

**REPORT OF THE
ENVIRONMENTAL ASSESSMENT PANEL**

SHAKWAK HIGHWAY PROJECT



JUNE 1978

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TABLE OF CONTENTS

Map of Project Location	iv
Letter of Transmittal	v
INTRODUCTION	1
Project Setting	1
General Project Description	2
Canada - U.S.A. Involvement	3
Environmental Review Procedures	3
Report Structure	4
ISSUES AND POTENTIAL IMPACTS	7
OVERALL CONCLUSION	9
PROJECT MANAGEMENT ISSUES	9
Project Review	9
Enforcement of Environmental Stipulations	10
Environmental Quality Assurance	11
Co-ordination with Alaska Highway Gas Pipeline Project	12
PHYSICAL AND ENGINEERING ISSUES	13
Borrow Pits	13
Permafrost	14
Roadway Design in Communities	15
Road Quality, Safety and Ease of Travel	15
Rainy Hollow Alignment	16
ECOLOGICAL ISSUES	16
Fish Passage at Stream Crossings	16
Over-Harvest of Fish and Wildlife	17
Construction Disturbance of Fish and Wildlife	18
Attraction of Wildlife to Unnatural Food Sources	19
Reclamation and Revegetation	20

SOCIAL AND ECONOMIC ISSUES	21
Construction Impacts on Communities	21
Community Liaison	22
Police Services	23
Demands on Community Recreation Facilities	24
Location of Project Headquarters	25
Construction Disturbance to Highway Travellers	25
Protection of Traditional and Historic Sites	26
Native Land Claims in Yukon	26
Jobs for Northern Residents	27
Job Training	28
Contracting Opportunities	29
OTHER ISSUES	30
Protection of Unique Areas	30
Aesthetics of Right-of-Way	33
Maintenance Guidelines	34
Hazardous Chemicals and Petroleum Products	34
SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS	35
APPENDICES	45
Appendix A Public Hearing Procedures	47
Appendix B Written Submissions Received by the Panel	48
Appendix C List of Panel Documents	50
Appendix D Guidelines for Ongoing Development of Social/Community Impact Reports	51
Appendix E Panel Member Biographies	57
Appendix F Acknowledgements	60

SHAKWAK HIGHWAY PROJECT PROJET ROUTIER SHAKWAK



"In this day of environmental awareness, however, it should not be necessary to remind ourselves that while assuring easy access from one portion of our range to another, we do not create insurmountable barriers to other species; that while ensuring our occupation of what is for our species marginal habitat, we do not unduly disturb other species on what for them is critical habitat."

Mr. Bill Klassen, Biologist, Yukon Game Branch.





Environment Canada

Environnement Canada

Federal Environmental
Assessment Review
Office

Bureau fédéral d'examen
des évaluations
environnementales

Ottawa, June 15, 1978

**The Honourable Len Marchand, P.C., M.P.
Minister of the Environment
House of Commons
OTTAWA, Ontario
K1A 0A6**

Honourable Minister:

This letter conveys for your consideration the report of the Environmental Assessment Panel for the Shikwak Highway Project.

The project involves the paving and upgrading of the Haines Road from the Alaska/British Columbia border to Haines Junction, and the Alaska Highway from Haines Junction to the Yukon/Alaska border, a distance of approximately 520 kilometres. The proposed improvements include pavement, smoothing curves, improving grades and increasing lane width and shoulders.

Construction of the project is planned to take place over eleven years, from 1978 to 1989, and is expected to cost approximately \$200 million.

An International Agreement between Canada and the United States provides that, pending appropriate environmental clearances, the United States would pay for the construction of the project and Public Works Canada would direct construction efforts. Canada would maintain the facility. Hence both United States and Canadian environmental regulations are to be met.

The Panel reviewed the environmental and social implications of the project with the assistance of the public and government agencies, both through written briefs and the holding of public hearings in Yukon communities.

Having reviewed the Environmental Impact Statement prepared for the project, and having heard and assessed many submissions by the general public and government agencies, the Panel concludes that there are no over-riding environmental or social concerns which prevent the project from proceeding as scheduled. While the potential for adverse social and ecological impact from the project is significant, the Panel concludes that these impacts can be mitigated if certain procedures are followed and specific conditions met.

Because the Shakwak Highway Project passes through one of the most spectacularly beautiful land routes on the continent, the project must be particularly sensitive to its setting and to the environmental values it encounters. This requirement is acknowledged by the project planners who have made commitments to sound environmental and aesthetic design in the reconstruction program

However, the Panel notes a number of information deficiencies and the consequent need for further studies and ongoing evaluation of activities during the eleven-year program. Since several of the information deficiencies are significant, completion of the further studies is important to carrying out the project in a satisfactory manner. The Panel agrees that the studies for which the proponent has made commitments are required now to establish sound environmental planning. The Panel is also of the opinion that the required studies are not of a nature to influence the basic recommendation to proceed with the project. However, the results will strongly influence the manner in which the project is carried out.

Potential impacts on the wildlife resources of the Shakwak corridor were a common concern of participants in the hearings. Hunting for food is an important activity for northerners, especially natives, and there is concern that added hunting pressure from construction workers may seriously jeopardize game populations. Wildlife resources are found throughout the corridor and in particular on Sheep Mountain, Duke Meadows and Mount Mansfield unique combinations of terrain and climate provide habitat for large populations of wildlife. The Panel is recommending strict controls in such areas.

The population of the construction corridor will more than double for almost ten years due to the influx of workers. Pressures on families, traditional values, recreation resources,

community and government services and the economy will be significant and the potential for adverse social impacts during the construction period is great. Consequently, the Panel is recommending that certain medical and social services be immediately put in place in the corridor to reduce impacts due to the initial construction activities. It is also recommending that community impact reports be developed on an ongoing basis to assist in establishing community and government services as the needs are identified.

To carry out the project successfully, it is very important that effective communication and project liaison exist among the proponent, individuals, communities and businesses affected by the project, as well as with those government agencies charged with regulating the project and providing services. In particular, co-ordination of project activities and impact mitigation measures with those of the Alaska Highway Gas Pipeline Project is of paramount importance, since the two projects share many environmental and social concerns.

Also important is the co-ordination of government agency regulation of the project, particularly because of the number of jurisdictions and regulatory bodies involved and the number of significant further ecological and social studies required. The Panel recognizes that much of the ongoing detailed environmental decision-making will rest with the normal regulatory and permitting agencies already established for those purposes. With this in mind, governments should be aware that an increase in workload of the responsible agencies due to the Shakhwak Highway Project is inevitable. Within their own mandates, these agencies will also have significant responsibilities to co-ordinate this project with the upcoming Alaska Highway Gas Pipeline Project.

The establishment of a Shakhwak Review Committee, drawn from federal and territorial government agencies in Yukon is considered necessary to monitor the implementation of the approved recommendations. Suggested terms of reference for the committee are delineated in this report. The Panel believes that, without the recommended committee, no single body would have an overall view of the project.

The Panel would also like to mention a continuing theme in Yukon today--the settlement of native land claims. The Panel

held hearings in both native communities affected by the Shakwak Highway Project, and was told of concerns that sites of traditional and historic importance may be disturbed by the project, about land claims and the need for natives to have authority to control their lifestyle, about the need for better police protection and social counselling and about desires for jobs and job training.

The Panel is of the opinion that the project should not prejudice the land claims negotiations and, given the nature and intent of project planning to date, there appears to exist the goodwill necessary to achieve the realization of potential benefits.

A final point the Panel would like to draw to your attention is the question of funding to assist public interest groups in preparing for and contributing to the Panel hearings. It was suggested to the Panel that the lack of funding, coupled with the short period of time available for review of the project, made it difficult for the public to participate meaningfully in the hearings. The recommendation was made to the Panel that the federal government establish a policy of funding public interest groups if the Environmental Assessment and Review Process is to obtain substantive public input. The Panel supports this concept and recommends that a study be undertaken to determine funding mechanisms.

The following report discusses in more detail the Panel's assessment of the issues, impacts and mitigating measures and presents specific recommendations for your consideration.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'F. G. Hurtubise', written in a cursive style.

F. G. Hurtubise,
Chairman.

INTRODUCTION



"We live in a beautiful and abundant country here by Kluane Lake and we wish it to remain that way. Our major concern lies in protecting our food resources as some of our people live in large part off the land. We are frightened that if present hunting and fishing regulations are not changed, many of your workers-- engineering and construction staff-- will be able to hunt and our game resources will be depleted."

Ms. Robe Marie Smith, Kluane Band Manager, Burwash Landing.

"We want to make this project up here just as good a project as any that we would develop in our own country in the same kind of an environment. And we, in our region, do get involved in the same kinds of areas that you have here in the Yukon--national parks, national forests, wilderness terrain, and that sort of thing. We're well experienced in that kind of work and we are sensitive to it, and I want to assure you that we will be just as concerned about this project here as we are in our own country."

Mr. Richard C. Cowdrey, United States Federal Highway Administration.

"We tend, in a very real way, to regard the Alaska Highway, and to a lesser extent the Haines Road, as our lifeline. Everything we do in our daily lives involves these two highways. Our association feels that the results of the impact of the Shakhvak, more than the pipeline, will determine the future, social and economic welfare of our community for many years to come."

Mr. Ron Watson, Haines Junction businessman.

INTRODUCTION

The Shikwak Highway Project is a proposal to reconstruct and pave the Haines Road from the B. C. /Alaska border to Haines Junction, Yukon, and the north Alaska Highway from Haines Junction to the Yukon/Alaska border. Eighty kilometres of the 520 km project are in northwest British Columbia. The remainder is in the Yukon Territory.

The project derives its name from a prominent geological feature--the Shikwak Trench--in which a significant proportion of the present roadway is located.

The project has been proposed and is to be funded by the United States Government through the United States Federal Highway Administration. The design and construction will be managed by Public Works Canada. Together, Public Works Canada and the United States Federal Highway Administration are referred to as the project proponent in this report.

The project was referred to the Federal Environmental Assessment Review Office in July 1974 by Public Works Canada. The referral was in accordance with the 1973 Cabinet directive establishing the Federal Environmental Assessment and Review Process. This process provides for the environmental review of federal projects which may have significant environmental impact. A review of the

environmental implications of the project was also undertaken by the United States Federal Highway Administration in accordance with United States environmental law.

In Canada, the review of potential impacts of the project was carried out by an Environmental Assessment Panel drawn from the Public Services of the Federal, Territorial and Provincial governments. This report is the result of the Panel's review. It contains discussion of the significant environmental and social concerns relating to the project and the Panel's recommendations for dealing with them

An Environmental Impact Statement (EIS) prepared jointly by Public Works Canada and the United States Department of Transportation, Federal Highway Administration, according to Panel guidelines, served as a framework for the review of impacts by the Panel. The Panel's review included the hearing of information from public interest groups, individuals and government agencies.

Project Setting

One would be hard-pressed to find a more spectacular setting for 520 kilometres of roadway anywhere in the world. From the Alaska-British Columbia border, the road ascends from

coastal rain forest through Three Guardsmen Pass and a series of sub-alpine valleys to the Shakwak Trench at Dezadeash Lake. From here it borders Kluane National Park and Kluane Wildlife Sanctuary for a distance of about 315 kilometres before crossing the flatter spruce forest-muskeg area extending to the Yukon-Alaska border. This western portion is the area in which most permafrost is likely to be encountered. This route and the associated communities will be referred to in this report as the project corridor.

There are four communities in the project corridor. The largest is Haines Junction with a population of about 325. This community is headquarters for the new Kluane National Park administration and includes a segment of the Champagne-Aishihik Indian Band. Destruction Bay has a population of about 80 and is mainly a Yukon Government highway service centre. Burwash Landing, about 16 kilometres west of Destruction Bay, is the home of the Kluane Tribal Brotherhood with a somewhat flexible population, averaging about 70. Beaver Creek is a centre for highway maintenance, customs and for tourist and transportation services. The community is 32 kilometres from the Alaska border and has a population of about 130.

