

Possible Effects of the Arctic Islands Pipeline on Living Resource Use

Preliminary Report 1977

**D.H. Boyd
R.E. Schmidt
W. Hayden
I.W. Dickson and
Interdisciplinary
Systems Ltd.**

ESCOM No. AI-02



**Environmental-Social Program
Northern Pipelines**

**Programme écologique et social
Pipe-lines du Nord**

AIPP PRELIMINARY REPORT 1977

Possible Effects of the Proposed Polar
Gas Pipeline Project on Living Resource
Use in the Eastern Arctic

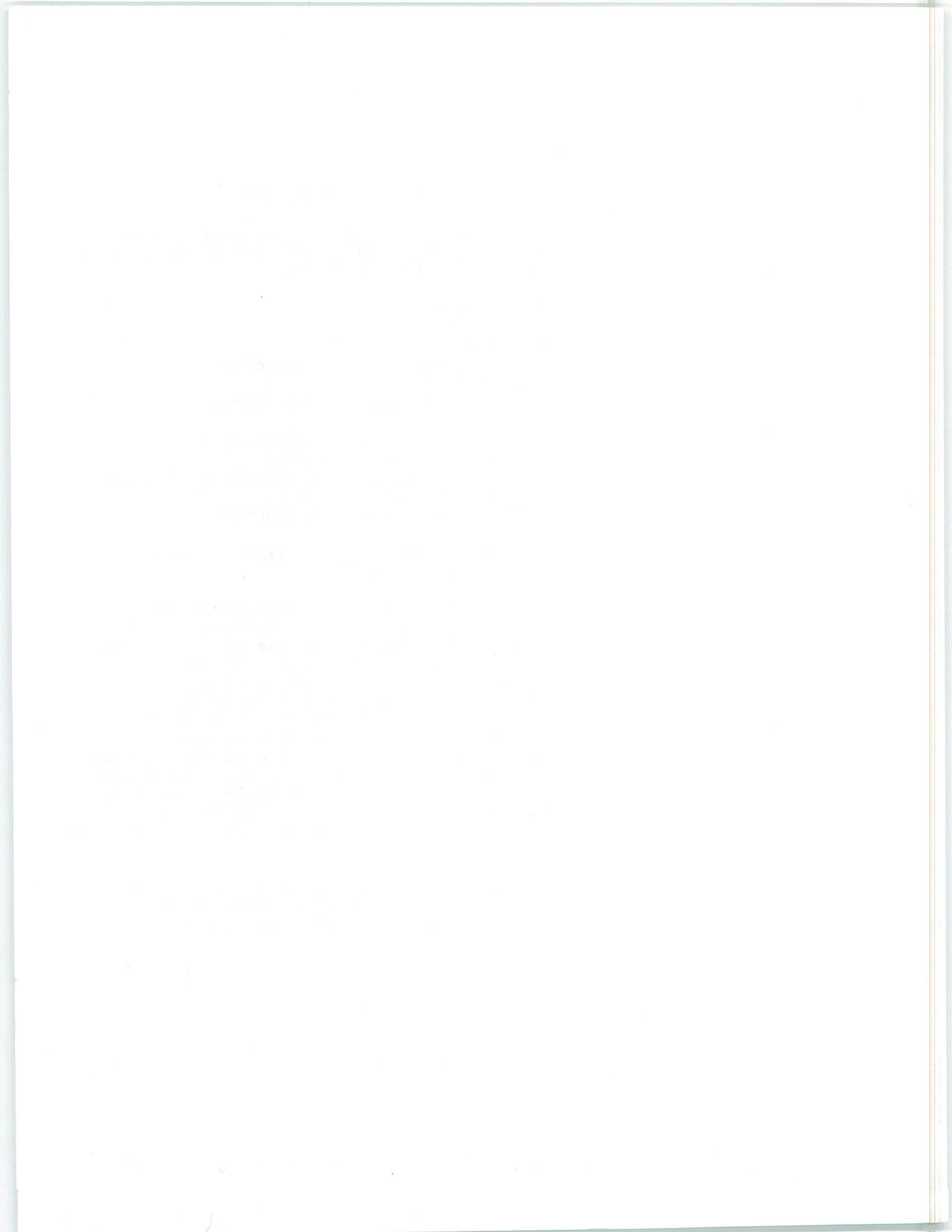
D. H. Boyd
R. K. Schmidt
W. Hayden
I. W. Dickson (Study Director)

Interdisciplinary Systems Ltd.

Published under the Authority of
the Hon. J. Hugh Faulkner
Minister of Indian and Northern Affairs
and the Hon. Len Marchand
Minister of State (Environment)
Ottawa, 1978
INA Publication No. QS-8160-002-EE-A1
ESCOM Report No. AI-02

This report presents preliminary data and results obtained by Fisheries and Environment Canada for use by the Arctic Islands Pipeline Program. These investigations were carried out under the Environmental-Social Program, Northern Pipelines of the Government of Canada. While the studies and investigations were initiated to provide information necessary for the assessment of hydrocarbon transportation proposals, the knowledge gained is equally useful in planning and assessing other development projects.

Any opinions or conclusions expressed in this report are those of the authors and are not necessarily shared by the Government of Canada.



RÉSUMÉ

La présente étude examine l'utilisation des ressources vivantes par douze communautés inuit des Territoires du Nord-Ouest et les effets possibles du projet du pipeline "Polar Gas" sur le régime communautaire d'utilisation des ressources. Elle fait partie intégrante du Programme du pipeline des îles de l'Arctique et est parrainée par le ministère fédéral de l'Environnement.

Les douze communautés étudiées ont été choisies à cause de la proximité de leurs ressources par rapport aux tracés du pipeline ou aux chantiers. Nous décrivons les zones de prise d'animaux à fourrure, de mammifères terrestres et marins, de sauvagine et de poissons de chacune de ces communautés, ainsi que le régime d'exploitation et les statistiques des prises. Nous discutons de l'importance relative de ces ressources des points de vue nourriture, revenu et loisirs.

Les incidences néfastes probables du pipeline sur les ressources vivantes utilisées par les communautés et leurs implications sont identifiées selon l'espèce animale et les régions caractéristiques.

Le principal tracé proposé, à l'ouest du lac Baker, a été étudié de façon prioritaire. Toutefois, nous avons porté une égale attention aux deux autres tracés proposés: les tracés côtier et québécois.

Les ressources vivantes tiennent une place importante dans le gagne-pain des communautés inuit; c'est ce qui ressort d'un examen d'ensemble des statistiques des prises, de l'étendue des zones d'utilisation des ressources et de l'importance commerciale et domestique des ressources vivantes pour ces communautés. Le caribou et le phoque sont d'une importance primordiale pour la plupart des communautés. Ils sont suivis, à un degré moindre, par le poisson, l'ours blanc, les baleines, le morse, la sauvagine et le renard. Les boeufs musqués ne sont pas exploités à l'heure actuelle, mais ils pourraient devenir assez nombreux pour l'être.

Resolute, Spence Bay et Baker Lake seront les communautés les plus touchées par le pipeline à cause de la proximité du principal tracé proposé. Celles d'Eskimo Point, Gjoa Haven, Chesterfield Inlet, Rankin Inlet, Whale Cove et Arctic Bay seront touchées à un degré moindre, alors que celles de Coral Harbour, Repulse Bay et Pelly Bay ne seraient touchées que si l'on choisissait le tracé québécois.

Des priorités pour la protection des ressources vivantes utilisées par les communautés ont été accordées à des zones de prises et à des habitats précis situés le long du tracé proposé. Les régions qui ont une importance primordiale à cause de la diversité de leurs ressources vivantes et de l'intensité de leur exploitation sont le détroit de Barrow, la côte nord de l'île Somerset, le bassin Stanwell-Fletcher et la baie Creswell, le détroit de Bellot, l'inlet Chesterfield, la baie Repulse, la région de l'anse Bear de l'île Southampton et l'île Coats.

Parmi les stratégies possibles de protection des ressources, on compte la possibilité de modifier le tracé, l'ordonnancement des travaux de construction, la sélection de l'emplacement des chantiers et la formulation et la mise en vigueur d'un code de protection de l'environnement.

Aucun des principaux tracés de rechange ne nous a semblé préférable au tracé principal pour ce qui est de protéger les ressources vivantes. Nous fournissons des dates précises pour les régions où les travaux devraient être limités pendant des périodes importantes pour la faune. Nous identifions les emplacements précis où l'on devrait éviter à tout prix toute construction reliée au pipeline. Nous donnons finalement une liste des sujets qui devraient être inclus dans le code conçu pour protéger les ressources vivantes importantes pour les communautés.

SUMMARY

This study examines the use of living resources by twelve Inuit communities in the Northwest Territories and the potential effects of the proposed Polar Gas Pipeline on community resource-use patterns. It was conducted as part of the Arctic Islands Pipeline Program and sponsored by the Canada Department of Fisheries and Environment.

The twelve communities examined were chosen because of the proximity of pipeline routes or project facilities to their resource-use zones. Harvest areas, harvest patterns, and harvest statistics are described for the use of furbearers, land mammals, wildfowl, marine mammals, and fish by each of these communities. The relative importance of these resources to communities for food, income, and recreation is discussed.

Possible adverse impacts of the proposed pipeline project on living resources harvested by communities are identified by species and by site-specific areas. The implications to communities resulting from impacts on living resources are described.

The proposed pipeline route west of Baker Lake was considered the prime route for the purpose of this study. However, the coastal and Quebec route alternatives were given equal consideration.

Living resources constitute an important aspect of the livelihood of the communities, based on an overview examination of harvest statistics, the extent of community resource-use zones, and the commercial and domestic importance of living resources to communities. Caribou and seal are of primary importance to most communities while fish, polar bear, whales, walrus, wildfowl, and fox are of lesser importance. Muskoxen are not presently used but they may become numerous enough to be harvested.

Resolute, Spence Bay, and Baker Lake will be the communities most significantly affected by the proposed pipeline project because of their proximity to the proposed prime route. Eskimo Point, Gjoa Haven, Chesterfield Inlet, Rankin Inlet, Whale Cove, and Arctic Bay would be affected to a lesser degree. Coral Harbour, Repulse Bay, and Pelly Bay would only be affected by construction of the Quebec route alternative.

Priorities for protection of living resources used by communities were assigned to specific resource harvest and habitat areas along the proposed pipeline routes. Several areas which are of primary importance because of diversity of living resources and intensity of resource harvest are Barrow Strait, the north coast of Somerset Island, Stanwell Fletcher Basin and Creswell Bay, Bellot Strait, Chesterfield Inlet, Repulse Bay, the Bear Cove area of Southampton Island, and Coats Island.

Strategies for protecting living resources include consideration of alternate routes, scheduling of construction activities, siting of project facilities, and the formulation and enforcement of an environmental code.

None of the major alternate routes examined appeared to be preferable to the prime route in terms of protecting living resources. Specific dates are provided for areas where construction activities should be restricted during important periods for wildlife. Specific sites are identified where every effort should be made to avoid location of pipeline facilities. Specific items which should be included in an environmental code designed to protect living resources important to communities are listed.

CONTENTS		Page
SUMMARY		v
LIST OF TABLES		xv
LIST OF MAPS		ix
ACKNOWLEDGEMENTS		xx
1. INTRODUCTION -----		1
1.1 Nature of Study -----		1
1.2 Terms of Reference -----		2
1.3 Definitions and Clarification of Terms -----		2
2. METHODS AND SOURCES OF DATA -----		5
2.1 Community Data -----		5
2.2 Resource-Use Areas -----		6
2.3 Harvest Patterns -----		8
2.4 Harvest Data -----		9
2.4.1 Trapping -----		9
2.4.2 Land Mammal Hunting -----		9
2.4.3 Wildfowl Hunting -----		10
2.4.4 Marine Mammal Hunting -----		10
2.4.5 Fishing -----		11
2.5 Commercial Importance -----		12
2.6 Domestic Importance -----		14
2.7 Pipeline Implications -----		15
2.8 Resource Impacts -----		15
3. PROJECT DESCRIPTION -----		15
4. RESOLUTE -----		16
4.1 The Community -----		16
4.2 The Economy -----		17
4.3 Resource-Use Areas -----		18
4.3.1 General Area -----		18
4.3.2 Trapping -----		18
4.3.3 Land Mammal Hunting -----		19
4.3.4 Wildfowl Hunting -----		19
4.3.5 Marine Mammal Hunting -----		20
4.3.6 Fishing -----		20
4.4 Harvest Patterns -----		23
4.5 Harvest Data -----		23
4.6 Commercial and Domestic Importance -----		23
4.6.1 Commercial Importance -----		23
4.6.2 Domestic Importance -----		30
4.7 Pipeline Implications -----		31

CONTENTS - Continued

	<u>Page</u>
5. SPENCE BAY -----	33
5.1 The Community -----	33
5.2 The Economy -----	33
5.3 Resource-Use Areas -----	34
5.3.1 General Area -----	34
5.3.2 Trapping -----	34
5.3.3 Land Mammal Hunting -----	35
5.3.4 Wildfowl Hunting -----	35
5.3.5 Marine Mammal Hunting -----	35
5.3.6 Fishing -----	39
5.4 Harvest Patterns -----	39
5.5 Harvest Data -----	39
5.6 Commercial and Domestic Importance -----	39
5.6.1 Commercial Importance -----	39
5.6.2 Domestic Importance -----	44
5.7 Pipeline Implications -----	45
6. ARCTIC BAY -----	46
6.1 The Community -----	46
6.2 The Economy -----	47
6.3 Resource-Use Areas -----	47
6.3.1 General Area -----	47
6.3.2 Trapping -----	48
6.3.3 Land Mammal Hunting -----	48
6.3.4 Wildfowl Hunting -----	48
6.3.5 Marine Mammal Hunting -----	49
6.3.6 Fishing -----	52
6.4 Harvest Patterns -----	52
6.5 Harvest Data -----	52
6.6 Commercial and Domestic Importance -----	52
6.6.1 Commercial Importance -----	52
6.6.2 Domestic Importance -----	58
6.7 Pipeline Implications -----	60
7. GJOA HAVEN -----	60
7.1 The Community -----	60
7.2 The Economy -----	60
7.3 Resource-Use Areas -----	61
7.3.1 General Area -----	61
7.3.2 Trapping -----	61
7.3.3 Land Mammal Hunting -----	61
7.3.4 Wildfowl Hunting -----	64
7.3.5 Marine Mammal Hunting -----	64
7.3.6 Fishing -----	64

