, Caribou herd on winter range in Yukon.	Renewable Resources Edmonton.

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- Evaluation of spring migration pattern of Porcupine, caribou herd to and across Dempster corridor. Renewable Resources Edmonton.
- Assessment of Fall migration pattern of Porcupine, caribou herd in vicinity of Dempster corridor Planned.
- Survey of sheep population in vicinity of Dempster corridor (Joint study) Yukon Government Game Branch
- Archaeology/ - Assessment of Archaeological resources along Dempster lateral corridor. Lifeways of Canada Calgary.
- Land and Resource use Assessment of current and potential land and resource use patterns along Dempster corridor J. Malbach Kamloops, B.C.

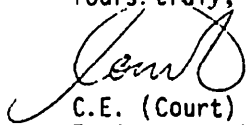
Additionally here is a listing of completed studies:

STUDY TITLE	CONSULTANT
Fish	
- Fall and early winter aquatic resource inventory: Dempster Lateral Pipeline Route.	Aquatic Environments Calgary.
- Fisheries investigations along the Klondike Highway section of the prospective Dempster Lateral Pipeline Route (summer and fall 1977).	Beak Consultants Calgary
Birds	
- Fall (1977) waterfowl concentrations proposed Klondike section of Dempster Lateral	Beak Consultants Calgary
Mammals	
- Klondike Highway summer/fall ungulate and furbearer studies (1977)	Beak Consultants Calgary.

Foothills Pipe Lines (Yukon) Ltd.

On the matter of contacting our consultants I would request that you inform us of your requirements in this regard and we would be pleased to arrange proper contact. I hope this information is sufficient for your present purposes.

Yours truly,



C.E. (Court) Fooks,  
Environmental Scientist  
Foothills Pipe Lines (Yukon) Ltd.

.CEF:cj

## APPENDIX III

### Information Requirements for a Long Term Management Plan - Yukon

#### Game Branch

1. Continuation of Porcupine caribou, sheep and grizzly bear studies - at least two more years required depending on availability of funding.
2. Moose, avifauna and fur-bearer studies required - will take at least two years depending on availability of funding.
3. Development of a harvest statistics program for NWT and YT for the Porcupine Caribou Herd.

#### Department of Tourism

1. Traffic Study
  - to determine the annual and seasonal volumes of traffic on the highway, type of use, purpose of trip, etc., for several years.
2. Inventories
  - geographic and physiographic information, points of interest, scenic resources and other information relevant to locating attractions and facilities on the highway.
3. Results of the NWT Tourism impact study on the Mackenzie Delta communities

#### Department of Highways and Public Works

No studies are planned by Department of Highways and Public Works but traffic counts will be done.

#### Resource Planning Branch

1. Land use capability and planning studies

#### Parks and Historic Sites Branch

1. Comprehensive recreation potential and capability analyses (estimate two years) followed by site selection and design.
2. Use survey upon which to make user projections (estimate 2 years and ongoing during alternate years).