There are no established settlements in the British Columbia section

of the corridor, except for a Yukon Government highway maintenance camp of about 20 residents located at km 120.

For all communities, tourism associated with the highway is economically important. The native populations in the Shakwak corridor have a significant dependence on the land for food and income.

General Project Description

The highway reconstruction will involve major realignment at Rainy Hollow and near the Kluane River, as well as some minor adjustments of the present road to improve curves and grades. The more significant realignment is in the Rainy Hollow area at the south end of the project where a number of alternates to reduce a slide hazard and to improve curves and grades over a 15 to 20 kilometre distance are under consideration.

Construction of the project is planned to take place over eleven years, from 1978 to 1989, and is expected to cost approximately \$200 million. The project will be divided into 18 construction segments varying in length from 17 to 34 kilometres. The total required workforce is expected to reach a peak of about 1000 in 1984 and 1985 with 80 to 90 per cent of the personnel employed between April and November.

In order to avoid conflicting with the proposed Alaska Highway Gas Pipeline program of construction, it has been proposed that activities on the Shakwak Highway Project be scaled down during the pipeline construction period.

Canada - U.S.A. Involvement

An exchange of notes between the Canadian and United States governments constitutes an agreement which came into force on February 11, 1977. It was agreed that, among other provisions and pending appropriate environmental clearances, Canada would arrange for reconstruction of the highway to jointly agreed standards using funds appropriated for that purpose by the Congress of the United States. Following reconstruction, Canada would maintain the highway.

Congress has thus far appropriated \$58.6 million of a total estimated requirement of \$200 million for the project. A small staff from the United States Federal Highway Administration has been established in Canada to work with the Canadian project management in overseeing the expenditure of funds.

Environmental Review Procedures

Following referral of the project by Public Works Canada in accordance with the Federal Environmental Assessment and Review Process, an Environmental Assessment Panel was formed to review the project. Under the chairmanship of Mr. R. E. McLaren, then Pacific Regional Director of the federal Environmental Protection Service, the Panel developed a set of guidelines for the preparation of an Environmental Impact Statement. These guidelines outlined the information requirements of the Panel for its project review and were issued to Public Works Canada on March 31, 1976.

The Panel presently consists of the following members:

Mr. F. G. Hurtubise (Chairman)
Mr. P. H. Beaubier
Mr. W. A. Bilawich
Dr. D. S. Lacate
Mr. J. P. Secter
Mr. G. D. Tench
Mr. C. E. Wykes.

Brief biographies of the Panel members may be found in Appendix E.

Following completion of the agreement between Canada and the United States, Public Works Canada engaged a team of consultants to prepare the Environmental Impact Statement. The

consulting team of nine firms was coordinated by Thurber Consultants Limited. The studies were overseen by a separate 8-member intergovernmental environmental steering committee appointed by the proponent. A series of public information meetings was held by the proponent in communities along the corridor in the autumn of 1977.

The Environmental Assessment Panel received the Environmental Impact Statement (EIS) on December 30, 1977, and invited public participation in the review of the document through media advertisements and direct mailing. The full (1400 page) EIS was placed in government offices, libraries and northern book depots and was made available on request to those who wanted to participate directly in the review. A summary of the EIS was more widely distributed. Notice was given that public hearings into the project would be held in Whitehorse and the corridor communities in early March, 1978.

In February, Panel secretariat visited the communities to explain the review procedures to community leaders and public interest groups and to encourage those who might be affected by the project to make their views known to the Panel.

The Panel held public hearings in Yukon from March 3 to March 10, 1978. Over this period, the Panel was in public session for almost 40 hours. Hearings were held in Whitehorse, Beaver Creek, Destruction Bay, Burwash Landing, Haines Junction and at the

Champagne/Aishihik Band hall. The project proponent was represented at all sessions by the Project Manager from Public Works Canada, the United States Program Manager and selected members of the consulting team. The general procedures for the conduct of the hearings may be found in Appendix A. The hearings were recorded and complete transcripts of the proceedings have been prepared and are available from Panel offices. Thirty written briefs were submitted to the Panel, most of which were read into the record of the public meetings. A compilation of these briefs forms a 200-page book which is also available from Panel offices. During the public meetings, approximately 50 individuals addressed the Panel.

A listing of the groups, agencies and individuals who submitted briefs to the Panel may be found in Appendix B. A listing of other documents associated with the review forms Appendix C.

Report Structure

The following sections of the report present a discussion of potential environmental and social problems associated with the project and reflect the information contained in the Environmental Impact Statement as well as that brought out during the public review.

A very wide range of concerns was presented to the Panel. These are all contained in the printed record of the review and were considered by the Panel. The significant concerns are discussed in this report.

Each issue is discussed in a similar format. The issue or potential impact is described and mitigation measures are discussed, following which the conclusions and recommendations of the Panel are stated. The Panel recommendations are summarized in a later section of the report.



"We have a fairly good idea of what we would like to do in the first year [of construction], a little less so the second year, and the third year gets a little fuzzy. The fourth year is strictly looking into a crystal ball, and anything from the fifth year on down is almost pure fiction."

Mr. Gordon Luke, Shikwak Project Manager.

"We recognize the social impacts that do occur when a large number of construction workers are located in or near smaller communities and away from their 'home' base... It seems very important that the communities and their representatives be part of the definition of the ways in which efforts will be carried out to minimize the negative aspects of the social impact."

Mr. Ross N. Findlater, Government of the Yukon Territory, Whitehorse.

"There simply cannot be any additional losses due to direct killing of wildlife in this corridor... Grizzlies, Dall sheep, caribou and to a lesser extent moose cannot sustain additional direct mortality in the highway region."

National and Provincial Parks Association of Canada, Toronto.

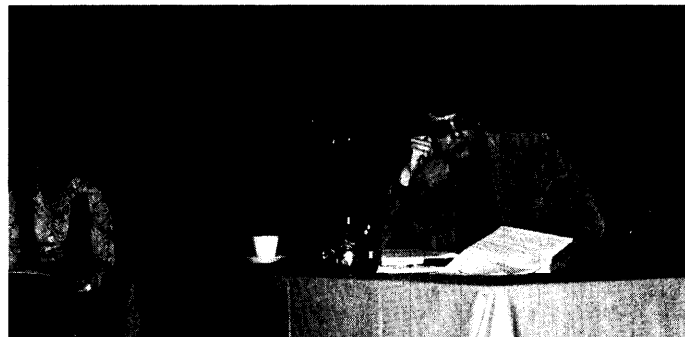
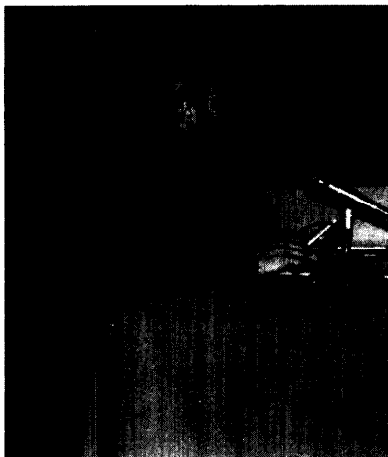
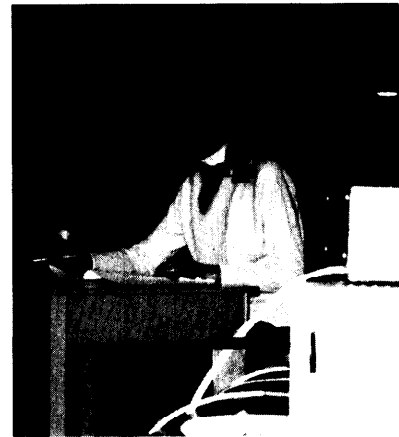
"Our history and culture is carried most strongly in our hearts. Only recently has a little of it been written down. Our history books have been our stories, our dances, our songs. The Environmental Impact Statement does not mention any of this tradition and history. It cannot, without going directly to the people and listening to them. A few old chips of firewood from an old camp won't mean anything to a man driving a bulldozer, but to us, who know the stories that go with that old camp, a great deal of our identity will be taken away. We have not left many visible signs but that does not make these historical places any less valuable than Sam McGee's Cabin."

Ms. Barbara Hume, Champagne-Aishihik Band, Haines Junction.

"I look to the Shikwak Highway Improvement Project as a real opportunity for Yukoners and northern B.C. residents particularly, and Canadian workers generally, to benefit from the employment and training opportunities this project will provide. I suggest that a great deal of patience and understanding will be required from all involved parties to make it work to our mutual advantage, and I offer my personal support and that of my Commission to that objective."

Mr. Ernie Standish, Employment and Immigration Canada, Whitehorse.

ISSUES AND POTENTIAL IMPACTS



"A modern paved road together with the attractions offered by Kluane National Park could help establish this area as a viable and competitive tourist and recreational area. The basis for a service industry would be in place and the people of the corridor, with personal initiative, and investment of money and work could have the opportunity to live the relatively free life style which they now enjoy, and they would still be able to be independent and earn their own living."

Mrs. Hilda Watson, M. L.A., Haines Junction.

"Small individual native contractors have a very hard time getting bonding and as a result they have a very hard time getting loans to get equipment. I believe one of the feelings of the Brotherhood is that if, in fact, guarantees were made on contracts, native contractors might be able to get bonding and might be able to get the kind of loans that they would need to more effectively participate...."

Mr. Harry Harker, Yukon Native Brotherhood, Whitehorse.

"From what I can see, every three to five years you're going to have to repave this whole stinking highway all over again."

Mr. Hiemstra, Truck Driver, Beaver Creek.

"...construction workers are the salt of the earth, as far as I'm concerned. A construction worker's day usually starts about 5:30, 6:00 o'clock in the morning, he finishes suppertime, he is tired, he is dirty, he is beat, and he is hungry, and they eat supper, get cleaned up, and they lie on the bed and read a book for a couple of hours and they usually go to sleep, half past nine, 10:00 o'clock at night. They're not out pillaging the countryside or raping the women, or drinking the bar dry. They have a limited season in which to make a living, and I would say that the majority of them they live fairly monastic lives out at camp. You might see them in town raising hell but not out on the road, and we are talking about, you know, the Shakhwak Valley, and as regards to the impact in the valley, it would be minimum"

Mr. J. N. Thomas, Construction Worker, Whitehorse.

"Upon refinement, it is most essential that the terms and conditions contained in the Environmental Impact Statement are incorporated in the Shakhwak contracts and followed up by thorough monitoring to ensure that the guidelines are followed. If that is not done, this whole exercise is futile."

Mr. Jim Mas y h, Superintendent, Kluane National Park.

ISSUES AND POTENTIAL IMPACTS

OVERALL CONCLUSION

The Panel has concluded that it will be possible to carry out the project without significant adverse environmental or social impacts if appropriate procedures are followed and certain conditions are met. The project managers, the governments involved and the general public must all share the responsibility for and be committed to ensuring that the project goes ahead without undue impact.

The potential for adverse social and environmental impact is significant and the project must be carefully planned and monitored throughout its life so that none of the areas of possible impact develops into a serious problem. The Panel acknowledges the planning which is already under way to develop opportunities for social and ecological benefit from the project and to mitigate potential impacts.

This chapter of the report discusses the major issues associated with the project and presents the Panel's recommendations and conclusions.

PROJECT MANAGEMENT ISSUES

Project Review

Much of the ongoing detailed environmental review and monitoring of the Shikwak Highway Project will properly rest with the normal regulatory and permitting agencies already established for those purposes. However, because of the wide-ranging nature and long term implications of the project and of some of the Panel's recommendations, there remains a need for a body specifically assigned to continuously review the project. There is also a need to ensure that the inevitable changes which will occur in the project over its relatively long construction period receive an integrated planning response from the proponent and government agencies.