CONTENTS - Continued

	<u>Page</u>
7.4 Harvest Patterns -----	65
7.5 Harvest Data -----	65
7.6 Commercial and Domestic Importance -----	65
7.6.1 Commercial Importance -----	65
7.6.2 Domestic Importance -----	65
7.7 Pipeline Implications -----	70
8. BAKER LAKE -----	72
8.1 The Community -----	72
8.2 The Economy -----	72
8.3 Resource-Use Areas -----	73
8.3.1 General Area -----	73
8.3.2 Trapping -----	73
8.3.3 Land Mammal Hunting -----	77
8.3.4 Wildfowl Hunting -----	77
8.3.5 Marine Mammal Hunting -----	77
8.3.6 Fishing -----	77
8.4 Harvest Patterns -----	78
8.5 Harvest Data -----	78
8.6 Commercial and Domestic Importance -----	78
8.6.1 Commercial Importance -----	78
8.6.2 Domestic Importance -----	82
8.7 Pipeline Implications -----	82
9. CHESTERFIELD INLET -----	84
9.1 The Community -----	84
9.2 The Economy -----	85
9.3 Resource-Use Areas -----	85
9.3.1 General Area -----	85
9.3.2 Trapping -----	89
9.3.3 Land Mammal Hunting -----	89
9.3.4 Wildfowl Hunting -----	89
9.3.5 Marine Mammal Hunting -----	89
9.3.6 Fishing -----	90
9.4 Harvest Patterns -----	91
9.5 Harvest Data -----	91
9.6 Commercial and Domestic Importance -----	91
9.6.1 Commercial Importance -----	91
9.6.2 Domestic Importance -----	91
9.7 Pipeline Implications -----	91

CONTENTS - Continued

	<u>Page</u>
10. RANKIN INLET -----	98
10.1 The Community -----	98
10.2 The Economy -----	98
10.3 Resource-Use Areas -----	99
10.3.1 General Areas -----	99
10.3.2 Trapping -----	99
10.3.3 Land Mammal Hunting -----	103
10.3.4 Wildfowl Hunting -----	103
10.3.5 Marine Mammal Hunting -----	103
10.3.6 Fishing -----	104
10.4 Harvest Patterns -----	104
10.5 Harvest Data -----	104
10.6 Commercial and Domestic Importance -----	110
10.6.1 Commercial Importance -----	110
10.6.2 Domestic Importance -----	111
10.7 Pipeline Implications -----	111
11. WHALE COVE -----	113
11.1 The Community -----	113
11.2 The Economy -----	113
11.3 Resource-Use Areas -----	114
11.3.1 General Area -----	114
11.3.2 Trapping -----	114
11.3.3 Land Mammal Hunting -----	115
11.3.4 Wildfowl Hunting -----	115
11.3.5 Marine Mammal Hunting -----	115
11.3.6 Fishing -----	115
11.4 Harvest Patterns -----	119
11.5 Harvest Data -----	119
11.6 Commercial and Domestic Importance -----	119
11.6.1 Commercial Importance -----	119
11.6.2 Domestic Importance -----	122
11.7 Pipeline Implications -----	122
12. ESKIMO POINT -----	123
12.1 The Community -----	123
12.2 The Economy -----	123
12.3 Resource-Use Areas -----	124
12.3.1 General Area -----	124
12.3.2 Trapping -----	124
12.3.3 Land Mammal Hunting -----	124
12.3.4 Wildfowl Hunting -----	125
12.3.5 Marine Mammal Hunting -----	125
12.3.6 Fishing -----	125

CONTENTS - Continued

	<u>Page</u>
12.4 Harvest Patterns -----	129
12.5 Harvest Data -----	129
12.6 Commercial and Domestic Importance -----	129
12.6.1 Commercial Importance -----	129
12.6.2 Domestic Importance -----	129
12.7 Pipeline Implications -----	129
13. PELLY BAY -----	136
13.1 The Community -----	136
13.2 The Economy -----	136
13.3 Resource-Use Areas -----	137
13.3.1 General Resource-Use Area -----	137
13.3.2 Trapping -----	137
13.3.3 Land Mammal Hunting -----	137
13.3.4 Wildfowl Hunting -----	140
13.3.5 Marine Mammal Hunting -----	140
13.3.6 Fishing -----	140
13.4 Harvest Patterns -----	141
13.5 Harvest Data -----	141
13.6 Commercial and Domestic Importance -----	141
13.6.1 Commercial Importance -----	141
13.6.2 Domestic Importance -----	141
13.7 Pipeline Implications -----	146
14. REPULSE BAY -----	146
14.1 The Community -----	146
14.2 The Economy -----	147
14.3 Resource-Use Areas -----	147
14.3.1 General Area -----	147
14.3.2 Trapping -----	151
14.3.3 Land Mammal Hunting -----	151
14.3.4 Wildfowl Hunting -----	151
14.3.5 Marine Mammal Hunting -----	151
14.3.6 Fishing -----	152
14.4 Harvest Patterns -----	152
14.5 Harvest Data -----	153
14.6 Commercial and Domestic Importance -----	153
14.6.1 Commercial Importance -----	153
14.6.2 Domestic Importance -----	153
14.7 Pipeline Implications -----	153

CONTENTS - Continued

	<u>Page</u>
15. CORAL HARBOUR -----	160
15.1 The Community -----	160
15.2 The Economy -----	160
15.3 Resource-Use Areas -----	161
15.3.1 General Area -----	161
15.3.2 Trapping -----	161
15.3.3 Land Mammal Hunting -----	165
15.3.4 Wildfowl Hunting -----	165
15.3.5 Marine Mammal Hunting -----	165
15.3.6 Fishing -----	166
15.4 Harvest Patterns -----	167
15.5 Harvest Data -----	167
15.6 Commercial and Domestic Importance -----	167
15.6.1 Commercial Importance -----	167
15.6.2 Domestic Importance -----	167
15.7 Pipeline Implications -----	174
16. RESOURCE IMPACTS -----	174
16.1 Format -----	174
16.2 Arctic Fox -----	175
16.2.1 Disturbance of Denning -----	175
16.2.2 Communities Affected -----	176
16.2.3 Data Gaps -----	176
16.2.4 Resource Protection Strategies -----	176
16.3 Caribou -----	176
16.3.1 Interference with Caribou Migrations ---	176
16.3.2 Interference with Calving -----	179
16.3.3 Disturbance of Caribou Concentrations --	180
16.3.4 Communities Affected -----	181
16.3.5 Data Gaps -----	181
16.3.6 Resource Protection Strategies -----	182
16.4 Muskox -----	183
16.4.1 Disturbance -----	183
16.4.2 Communities Affected -----	185
16.4.3 Data Gaps -----	185
16.4.4 Resource Protection Strategies -----	185
16.5 Wildfowl -----	186
16.5.1 Disturbance -----	186
16.5.2 Pollution -----	189
16.5.3 Communities Affected -----	190
16.5.4 Data Gaps -----	190
16.5.5 Resource Protection Strategies -----	191

CONTENTS - Continued

	<u>Page</u>
16.6 Polar Bear -----	192
16.6.1 Disturbance of Denning -----	192
16.6.2 Man-Bear Conflicts and Impacts on Major Food Sources -----	193
16.6.3 Communities Affected -----	194
16.6.4 Data Gaps -----	194
16.6.5 Resource Protection Strategies -----	195
16.7 Seals -----	196
16.7.1 Disturbance and Pollution -----	196
16.7.2 Communities Affected -----	198
16.7.3 Data Gaps -----	198
16.7.4 Resource Protection Strategies -----	199
16.8 Whales -----	200
16.8.1 Disturbance -----	200
16.8.2 Pollution -----	202
16.8.3 Communities Affected -----	202
16.8.4 Data Gaps -----	203
16.8.5 Resource Protection Strategies -----	203
16.9 Walrus -----	204
16.9.1 Disturbance -----	204
16.9.2 Pollution -----	206
16.9.3 Communities Affected -----	206
16.9.4 Data Gaps -----	206
16.9.5 Resource Protection Strategies -----	207
16.10 Fish -----	208
16.10.1 Toxic Spills and Siltation -----	208
16.10.2 Interference with Fish Migrations -----	211
16.10.3 Interference to Fishing -----	212
16.10.4 Communities Affected -----	213
16.10.5 Data Gaps -----	214
16.10.6 Resource Protection Strategies -----	214
17. CONCLUSIONS -----	216
17.1 Resource Use -----	216
17.2 Resource-Use Impacts -----	217
17.3 Priorities for Protecting Resources -----	218
17.4 Priority Areas Along Pipeline Routes -----	219
17.5 Resource Protection Strategies -----	222
17.6 Data Gaps -----	225

CONTENTS - Continued

	<u>Page</u>
18. RECOMMENDATIONS -----	227
18.1 Communities and Priorities for Studies -----	227
18.2 Project Description Requirements -----	227
18.3 Priorities for Protection of Living Resources --	228
18.4 Route Alternates -----	228
18.5 Scheduling of Construction Activities -----	229
18.6 Stanwell Fletcher Basin -----	229
18.7 Location of Major Pipeline Project Facilities --	230
18.8 Environmental Code -----	230
18.9 Data Gaps -----	231
REFERENCES -----	233

LIST OF TABLES

2-1.	Time span of maps from Inuit Land Use and Occupancy Project, used in defining community resource-use areas.	7
2-2.	Average NWT fur prices.	12
4-1.	Number of General Hunting Licences issued - Resolute.	18
4-2.	Harvest patterns - Resolute.	25
4-3.	Harvest data - Resolute.	28
4-4.	Expected annual income from sales of fur - Resolute.	30
4-5.	Estimated annual imputed income from major food sources - Resolute.	31
5-1.	Number of General Hunting Licences issued - Spence Bay.	34
5-2.	Harvest patterns - Spence Bay.	40
5-3.	Harvest data - Spence Bay (and Pelly Bay).	42
5-4.	Expected annual income from sales of fur - Spence Bay plus Pelly Bay.	44
5-5.	Estimated annual imputed income from major food sources - Spence Bay plus Pelly Bay.	45
6-1.	Number of General Hunting Licences issued - Arctic Bay.	47
6-2.	Harvest patterns - Arctic Bay.	53
6-3.	Harvest data - Arctic Bay.	56
6-4.	Expected annual income from sales of fur - Arctic Bay.	58
6-5.	Estimated annual imputed income from major food sources.	59

7-1.	Number of General Hunting Licences issued - Gjoa Haven.	61
7-2.	Harvest patterns - Gjoa Haven.	66
7-3.	Harvest data - Gjoa Haven.	68
7-4.	Expected annual income from sales of fur - Gjoa Haven.	70
7-5.	Estimated annual imputed income from major food sources - Gjoa Haven.	71
8-1.	Number of General Hunting Licences issued - Baker Lake.	73
8-2.	Harvest patterns - Baker Lake.	79
8-3.	Harvest data - Baker Lake.	80
8-4.	Expected annual income from sales of fur - Baker Lake.	82
8-5.	Estimated annual imputed income from major food sources - Baker Lake.	83
9-1.	Number of General Hunting Licences issued - Chesterfield Inlet.	85
9-2.	Harvest patterns - Chesterfield Inlet.	92
9-3.	Harvest data - Chesterfield Inlet.	94
9-4.	Expected annual income from sales of fur - Chesterfield Inlet.	96
9-5.	Expected annual imputed income from major food sources - Chesterfield Inlet.	97
10-1.	Number of General Hunting Licences issued - Rankin Inlet.	99
10-2.	Water bodies in the Rankin Inlet area with 1976 commercial quotas.	105
10-3.	Harvest patterns - Rankin Inlet.	106
10-4.	Harvest data - Rankin Inlet and Whale Cove.	108

10-5.	Expected annual income from sales of fur - Rankin Inlet plus Whale Cove.	110
10-6.	Estimated imputed income from major food sources - Rankin Inlet plus Whale Cove.	112
11-1.	Number of General Hunting Licences issued - Whale Cove.	114
11-2.	Harvest patterns - Whale Cove.	120
12-1.	Number of General Hunting Licences issued - Eskimo Point.	123
12-2.	Harvest patterns - Eskimo Point.	130
12-3.	Harvest data - Eskimo Point.	132
12-4.	Expected annual income from sales of fur - Eskimo Point.	134
12-5.	Estimated annual imputed income from major food sources - Eskimo Point.	135
13-1.	Number of General Hunting Licences issued - Pelly Bay.	137
13-2.	Harvest patterns - Pelly Bay.	142
13-3.	Harvest data - Pelly Bay.	144
14-1.	Number of General Hunting Licences issued - Repulse Bay.	147
14-2.	Harvest patterns - Repulse Bay.	154
14-3.	Harvest data - Repulse Bay.	156
14-4.	Expected annual income from sales of fur - Repulse Bay.	158
14-5.	Estimated annual imputed income from major food sources - Repulse Bay.	159
15-1.	Number of General Hunting Licences issued - Coral Harbour.	161
15-2.	Harvest patterns - Coral Harbour.	168

15-3.	Harvest data - Coral Harbour.	170
15-4.	Expected annual income from sales of fur - Coral Harbour.	172
15-5.	Estimated imputed income from major food sources - Coral Harbour.	173

LIST OF MAPS

1. Pipeline Routes and Possible Staging Sites	4
2. Resolute	20-21
3. Spence Bay	36-37
4. Arctic Bay	50-51
5. Gjoa Haven	62-63
6. Baker Lake	74-75
7. Chesterfield Inlet	86-87
8. Rankin Inlet	100-101
9. Whale Cove	116-117
10. Eskimo Point	126-127
11. Pelly Bay	138-139
12. Repulse Bay	148-149
13. Coral Harbour	162-163

ACKNOWLEDGEMENTS

This report was prepared by the authors in partial fulfilment of a contract with the Canada Department of Supply and Services (contract No. OSW 76-00228). The study was conducted for the Arctic Islands Pipeline Program, Fisheries and Environment Canada. The study director was Dr. I.W. Dickson, Interdisciplinary Systems Ltd. and the contract was managed by Mrs. R.M. Hache, Science Procurement Manager, Department of Supply and Services.