THE PANEL RECOMMENDS that a Shikwak Review Committee be established reporting annually to the federal Minister of the Environment and the Yukon Territorial Council through the Federal Environmental Assessment Review Office.

The terms of reference of the Committee would be:

1. *To review and report on the manner in which the Panel's recommendations and the proponent's commitments are being implemented during the life of the project.*
2. *To co-ordinate the review and evaluate the adequacy of further studies and resultant mitigation measures required for the project.*
3. *To exercise an ombudsman function when existing channels of communication among groups interested in the project appear to be ineffective.*

The Committee would have responsibility for both Yukon and British Columbia sections of the project. It would itself have no direct regulatory authority; these responsibilities would remain with the existing agencies.

THE PANEL RECOMMENDS that the Committee have four members which have, among them, both environmental and social expertise. The members would be drawn from agencies of the federal government in Yukon and the Government of Yukon. The Committee may require a secretariat and THE PANEL RECOMMENDS that the cost of a secretariat be borne by the proponent .

Enforcement of Environmental Stipulations

The environmental permitting, inspection and enforcement requirements for this project are the responsibility of government.

The Panel recognizes that the fulfilment of these responsibilities for land areas in a consistent manner is very complicated since the project involves a number of jurisdictions, several of which lack specific environmental legislation and associated permitting and enforcement programs.

Within British Columbia, the administration over lands required for the project right-of-way (to an extent of 300 feet (91.5 m) on either side of the existing highway) has been transferred by Order-in-Council to Canada, under the Minister of Public Works. The environmental provisions of the B.C. Land Act therefore do not apply to this land. Federal environmental agencies will regulate activities in this federally administered right-of-way and implement the findings and recommendations of this report.

The exception is the Rainy Hollow area, where the right-of-way has not yet been selected. In this case, if the realignment is over Provincial Crown Lands, other than those specified in the agreement, the appropriate

British Columbia legislation will apply until such time as the agreement between British Columbia and Canada is amended accordingly.

In Yukon, lands occupied by the existing road or required for realignment are also under different jurisdictions and legislation. The existing highway and its right-of-way are under the control of the Commissioner-in-Council, whereas other lands required for the project are under the control of the Minister of Indian and Northern Affairs. Only those lands under the Territorial Lands Act are now subject to specific environmental legislation supported by permitting and enforcement programs.

The Panel recognizes that in order to ensure the required land based environmental controls are applied in a consistent manner, a mechanism to standardize, co-ordinate and control the issuance, inspection and enforcement of specific environmental terms and conditions will be required.

Environmental concerns associated with water use and crossings are administratively less cumbersome. In British Columbia, the construction of each stream crossing will require a permit from the Water Rights Branch of the British Columbia Ministry of the Environment. In Yukon, stream crossings and water use are administered through well-established permitting mechanisms.

THE PANEL RECOMMENDS that those agencies with jurisdictional responsibilities over Yukon lands affected by the Shaskwak Highway Project co-ordinate their activities to avoid duplication of effort and to ensure that specific environmental concerns are neither overlooked nor handled inconsistently. It is recommended that the Land Use Advisory Committee initiate this co-ordination and advise the Shaskwak Review Committee of the actions taken.

IT IS FURTHER RECOMMENDED that a common Land use permit be developed to regulate the work in any given construction segment. Operating terms and conditions should be developed through the appropriate members of the Land Use Advisory Committee.

IT IS RECOMMENDED that a similar mechanism be operated by the Yukon Land Use Advisory Committee to apply environmental controls over the B.C. portion of the highway project.

Environmental Quality Assurance

The proponent will have primary responsibility for assuring environmental quality in the construction activities. To this end, he has stated his intention to employ a full-time environmental co-ordinator who will be responsible for ensuring that the design and construction of the

project are compatible with environmental requirements. He will field check construction activities, instruct project management and contractor staff on environmental constraints and philosophies related to the project, and prepare regular reports on the progress of the application of environmental conditions.

The proponent's initiatives in employing an environmental co-ordinator are endorsed. THE PANEL RECOMMENDS that this position be filled permanently as soon as possible to ensure continuity and early input to this year's scheduling and project design. IT IS FURTHER RECOMMENDED that the environmental co-ordinator establish early contact with the regulatory agencies to determine data requirements and timing of applications.

IT IS RECOMMENDED that reports be prepared regularly by the environmental co-ordinator for submission to the Shakwak Review Committee. The reports should contain a summary of environmental management actions proposed by the proponent, permits received, environmental problems which developed and mitigative actions taken.

Co-ordination with Alaska Highway Gas Pipeline Project

Northwest of Haines Junction, the Shakwak Highway Project follows the same general corridor as the proposed Alaska Highway Gas Pipeline. The current pipeline schedule in Yukon calls for construction activities in 1981 and 1982, a period spanned by the Shakwak construction schedule. Many of the concerns for environmental and social impact are shared by the two projects and the information and measures required to avoid or mitigate adverse impacts will in many cases be the same.

The proponent has advised the Panel that ongoing liaison with Foot-hills Pipe Lines (Yukon) Ltd. has been in place since early June, 1977, and will continue. This liaison has resulted in the planned curtailment of Shakwak activities during the construction of the pipeline to avoid cumulative adverse impacts and in the design of a common route around Sheep Mountain. The planning for further environmental studies on the Shakwak Highway Project is also being co-ordinated with similar work by Foot-hills.

The Panel concludes that the co-ordination of studies, planning and construction on the two projects is of major importance. Since both projects have the potential for causing significant adverse impacts in Yukon, particularly in the social and economic

areas, co-ordination will be essential to the development of effective measures for avoiding or mitigating adverse impacts.

The Panel endorses the proponent's actions to date to co-ordinate the two projects. In particularly endorsing the limiting of Shakuak activities during pipeline construction as described by the proponent, **THE PANEL RECOMMENDS** that if changes to these limitations are proposed, the degree of limitation be determined through consultation with the Shakuak Review Committee at least one year before any simultaneous construction on the two projects. The liaison should increase substantially as the two projects progress in their detailed planning and enter the construction phase. Areas where co-ordination is required are discussed elsewhere in this report and include:

1. The preparation of a joint plan for the development of borrow pits;
2. The preparation of community impact reports;
3. The establishment of a community liaison program;
4. The location of camps;
5. Project scheduling;
6. Project design at Sheep Mountain and major river crossings;

7. The acquisition and sharing of environmental and geo-technical data.

The Panel wishes to emphasize that considerable co-ordination effort will also be required of government agencies in such areas as the approval of borrow pits and camp sites, the provision of community and social services, the training and hiring of construction workers and the sharing of environmental information.

PHYSICAL AND ENGINEERING ISSUES

Borrow Pits

The Shakuak Highway Project will require considerable quantities of fill and aggregate material and a comprehensive plan for the development of borrow sources will be required. The proponent stated in the EIS and at the hearings that a plan for the extraction of borrow material will be prepared on a segment-by-segment basis as the project proceeds.

The Panel endorses the proponent's commitment to develop a plan for the extraction of borrow materials and concludes that the existing land

use permitting process will ensure satisfactory development control. This plan should consider such factors as aesthetics, reclamation and revegetation of abandoned pits, drainage and sediment control, possible future use of pits (e.g. camp sites, garbage dumps), the protection of possible archaeological resources and denting sites and especially the competition for the materials with other users.

THE PANEL RECOMMENDS that the plan for each construction segment be available for review by the permitting agencies at least six months in advance of construction. This requirement will be particularly important where competing demands for materials may be severe. For the segments scheduled for construction in 1978 and 1979, the plans are also to be available well in advance of construction.

The Panel acknowledges the proponent's intention to coordinate borrow pit planning with the Alaska Highway Gas Pipeline Project and local communities. THE PANEL STRONGLY RECOMMENDS that a joint plan for the extraction of borrow materials be prepared for the two projects at least six months before pipeline construction begins. This plan must recognize the priority needs of local communities for borrow materials.

Permafrost

The Panel heard a number of doubts expressed, particularly at the Beaver Creek hearing, about the possibility of constructing and maintaining a high quality paved road in permafrost areas. The comments were based on maintenance experience with the present road in the area and on the quality of the adjacent paved road in Alaska.

The proponent advised the Panel that the standard of road design on the Shakwak project is higher than that which had been applied to the older road in Alaska and incorporates recent experience in constructing northern roads. Also planned is a pilot project in the Beaver Creek area using an insulated embankment over permafrost. The proponent anticipates that the pilot project will be started in 1980 or 1981. Actual road construction is planned to begin in 1984.

THE PANEL RECOMMENDS that the pilot project begin by 1980 at the latest so as to provide a number of years' experience before actual road construction begins and to permit changes to be made and evaluated in the experimental section.

Roadway Design in Communities

There were many questions and comments during the hearings concerning the details of the roadway design in developed areas. For example, questions were raised about the intersection design and a school crossing in Haines Junction and the type of road profile through communities.

The questions were addressed by the proponent at the hearings to the extent possible at this stage of the design. The proponent also stated that he would meet with the appropriate government agencies, community groups and individuals, as required, to discuss and resolve project details of local concern.

THE PANEL RECOMMENDS the proponent take the initiative in establishing communication with the communities and the responsible government agencies in order to ensure that the community concerns are satisfactorily resolved.

Road Quality, Safety and Ease of Travel

The Panel heard several comments concerning the relative safety and ease of travel on paved and unpaved roads in the north. Some participants

in the hearings felt that gravel roads were safer, particularly in winter, since they are graded and roughened, while paved roads can be icy. It was also thought that the general raising of the highway and its higher design speed may lead to an increase in the number and severity of road accidents.

The proponent advised the Panel that modern highway design standards incorporate a significant safety component in specifying sight distance, lane width, and shoulder design. The standard designs promote self-clearing of snow and ice from the road surface in winter and, coupled with a good maintenance program, should ensure a safe winter road surface. The proponent also advised the Panel that further study of existing icing problems will be undertaken in order to develop site-specific designs to eliminate the problems.

The Panel has observed the poor condition of paved roads in parts of Alaska and is aware of some difficulties in recent paving south of Whitehorse. However, there exist good examples of highway construction in Alaska and Yukon which prove success can be attained with proper care.

The Panel accepts the proponent's position on the safety of the road design, and endorses the proposed approach to solving icing problems. The Panel concludes, however, that continuous adequate maintenance will be essential to sustain a safe highway, particularly in winter AND RECOMMENDS

that winter maintenance requirements for the completed highway be specified in comprehensive maintenance guidelines (see "Maintenance Guidelines" page 34).

IT IS STRONGLY RECOMMENDED that special care be taken by the proponent to attain satisfactory lasting quality of the riding surface. This will require careful investigation and analysis of the varying subsoil conditions before construction. Design will have to be based on proven results obtained from those analyses. Effective quality control will be necessary to ensure the design requirements are actually met.

Rainy Hollow Alignment

One of the two major road realignments of the Shakwak project is in the Rainy Hollow area of British Columbia, just north of the Alaska border. The realignment is proposed to improve the road geometry and grades. Several alternative routes have been examined and the proponent will select a preferred alignment based on both engineering and environmental considerations.

THE PANEL RECOMMENDS that the proponent prepare a comparative assessment of the route alternatives in the Rainy Hollow section, incorporating the results of the further

studies now being conducted. The assessment should provide a detailed environmental evaluation of the preferred alignment and should itemize why the other alternatives are considered less desirable.

Before any work begins on the site, the assessment is to be reviewed by the Shakwak Review Committee and the alignment approved by the appropriate British Columbia government agencies.

ECOLOGICAL ISSUES

Fish Passage at Stream Crossings

The Panel was advised that many existing culverts on the Shakwak route inhibit or prevent fish passage across the highway and that a benefit of the project will be the upgrading of these crossings. The federal Fisheries Service has established guidelines for culvert design to allow fish passage and the application of these guidelines should ensure protection of the fisheries resource. Completion of the further fisheries studies (see "Construction Disturbance of Fish and Wildlife" page 18) will be essential to proper stream crossing design. Also required will be the completion of hydrologic studies to determine design flow requirements and flow ranges for which fish passage must be provided.

The proponent has committed himself to providing for fish passage on all stream crossings where it is needed and to completing the fisheries studies required for crossing designs. The Inland Waters Directorate of Environment Canada is developing design flows for crossings on the Shakwak Highway Project on behalf of Public Works Canada. Studies have not yet been undertaken to determine the water flows at times of fish passage and thus the flow ranges which the crossings must be able to accommodate.

The proponent has indicated the possibility of installing pipe arches instead of full culverts to preserve the natural stream bed where fisheries values are particularly important or where fisheries and hydraulic requirements may be difficult to reconcile.

The Panel recognizes the beneficial impact of the corridor fisheries resources that will result from the upgrading of stream crossings, and acknowledges the proponent's commitment to providing for fish passage where needed. A study to evaluate the use of pipe arches instead of full culverts on some crossings is endorsed by the Panel. THE PANEL RECOMMENDS that stream crossing designs be available for review by the appropriate government agencies sufficiently in advance of crossing construction to permit their proper evaluation.

Over-Harvest of Fish and Wildlife

Concern was widely expressed about the added fishing and hunting pressure that construction workers could place on the corridor game resources. For example, moose populations are under significant pressure along the highway, and "under no condition can we afford to increase the (moose) hunting pressure along this transportation corridor." (Yukon Wildlife Branch, 1977.) Of similar concern is the Burwash Uplands caribou herd where "recruitment to breeding age is suspected to have been negative (for) a number of years" (Ibid). Native people are particularly anxious about the threat to their food supply.

The Panel was advised that the current level of game management and enforcement of game regulations was less than adequate to deal with existing pressures and that an increase in pressure on fish and wildlife resources without an increase in management and enforcement activity could lead to serious impacts. Management suggestions received by the Panel included the provision of additional conservation officers and/or game wardens, increasing the residency requirements for obtaining a hunting licence, establishing a no-hunting corridor along the project route, reducing bag limits and eliminating commercial fishing in Klwane Lake.

The proponent stated that he recognizes the potential problem and that he is planning to control those recreation activities of construction workers which could impact fish and wildlife resources and locate these activities away from the corridor as much as possible. A "no gun" rule will be enforced in the camps.

The Panel endorses the proponent's plans to limit the recreation activities of project workers that could impact on fish and wildlife resources in the corridor, but concludes that more definite action is required to avoid the over-harvesting of these resources. This action is the responsibility of existing federal and territorial agencies. **THE PANEL RECOMMENDS** that federal and territorial agencies increase their management and enforcement activities accordingly. However, the Panel is concerned that existing legislation and regulations, and the present level of funding of Yukon game management agencies, may be inadequate to cope with the significant increase in pressure on fish and wildlife resources over the next few years.

THE PANEL RECOMMENDS that, as a minimum, additional enforcement officers be assigned to the project corridor to enforce existing regulations.

Construction Disturbance of Fish and Wildlife

The disturbance of fish and wildlife populations by construction activities is of general concern along the Shakhwak corridor. Construction in and adjacent to streams may threaten fish during any part of their lifecycle. In areas of important sheep habitat, caribou migration, raptor nesting, canid denning and waterfowl staging, construction activities during sensitive periods could disturb the resident wildlife.

The need for avoiding such disturbances was expressed in several briefs and submissions received by the Panel. However, the available environmental data are often inadequate to determine specific measures to avoid or mitigate adverse impacts. This situation is acknowledged by the proponent and further studies are planned to provide the necessary data. The proponent has made the following commitments to deal with these concerns:

1. Adequate data to reasonably determine the timing and location of fish migration, spawning, fry emergence and over-wintering activities will be collected in watercourses where construction disturbance may occur. The in-stream construction program will be arranged to minimize

the disturbance of these activities. Stream crossing designs will also be based on these data.

2. A detailed survey of potential raptor nesting areas will be made to identify active sites. Construction activity will be limited at sensitive times and locations.
3. Field observations during the appropriate seasons will be made to improve understanding of the timing of migration of Burwash Uplands caribou across the highway.
4. Areas of proposed road re-alignments, camps and borrow pits will be ground checked for active caribou denning sites.

Some of these studies have already been initiated where they must precede construction activities scheduled for 1978 and 1979. The proponent has stated his intention to develop the study methods and reporting procedures in consultation with the appropriate government agencies and to widely distribute the study reports for review. The studies will also be co-ordinated with similar work being undertaken by Foothills Pipe Lines (Yukon) Ltd. in conjunction with their Alaska Highway Gas Pipeline Project.

Discussion of possible impacts to Dall sheep populations near the project will be found later in this report under "Protection of Unique Areas" page 30.

The Panel endorses the further study plans of the proponent for which commitments were made during the course of the hearings. THE PANEL RECOMMENDS that the findings of the studies be incorporated into the construction design and schedule and that the schedule be submitted for approval to the appropriate regulatory agencies sufficiently in advance of any field activity.

With regard to avoiding disturbance of the migration of Burwash Uplands caribou across the highway in the Duke River/Burwash Creek area, THE PANEL RECOMMENDS that no new facilities such as camps, gravel crushers and asphalt plants be located between the Burwash Airport (km 7765) and Quill Creek (km 7790).

Attraction of Wildlife to Unnatural Food Sources

The attraction of bears and other scavengers to garbage dumps or food sources is considered to be a significant potential problem in the Shakhwak corridor. Threats to human safety and to the welfare of the animals can develop if the problem should become serious. The Panel was advised that

the Territorial and Federal governments are presently in the process of developing guidelines for solid waste disposal in Yukon.

In the EIS, the proponent states his intention to incinerate and bury all camp garbage daily and to ensure the proper storage of food and food wastes at camps. Camps would be located, where possible, to avoid prime grizzly bear habitat and construction personnel would be discouraged from interaction with wildlife.

THE PANEL RECOMMENDS that to avoid attracting wildlife to garbage dumps and food sources, all camps established for one construction season or more be surrounded with a bear-proof fence and that garbage be incinerated and the residue buried daily. Further, it is recommended that the proponent prepare a comprehensive plan for food storage and waste handling for approval by the Yukon Land Use Advisory Committee and the Yukon Game Branch before any camps are established.

Reclamation and Revegetation

A detailed program for the reclamation and revegetation of disturbed areas in the right-of-way, abandoned road alignments and haul roads, borrow and staging areas and

camp sites will be required for the project. Revegetation with native species was frequently suggested to the Panel, particularly in unique areas. Some areas of particular wildlife value were suggested for immediate active revegetation rather than relying on slower natural processes.

The proponent has stated that he intends to begin the development of such a program this summer for the initial construction segments in Rainy Hollow and on either side of Haines Junction. Planning for the remainder of the project would be carried out on a segment-by-segment basis as the construction design proceeds.

The Panel acknowledges the need for a detailed reclamation and revegetation program and endorses the proponent's approach to developing the phugam. In making site-specific plans, the phugam should consider erosion control, aesthetics, wildlife values and the use of native species in unique areas. **THE PANEL RECOMMENDS** that each phugam be available for review and approval by the appropriate government agencies at least one year in advance of construction. For the first segments scheduled for construction, the program is to be available for review in 1976.

SOCIAL AND ECONOMIC ISSUES

Construction Impacts on Communities

The potential for adverse social impacts during the construction period is great. The population in the construction corridor will more than double during much of this eleven-year period due to the increased work force. This will result in pressures on government and social services, natural resources, lifestyles, traditional values and the local economy.

Immediate Impacts

The Panel recognizes that one of the most critical periods will be the first few years before all services are in place and before the degree of compatibility between the project and the communities is well understood. Serious problems could develop in the Haines Junction area and along the highway corridor in the first two years without the provision of improved medical facilities and social services.

Increases in services in the corridor have, in some cases, already begun. A third R. C. M. P. constable will be stationed in Haines Junction beginning in 1978 and expanded nursing facilities are being planned

for 1979. Construction of an extension to the Haines Junction School is also planned for 1978.

The proponent has stated that the project camps will be as self-contained and independent of the communities as is reasonably possible. The camps will have their own fire protection facilities, first aid capability, security force and emergency equipment. The camps will also take care of their own garbage and refuse disposal.

The Panel acknowledges the proponent's plans to minimize the dependence of camps and workers on communities, but concludes that some pressures on the communities will inevitably develop and problems will consequently arise. **THE PANEL RECOMMENDS**, beginning this summer (1978), that an additional social worker be assigned to the Haines Junction area on a year-round basis and an additional public health nurse be located in the area on a full-time basis during the construction season until the planned expansion of nursing facilities has been completed. In 1979, the total area population should support a resident medical doctor, but in the meantime **IT IS RECOMMENDED** that the frequency of medical doctor visits be increased from monthly to weekly during the active construction period.

Provision of the recommended services are the responsibilities of the appropriate government agencies. However, project management must ensure that the services are funded and available in Haines Junction for a twelve-

month period beginning July 1978 after which financial responsibility will revert to these agencies.

Long Term Impacts

The Shakwak Highway Project is planned over an eleven-year period, during which a major gas pipeline project is expected in the same corridor and other projects and events will likely occur. The project schedule is also subject to change. Consequently, the Panel believes that, on the basis of available information, it is not possible to predict community impacts, mitigation measures and service requirements with any degree of confidence beyond two years.

The Panel considers that the community impact analyses presented in the EIS are inadequate in content and organization and do not permit the development of appropriate impact mitigation measures.

THE PANEL RECOMMENDS the ongoing development of community impact reports by a team of qualified professionals for the corridor areas centred on each of Haines Junction, Destruction Bay, Burwash Landing and Beaver Creek. The initial report for Haines Junction is to be prepared this year with the initial reports for other communities at least 2 years in advance of the beginning of

construction in the area. These reports are to be subsequently updated annually with the additional project experience and changes and with the influences of other events in the areas, until such time as project related impacts have subsided.

The reports should cover such factors as medical and social services, schools, housing, native concerns, recreation, garbage disposal, wage and price inflation and the current schedule of project activities, camp locations and manpower. More detailed terms of reference for the methodology and content of the reports are found in Appendix D of this report.

In preparing the reports, the proponent is to ensure full coordination with the Alaska Highway Gas Pipeline Project, with the communities themselves, and with government agencies responsible for community services.

The reports are to be submitted to the Shakwak Review Committee for review and distribution to the appropriate agencies.

Community Liaison

The potential pressures on communities due to the project could develop into serious problems and such consequences must be avoided. It will

thus be essential that good communications exist among the proponent, corridor residents and government agencies, since ease of communication will allow the early identification of problems and their solution.

The proponent intends to employ an environmental co-ordinator whose responsibility, in part, will be to develop and maintain good community liaison. Representatives of project management will consult with government agencies and will attend Local Improvement District Board or other community group meetings whenever requested and whenever significant action is planned which will affect a community.

Because it believes that community liaison will be vital to the prevention of community problems, THE PANEL RECOMMENDS that a community liaison officer be named by the proponent. The responsibilities of this person would include maintaining close contact with individuals, communities and businesses affected by the project, identifying problems and their solution and co-ordinating Shakuwak Highway Project activities with other projects or events in the corridor. THE PANEL RECOMMENDS that the proponent's community liaison officer submit an annual report to the Shakuwak Review Committee.

THE PANEL FURTHER RECOMMENDS that each community, the Champagne-

Aishihik Band and the Kluane Tribal Brotherhood, name a Shakuwak liaison person to represent community concerns to the project management and to receive information about project activities. Project management will be expected to reimburse, with advance authorization, any reasonable expenses which the community liaison persons or groups may incur in carrying out their responsibilities.