The study is based primarily on information obtained from literature reviews, reports and files of government and other agencies, borrowed unpublished material, and personal interviews and is dependent to a large extent on the cooperation and contribution of others independent of the study team.

We are indebted to staff of the Fisheries and Marine Service in Winnipeg, Yellowknife, and Ste.-Anne-de-Bellevue and the Canadian Wildlife Service, Edmonton and Ottawa, Department of Fisheries and the Environment, Canada. In particular, R. Peet, Fisheries and Marine Service, Winnipeg and D. Dowler, Fisheries and Marine Service, Yellowknife supplied valuable information on fishing. Dr. T.G. Smith, Arctic Biological Station, Ste.-Anne-de-Bellevue, generously provided information describing marine mammal, fox, and polar bear harvests. P. Smith, Canadian Wildlife Service, Ottawa and I. Stirling, R. Russell, J. Edmonds, and F. Miller, Canadian Wildlife Service, Edmonton provided helpful information on wildlife harvest and wildlife distribution.

A number of employees of the Northwest Territories government were most helpful in providing harvest data.

Polar Gas officials were responsive to our requests for project information.

Mr. R.J. Paterson, Fisheries and Marine Service, Winnipeg, provided welcome advice and direction as Scientific Authority for this study.

To the numerous people who assisted in this work, we are indeed grateful.

1. INTRODUCTION

1.1 Nature of Study

A number of studies are currently in progress to determine the feasibility and implications of constructing a pipeline to transport natural gas from the Arctic Islands to southern markets. An Arctic Islands Pipeline Program (AIPP) Study Board, established by the Canadian government, is responsible for overseeing the Canada Department of Fisheries and the Environment component of the Government's pipeline study program. Other studies are being done by the Polar Gas Project consortium.

To further the work of the AIPP Study Board, Interdisciplinary Systems Ltd., on behalf of the Canada Department of Fisheries and the Environment, has completed a study of living-resource use in the eastern Arctic as related to the proposed Polar Gas pipeline development. The primary focus of attention in this report is to determine key issues related to use of resources by communities potentially implicated by the pipeline; to identify anticipated problem areas related to resource-use; to indicate means by which to prevent or minimize resource-use impacts; and, to highlight areas deserving of further attention. The study is not to be considered as a substitute for a comprehensive environmental impact assessment; nor is it a comprehensive analysis of the socio-economic profile of eastern Arctic communities or a detailed inventory of regional resources. Rather, it is primarily intended to assist the AIPP Study Board in better understanding the community resource-use implications of the proposed pipeline and to identify areas and priorities for future work.

1.2 Terms of Reference

The terms of reference, as specified by our contract, are as follows:

1. By review of available literature and records, both published and unpublished, determine:
 - a) those living resources in the area affected by the proposed Polar Gas pipeline development utilized by residents and communities, with emphasis on fish, wildlife, furbearers, birds and marine mammals;
 - b) the magnitude and form of utilization of each of the living resources identified, i.e. volume of harvest and type of use: commercial sale, local food, recreation, craft production, etc.;

- c) the seasonal pattern of living resource use for each identified resource and the significance of this seasonal pattern, i.e. choice of resident vs. availability of resource; and
 - d) the "importance" of each of the resources identified to the social and economic life of each community.
2. Identify critical gaps in the available information on resource use and fill these gaps by means of:
 - a) discussions and interviews with government officials who will generally be employees of the Departments of Indian and Northern Affairs, Fisheries and the Environment, or the Government of the Northwest Territories located in district, regional, and headquarters offices and in the communities;
 - b) discussions and interviews with key individuals in the communities.
 3. By discussion with staff responsible for resource impact studies associated with the pipeline development to determine the most probable adverse impacts on resources utilized by local residents.
 4. Correlate estimates of adverse impacts on resources with information on resource utilization to establish a prediction of possible social and economic impacts on the respective communities.
 5. Establish priorities for resource protection based upon the relative "importance" of the resources to the communities and identify appropriate methods for protection based on advice from impact study personnel. Alternative methods should be outlined where possible.
 6. Prepare a comprehensive report on natural resource utilization in eastern Arctic communities potentially affected by the Polar Gas pipeline development utilizing all available data from this and previous studies and from records.

1.3 Definitions and Clarification of Terms

A number of points were identified from the terms of reference, literature review, and staff interview process that suggested the need for further definition and clarification of the nature and scope of this study. These points are briefly noted as follows:

1. The terms of reference state: "...the area affected by the proposed Polar Gas pipeline development..."

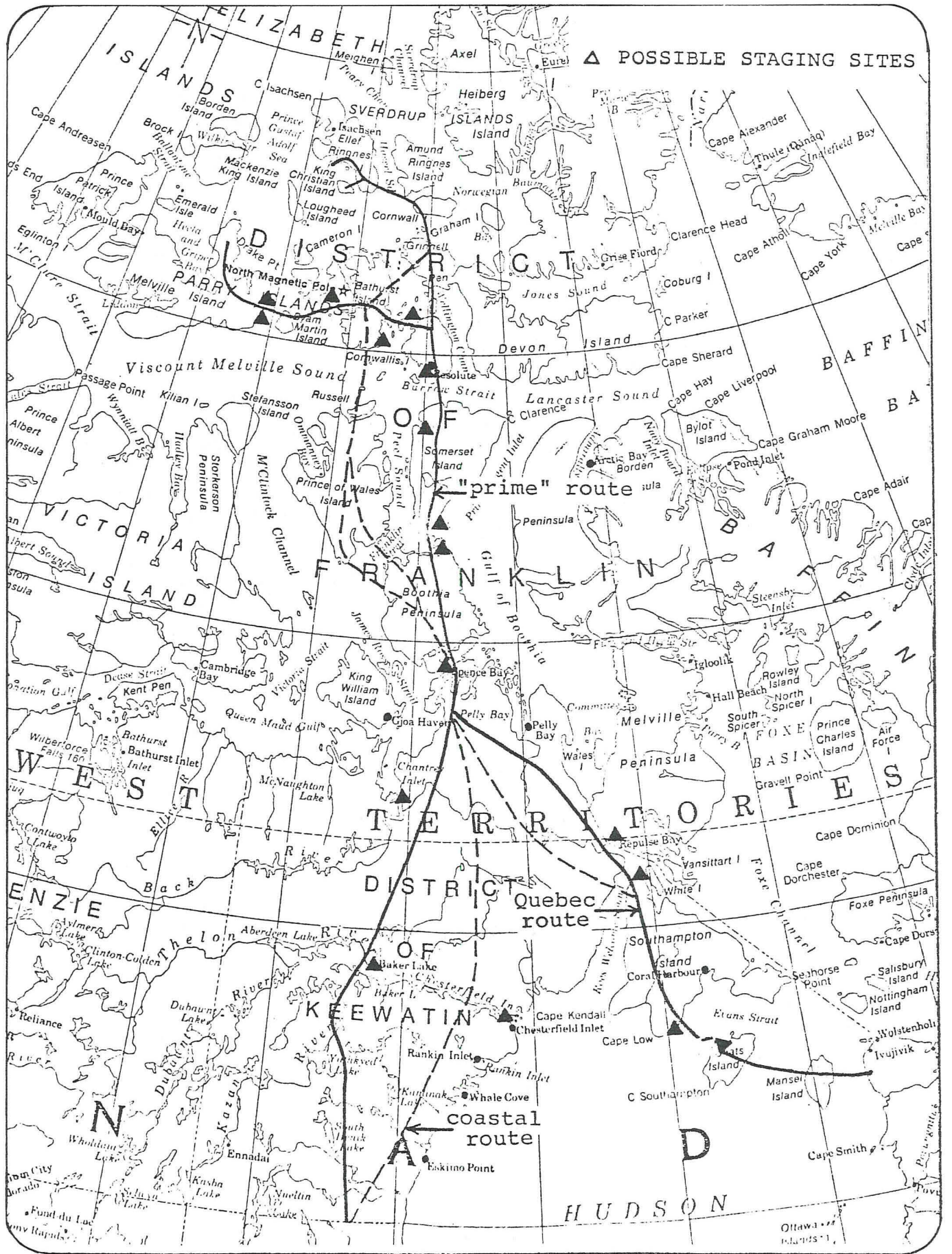
We have determined the communities and "area affected" by the proposed pipeline development on the basis of the proximity of the proposed route alternatives to community land-use areas. This approach was deemed preferable to the arbitrary designation of a regional corridor of project influence because of the resource-use emphasis in the terms of reference.

Communities and resource-use areas could be affected if:

- a) pipeline routes cross or encroach on areas that are presently used, or were used recently by communities in the harvest of living resources,
- b) major ancillary activities such as materials staging or marine transportation occur in or near resource harvest areas or
- c) pipeline project activities occurring outside of harvest areas affect animal populations harvested by communities.

Based on the above criteria, the resource-use patterns of the following communities were identified as being potentially affected by the project: Resolute, Spence Bay, Arctic Bay, Baker Lake, Gjoa Haven, Chesterfield Inlet, Rankin Inlet, Whale Cove, Eskimo Point, Pelly Bay, Repulse Bay, and Coral Harbour.

2. First attention has been given to the resource-use implications associated with the preferred or "prime" route (Map 1). However, the Quebec and coastal routes have received comparable attention in this report to that given to the preferred route, even though it would appear that Polar Gas is likely to be applying for a licence to develop the prime route in their upcoming application to the Government of Canada.
3. We used the following "importance" criteria to establish priorities for resource protection:
 - a) relative importance of the resource for providing food, income, and recreation to the community;
 - b) relative importance of the specific harvest area to the community;



1. Pipeline Routes and Possible Staging Sites

- c) relative importance of the affected habitat for animal populations harvested by the community; and
 - d) expected severity of impact to animal populations harvested by the community.
4. The importance and values assigned to uses of resources by residents of northern communities has been done so with the full knowledge that such judgements are made from a non-resident's perspective and may not accurately reflect the true cultural value of resources to residents of northern communities.
5. Other communities, (e.g. Cambridge Bay and Pond Inlet) while not directly affected in terms of resource-use implications, could, however, be affected by the pipeline project because they are located close to major routes which may be used for shipping materials and supplies to the project area. Although these communities were not included in our resource-use study, they have been considered in the recommendations concerning the formulation of an environmental code.

2. METHODS AND SOURCES OF DATA

Our study of resource use in the eastern Arctic as related to the proposed Polar Gas pipeline is based on information available from existing sources, primarily federal government reports, Northwest Territories (NWT) Government data, Polar Gas Environmental Program reports, and Inuit Tapirisat of Canada (ITC) reports. This is supplemented by personal communications with federal government, NWT Government, and Polar Gas staff.

A description of information sources and methods used in analysis of information for the major sections of the report follows.

2.1 Community Data

Data on the history, population, and economy of a community are provided to give a background sketch, important to an understanding of resource harvest patterns of the community.

Knowledge of the historic origins of people in communities is important in understanding resource use characteristics of individual communities. For instance, if the historic origin of people in coastal communities, such as Whale Cove or Eskimo Point, is primarily inland, then inland activities such as caribou hunting or fishing may be more important than marine mammal hunting, even though marine mammal populations are more accessible than caribou populations.

Information on wage employment opportunities is essential in understanding the significance of animal resources in providing community income. Trapping, polar bear hunting, and commercial fishing are likely to be less important to a community where wage employment opportunities are abundant, whereas caribou and seal hunting may not be significantly affected because almost all communities rely to a large extent on country food.

The number of General Hunting Licences issued in a given year provides an adequate approximation of the numbers who hunted or trapped to some extent during the year, as all Inuit hunters and trappers are required to hold a licence. These data do not discriminate between full time, seasonal part time, or occasional hunters or trappers, but we encountered no reliable data source that did. Moreover, it would be safe to assume that at least one member of most families hunted to an extent sufficient to supply most of the family's food requirements.

Data on commercial fishing licences issued in 1975 and, where possible, 1976 are provided. No licences are issued for domestic fishing but most domestic fishermen would likely hold General Hunting Licences, as domestic fishing is often done in conjunction with caribou, wildfowl, or seal hunting. Data presented do not account for the numbers of women in communities who fish nearby lakes or jig for cod in nearby coastal areas. In many communities, a substantial number of women may engage in domestic fishing.

2.2 Resource-Use Areas

All information on community resource-use areas is drawn from Freeman (1976). This information was more comprehensive and supersedes information from previous reports, such as the Department of Indian Affairs and Northern Development Area Economic Survey Reports (Villiers 1969; Bissett 1968).

Maps 2 through 13 are essentially consolidations of the maps in Volume Three of the Inuit Land Use and Occupancy Project Freeman (1976). The maps in Volume Three are presented in three time periods. However, for this report we used the maps depicting the latest time period which ranges from a 7-year span (1967-1974) for Pelly Bay to a 20-year span (1954-1974) for Chesterfield Inlet (Table 2-1).