This liaison program must be closely co-ordinated with similar programs which might be instituted for the Alaska Highway Gas Pipeline Project.

Police Services

The need for improved police services in the corridor is a concern, particularly of the native community of Burwash Landing and the Yukon Native Brotherhood. The native communities have recently been trying to establish a native police program in Yukon in conjunction with the R. C. M. P.

The R. C. M. P. advised the Panel that an additional constable will be stationed in Haines Junction starting this summer and that a proposal for an additional constable in Beaver Creek and a mobile detachment in Destruction Bay is currently before the federal Treasury Board for implementation in 1979. Concerning the question of

native police, the Panel was advised that the extension of the R.C.M.P.'s Special Constable program to Yukon is currently under Treasury Board review.

The Panel endorses the actions and intentions of the R.C.M.P. to improve police services in the Shikwak corridor and strongly supports the R.C.M.P. proposal before the Treasury Board for additional staff in Destruction Bay and Beaver Creek and implementation of the Special Constable program in Yuhan. The Panel also supports the concept of a crime prevention program in the communities.

Demands on Community Recreation Facilities

The number of project personnel in the Shikwak corridor and the unavoidable proximity of camps to communities, indicate that there will be significant use of community services and facilities by project workers. In particular, workers may want to use recreation facilities which in most cases are adequate to satisfy only current community needs.

The proponent advised the Panel that each engineering and contractor camp will be provided with a recreation facility incorporating such amenities as a shuffleboard,

pool table, card table, television, bar and so on. This facility is intended for use during the evenings. On days off, the proponent intends to encourage workers to leave the corridor area.

This issue was the subject of discussion at every community hearing. With the exception of the native communities, the consensus was that construction workers would be welcome in the communities, provided that the local facilities are not overloaded as a consequence. Residents indicated a willingness to have workers participate in community activities and suggested that financial support of local facilities by the proponent or contractors may be justified. The proponent indicated willingness to discuss the support of community recreation facilities with residents, but that it would be difficult to fund any direct capital improvements to the facilities.

The Panel concludes that project workers might want to participate in community activities and use local facilities, though the extent is not predictable at present. The Panel acknowledges that the apparent willingness of some communities to welcome the workers has the potential for both beneficial and undesirable impacts.

THE PANEL RECOMMENDS that this matter be the subject of ongoing monitoring and discussion between the proponent and the communities to

identify and address any problems which might develop. Various methods of assisting the communities should be explored, including worker membership in community associations, direct capital or equipment grants and contributions under the Yukon Capital Assistance Program.

Should it become apparent that a community cannot or does not want to accommodate worker recreation activities, THE PANEL RECOMMENDS that the proponent ensure workers the means to participate in recreation activities which do not depend on the communities.

Location of Project Headquarters

Representation was made to the Panel at the hearings in Haines Junction that the Shakwak Highway Project headquarters be located in that community. The reasoning was that this action would help develop community services. Improved services are considered necessary to attract more permanent residents and provide for long-term community stability.

The proponent stated that the project headquarters would consist of a maximum of 16 permanent employees and that all but 5 of these would be assigned to the construction sites during the summer months.

The proponent wishes to locate the headquarters in Whitehorse to minimize logistic and recruiting problems. He has stated that some elements of project servicing, such as vehicle maintenance, are now planned to be located in Haines Junction. Further, he is prepared to discuss with the Local Improvement District Board and the Yukon Department of Local Government what additional services may be appropriate in Haines Junction. These services are expected to result in a demand for housing and related services in the community.

The Panel concludes that the project headquarters should not be located in Haines Junction since it would appear to be an unnecessary inducement for growth with little potential for permanence. The Panel endorses the proponent's intention to discuss the development of services in Haines Junction with the Local Improvement District Board and the Yukon Department of Local Government, AND RECOMMENDS that they explore the establishment of service facilities which would remain useful when the project is completed.

Construction Disturbance to Highway Travellers

Construction activity on the Shakwak Highway Project, particularly

the occasional road closures, will periodically cause unavoidable delay in travel along the highway. Such delay will inconvenience all travellers. Of particular concern are scheduled tour buses and commercial vehicles where delays may result in an economic loss.

The proponent intends to keep delays to a maximum of one hour, except under extraordinary circumstances, and then only with advance notice and at off-peak times. It is also the proponent's intention to maintain continuous liaison with tourist information centres and travel businesses to publicize the progress of the project and to minimize inconvenience to travellers.

The Panel supports the proponent's initiatives to reduce construction disturbance to highway travellers and concludes that these initiatives should help to minimize the problems.

Protection of Traditional and Historic Sites

The protection of traditional and historical resources (including archaeological) in the Shakuwak corridor will be an important prerequisite to the project proceeding successfully. The need for this protection was emphasized by the native people.

In the EIS and at the public hearings, the proponent stated his intention to complete a detailed inventory of these resources which may be affected by highway reconstruction and to develop appropriate protection measures. This work will be done in consultation with corridor residents who have special knowledge of the area. Some work has already begun in sections of the project scheduled for reconstruction in 1978 and 1979.

The proponent's plans for the protection of traditional and historic sites are endorsed. THE PANEL RECOMMENDS that the inventories produced and the p&o-&ion measures devised be referred to the Shakuwak Review Committee and submitted to the appropriate government agencies, as well as to groups and individuals who may have an interest in the sites.

Native Land Claims in Yukon

The Yukon Native Brotherhood, Champagne-Aishihik Band and Kluane Tribal Brotherhood all made representations to the Panel that the Shakuwak Highway Project not be permitted to proceed until their land claims are settled. They maintained that, prior to settlement of the claims, they would not have the means of preventing project impacts on their communities and lifestyles and they would not be able to benefit economically from the project.

The Panel recognizes that land claim settlement in addition to providing the Yukon Indian people with land and other forms of compensation to develop an economic base, includes such important issues as preservation of lifestyle and participation in the decision-making authority which governs their everyday life.

These issues have not been resolved and the initial years of construction of the project may have an impact on native people and the settlement of their claims.

However, the potential for impacts on communities and lifestyle exists for all corridor residents, both native and non-native. The proponent intends to take measures to mitigate these impacts. Such measures are the subject of several Panel recommendations found elsewhere in this report.

It is recognized that there is an ongoing process in Yukon which is actively pursuing the just settlement of native land claims. This process is in a fairly advanced stage and currently allows for the pre-selection of lands and the resolution of the type of side issues which could arise from the Shakwak Highway Project. Also, access to funding for native undertakings will become available upon the signing of an agreement on the principles of a land claims settlement.

The Panel acknowledges that some elements of the Shakwak Highway Project may be on lands subject to the native claims selection process. We understand this process will permit the Minister of Indian and Northern Affairs to withdraw and protect community lands identified as being of special native interest in advance of the final settlement of land claims.

Because of the social impact mitigation measures planned for the project, and the protective measures established by the Land claims process itself, the Panel concludes that the project will not adversely affect or prejudice the resolution of land claims to the extent that would warrant postponement of the project.

Note: The Government of British Columbia Panel member did not participate in the discussion of this issue.

Jobs for Northern Residents

The potential for employment on this project is of paramount importance to local residents.

Important questions raised at the hearings on this subject concerned local hire preferences, hiring of American citizens and job opportunities for non-union workers.

The Canadian Employment and Immigration Commission has established local employment provisions for the project delineating hiring priorities based on the location and duration of residency of job applicants. These provisions cover Canadian citizens only. The Panel was advised that the question of the employment of American citizens is being discussed by the governments of Canada and the U.S.A.

Regarding union membership, many residents who may want to work on the project are not union members and are anxious about being denied job opportunities as a result.

The Panel endorses a local hire policy for the project with highest priority being given to residents of the project corridor. However, it is acknowledged that this issue is currently under review at high government levels, and the Panel has taken steps to make known the views of corridor residents, as expressed at the Panel's hearings, to those charged with resolving the issue. It is expected that this review will also resolve the issue of the employment of United States citizens on the project.

THE PANEL RECOMMENDS that if union membership is a requirement of employment on the project, corridor residents be able to join the unions at the job site.

Job Training

The training of northerners in skills useful on projects such as Shakwak is an ongoing process in Yukon today. Training is available through the Whitehorse Vocational and Technical Training Centre, though the Centre likely does not have the capacity to satisfy all the requirements of the Shakwak Highway Project, the gas pipeline project and other projects proposed for Yukon. Native people in the corridor indicated an interest in decentralized training programs to facilitate their acquisition of skills.

The Panel was advised that satellite or mobile training units are being considered for locations outside Whitehorse and that the Yukon Department of Education and Manpower is actively planning the expansion of their activities to provide more training opportunities in light of the major capital projects upcoming in Yukon. Liaison has been established between the agencies and the proponent who has expressed support for their programs.

The Panel supports the concept of training northerners in skills in construction and associated services generally in demand in Yukon and on the Shakwak Highway Project. It endorses the intentions of manpower agencies to expand existing training programs as the need is identified. THE PANEL

RECOMMENDS that any expansion in training programs directed at Shakwak corridor residents be conducted in the corridor where possible. This approach would aid in acquiring training. If an on-the-job training method is to be used, it is recommended that the incremental cost of training, over the basic construction contract cost, be borne by the Canadian Government.

Contracting Opportunities

To maximize the opportunities for smaller contractors to participate in the Shakwak Highway Project, the proponent intends to divide the work into as many small contracts as possible. It is also the proponent's intention to provide, with the contract tender documents, lists of local sub-contractors and to ensure that small and native contractors understand bidding procedures.

Native groups requested that a certain minimum percentage of contracts be guaranteed to native contractors since they were concerned about their present lack of equipment and financial ability to obtain it. The proponent advised the Panel that this approach is contrary to established public tendering policy.

The Panel endorses the proponent's initiatives in providing opportunities and assistance for smaller contractors to participate in the project. **THE PANEL RECOMMENDS** that construction and service contract awards be well publicized in Yukon so that residents will readily know where employment or contracting opportunities may lie.

The Panel believes that mechanisms other than guaranteed contracts appear more appropriate for encouraging the development of native businesses. A variety of opportunities are available that could allow native firms to achieve a competitive position. These include:

1. Yukon Native Construction Ltd. is already in a competitive position and has the capability of securing and handling a range of contract opportunities available under the Shakwak program. It is anticipated that this company will soon be in a position to bid on the major contracts to be let by the proponent.
2. Funding for native businesses is available from the Indian Economic Development fund and other programs within the Department of Indian Affairs and Northern Development. With the wide variety of contracts available under Shakwak, those interested in taking advantage of these business opportunities

may be able to secure initial funding through traditional programs.

3. Recent agreements signed by the Territorial Government and the Department of Regional Economic Expansion under the General Development Agreement provides funding and management opportunities for Yukon businesses. These could provide the mechanism whereby those interested in securing contracts with the Shakwa program can achieve a competitive position.
4. Financing and management advice is presently available through the Federal Business Development Bank. The nature of these programs is such that they are directed at emerging businesses and funds are often made available to ventures that are unable to secure financing through the traditional institutions.
5. The process of land claims provides an opportunity for native groups interested in securing contracts under the Shakwa program. Funds from the \$50 million cash advance recommended in the Lysyk Enquiry should be available shortly. It is understood that interest from this money will be available to the native organizations once an agreement in principle has been signed. These funds could be

used to establish a competitive bidding position for Shakwa contracts.

In addition, detailed analyses of corporate structures are currently part of the Land claims discussions. These may lead to the development of native businesses and companies that can direct any cash proceeds of the land claims to revenue producing resources.

Finally, because of the length of the project (11 years), cash flow from the land claims will likely be well in advance of the completion date and these funds can be directed towards securing Shakwa contracts, if desired, by the native groups.