Table 2-1. Time span of maps from Inuit Land Use and Occupancy Project, used in defining community resource-use areas.

<u>Community</u>	<u>Time Span</u>
Arctic Bay	1959-1974
Baker Lake	1956-1974
Chesterfield Inlet	1954-1974
Coral Harbour	1962-1974
Eskimo Point	1959-1974
Gjoa Haven	1963-1974
Pelly Bay	1967-1974
Rankin Inlet	1956-1974
Repulse Bay	1963-1974
Resolute	1960-1974
Spence Bay	1963-1974
Whale Cove	1959-1974

In our opinion, these maps are a reasonably accurate representation of resource use and resource-use potential for the communities. While it is true that the extent of land used by most communities has declined since the late 1950's and early 1960's, there are indications now that with rising fur prices, the widespread use of power toboggans, and a rising "back to the land" sentiment, resource-use zones are expanding and areas that have not been used for a decade have recently been used again.

The maps in Volume Three (Freeman, 1976) were based on information collected by interviews with hunters, trappers, and fishermen, consolidated through a computerized data system, plotted on maps, and verified by subsequent public meetings in the communities. The study team attempted to interview every Inuit male who had independently hunted, trapped, or fished, whatever his age, experience, or place of origin. The resulting coverage ranged from 71% to 96% complete in the communities surveyed.

Information recall was a key factor in the accuracy of the maps contained in Volume Three of the Inuit Land Use and Occupancy Projects. These maps are judged to be highly reliable as evidence shows that "members of preliterate societies are taught at an early age to remember accurately the small details of everyday life, and especially in the case of a male in a hunting society - details

associated with hunting and the environment" (Freeman 1976: Vol. Two). Freeman, in describing the community surveys reports: "Many persons took a real interest and were eager to ensure that data were both comprehensive and accurate. Maps were drawn in enthusiastic detail, and ecological and cultural data, which were accumulated over time, were repeatedly checked, revised, and improved" (Freeman 1976: Vol. Two).

Up to 33 land-use categories are depicted on maps in Volume Three. For Maps 2 to 13 in our report we have consolidated these 33 land-use categories into five major categories: trapping (primarily fox); land mammal hunting (caribou and wolf); wildfowl hunting (ducks, geese, ptarmigan, seabirds, and egg collecting); marine mammal hunting (polar bears, seals, whales, and walrus); and fishing (domestic and commercial fishing for char, lake trout, whitefish, and cisco).

At the risk of losing some precision by consolidating land use categories, we concluded this was justified in terms of ease of presentation and interpretation, considering the primary purpose of our report was to identify resource-use conflicts associated with the proposed Polar Gas pipeline. In addition, we have added the proposed Polar Gas routes and alternates and the locations of possible materials staging sites to our community resource-use area maps. Detailed information on resource-use areas, not shown on Maps 2 to 13, is provided in the text of this report.

Data sources to describe resource-use areas were Volume One of the Inuit Land Use and Occupancy Project (Brice-Bennett 1976; Brody 1976; Riewe 1976; Welland 1976) and the maps from Volume Three. Where possible, the text (in Sections 4 to 15 of this report) describes the resource-use area by species and provides a breakdown into primary and secondary use areas. Used in conjunction with Maps 2 to 13, the text provides a reasonably complete description of the community use area for harvest of a particular species.

2.3 Harvest Patterns

Information on harvest patterns (seasonality of harvest and harvest methods) was drawn primarily from Volume One of the Inuit Land Use and Occupancy Project. The Area Economic Survey Reports were secondary sources of information. Where there was no information on harvest patterns for a specific species for a particular community, we deduced the pattern for that community by assuming that the harvest pattern for that species for one or more of the closer communities in the study area would be similar. Given the degree of similarity of harvest patterns in the study area from community to community, results obtained by this process should be reasonably reliable.

2.4 Harvest Data

We relied primarily on Usher (1976) for harvest data. Other major sources included the NWT Game Management Division for more recent data, Smith and Taylor (1977) for summaries of marine mammal harvests from RCMP Game Records, Environment Canada (1976a, b) for the Northwest Territories Fishery Regulations and Variation Order for Commercial Fisheries for commercial fish quotas, and R. Peet (personal communication) and the files of the Fisheries and Marine Service for commercial fish harvest data.

Harvest data are presented for each community by species, by year, for the years 1963-1964 to 1974-75, where possible. This period was chosen because 1963-64 represents the date by which almost all Inuit had moved into communities; thus, data collected after this date are likely to be more reliable and more representative of current harvest. Data are recorded by harvest season which begins on July 1 and ends June 30. Averages for harvest statistics are calculated for the entire period from 1963-64 to 1974-75 and from 1969-70 to 1974-75. The latter average is used to represent current harvest in subsequent calculations. Gaps in harvest data tables should not be interpreted as representing no harvest; rather, they indicate that data were either absent or unreliable.

Harvest data are recorded on the basis of districts. Usually, these districts contain only one community. However, in our study area, data for Rankin Inlet and Whale Cove are recorded for the same district, as are data for Spence Bay and Pelly Bay.

2.4.1 Trapping

Usher (1975) and the NWT Game Management division are the only sources of information used for arctic and coloured fox harvest. The data base is the Fur Export Tax Returns compiled from permits required for any fur exported from the NWT. Usher (1975) reports that there are no significant sources of error in these returns. However, they do underestimate harvest in that they do not account for loss due to damage in traps (which Usher reports is high in some years), the small percentage of pelts that are judged unsalable, or the limited domestic use of fox pelts. Usher (1975:11) attributes a 10 to 15% underestimation of the harvest to these factors.

2.4.2 Land Mammal Hunting

Usher (1975) and the NWT Game Management division are the only major sources of information used for caribou and wolf harvest. The data base for caribou harvest is the General Hunting Licence Returns, compiled from licences returned in June when hunters and trappers

apply for new licences. Usher (1975) reports significant sources of error in these returns: not all licences are returned, the usual rate of return rarely being more than 50%; declarations of the previous year's kill are made from memory when the licences are renewed; and licence holders may deliberately underestimate their take for fear of restrictive actions or regulation of harvest. Further, they do not account for caribou shot and not retrieved, or wounded caribou that escape and later die, which Usher estimates is 5 to 25% of the total harvest. The combined effect of the inaccuracy of data from General Hunting Licence Returns and retrieval losses may be a 50% or greater underestimation of the caribou harvest.

The data base for wolf harvest is the Fur Export Tax Returns. These returns are a considerable underestimation of harvest because of a high level of domestic use of wolf pelts (Usher 1975).

2.4.3 Wildfowl Hunting

Major data sources for goose, duck, and ptarmigan harvest are Usher (1975) and the NWT Game Management Division. The data base is the General Hunting Licence Returns. The combined effect of the inaccuracy of these returns and retrieval losses is a substantial underestimation of harvest (probably more than 50%).

2.4.4 Marine Mammal Hunting

Polar Bears

Major data sources for polar bear harvest are Usher (1975) and the NWT Game Management Division. The data base was the Fur Export Tax Returns (before 1969) and NWT Game Management Division's Polar Bear Harvest Records (since 1969 - the year polar bear quotas were introduced). The latter records are considered very reliable as tags are issued to each community that has a quota and a tag must be affixed to every polar bear skin before it is sold. Usher (1975) reports that retrieval losses are insignificant.

Seals

Major data sources for ringed seals are Usher (1975) and the NWT Game Management Division. The data base for ringed seals is the Traders Fur Record Books prior to 1971 and the Fur Export Tax Returns since then. Data sources for bearded and harp seals are Smith and Taylor (1977), who summarize RCMP Game Records for the period 1962 to 1971, and Friesen (1975), who summarizes a 1973 survey. Although data for bearded and harp seal harvest are largely incomplete, they may be more accurate than ringed seal harvest data. Ringed seal harvest data record only the number of

seal skins exported; they do not include seal skins used domestically or seal skins not exported because of low fur quality or low fur prices. This might be a major factor at times when seals are harvested more for the food they provide than for the income the skins provide. Usher (1975) reports that these factors may result in a 50 to 70% underestimation of harvest for ringed seals. Bearded and harp seal data primarily reflect harvest for food, as few bearded and harp seal skins are exported.

Usher (1975) and Smith and Taylor (1977) also report a significant loss during certain seasons (particularly from break-up to early August) due to seals sinking after they are killed. This loss can be as high as 25 to 50% for ringed seals and even greater for bearded and harp seals.

Whales

Data sources for beluga and narwhal harvests are Smith and Taylor (1977) and Friesen (1975). Harvest statistics from these sources are significant underestimates of harvest as they are largely incomplete and based only on data reported verbally. Smith and Taylor (1977) report that retrieval losses due to sinking are insignificant where belugas are hunted in shallow waters but may be as high as 50% where they are hunted in deep waters or waters with low salinity or high silt content. Smith and Taylor (1977) estimate that 15% of narwhals shot in open water are lost by sinking but that up to 50% of narwhals shot along the floe-edge may be lost when they dive under the ice.

Walrus

Data sources for walrus harvest are from Smith and Taylor (1977) and Friesen (1975). Harvest statistics from these sources are also significant underestimates of harvest as they are largely incomplete and based only on data reported verbally. Smith and Taylor (1977) report that losses of walrus due to sinking can be higher than 50% during open water hunting.

2.4.5 Fishing

Quotas for water bodies that were commercially licenced in 1976 are from the Northwest Territories Fishery Regulations (Environment Canada, 1976a) and the Variation Order for Commercial Fisheries, Northwest Territories, 1976/77-1 (Environment Canada, 1976b). These quotas are based on a 0.5 lb/acre (0.09 kg/hectare) production for lake trout and whitefish and a 2 lb/acre (0.37 kg/hectare) production for land-locked char in lakes. Quotas for sea-run char are based on past harvests (R. Peet, personal communication).

Commercial harvest statistics before 1976 are from Fisheries and Marine Service files. These data are collected by the NWT Government and forwarded to the Fisheries and Marine Service. Harvest statistics for 1976 were provided by R. Peet and D. Dowler (personal communication). Data from Fisheries and Marine Service files are likely to be significant underestimates of commercial harvest as these records are incomplete.

Data are unavailable for domestic or sports harvest. No permits or licences are required for domestic fishing and no system has been established to collect domestic harvest data. The sports harvest is not likely to be significant.

2.5 Commercial Importance

Furbearers and fish are important sources of income in the eastern Arctic. Fur is regaining its importance for providing income as fur prices, particularly for polar bear, have made a good recovery in the last decade (Table 2-2).

Table 2-2. Average NWT fur prices.

Year	Arctic (white) Fox	Coloured (red) Fox	Wolf	Polar Bear	Ringed Seal
1963-64	\$ 14.98	\$ 5.00	\$ 12.16	\$ 68.91	\$ 14.78
1964-65	9.23	3.87	18.55	99.47	11.08
1965-66	15.55	8.00	29.43	128.98	5.97
1966-67	15.65	7.66	16.34	126.86	6.82
1967-68	9.99	4.92	21.31	135.30	3.80
1968-69	12.21	11.78	28.68	157.25	7.68
1969-70	14.03	12.43	35.03	222.11	8.64
1970-71	12.30	10.28	34.18	214.13	9.22
1971-72	11.32	13.75	44.50	339.76	9.81
1972-73	18.32	22.02	61.37	599.38	15.10
1973-74	30.21	42.16	58.76	1073.68	17.36
1974-75	17.59	28.61	62.72	640.16	17.10
1975-76				840 ¹	

Source: Fur Traders Record Book - NWT Government

1 P. Smith (personal communication) estimates that polar bear skin prices for 1975-76 were on average \$200 higher than 1974-75 prices.

For each community, the expected annual income for major furbearers was estimated on the basis of 1974-75 fur prices and a six-year average harvest for the period 1969-70 to 1974-75. The resultant expected income for each species is divided by the 1974 population to give an expected per capita income. This statistic is useful in comparing the relative income importance of a species from community to community.

A six-year harvest period was used because, with wide fluctuations in harvest for some furbearers (especially fox), one year of data would not have provided a reliable indication of expected harvest. In all cases, the polar bear quota was used instead of the six-year average harvest. With currently high polar bear skin prices, communities almost always harvest their full quota.

Average NWT fur prices (Table 2-2) were used for all species but polar bear; polar bear skins can be sold in a variety of ways and prices vary widely from community to community in a single year. Smith and Stirling (1976) show that the lowest prices were received by hunters who sold directly to the local store or co-operative while the highest prices were received by hunters who sold directly to fur auction houses or indirectly through the NWT Fur Marketing Service. Some sales are also made to private individuals in communities who may not be fully aware of current market prices or variation in fur quality. Variation in fur quality also plays an important role in fur prices; variables are the care taken in skinning and preparing the hides and the condition of the hide when the bear is killed. As a result of the variation in marketing methods and fur quality, average community prices in 1974-75 varied by \$759 throughout the study area, ranging from \$200 at Pelly Bay to \$959 at Arctic Bay (Smith and Stirling 1976).

Fish are an important source of income to many communities. Two commercial fisheries operate in the study area, one at Rankin Inlet and the other at Pelly Bay. Income from the Pelly Bay char fishery can be considered as income to Pelly Bay, whereas income from the Rankin Inlet cannery is distributed among the southern Keewatin communities (Rankin Inlet, Baker Lake, Whale Cove, Eskimo Point, Chesterfield Inlet) as not only Rankin Inlet fishermen fish for the cannery. Fishermen who are outfitted by the Rankin cannery receive \$0.50/lb for fish they sell to the cannery while fishermen operating independently of the cannery receive \$0.55/lb. Prices paid to fishermen by the Pelly Bay Fishery are probably of the same order.

In many communities, the co-ops buy fish from commercial fishermen of that community and sell it locally. All communities in the study area are self-sufficient in meeting their domestic requirements for fish. No attempt has been made to estimate income from local sale of fish due to a lack of data on both price and quantities sold.

2.6 Domestic Importance

Harvest data were used in conjunction with Brice-Bennett (1976), Brody (1976), Riewe (1976), Welland (1976), Villiers (1969), Bissett (1968), and other studies to describe the domestic importance of each species to the communities in the study area.

To estimate the relative importance of various species as food sources, the average community harvest from 1969-70 to 1974-75 (where available) was multiplied by the estimated edible weight (lbs) per animal to obtain the total estimated edible food provided by that species. This was multiplied by the imputed value per pound to obtain the total estimated imputed value for that species. This value was divided by the 1974 population of the community to obtain the estimated imputed per-capita value of each species. This statistic provides a basis for comparing the relative importance of various species from community to community.

Data on edible pounds per animal were taken from Bissett (1974) and Usher (1976) for caribou, geese, ducks, and ptarmigan and from Thompson (1976) and Lu (1972) for ringed seal. We assumed that 60% of the reported fish harvest (in round weight) is edible. It was also assumed that all edible meat is eaten although there may be considerable variation in eating habits from community to community. For instance, communities that are primarily oriented to coastal hunting (e.g. Resolute) would probably tend to a greater portion of a seal for food than communities that are oriented to inland hunting (e.g. Eskimo Point) and view seal only as a secondary food source. This assumption was made because we had no complete, reliable data on the use of each species by community.

Data on imputed values of animal food are adapted from Usher (1976). Usher bases imputed values on substitution costs - what it would cost a man to feed his family by buying an equivalent amount of food at the store if he could no longer procure country food by hunting and fishing. He reports that realistic substitution prices in the western Arctic as of 1976, were: \$2.50 to \$3.00/lb for red meat; \$1.80/lb for birds; and \$2.00/lb for fish. He argues that on a protein-equivalent basis, these prices would be \$4.00 to \$4.50/lb for red meat, \$2.50/lb for birds, and \$2.00/lb for fish. We chose values of \$2.50/lb for caribou and seal meat and \$2.00/lb for wildfowl and fish. These are conservative estimates as prices in the eastern Arctic are likely to be higher than prices in the western Arctic and the values we have chosen do not account for protein equivalency. Nevertheless, they provide a realistic minimum substitution price.

We caution that the imputed incomes provided for each community should not be considered as attempts to estimate the economic importance of a species to that community. Rather, they are presented to

indicate the relative importance of various species to a community and the relative importance of one species to various communities. To accurately estimate the economic importance of a species to a community, much more reliable data describing harvest and use would be required.

Bearded seal, harp seal, beluga, narwhal, and walrus are not included in the estimated imputed income tables; the expected annual harvest for these species cannot be calculated as harvest data are too incomplete and unreliable. The tables also do not account for domestic uses such as bedding, clothing, shelter, and heat. Usher (1976) estimates that the value for these uses is less than 10% of the value for food.

2.7 Pipeline Implications

Following a discussion of resource-use areas, harvest patterns, harvest data, and commercial and domestic importance for each community, we have provided a brief overview of the implications of the Polar Gas project (including the prime route and alternate routes) to each community. The overview describes the relation of the prime and alternate routes to the resource-use zone of the community and lists key areas along the route where conflicts between the pipeline project and animal populations important to community harvest may occur. Detailed descriptions of potential impacts are presented in Section 16.

2.8 Resource Impacts

Data sources used in determining species distribution, seasonal movements, and critical habitats for animal populations important to communities in the study area were: Polar Gas Environmental Program Reports; Arctic Islands Pipeline Program; Fisheries and Environment Canada (AIPP) reports; Canadian Wildlife Service (CWS) reports; and, to a very limited extent, other scientific publications. We relied to a large extent on staff experience with pipeline impact assessments in determining potential impacts of the pipeline project on animal populations. Key data gaps which should be filled in order to determine the likely impact of the pipeline project on animal populations harvested by communities are listed.

The expected severity of impact, the relative importance of the area for resource harvest, and the relative importance of the species harvested to the community were parameters used in assigning protection priorities to animal populations along the route.

3. PROJECT DESCRIPTION

Although the Polar Gas Project organization was formed in 1972 to determine the feasibility of natural gas transmission from the Arctic Islands to southern markets, detailed engineering plans

describing construction, scheduling, the land transportation system for moving supplies and equipment, and the location of materials staging sites, work camps, compressor stations, airports, wharves, maintenance depots, etc. were largely unavailable for this study. Only preliminary plans concerning pipeline route alternatives and possible materials staging sites have been identified (Map 1). This information, combined with staff familiarity with the engineering aspects of gas pipeline construction (e.g. requirements for work camps, staging areas, compressor stations, access routes, etc.) and assumptions concerning access from the south to the remote northern project site, have provided the basis for the project description employed in this study to assess resource-use implications.

The proposed Polar Gas pipeline system is likely to be developed in two phases. The first development would bring gas from Melville Island; the second system would be developed at a later date to carry gas from the area of King Christian and Ellef Ringnes Islands. Depending on the selected route, the system may constitute 2200 - 3000 mi (3500 - 4800 km) of up to 48-in (122 c) diameter pipe to deliver in the order of 2 to 4.5 billion ft³ (54-120 million m³) of gas per day.

This study has been limited to that portion of the proposed pipeline route alternatives situated north of latitude 60° (Map 1). Because of the early stage of project planning and the absence of a detailed project description, we have made the following assumptions concerning the proposed project.

1. We have assumed that Spence Bay and Chantrey Inlet could be used as staging areas if the prime route is chosen and that Repulse Bay, north Southampton Island, Bear Cove on south Southampton Island, and Coats Island could be staging areas if the Quebec route is chosen. All of these possible staging areas are identified in Map 1. Possible materials staging sites identified by Polar Gas are Rae or King Point on Melville Island, Schomberg Point (Graham Moore Bay) on Bathurst Island, Labrador Bay on Little Cornwallis Island, Resolute Bay on Cornwallis Island, Aston Bay on Somerset Island, north Bellot Strait on Somerset Island, Brentford Bay on Boothia Peninsula, and the Chesterfield Inlet-Baker Lake area.
2. We have assumed that the pipeline will be chilled and buried throughout our study area and that it will be buried at all river crossings.

4. RESOLUTE

4.1 The Community

A joint Canada-U.S. program to establish weather stations in the north resulted in the establishment of a weather station, along

with a supporting airstrip, at Resolute in 1947. The station was established at Resolute as it offered the best possibility for airstrip construction and weather observations, it was in a central location in the Arctic Islands, and it was believed to be accessible by cargo ships even in a difficult ice year. In 1949 the RCAF established a base at Resolute and operated the airstrip until 1964, at which time the management of the airstrip and all facilities was taken over by the Department of Transport (Bissett 1968).

Before the Inuit community was established at Resolute in 1953, there were no permanent Inuit settlements on Cornwallis Island. In 1953, four Inuit families, comprising 23 people, were moved to Resolute from Port Harrison in northern Quebec. The move was made because economic conditions were poor in the Port Harrison area and because the Federal government and the RCMP felt that the wildlife resources were sufficient to support an Inuit settlement in the Resolute area. One Pond Inlet family was moved to Resolute with the Port Harrison families in 1953.

Since 1953, Inuit have been moved, under government auspices, from Pond Inlet, Arctic Bay, Spence Bay, and Grise Fiord to Resolute. Some people who were living in the Creswell Bay area also moved to Resolute. The airstrip/weather station/RCAF base are about 5½ km from the Inuit settlement (Bissett 1968).

The estimated population of the Inuit settlement at Resolute in 1976 was 218; it has been slowly growing over the last decade. In 1974, it was 200; in 1971, 181; and in 1969, 138. In 1971, about 89% of the population was Inuit. Between 250 and 600 whites live and work at the airbase, depending on the season (Riewe 1976).

Resolute has served as a shipping, air transport, and transfer base for scientific expeditions, and more recently for petroleum exploration. It is currently served by five flights a week from Edmonton, Montreal, and Winnipeg and by Ministry of Transport (M.O.T.) ships from Montreal. The shipping season begins in late July or early August and closes in late September or early October (Canada North Almanac 1976; Bissett 1968).

4.2 The Economy

Since 1953, the economy has changed from a full-time traditional economy to a wage-based economy with a resulting change to part-time hunting and trapping. Most men in Resolute now work in regular wage occupations. Wage employment is available through the Ministry of Transport (MOT) airbase and weather station, petroleum exploration, scientific expeditions that operate out of Resolute, Department of Indian and Northern Affairs (DIANA) in the settlement, and the Resolute Co-op (Riewe 1976; Canada North Almanac 1976).

There were 38 holders of General Hunting Licences in 1974-75. The number of licences issued has been slowly increasing over the past decade (Table 4-1). No commercial fishing licences were issued

Table 4-1. Number of General Hunting Licences issued - Resolute.

1974-75	38	1970-71	22	1966-67	24
1973-74	33	1969-70	31	1965-66	25
1972-73	16	1968-69	28	1964-65	23
1971-72	38	1967-68	28	1963-64	17
Source: NWT Government					

in 1975 but an estimated 6 licences were issued in 1976 (D. Dowler, personal communication). The need for fresh, local country food remains high because no acceptable fresh-food alternatives are available, local prices for non-fresh foods are high, and non-fresh foods have low acceptability for most people in the community (Freeman 1974).

4.3 Resource-Use Areas

4.3.1 General Area

The resource-harvest zone of the Resolute Inuit is one of the more extensive of the Inuit settlements' resource-use zones. The limits of the Resolute resource-harvest zone are defined by seal and polar bear hunting which extends about 240 km north to the Grinnell Peninsula on Devon Island; 160 km east into Lancaster Sound; 250 km south-east into Prince Regent Inlet; 300 km south on Somerset Island; 240 km southwest on Prince of Wales Island; and 150 km west into Viscount Melville Sound (see Map 2). Riewe (1976) reports that the change to part-time hunting which has occurred has not resulted in a reduction in the area used by the community.

About 25 to 30 people camped in the Creswell Bay area in the summer of 1976 and 12 to 15 people planned to overwinter there during the winter of 1976-77.

4.3.2 Trapping

Trapping occurs along coastlines; no attempt is made to trap inland areas (Riewe 1976; Bissett 1968). The majority of

traplines are along the southern coast of Cornwallis Island; on the sea ice and around Griffith, Browne, and Somerville Islands (just south of Cornwallis Island); and along the east, north, and south coasts of Somerset Island. One trapline runs from Cornwallis Island to the southeast tip of Bathurst Island and another is on Russell Island.

4.3.3 Land Mammal Hunting

The southern part of Bathurst Island has been the major caribou hunting area for the Resolute Inuit since 1953. Lately though, this area has been declining in importance because of the severe depletion of caribou populations and the Resolute Inuit have agreed to stop hunting on Bathurst Island until populations recover (F. Miller personal communication). The Resolute Inuit blame the depletion of caribou on Bathurst Island on seismic exploration activities on the island. They are concerned because they feel that the southern part of Bathurst Island provides the only suitable winter range in the area (Freeman 1974, 1975). However, this depletion is more likely due to recent severe winters and is part of a general decline in caribou populations on the Queen Elizabeth Islands (F. Miller personal communication).