OTHER ISSUES

Protection of Unique Areas

Four particularly unique areas occur along the Shakwa corridor. These are:

Sheep Mountain/Slims River Area

The area from the Slims River north to Congdon Creek, and Sheep Mountain in

particular, supports both a large population of Dall sheep and unique vegetation. Of major significance is the use of south-facing slopes as winter range; sheep are commonly found adjacent to the road in the winter and spring. Known raptor nesting sites occur in the vicinity as well. Outpost Mountain, just east of the Slims River floodplain, also provides sheep habitat, and a lambing ground is found on its north-facing slope above the highway.

The importance of this area was highlighted in the brief prepared for the Alaska Highway Gas Pipeline Project by the Yukon Game Branch which read, in part, (page 36):

It is difficult to describe in simple terms and in a few short sentences the uniqueness of Sheep Mountain and its animals as an ecological system and to persuade the decision-makers of the importance of leaving it intact. Sheep Mountain has always been the focal point of the Kluane area in respect to Park Reserve, Sanctuary and National Park establishments and boundary decisions. The area is also a planned ecological reserve proposed under the International Biological Program. Its conservation is therefore not only a question of pipeline economics but also a national and international responsibility.

The concern expressed to the Panel is that noise-producing construction

activity, particularly drilling and blasting, will disrupt the wildlife during sensitive periods of their lifecycle. Restrictions on the timing of construction activity were proposed both by the proponent in the Environmental Impact Statement and in several briefs and representations made to the Panel.

The Panel was also often referred to the unique assemblage of plant species and communities which exist on the highly saline floodplain of the Slims River. Any unnatural changes in the floodplain water table caused by the project could have extremely adverse impacts on this unusual biotic resource. The proponent advised the Panel that the widening of the causeway across the floodplain and the replacement of the Slims River bridge would in no way affect the water table in the area.

With respect to the timing of construction activities, the Panel acknowledges the need to prohibit any construction activity which will adversely disturb wildlife, and agrees with the advice given by Parks Canada that activities in the area be very closely controlled, and perhaps stopped, during the period of September 15 to July 75. It is realized that this restriction will be inconvenient for the proponent. THE PANEL RECOMMENDS that the proponent, the Yukon Game Branch and Parks Canada management, jointly determine a program of field activity and monitoring in the area which will protect the area's wildlife and vegetation.

The Panel accepts the proponent's position that the construction activity on the Slims River floodplain should not affect the water table and thus the unique vegetation of the area. THE PANEL RECOMMENDS, however, that the proponent be aware of the sensitivity of the area when preparing work schedules and detailed construction plans, that construction activities be closely monitored for any problems which may develop and that construction equipment and personnel be strictly constrained from damaging the floodplain vegetation.

It is particularly important that the construction activities of the Shakhah and gas pipeline projects be closely co-ordinated in this area.

Mt. Mansfield

An International Biological Program site is proposed in the Mt. Mansfield area of British Columbia to protect part of a population of Dall sheep and their habitat, including an important mineral lick in the canyon of Kwatini Creek. The site also contains several plant species found only in this part of British Columbia, plus additional rare species of wider distribution.

The Haines Road passes immediately to the west of the proposed

reserve and within a kilometre of the Kwatini Creek mineral lick.

THE PANEL RECOMMENDS that this area be treated as sensitively as the Sheep Mountain area and that the proponent similarly determine with the appropriate agencies a program of construction activity and monitoring which will minimize disturbance of the sheep population.

Duke Meadows

On an old channel of the Duke River northeast of the Alaska Highway lie the Duke Meadows, also a proposed International Biological Program site. The Meadows support a large population of arctic ground squirrels, an important resource for wild predators and for the native community of Burwash Landing about 7 kilometres to the east. The area is identified as sharp-tailed grouse habitat and sustains a high breeding density of upland plovers and other grassland birds.

No realignment of the existing road is proposed in this area.

THE PANEL RECOMMENDS that construction activity and personnel be strictly confined to the existing right-of-way in the vicinity of Duke Meadows.

Klukshu Village

Lying at the south end of Klukshu Lake, near km 190 of the Haines Road, Klukshu Village is an important site for the Champagne-Aishihik Band. The lake is the only one in the vicinity of the highway which contains salmon (sockeye, coho and chinook). The natives inhabit the village largely in the late summer and early fall when they trap migrating salmon for food. The village site is one of the more important traditional native areas in the Shakwak corridor.

A minor amount of straightening of the road in the Klukshu area is planned during reconstruction and the road into the village site will remain accessible from the new highway.

THE PANEL RECOMMENDS that because of the acknowledged importance of the Klukshu area to the native people, the proponent take particular care not to disturb any locations or artifacts of value to native people during the construction period. There should be continuous consultation between the proponent and the natives to prevent problems from developing.

THE PANEL RECOMMENDS that particular attention be paid to the protection of the fishery resource and the provision of a crossing structure to permit the passage of salmon in Klukshu River.

Aesthetics of Right-of-Way

The scenic resources of Yukon and British Columbia constitute one of their most important assets. The Shakwak Highway Project passes through a strikingly beautiful region. For these reasons, the highway design must be particularly sensitive to its setting. The proponent has stated that the services of a landscape architect will be employed on the highway design team and that scenic viewpoints will be developed along the highway in conjunction with the Yukon Resource Planning Branch and Parks Canada.

The proponent's intentions concerning the scenic design of the highway are endorsed. THE PANEL RECOMMENDS the continuous involvement of the landscape architect on the design team throughout the design period. To ensure that the integrity of the aesthetic characteristics of the design is preserved, the Panel recommends that the proponent prepare maintenance guidelines for each segment of the highway in conjunction with the Yukon Department of Highways and Public Works. The guidelines would explain the aesthetic design elements incorporated into the highway and right-of-way and delineate appropriate objectives and procedures for maintenance activities.

Maintenance Guidelines

Several issues were raised at the public hearings which were associated with the maintenance of the highway following construction. These issues are the concern of the Yukon Department of Highways and Public Works which will be maintaining the reconstructed road. These issues include the maintenance of the aesthetic design of the project as discussed earlier in this report, the attraction of wildlife to the highway by road salt in winter with a consequent increase in vehicle collisions, the use of herbicides to control roadside vegetation and the maintenance of a clear road in winter.

THE **PANEL** RECOMMENDS that the proponent, in consultation with the Yukon Department of Highways and Public Works, prepare comprehensive maintenance guidelines for each segment of the highway. The guidelines would explain particular design elements which should be maintained on the highway and delineate where the nature of the road environment dictates special maintenance procedures or unique seasonal requirements.

Hazardous Chemicals and Petroleum Products

The Panel observed that little information had been presented by the proponent on the transport and storage of hazardous chemicals and petroleum products and that there was no contingency plan to deal with spills of these materials.

THE **PANEL** RECOMMENDS that the proponent prepare a plan for the safe transport and storage of hazardous chemicals and petroleum products and a contingency plan for dealing with spills of these materials. The plan is to be completed this year and approved by the Environmental Protection Subcommittee of the Yukon Disaster Committee.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS



"...we feel very strongly that participation by local residents in all aspects of this project is most important... [This] monitoring and corrective action role belongs with the people who are being affected by the project and know best what is required to alleviate any adverse effects... they will also be able to recognize where and how they can attain benefits from the project."

Mr. Ewan Cotterill, Department of Indian and Northern Affairs, Ottawa.

"The idea that you're going to get fifty men to drive to Whitehorse back and forth every two day weekend is patently absurd in my opinion."

Mr. Vance Skyler, Destruction Bay.

"I spent four years in the service... When I got a one or two day pass, I headed for the nearest town... I found that in most of the towns we were welcome. You know, they'd like to have us and they made you feel welcome: I think we'd do the same thing here to the men, because they're people just like us. It's just that they've got to have something to do and right now we can't supply that."

Mr. Dwayne Holman, Destruction Bay.

"I would hope it goes without saying that we would attempt to recruit people [to work on the project] from their home communities when the project is near their home."

Mr. Ernie Standish, Employment and Immigration Canada, Whitehorse.

The process of informing the public and soliciting well-informed responses takes time, time that has not been allocated with respect to this project."

Ms. Nancy MacPherson, Social Worker, Whitehorse.

"...the Local Improvement District would like to see as many family housing units as possible located in the community. Possibly even some of the monies intended for camp recreation facilities would be better invested here, since the facility would be continued forever and not dismantled at the end of the construction period."

Mr. Neil Olson, Haines Junction Local Improvement District Board.

"Our people hunt in order to eat, not to decorate their homes."

Ms. Barbara Hume, Champagne-Aishihik Band, Haines Junction.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Following is a summary listing of the Panel's recommendations drawn from the preceding discussion of issues and potential impacts.

Overall Conclusion

1. The Panel concludes that it will be possible to carry out the project without significant adverse environmental or social impact if appropriate procedures are followed and certain conditions are met and recommends that the project be allowed to proceed this year as scheduled.

Project Management Issues

2. The Panel recommends that a 4-member Shakwak Review Committee be established to continuously review the project and to report annually to the federal Minister of Environment and Yukon Territorial Council through the Federal Environmental Assessment Review Office
3. The Panel recommends that those agencies with jurisdictional responsibilities over Yukon lands affected by the Shakwak Highway Project co-ordinate their activities to avoid duplication of effort and to ensure that specific environmental concerns are neither overlooked nor handled inconsistently. It is recommended that the Land Use Advisory Committee initiate this co-ordination and advise the Shakwak Review Committee of the actions taken.

It is further recommended that a common land use permit be developed to regulate the work in any given construction segment.

Operating terms and conditions should be developed through the appropriate members of the Land Use Advisory Committee. It is recommended that a similar mechanism be operated by the Land Use Advisory Committee to apply environmental controls over the British Columbia portion of the highway project.
4. The Panel endorses the proponent's initiatives in employing an environmental co-ordinator. It is recommended that this position be filled permanently as soon as possible to ensure continuity and early input to this year's scheduling and project design. It is further recommended that the environmental co-ordinator establish early contact with the

regulatory agencies to determine data requirements and timing of applications.

It is recommended that reports be prepared regularly by the environmental co-ordinator for submission to the Shakwak Review Committee.

5. The Panel wishes to emphasize that the co-ordination of studies, planning and construction between the Shakwak Highway Project and the Alaska Highway Gas Pipeline Project is of major importance.

Plans to limit activity on the Shakwak project during pipeline construction are endorsed. The Panel recommends that any changes to these limitations be determined through consultation with the Shakwak Review Committee.

Physical and Engineering Issues

6. The Panel endorses the proponent's commitment to develop a plan for the extraction of borrow materials and concludes that the existing land use permitting process will ensure satisfactory development control. The Panel recommends that the plan for each construction segment be available for review by the permitting agencies at least six months in advance of construction.

The Panel strongly recommends that a joint plan for the extraction of borrow materials be prepared for the Shakwak Highway Project and the Alaska Highway Gas Pipeline Project at least six months before pipeline construction begins.

7. The Panel recommends that the pilot project in the Beaver Creek area to evaluate the effectiveness of an insulated embankment over permafrost begin by 1980 at the latest.
8. The Panel recommends that the proponent take the initiative in establishing communication with the communities and the responsible government agencies in order to ensure that concerns regarding roadway design in the communities are satisfactorily resolved.
9. The Panel recommends that winter maintenance requirements for the completed highway be specified in comprehensive maintenance guidelines and that special care be taken by the proponent to attain satisfactory lasting quality of the riding surface.
10. The Panel recommends that the proponent prepare a comparative assessment of the route alternatives in the Rainy Hollow section, incorporating the results of the further studies now being conducted. Before any work begins on the site, the assessment is to be reviewed by

the Shakwak Review Committee and the alignment approved by the appropriate British Columbia government agencies.

for approval to the appropriate regulatory agencies sufficiently in advance of any field activity which may impact the resources to permit proper evaluation.

Ecological Issues

11. It is recommended that stream crossing designs be available for review by the appropriate government agencies sufficiently in advance of crossing construction to permit their proper evaluation.
12. To address the potential problem of the over-harvest of fish and wildlife resources, the Panel recommends that federal and territorial game management agencies increase their management and enforcement activities. The Panel recommends that as a minimum additional enforcement officers should be assigned to the project corridor to enforce existing regulations.
13. The Panel endorses the further study plans of the proponent with respect to fish and wildlife resources for which commitments were made during the course of the hearings. The Panel recommends that the findings of the studies be incorporated into the construction design and schedule and that the schedule be submitted

14. With regard to avoiding disturbance of the migration of Burwash Uplands caribou across the highway in the Duke River/Burwash Creek area, the Panel recommends that no new facilities such as camps, gravel crushers and asphalt plants be located between the Burwash Airport (km 1765) and Quill Creek (km 1790).
15. To avoid attracting wildlife to garbage dumps and food sources, the Panel recommends that all camps established for one construction season or more be surrounded with a bear-proof fence and that garbage be incinerated and the residue buried daily. Further, it is recommended that the proponent prepare a comprehensive plan for food storage and waste handling for approval by the Yukon Land Use Advisory Committee and the Yukon Game Branch before any camps are established.
16. The Panel acknowledges the need for a detailed reclamation and revegetation program and endorses the proponent's approach to developing the program. In general, each program is to be available for review and approval by the

appropriate government agencies at least one year in advance of construction. For the first segments scheduled for construction, the program is to be available for review in 1978.

Social and Economic Issues

17. The Panel acknowledges the proponent's plans to minimize the dependence of camps and workers on communities, but concludes that some pressures on the communities will inevitably develop and problems will consequently arise. Therefore, the Panel recommends, beginning this summer (1978), an additional social worker be assigned to the Haines Junction area on a year-round basis and an additional public health nurse be located in the area on a full-time basis during the construction season until the planned expansion of nursing facilities has been completed. In 1979, the total area population should support a resident medical doctor, but in the meantime it is recommended that the frequency of medical doctor visits be increased from monthly to weekly during the active construction period.

Provision of the recommended services are the responsibilities of the appropriate government

agencies. However, project management must ensure that the services are funded and available in Haines Junction for a 5-month period beginning July 1978 after which financial responsibility will revert to these agencies.

18. The Panel recommends the ongoing development of community impact reports by a team of qualified professionals for the corridor areas centred on each of Haines Junction, Destruction Bay, Burwash Landing and Beaver Creek. The initial report for Haines Junction is to be prepared this year, with the initial reports for other communities at least 2 years in advance of the beginning of construction in the area. These reports are to be subsequently updated annually with the additional project experience and changes and with the influences of other events in the areas until such time as project related impacts have subsided. Terms of reference for the reports are provided by the Panel.
19. Because the Panel believes that community liaison will be vital to the prevention of community problems, it recommends that a community liaison officer be named by the proponent and that this officer submit an annual report to the Shakwak Review Committee.
20. The Panel recommends that each community, the Champagne-Aishihik Band and the Kluane Tribal

Brotherhood, name a Shakwak liaison person to represent community concerns to the project management and to receive information about project activities.

21. The Panel strongly supports the R. C. M. P. proposal before Treasury Board for additional staff in Destruction Bay and Beaver Creek and the implementation of the Special Constable program in Yukon.
22. The Panel recommends that the use of community facilities by project workers be the subject of ongoing monitoring and discussion between the proponent and the communities to identify and address any problems which may develop.

Should it become apparent that a community cannot or does not want to accommodate worker recreation activities, the Panel recommends that the proponent ensure workers the means to participate in recreation activities which do not depend on the communities.
23. The Panel concludes that the project headquarters should not be located in Haines Junction since it would appear to be an unnecessary inducement for growth with little potential for permanence. The Panel endorses the proponent's intention to discuss the development of

services in Haines Junction with the Local Improvement District Board and the Yukon Department of Local Government and recommends that they explore the establishment of service facilities which would remain useful when the project is completed.

24. The Panel endorses the proponent's plans for the protection of traditional and historic sites and recommends that the inventories produced and the protection measures devised be referred to the Shakwak Review Committee for review and submitted to the appropriate government agencies.
25. The Panel endorses a local hire policy for the project and recommends that if union membership is a requirement of employment on the project, corridor residents be able to join the unions at the job site.
26. The Panel recommends that any expansion in training programs directed at Shakwak corridor residents be conducted in the corridor where possible. If an on-the-job training method is to be used, it is recommended that the incremental cost of training, over the basic construction contract cost, be borne by the Canadian Government.
27. The Panel recommends that construction and service contract

awards be well publicized in Yukon so that residents will readily know where employment or contracting opportunities may lie and concludes that mechanisms other than guaranteed contracts appear more appropriate for encouraging the development of native businesses.

Other Issues

28. The Panel recommends that the proponent, the Yukon Game Branch and Parks Canada management jointly determine a program of field activity and monitoring in the Sheep Mountain area which will protect the area wildlife and vegetation.

29. The Panel recommends that the proponent be aware of the sensitivity of the Slims River floodplain when preparing detailed construction plans, that construction activities be closely monitored for any problems which may develop and that construction equipment and personnel be strictly constrained from damaging the floodplain vegetation.

30. The Panel recommends that the Mt. Mansfield area of British Columbia be treated as sensitively as the Sheep Mountain

area and that the proponent similarly determine with the appropriate agencies a program of construction activity and monitoring which will minimize disturbance of the sheep population.

31. The Panel recommends that construction activity and personnel be strictly confined to the existing right-of-way in the vicinity of Duke Meadows.

32. The Panel acknowledges the importance of the Klukshu area to the native people and recommends that the proponent take particular care not to disturb any locations or artifacts of value to native people during the construction period. There should be continuous consultation between the proponent and the natives to prevent problems from developing.

The Panel recommends that particular attention be paid to the provision of a crossing structure to permit the passage of salmon in the Klukshu River.

33. The Panel endorses the proponent's intentions concerning the scenic design of the highway and recommends the continuous involvement of a landscape architect on the design team throughout the design period.

34. The Panel recommends that the proponent in consultation with the Yukon Department of Highways and

Public Works, prepare comprehensive maintenance guidelines for each segment of the highway. The guidelines would explain particular design elements, especially aesthetic elements, which should be maintained on the highway and delineate where the nature of the road environment dictates special maintenance procedures or unique seasonal requirements.

- 35. The Panel recommends that the proponent prepare a plan for the safe transport and storage of hazardous chemicals and petroleum products and a contingency plan for dealing with spills of these materials. The plan is to be completed this year and approved by the Environmental Protection Subcommittee of the Yukon Disaster Committee.**

**ENVIRONMENTAL ASSESSMENT PANEL
SHAKWAK HIGHWAY PROJECT**

APPENDICES

**APPENDIX A: PUBLIC HEARING
PROCEDURES**

The following is as described to audiences at the various hearing sessions:

- 1. Panel Chairman, Mr. F. G. Hurtubise, will chair all sessions.**
- 2. All prospective speakers should register with the Panel Secretary for scheduling purposes.**
- 3. Up to 20 minutes will be allotted for each presentation.**
- 4. After presentation of a brief, the Panel members may ask questions of clarification of the speaker.**
- 5. Both the speaker and Panel members may ask questions of the proponent relative to the brief.**
- 6. Neither the proponent nor other speakers may question a speaker directly.**
- 7. A period of time will be set aside at the end of each session for unscheduled speakers to comment on the project or to ask questions of the Panel or the proponent.**
- 8. There will be opportunities at breaks in the sessions for those in attendance to talk informally and off the record to individual Panel members and to the proponent's representatives.**

**APPENDIX B: WRITTEN SUBMISSIONS
RECEIVED BY THE PANEL**

Submissions from Groups

1. **Haines Junction Businessmen's Association (presented by Mr. Ron Watson)**
2. **National and Provincial Parks Association of Canada**
3. **Yukon Fish and Game Association**
4. **Yukon Association of Social Workers and Yukon Conservation Society (presented by Ms. Nancy MacPherson)**
5. **Champagne-Aishihik Band Community (presented by Ms. Barbara Hume)**
6. **Kluane Tribal Brotherhood (presented by Ms. Rose Smith)**
7. **Yukon Native Brotherhood (presented by Mr. Harry Harker)**
8. **Yukon Native Brotherhood - Supplement**
9. **Union of B.C. Indian Chiefs**
10. **Ecopact**

Submissions from Individuals

11. **Mr. R. M. Tait**
12. **Mrs. Hilda Watson - Brief**
13. **Mrs. Hilda Watson - Letter**

**Submissions from Government
Agencies**

Federal

14. **Fisheries and Environment Canada - Brief (presented by Mr. Ken Redpath)**
15. **Fisheries and Environment Canada - Memorandum**
16. **Department of Indian and Northern Affairs**
17. **Parks Canada - Kluane National Park (presented by Mr. Jim Masyk)**
18. **Royal Canadian Mounted Police (presented by Sgt. Dennis Presunka)**
19. **Canadian Employment and Immigration Commission (presented by Mr. Ernie Standish)**

Yukon

- 20. **Game Branch - Letter**
- 21. **Game Branch - Brief (presented by Mr. Bill Klassen)**
- 22. **Resource Planning Branch (presented by Mrs. Pia Archibald)**
- 23. **Department of Local Government (presented by Mr. Len Imrie)**
- 24. **Human Resources Branch**
- 25. **Department of Education and Manpower (presented by Mr. Duncan Sinclair)**

British Columbia

- 26. **Ministry of the Environment**

Municipal

- 27. **Haines Junction Local Improvement District (presented by Mr. Neil Olson)**

Submissions from Companies

- 28. **Northern Canada Power Commission**
- 29. **TERA Environmental Resource Analyst Limited**
- 30. **Vaartnou & Sons Enterprises Ltd.**

Note: All submissions listed are available in the form of a 200-page book, free of charge from Panel offices.

APPENDIX C: LIST OF PANEL DOCUMENTS

**Environmental Assessment Panel,
Shakwak Highway Project, March
1976, Guidelines to Prepare an
Environmental Impact Statement.**

**Environmental Assessment Panel,
Shakwak Highway Project, March
1978. Proceedings of Public
Hearings, Volumes 1 to 6.
(\$5.00).**

**Environmental Assessment Panel,
Shakwak Highway Project, March
1978. A compendium of Written
Submissions to the Environ-
mental Assessment Panel.**

**Public Works Canada and U.S.
Federal Highway Administration,
December 1977. Environmental
Impact Statement, 5 volumes:
Summary, Vol. 1, Vol. 2, Errata,
Final (post-review) volume.**

**Yukon Wildlife Branch, 1977.
Alaska Highway Gas Pipeline
Project - Environmental Concerns
and Recommendations of the Yukon
Wildlife Branch, July 7, 1977.**

**M. Mansfield - Application for an
Ecological Reserve, 1977.
Ecological Reserves Unit, Land
Management Branch, Government of
British Columbia.**

**MacPherson, Nancy, for Yukon
Association of Social Workers.
Potential Impact of the Alaska
Highway Pipeline on Alcohol and
Drug Services, Social Services,
and Rehabilitation Services of
the Yukon Territory.**

**Jones, Ian, for Yukon Association
of Social Workers, June 1977.
Potential Impact of the Proposed
Pipeline on the Criminal Justice
System of the Yukon Territory.**

APPENDIX D: **GUIDELINES FOR ONGOING
DEVELOPMENT OF SOCIAL/
COMMUNITY IMPACT REPORTS**

These guidelines are referred to in the report section entitled "Social and Economic Issues, Construction Impacts on Communities".