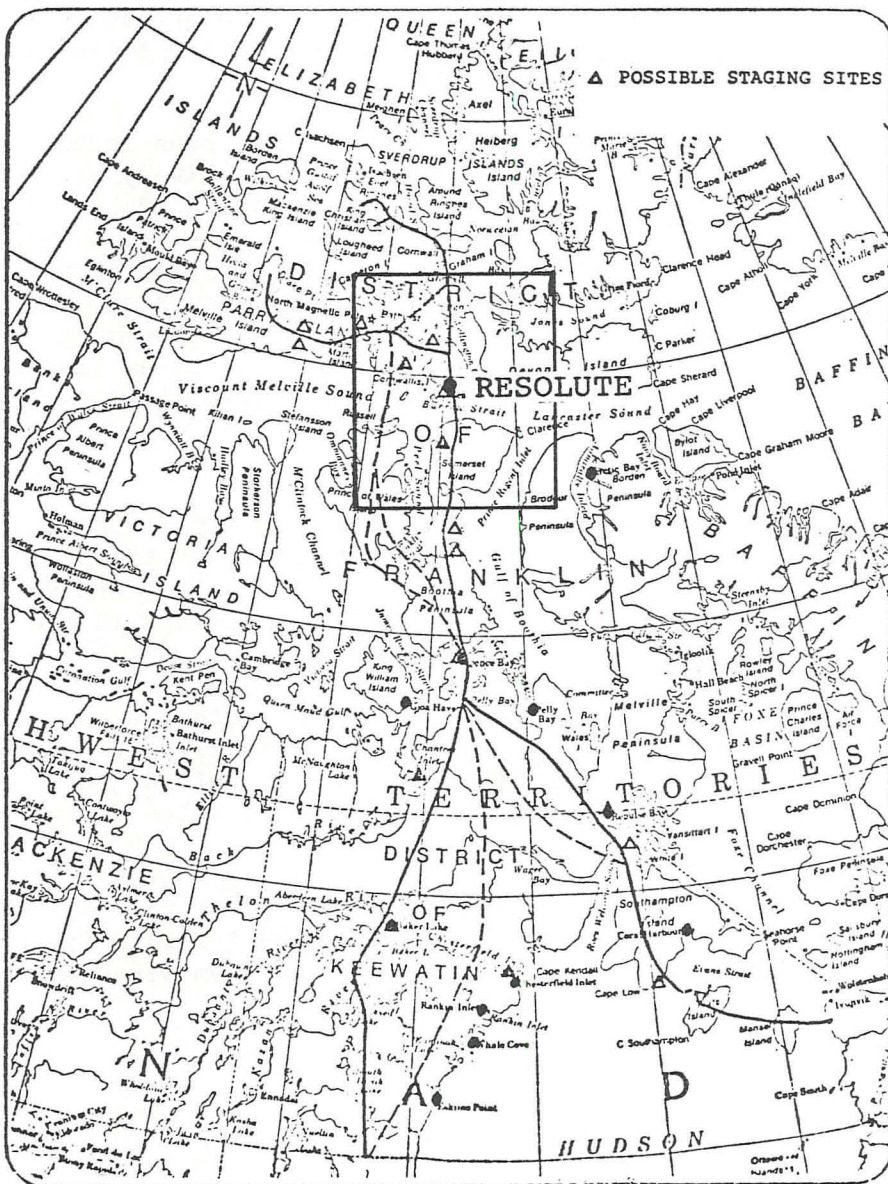
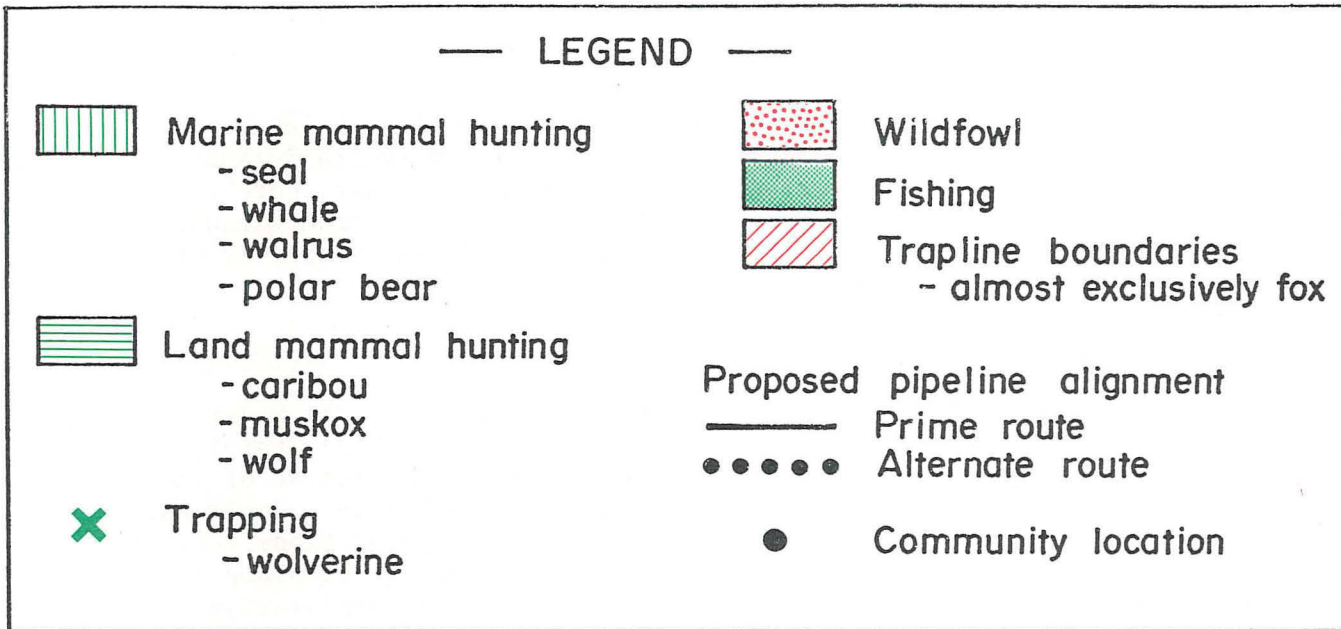
Little Cornwallis and Cornwallis Islands have been recently hunted for caribou in autumn but are not hunted intensively because of the poor condition of the caribou. Important spring hunting areas are northwest Somerset Island and to a lesser extent, northern Prince of Wales and Russell Islands. These spring-hunting areas are now becoming more important because winter-hunting areas, particularly the southern part of Bathurst Island, are becoming less important (Riewe 1976). Stanwell Fletcher Basin is an important year-round hunting area for Inuit using the Creswell Bay camp.

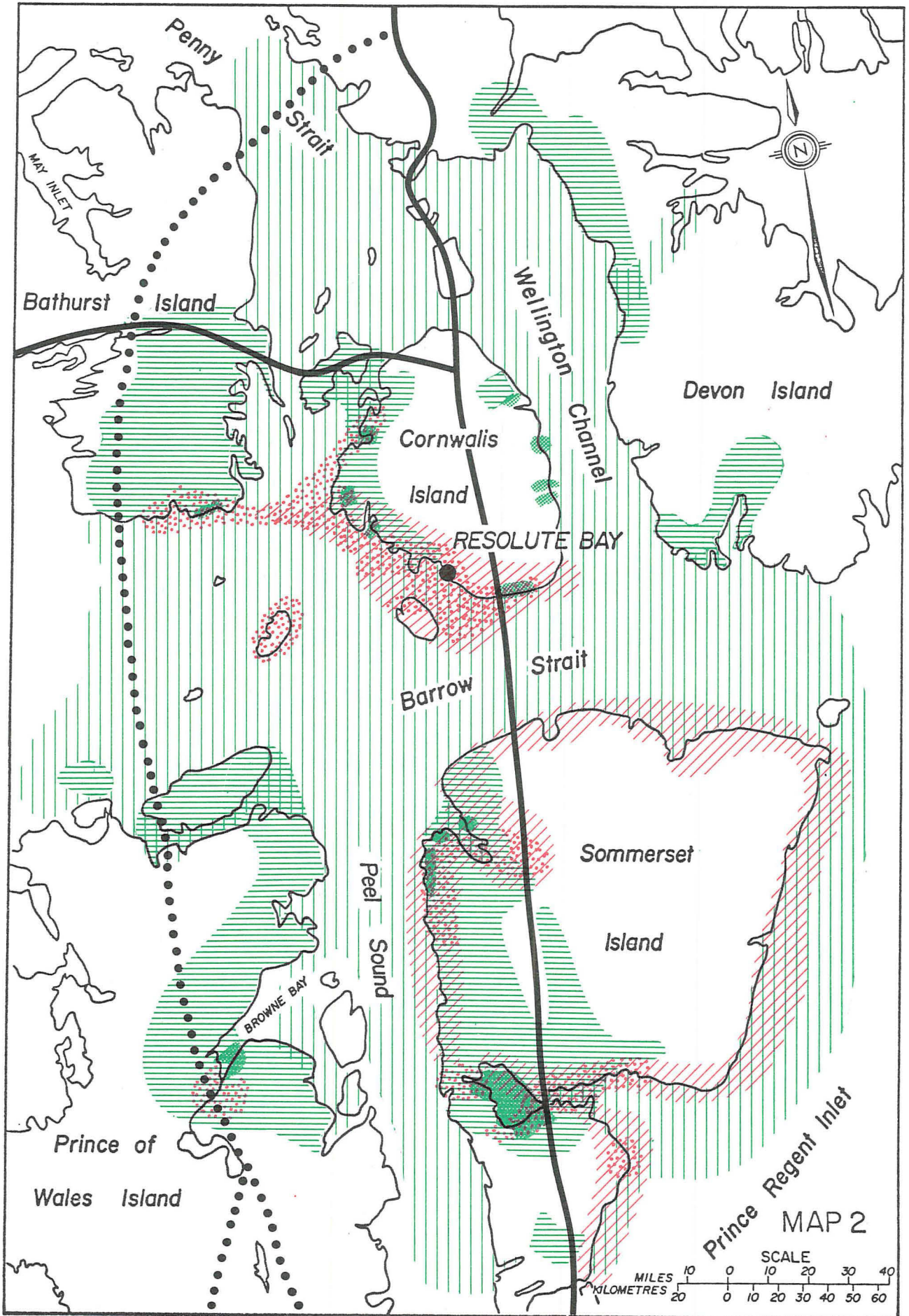
4.3.4 Wildfowl Hunting

Important goose-hunting areas are Assistance Bay on Cornwallis Island; Bedford Bay on Bathurst Island; from Aston Bay to Cape Court, Creswell Bay and Stanwell Fletcher Lake, and Cape Clara on Somerset Island; and Browne Bay on Prince of Wales Island (Riewe 1976).

Important duck-hunting areas are along the northwest and southwest coasts and near Eleanor Lake on Cornwallis Island; along the southeast coast of Bathurst Island; on Lowther Island; Creswell Bay on Somerset Island; and Browne Bay on Prince of Wales Island (Riewe 1976).

Ptarmigan are hunted from Allen Bay to Assistance Bay and at Pioneer Bay, Midshipman Bay, and Read Bay on Cornwallis Island; along the southeast coast of Bathurst Island; and from Birmingham





2. Resolute

Bay to Aston Bay, around Creswell Bay, and west of Stanwell Fletcher Lake on Somerset Island (Riewe 1976).

4.3.5 Marine Mammal Hunting

Polar Bears

Polar bears are hunted in all parts of the marine-mammal hunting zone (see Map 2). Important areas are Barrow Strait and the northwest part of Lancaster Sound (Riewe 1976).

Seals

Seals also are hunted in all areas outlined in the marine-mammal hunting zone, only they are not hunted quite as far west into Viscount Melville Sound, quite as far northeast into Lancaster Sound, or quite as far east off the shore of Somerset Island. Important areas for ringed seals are Barrow Strait, the western fringe of Lancaster Sound, and north up the Wellington Channel. The main areas for bearded-seal hunting are McDougall Sound and around Allen Bay on Cornwallis Island. In winter, seal-hunting is confined to the immediate area south of the community, primarily along the ice cracks between Griffith and Cornwallis Islands. Harp seals are hunted in McDougall Sound and Wellington Channel but are taken primarily around the bays and inlets close to the community (Riewe 1976; Bissett 1968).

Whales

White whales (beluga) are hunted around all coasts of Cornwallis Island and along the northwest coast and at Cape Clarence, Batty Bay, Creswell Bay, and the small bay north of Brentford Bay on Somerset Island. Narwhals are not as abundant in the area and are hunted primarily around Batty and Creswell Bays on the east coast of Somerset Island (Riewe 1976).

Walrus

Walrus are hunted in McDougall Sound; along the south and west coasts of Cornwallis Island; along the southeast coast of Bathurst Island; along the north coast and around the Cape Clarence area of Somerset Island. Just outside Resolute Bay is an important walrus-hunting area. Walrus used to migrate through Resolute Passage; they now migrate around Griffith Island into McDougall Sound. This change in migratory behavior has been attributed to human disturbances and pollution from ships at Resolute (Riewe 1976).

4.3.6 Fishing

Eleanor, Sophia, Kate Austin, and Trafalger Lakes and the small lake north of Becher Bay on Cornwallis Island are fished in

spring and fall. The Bedford Bay area of Bathurst Island is fished for char in spring and a small lake behind Resolute is fished for char in September. Other remote fishing areas are Stanwell Fletcher Lake and the Union River, from Aston Bay to Cape Court on Somerset Island, and Browne Bay on Prince of Wales Island. The latter two are not primary fishing areas; they are fished in conjunction with caribou or seal hunting (Riewe 1976; Bissett 1968).

No lakes in the area have commercial quotas with the exception of Stanwell Fletcher Lake which had an experimental quota of 15,000 lbs. of char in 1976.

4.4 Harvest Patterns

Spring is an important season for caribou, wildfowl, polar bear, and seal hunting and fishing and is the beginning of the whale and walrus hunting season. Summer is important for wildfowl, seal, whale, and walrus hunting, and fishing. Fall is important for trapping, caribou, polar bear, whale, and some seal and walrus hunting, and fishing. Winter is important for trapping, polar bear hunting, and some caribou hunting. (See Table 4-2).

4.5 Harvest Data

(See Table 4-3).

4.6 Commercial and Domestic Importance

4.6.1 Commercial Importance

Polar bear skins and, to a lesser extent, fox pelts and seal skins are important for providing income for the Resolute Inuit (Table 4-4).

A 1973 survey indicated that of the seals harvested, 80% of ringed seal skins and 33% of bearded seal skins were traded; 2% of ringed seal skins and 16% of bearded seal skins were used for handicrafts (Friesen 1975). Data are not sufficient to estimate average annual harvest for bearded seals.

Table 4-2. Harvest patterns - Resolute.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug.)	Fall (Sept. to Nov.)
Trapping ¹ Arctic Fox	Good in Dec, Jan. Best in Feb, Mar, Apr.	Stops in May	No trapping	Starts in Nov.
Land Hunting ¹ Caribou	Some in Dec, Jan, Feb. Good in Mar.	Good in Apr. Some in Jun. Season now prolonging into Jun with use of skidoos.	No hunting	Good in Sept, Oct, Nov.
Wildfowl ^{1,2,3,4} Hunting: Ducks & Geese	No hunting	Starts in Jun as nesting is beginn- ing. Often shot in leads in ice.	Best in July, Good in Aug. Shot in open water.	Hunting good in Sept. as migration in progress.
Ptarmigan ^{1,3,5}		Hunted in all sea- sons, best hunting in Spring.		
Eggs ¹		Some gathered in Jun & July.		
Marine Hunting ^{1,3} : Polar Bear	Starts about end of Feb. Good in March.	Good in Apr, May. Ends by Jun as pelts become yellow and less valuable.	No hunting	Starts again in Oct. Stops by Dec. due to cold & dark.