I. GENERAL CONTENT

Any community impact assessment study is characterized by three major types of investigation: a study of the present socio-economic environment of the community and of its likely development without the project; an assessment of the project-related impacts on the environment; formulation of mitigation and compensation measures designed to reduce the negative impacts and ensure that positive project impacts are realized. It is generally accepted that local people whose communities and lives will be affected by large scale projects should be consulted about such projects. It is therefore reasonable to include a public consultation program as characteristic of environmental impact assessments.

In addition to those general content areas, the community study should include a number of other related sections:

- a) Study Methodology: This would specify the tools of analysis used to predict impact, to describe the community and to ensure local input to the study.**
- b) Study Limitations: Every study has limitations and these should be recognized explicitly by the researchers and not merely inferred by the reader. Any lack of specificity of engineering data, time and budget constraints, external factors should be noted. The significance of such limitations in terms of predicting impacts and recommending mitigation measures should be addressed.**
- c) Analysis of Public Consultation Program The methodology section should contain a description of the consultation program. Further to that, some effort should be made to assess the effectiveness of the consultation program. What were the major concerns expressed throughout the process and how did they change with new information inputs? How significant was local input in terms of numbers or percentage of**

the population? Were public meetings well attended? What different types of public input made up the consultation program?

- d) **Literature Review and Experience Elsewhere:** The Shakwak Environmental Impact Statement includes some 35 socio-economic references in Appendix B and an item under "Identification of Possible Impacts" which states that the consultants have reviewed "experience on similar types of projects, most notably Dempster, Skagway-Carcross, MacKenzie and Alaska Highway projects and the Alyeska Pipeline". However, the report does not contain an analysis of the significance of those references and experiences elsewhere. In the first community study to be completed in the next phase (Haines Junction), a section should be written on the documented social impacts of other, similar types of projects and the differences between those and the project under review. Such a review would help to assess the importance of various community factors. They could then be updated for subsequent community studies.

II. DESCRIPTION OF SOCIAL AND ECONOMIC CONTEXT

A. CONTENT

The Yukon Territorial Government has prepared a blank Community Check List and Data Sheet that will be completed for all pipeline communities by government employees. A completed Check List and Data Sheet should be appended to each community study. An analysis of the significance of the information contained in the Fact Sheet should be presented in the body of the report.

In addition, a descriptive analysis of the socio-economic environment should include age, sex and ethnic characteristics of the population; information on the economic base of the community; employment rates, income ranges of residents and likely economic prospects of the community without the project.

Finally, the descriptive analysis should include

information on the socio-economic objectives of the community as a group and as these are presently defined and available from local government and self-help associations. For example, a local Band Council may have adopted a goal of increasing high school graduates among its people by 10 over the next 5 years. The local Chamber of Commerce may have decided to plan for a new tourist attraction within the next 3 years. These types of local socio-economic goals should be documented wherever possible, as such information will be necessary as base data in the impact assessment section.

B. METHODOLOGY

The information needed to complete this section could be obtained in a variety of ways:

- i. A formal consultation program with local people to get input to socio-economic community goals.

- ii. An interview program with government representatives and local self-help group representatives.
- iii. A literature search and comparative analysis for the section on social impacts of highway construction projects elsewhere.
- iv. Use of the findings of the literature to organize the analysis of the inventory section of the report.

The methodology followed and the extent of community input should be described in detail. Care must be taken to avoid guiding residents of small communities to definition of goals that reflect minor community priorities.

III. IMPACT ASSESSMENT

A. CONTENT

The community study should include as an introduction to the impact

assessment, a section that provides detailed community-specific information on the Shakwak Highway Project before, during and after the construction phases of the project. This would include the expected size, location and duration of the engineering and construction camps that would be located near the community under review; the distribution of the work force by task and labour skill requirement for the segments of the construction nearest the community; the size and skill requirements of the operations and maintenance crews that would be located nearest the community; and any other project considerations such as scheduling and phasing that might have implications for community life.

This would be followed by an assessment of potential impacts on the community

- during the pre-construction phase
- during the construction phase
- during the operational phase

FOR EACH OF THESE PHASES the following factors should be considered:

- i) Project-induced changes in the nature and size of the community population related to the nearest camps as well as to construction and maintenance workers who might live in the community with their families;
- ii) Corresponding changes in the availability and delivery mechanism of such services as law enforcement, social health, education, recreation; assessment of potential changes in priority in those services during the different phases;
- iii) Project impacts on housing availability, variety and cost;
- iv) Extent and nature of direct and indirect employment for local people, including women and native people;

- v) Extent and nature of contract work that is expected to be available to local businesses;
 - vi) Anticipated impacts on wages, prices and consumer services;
 - vii) Anticipated level of interaction between community and camp residents;
 - viii) Project impacts on community cohesion;
 - ix) Project impacts on community socio-economic objectives.
- nurse/population, etc.)
A formal consultation program with local service professionals and self-help group representatives could provide the basis for predicting changes in service priorities and delivery mechanisms as well as for understanding the unique characteristics of the service structure in each community.

- ii) Interviews with unemployed adults in the community, local business people, native representatives, and the Shakwak Project Manager could help to establish the range of employment opportunities for local people and the corresponding training initiatives that would be required to maximize local hiring.

B. METHODOLOGY

A number of different approaches could be used to generate the required information for this section. There should be consultation with the Manpower Training Program of the Yukon Territorial Government:

- i) For assessing changes in the service structure, Territorial ratios should be used wherever possible (pupil/teacher; R. C. M. P. / population; public health

- iii) The presence in the community of study team members for an extended period of time would allow them to use an anthropological approach in assessing the existing community structure and the impacts of the project on cohesion and socio-economic goals.
- iv) A comparative analysis of this project with other similar ones would help to

establish the range of potential impacts in the areas of population change; impacts on wages, price and consumer services, and housing impacts.

- v) Some statistical analysis could be used to generate potential population changes in the community over the life of the project.

IV. MITIGATION AND COMPENSATION MEASURES

This section should include:

- a) A detailed method for monitoring the impacts as they occur, thereby providing data that can be used throughout the 11-year construction period for specific mitigation and compensation measures.
- b) Identification of those social costs for which no significant mitigation measures can be presented.
- c) An assessment of the costs and planning resources

required to mitigate or compensate for negative impacts.

V. THE ALASKA HIGHWAY GAS PIPELINE

The most significant external factor to the social impact of the Shakwak Highway Project on the corridor communities will be the pipeline project.

This factor should be included throughout the study in discussions of local employment and training opportunities: size, nature and duration of construction camps; impacts on service structure.

APPENDIX E: PANEL MEMBER BIOGRAPHIES

FERN G. HURTUBISE (Panel Chairman)

Mr. Hurtubise was born in Ottawa and graduated in Chemistry from Carleton University in 1951. He later furthered his studies in Chemistry and Physics at several Canadian and American Universities. He is a fellow of the Chemical Institute of Canada and member of several other professional and scientific associations. He also holds the Diploma in Industrial Administration from the University of Geneva.

On graduation, he joined Canadian International Paper Research Limited and remained until 1971, at which time he was Manager of the Process Development Division. He then entered the Environmental Protection Service of the newly formed Department of the Environment and occupied various positions prior to his appointment as Director General, Environmental Conservation Directorate in 1975.

In 1976, Mr. Hurtubise was appointed Executive Chairman of the Federal Environmental Assessment Review Office.

P. HIRAM BEAUBIER

Mr. Beaubier completed a B.A. degree from the University of British

Columbia in 1967 and an M.A. in Geography from McGill in 1970.

Mr. Beaubier is presently Regional Manager, Land Resources, Department of Indian and Northern Affairs, Yukon Region. He has responsibilities for land resources in Yukon including sale and leasing of federal crown land, land use operations, and land research and planning. Before moving to Yukon, Mr. Beaubier worked on general research programs in various locations of the Canadian North, including mapping of present land and resource use of Yukon.

Other experience includes involvement in the environmental review of major projects in both northern and southern Canada.

WALTER A. BILAWICH

Mr. Bilawich has over twenty years of experience in municipal administration with various Saskatchewan municipalities including Uranium City in northern Saskatchewan during its initial development, leaving the position of City Commissioner in Estevan, Saskatchewan for service with the Government of the Yukon as Director of Local Government in 1970.

Mr. Bilawich is presently Special Projects Co-ordinator for the Government of the Yukon Territory with responsibilities in the areas of Pipeline Impact Planning, Electrical

Distribution Franchises, Acting Chairman of Government Structures Planning Committee for Yukon Planning Council in negotiation of Native Land Claims and represents the Yukon on the Mackenzie River Basin Study Committee. He is a fellow of the Chartered Institute of Secretaries and holds certificates in Municipal Administration from the Province of Saskatchewan and the International City Managers Association.

DOUG S. LACATE

Dr. Lacate received a BScF from University of New Brunswick in 1956 and an MSc from Cornell University in 1959.

He was employed as research scientist with federal Forestry Branch, 1956-1960, working on forest land classification throughout eastern Canada. He transferred to British Columbia in 1960 and continued forest land classification research until 1964 at which time he was seconded to the Canada Land Inventory Program (ARDA) and served as Provincial Co-ordinator of the Forestry and Agriculture Capability program

Dr. Lacate completed his PhD in 1970 at Cornell University in the fields of natural resource management and environmental impact assessment

of highway developments. He was associate professor at the University of British Columbia from 1970-1973, teaching airphoto interpretation and land classification and evaluation.

He worked on the evaluation of terrain in the Mackenzie Valley 1971-72 and returned to federal public service as Regional Director of the Lands Directorate in the Pacific and Yukon region from 1974 to the present.

JONATHAN P. SECTER

Mr. Sector received a Bachelor of Science in Agriculture degree from the University of British Columbia in 1965 and a Master of Science degree in wildlife biology from Utah State University in 1970. Before returning to Canada, he furthered his studies at the doctoral level in systems ecology, resource management, and environmental planning at Utah State University. He currently is a doctoral candidate in the College of Natural Resources at that institution.

Mr. Sector is Head of the Environmental Services Section of the British Columbia Ministry of the Environment's Environmental Studies Division with responsibilities for environmental services relating to land and resource development in British Columbia. These include

administering B.C.'s two environmental assessment Orders-in-Council, serving on five Environmental Assessment Panels for B.C. projects, co-ordinating B.C.'s shore management programs, and advising various B.C. ministries, crown corporations and related agencies on environmental implications of proposed development projects.

From 1973 through 1977 he served as Senior Ecologist and Co-ordinator of Environmental Services for the Land Management Branch of the B.C. Ministry of the Environment. Previously (1971-73) he was a Research Biologist with the Canadian Wildlife Service in Saskatoon.

GEORGE D. TENCH

Mr. Tench completed his degree in Architecture in Durham, England in 1951.

Mr. Tench was employed as an architect with the Department of Indian Affairs and the Department of Public Works in Ottawa, prior to 1956 when he moved to the Edmonton district office of Public Works. He transferred to Vancouver in 1957, was appointed Regional Architect for Public Works in 1966 and Regional Manager, Design and Construction, in 1972. In this capacity, Mr. Tench

is presently responsible for DPW's Marine, Building and Highway programs in British Columbia and Yukon.

COLIN E. WYKES

Mr. Wykes has a B.Sc.A. (1965) from University of Guelph, majoring in Fisheries and Wildlife Biology, and an M.Sc. in Limnology (1967) from University of Guelph.

From 1967 to 1973, Mr. Wykes was a Biologist with the Resource Development Branch, Federal Department of Fisheries, Halifax, N.S. These six years were spent in fisheries management and development work throughout the Maritime Provinces.

From 1973 to present he has been Director, Environmental Protection Service, Yukon Branch, Whitehorse, Y.T. Responsibilities include directing the Environmental Protection Service function in Yukon, being a member of the Yukon Territory Water Board, and a member of four Environmental Assessment Panels for Yukon projects.

APPENDIX F: ACKNOWLEDGEMENTS

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