Table 4-2. Harvest patterns - Resolute.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug.)	Fall (Sept. to Nov.)
Ringed Seal ^{1,3}	Some hunting at breathing holes close to community.	Very good in Spring Shot while basking on ice or swimming in open leads, good in late spring-hunted by boat or canoe from floe edge.	Shot from boats in open water, not a good season.	Early fall, shot in open water, not a good season, late fall, breathing hole hunting.
Bearded Seal ³	No hunting.	Best hunting in May, Jun, shot while basking on ice.	Some hunted from boats or canoes in open water.	Some open water hunting in Sept. No hunting after Sept.
Harp Seal ^{1,3}	No hunting.	None until Jun. & scarce in Jun.	Some hunted during open water season.	Some open water hunting in Sept. No hunting after Sept.
Beluga & Narwhal ^{1,3}	No hunting.	No hunting until Jun. Starts in Jun. or Jul.		Best hunting in Sept., Oct.
Walrus ^{1,3}	No hunting.	Starts in Jun.	Open water hunting in Jul, Aug. After ice breakup.	Stops in Sept.

Table 4-2. Harvest patterns - Resolute.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug.)	Fall (Sept. to Nov.)
Fishing ¹	No fishing.	Starts in May. Best in Jun, July Aug.		Good when ice forming in Sept. Sometimes good in Oct.
1 Bissett 1968				
2 Bissett 1968				
3 Riewe 1976				
4 Ducks and geese are taken incidental to other hunting expeditions like seal hunting (Riewe 1976, 1974).				
5 Ptarmigans are killed wherever and whenever they are seen (Riewe 1976, 1973).				

Table 4-3. Harvest data - Resolute⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR (3)	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
63-64	329			67	2		56	42	60	657		17	26		16	
64-65	405			108		11	65	100	92	670		24	3		16	
65-66	200			108	2	21	259	55	70	300		15	3		10	
66-67	172								124			14	16			
67-68	33			103		4	93	64	52							
68-69	112			53	1	5	49	36	47							
69-70	25			89	1		42	127	24							
70-71	59			54	4		11	140	33							
71-72	415			86 ⁽²⁾	2	7	17	21	33	376 ⁽⁴⁾	26 ⁽⁴⁾	28 ⁽⁴⁾	4 ⁽⁴⁾	10 ⁽⁴⁾		
72-73	245			150 ⁽²⁾	1				34							
73-74	667			139 ⁽²⁾					34							
74-75	224 ⁽²⁾								34 ⁽²⁾							(7)
75-76													6 ⁽⁶⁾	9 ⁽⁶⁾		
Total All Years	2886			957	13	48	592	585	637	3384 ⁽⁴⁾	234 ⁽⁴⁾	70	224 ⁽⁴⁾	17 ⁽⁵⁾	90 ⁽⁵⁾	
Avg. All Years	241			96	2	10	74	73	53	376 ⁽⁴⁾	26 ⁽⁴⁾	18	28 ⁽⁴⁾	6 ⁽⁵⁾	10 ⁽⁵⁾	

Table 4-3. Harvest data - Resolute⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR (3)	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
Total 69-70 to 74-75	1805			518	8		70	288	192							
Avg.	301			104	2		23	96	32							
High Year	667			150	4		42	140	34							

¹ All data from Usher 1975, unless otherwise indicated.

² NWT Game Management Division.

³ Polar Bear quota for Resolute is 34.

⁴ Mean from 9 years of records for ringed and bearded seal and Walrus, 8 years for beluga, and 2 years for narwhal, from RCMP Game Records for 1962-1971 (Smith and Taylor 1976).

⁵ RCMP data plus deMarch data from Creswell Bay.

⁶ These are for Creswell Bay only and were reported by L. deMarch (personal communication).

⁷ Estimate for annual domestic harvest for Stanwell Fletcher Lake is 6000-10,000 lbs; the 15,000 lb. commercial quota introduced in 1976 cannot entirely be added to this figure (L. deMarch, personal communication).

Table 4-4. Expected annual income from sales of fur - Resolute.

	Arctic Fox	Polar Bear	Ringed Seal	Total
Average Annual Harvest ¹ (69-70 to 74-75)	301	34	376	
Average NWT Pelt Price ² (74-75)	\$ 17.59	\$ 573.00	\$ 17.10	
Expected Income	\$5295.00	\$19482.00	\$6430.00	\$30,907.
Per Capita Income ³	\$ 26.00	\$ 97.00	\$ 32.00	\$ 155.

¹ from Table 4-3, except for polar bear which is based on allotted quota of 34.

² from Fur Traders Record Book - NWT Govt., except for polar bear from Smith and Stirling (1976).

³ based on a 1974 population of 200.

4.6.2 Domestic Importance

Seal meat is the most important part of the diet and provides the bulk of the protein requirements (Riewe 1976). Caribou, wild-fowl, and fish are also important foods and whale meat and some polar bear meat are eaten. Statistics presented do not reflect the true importance of seal in the diet as seal harvest statistics are collected on the basis of seal skins traded rather than on the basis of domestic use of seal meat (Table 4-5).

A 1973 survey found that 75% of edible ringed and bearded seal meat and 70% of edible beluga and narwhal meat are used for family food (Friesen 1975). Only a few choice portions of the polar bear are now used for family food (Bissett 1968).

Meat from seals, whales, fish, and polar bears is used for dog food although this use is becoming less important with the decline in the use of dog teams in recent years. The 1973 survey found that 25% of ringed seal meat, 83% of bearded seal meat, and 47% of beluga meat suitable for dogs was used for dog food (Friesen 1975).

Sealskins are still used for clothing, and narwhal and walrus tusks are used for handicrafts (Riewe 1976, Friesen 1975).

Table 4-5. Estimated annual imputed income from major food sources - Resolute.

	Caribou	Ducks	Ptar- migan	Ringed Seal	Fish	Total
Average Annual Harvest ¹ (69-70 to 74-75)	105	23	96	376	8,000 lbs ⁵	
Edible lbs/ animal ²	100	2.6	0.9	45	60% ⁶	
Edible Meat (lbs)	10,400	60	8.6	16,920	4,800	32,189
Imputed value/ lb ³	\$3.00	\$2.00	\$2.00	\$3.00	\$2.00	
Imputed Value	\$31,200	\$120	\$132	\$50,760	\$9,600	\$91,812
Per Capita Value ⁴	\$156	\$0.60	\$0.66	\$254	\$48	\$459
¹	from Table 4-3.					
²	from Usher 1976, Bissett 1974, Thompson 1976.					
³	adapted from Usher 1976.					
⁴	based on a 1974 population of 200.					
⁵	Only a partial value - for Stanwell Fletcher Lake only. Based on estimated annual domestic harvest of 6000 to 10,000 lbs.					
⁶	assumed 60% is usable food.					

4.7 Pipeline Implications

The proposed prime route passes through the core of the Resolute resource-use area in Bathurst Island, Crozier and Pullen Straits in McDougall Sound, Cornwallis Island, Barrow Strait, and Somerset Island to Stanwell Fletcher Basin. The western alternate avoids the most important use area, passing through the western fringes of caribou-hunting areas on Bathurst and Prince of Wales Island and the marine-mammal hunting zone in western Barrow Inlet. It may, however, cause impact on populations harvested in the core of the Resolute resource-use zone, particularly caribou on Prince of Wales Island.

Specifically, the prime route may conflict with resource harvest in the following key areas:

1. Bathurst Island. Southern Bathurst Island has been the most important caribou-hunting area for the Resolute Inuit but its importance has declined in recent years because of reduced caribou populations. The Resolute Inuit have agreed not to hunt caribou on Bathurst Island until populations increase. The southeast coast of Bathurst Island is an important duck and ptarmigan hunting area; the location of a major staging area for pipeline activities in Freemans Cove could disturb wildfowl populations or degrade wildfowl habitat.
2. Crozier Strait. This is part of a primary area for walrus and bearded-seal hunting. Summer construction and the location of a major staging area on Little Cornwallis Island could disturb or degrade the habitat of walrus and bearded seal populations.
3. Cornwallis Island-South Coast. Important for winter hunting of ringed seals; summer and fall hunting of bearded seals, harp seals, belugas, and walrus; and spring and summer hunting of ducks and ptarmigan. Large-scale staging activities at Resolute could disturb marine mammal and wildfowl populations or degrade their habitat.
4. Barrow Strait. Important area for polar bear and ringed seal hunting. Summer or early fall construction of the crossing and marine traffic could disturb or result in direct mortality of ringed seals and polar bears.
5. Somerset Island-North Coast. Beluga and some walrus are hunted here. Any activity in Cunningham Inlet (a key beluga calving area) in summer, construction in summer or early fall, and marine traffic could disturb beluga or walrus populations.
6. Aston Bay-Somerset Island. Important for ringed-seal hunting, also for geese and ptarmigan hunting and some fishing. The location of a major staging here could disturb or degrade the habitat of ringed seals or wildfowl.
7. Creswell Bay-Stanwell Fletcher Basin. This is a remote but important hunting area for beluga, narwhal, seal, caribou, ducks, geese, and ptarmigan; char are fished

in Stanwell Fletcher Lake and the Union River. Any activity in Creswell Bay in summer (the most important beluga-calving area in the entire region) could severely disturb beluga populations or degrade this important calving habitat. It could also disturb or degrade the habitats of other marine mammals and wild-fowl. Late fall and winter construction through the area could disturb caribou populations. Crossing of the Union River in late spring and late summer could interfere with char migrations.

5. SPENCE BAY

5.1 The Community

In 1949, the Hudson's Bay Company moved its trading post from Fort Ross in Bellot Strait to the present location of Spence Bay. Over the years, Inuit have gradually moved into Spence Bay from camps in the Creswell Bay, Fort Ross, Agnew Rivers, and Thom Bay areas (Villiers 1969; Brice-Bennett 1976).

The estimated population of Spence Bay in 1976 was 433; it has increased substantially over the last decade. In 1974, it was 406; in 1971, 350; in 1969, 334; and in 1966, 247. In 1971, about 94% of the population was Inuit.

Spence Bay is currently served by four flights a week from Cambridge Bay. Air connections at Cambridge Bay are to Yellowknife and Edmonton. Marine transportation is supplied by the Northern Transportation Company Limited operating out of Hay River. Supplies are trucked from Edmonton to Hay River, barged down the Mackenzie River, and loaded on ships for Spence Bay. The shipping season is limited to August and September (Villiers 1969; Canada North Almanac 1976).

5.2 The Economy

The economy of Spence Bay is primarily land based. Crafts, such as weaving and the making of dresses and other garments, and carving are important activities. Handicrafts are marketed through the Spence Bay Handicraft Cooperative.

There were 69 holders of General Hunting Licences in 1974-75. The number has increased and then decreased again over the last decade, peaking in 1969-70 (Table 5-1). No commercial fishing licences were issued in 1975, but an estimated 30 licences were issued in 1976 (D. Dowler personal communication).

Table 5-1. Number of General Hunting Licences issued - Spence Bay.

1974-75	69	1970-71	94	1966-67	86
1973-74	71	1969-70	98	1965-66	81
1972-73	47	1968-69	90	1964-65	75
1971-72	95	1967-68	86	1963-64	75

Source: NWT Government

5.3 Resource-Use Areas

5.3.1 General Area

The resource-harvest zone of the Spence Bay Inuit is fairly extensive although it has decreased in area in recent years. Seal and polar bear hunting define the marine boundary of this zone while caribou hunting defines the inland boundary. The zone extends about 480 km north along the western coast of Somerset Island, 250 km northeast into the Gulf of Boothia, 210 km south onto the mainland, 180 km southwest into the Rasmussen Basin and about 210 km northwest into Larsen Sound (see Map 3). The mainland south of Spence Bay and the southern part of Boothia Peninsula are now the most intensively hunted areas.

There is no indication of any permanent camps in the area although hunters who used to maintain winter camps along the coasts of the Boothia Peninsula and Prince of Wales Island at Brentford, Abernethy, Illaunnalik, Pasley, and Young Bays still hunt in these areas and presumably use their old camps or camping areas (Brice-Bennett 1976).

5.3.2 Trapping

The most important trapping areas are close to the community, including the Spence Bay, Balfour Bay, Willersted Inlet, Netsilik Lake, Lord Mayor Bay, Middle Lake, Krusenstern Lake, Jekyll Lake, Hansteen Lake, and Josephine Bay areas. The coasts of Boothia Peninsula as far north as Weld Harbour on the west and Cape Heytesbury on the east are trapped. Other trapping areas are around Brentford Bay and around Young Bay and Pandora Island. The Young Bay-Pandora Island area is trapped by hunters wintering on Prince of Wales Island (Brice-Bennett 1976).

5.3.3 Land Mammal Hunting

Caribou are hunted both north and south of Spence Bay. The most intensively hunted area is north of the community and west of Thom Bay and forms part of the northern caribou hunting area which extends up the Boothia Peninsula to Somerset Island west of Stanwell Fletcher Lake and across to the southeastern part of Prince of Wales Island. Caribou are hunted on the ice in Peel Sound in spring and fall as they migrate between Prince of Wales and Somerset Islands.

Several Spence Bay hunters hunt caribou on the mainland south of the community. This hunting zone extends almost as far south as the Hayes River; the most intensively hunted areas are around the Inglis and Murchison Rivers (Brice-Bennett 1976, Villiers 1969).

Wolves are hunted along the eastern part of the Boothia Peninsula from Thom Bay to south of Brentford Bay, and south of Young Bay on Prince of Wales Island.

5.3.4 Wildfowl Hunting

Wildfowl are hunted near the community south along the western coast of the mainland to Inglis Bay, north along the east coast of Boothia Peninsula to Brentford Bay, north along the west coast of Boothia Peninsula to Pasley Bay, along the eastern coast of Prince of Wales Island, and on Gibson Peninsula and west towards the interior of King William Island.

5.3.5 Marine Mammal Hunting

Polar Bears

Polar bears are hunted in all areas of the marine mammal hunting zone except for St. Roch and Rasmussen Basins (see Map 3). The most intensively hunted areas are along the west coast of Boothia Peninsula in James Ross Strait north to the Pasley Bay area or around the Astronomical Society Islands in Lord Mayor Bay (Brice-Bennett 1976).

Seals

Seals are hunted in all areas of the marine mammal hunting zone but are not hunted as far offshore along the east and west coasts of the Boothia Peninsula as are polar bears (see Map 3).

The most intensive hunting areas are the Lord Mayor and Thom Bay areas on the east coast of the Boothia Peninsula and off the west coast into James Ross Strait (Brice-Bennett 1976).

— LEGEND —



Marine mammal hunting

- seal
- whale
- walrus
- polar bear



Wildfowl



Fishing



Trapline boundaries

- almost exclusively fox



Land mammal hunting

- caribou
- muskox
- wolf

Proposed pipeline alignment

— Prime route

••••• Alternate route

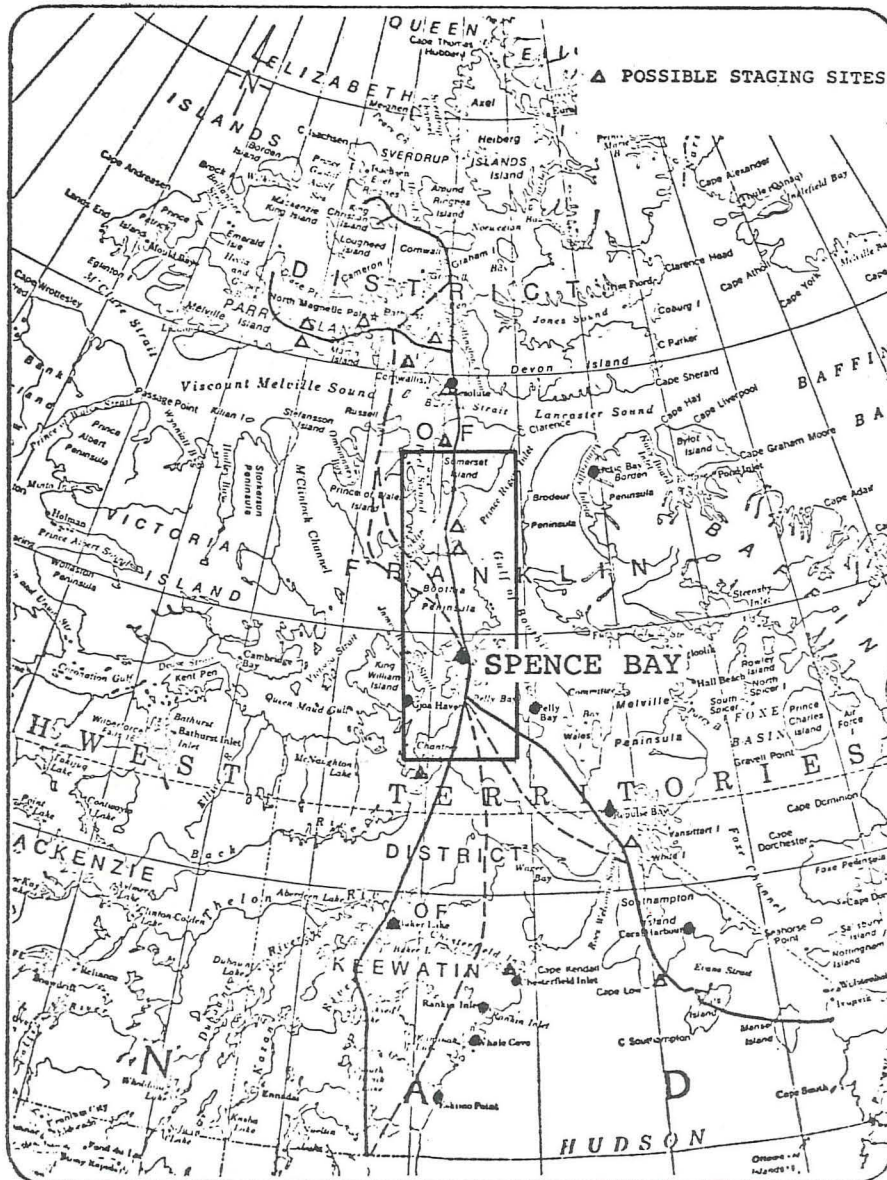


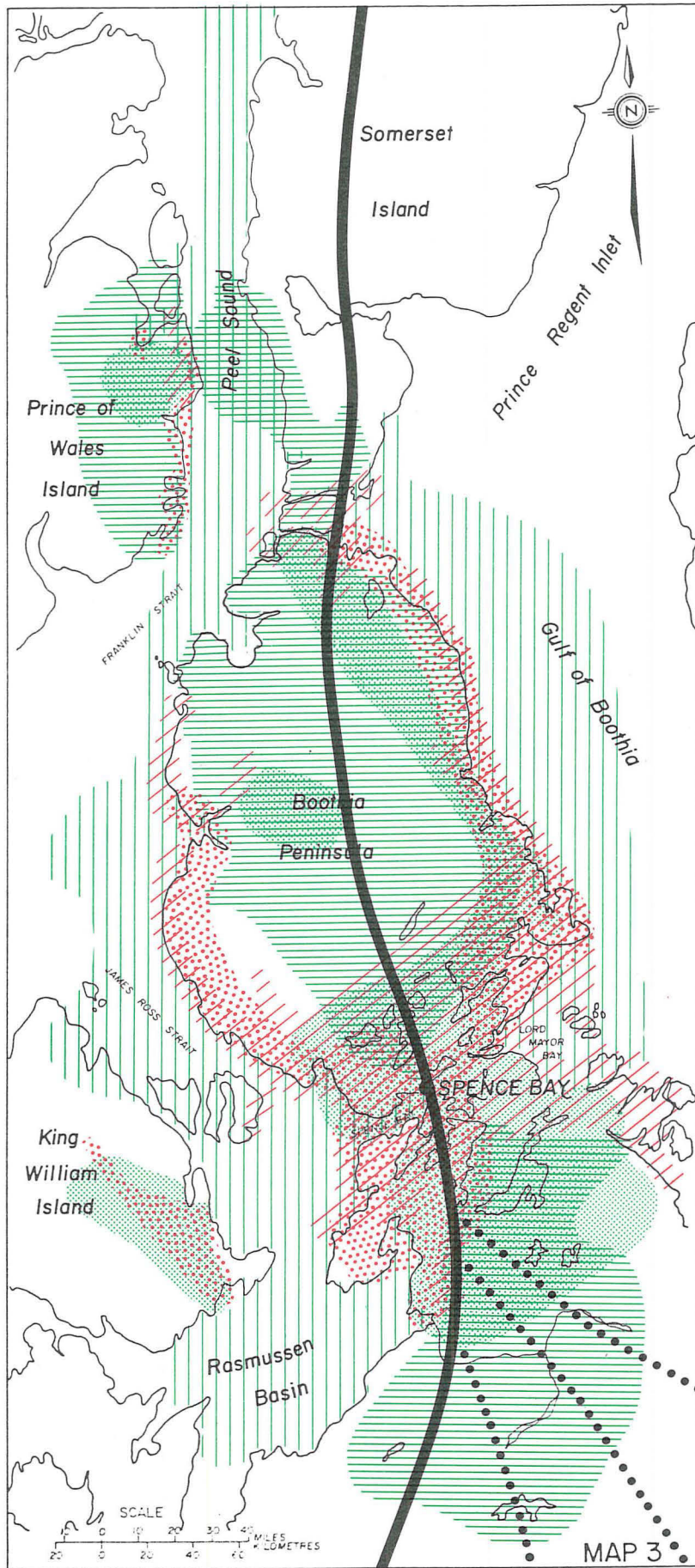
Trapping

- wolverine



Community location





3. Spence Bay

Whales

Whales are hunted around Pasley Bay, Spence Bay, Lord Mayor Bay, Thom Bay, Abernethy Bay, and Brentford Bay on the Boothia Peninsula and just south of Savage Point along the east coast of Prince of Wales Island. Only narwhals are taken in Pasley Bay (Brice-Bennett 1976).

Walrus

Walrus are hunted in Abernethy Bay and Brentford Bay on the Boothia Peninsula and just south of Savage Point along the east coast of Prince of Wales Island.

5.3.6 Fishing

Major fishing areas extend throughout the maze of lakes and streams extending about 60 km north and about 110 km south of the community. Remote fishing areas are the lakes and streams along the eastern part of the Boothia Peninsula from Thom Bay to Brentford Bay, the streams south of Young Bay on Prince of Wales Island, the streams inland from Pasley Bay on the Boothia Peninsula, and the lakes and streams north of Gjoa Haven on King William Island. Cod are jigged in Willersted Inlet and in Spence and Josephine Bays (Brice-Bennett 1976).

Waterbodies in the area that had commercial quotas in 1976 are Lord Lindsay Lake - 6500 lbs (landlocked char); and the Murchison River - 20,000 lbs (sea-run char). Only the Murchison River has been commercially fished recently, although it was probably fished by Pelly Bay rather than Spence Bay commercial fishermen.

5.4 Harvest Patterns

Spring is an important season for caribou, wildfowl, polar bear, and seal hunting and fishing. Late spring is also the start of whale and walrus hunting. Summer is important for wildfowl, seal, whale, and walrus hunting and fishing. Fall is important for trapping; caribou, polar bear, and whale hunting; and fishing. Winter is important for trapping and polar bear hunting. (see Table 5-2).

5.5 Harvest Data

(see Table 5-3).

5.6 Commercial and Domestic Importance

5.6.1 Commercial Importance

Seal skins, fox pelts, and polar bear skins are important for

Table 5-2. Harvest patterns - Spence Bay.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov)
Trapping ¹ Arctic & Colored Fox	Intensive in Dec. Ends in Mid-Mar.	No trapping.	No trapping.	Starts in Nov. Inten- sive in Nov.
Land Hunting: Caribou ¹	Hunting Mar to May.		No hunting.	Hunting Oct. & Nov.
Wildfowl Hunting: Ducks & Geese ³	No hunting.	Starts in Jun.	Hunting in July, Aug.	Hunting in Sept.
Ptarmigan ³	Hunted in all seasons.			
Marine Hunting: Polar Bear ³	Hunting more intensive in late winter.	Ends by Jun as pelts becoming less valuable.	No hunting.	Hunting more intensive in late fall.
Ringed Seal ^{1 2}	No hunting.	Hunted on ice from Mid-May to end of Jun - nets set in leads in mid-Jun.	Hunted along leads from end of Jul - hunted with boats in open water & nets set along coast.	Open-water hunting un- til freeze up in early Oct.

Table 5-2: Harvest patterns - Spence Bay.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov)
Bearded Seal ²	No hunting.	Hunting Usually shot from a canoe as they are resting on moving ice.	hunting	No hunting.
Beluga & Narwhal ³	No hunting.	No hunting until Jun, starts in Jun or Jul.		Best in Sept., Oct.
Walrus ³	No hunting.	Starts in Jun.	Hunting	Stops in Sept.
Fishing ^{1,3}	No fishing.	Starts in Jun on inland lakes. Fishing spring char-run.	Fishing along coast after breakup in conjunction with seal hunting.	Continues into fall.
¹	Treude 1975.			
²	Villiers 1969.			
³	Inferred from analysis of pattern in Resolute (see Table 4-2).			

Table 5-3. Harvest data - Spence Bay (and Pelly Bay). (1)

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR (6)	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
63-64	1548	1		134	12	54	588	511	9 ⁽⁴⁾	1500 ⁽⁴⁾						
64-65	1789				29				40 ⁽⁴⁾	2207 ⁽⁴⁾	3 ⁽⁴⁾			6 ⁽⁵⁾		
65-66	624	1							43 ⁽⁴⁾	2042 ⁽⁴⁾				5 ⁽⁵⁾		
66-67	2299	6			1				19 ⁽⁴⁾	1672 ⁽⁴⁾				25 ⁽⁵⁾		
67-68	1498			510					27	2558				2		
68-69	897	4		328		12	575	279	23 ⁽²⁾							
69-70	166	2		250/450 ⁽³⁾			550 ⁽³⁾	300 ⁽³⁾	25 ⁽²⁾	1069/1425 ⁽³⁾						
70-71	1271	3		27					21 ⁽²⁾							
71-72	1232	18		127					25 ⁽³⁾	1551 ⁽²⁾	22 ⁽⁷⁾		7 ⁽⁷⁾			
72-73	248			11 ⁽²⁾					24 ⁽³⁾	329/829 ⁽²⁾						
73-74	1652	5							23 ⁽²⁾	602 ⁽²⁾						
74-75	666 ⁽²⁾								22 ⁽²⁾	679 ⁽²⁾						
75-76																
Total All Year	13890	40		1387			1713	1090	301	14209				38		
Avg. All Year	1158	5		198			571	363	25	1421	22		7	9.5		

providing income for the Spence Bay Inuit (see Table 5-4 which includes data for Spence Bay plus Pelly Bay).

A 1973 survey indicated that of the seals harvested, 95% of the ringed seal skins were traded and 5% were used for handi-crafts (Friesen 1975). Villiers (1969) reports that only a very small portion of bearded seal skins are traded.

Table 5-4. Expected annual income from sales of fur - Spence Bay plus Pelly Bay.

	Arctic Fox	Coloured Fox	Polar Bear	Ringed Seal	Total
Average Annual Harvest ¹ (69-70 to 74-75)	914	7	22/10	1268	
Average NWT Pelt Price ² (74-75)	\$17.59	\$28.61	\$620/\$200 ⁴	\$17.10	
Expected Income	\$16,077	\$200	\$15,640	\$21,693	\$53,600
Per Capita Income ³	\$25	\$0.30	\$24	\$33	\$82
¹	from Table 5-3 (adjusted to eliminate Spence Bay only data), except for polar bear which is based on allotted quote of 22 for Spence plus 10 for Pelly Bay.				
²	from Fur Traders Record Book - NWT Govt.				
³	based on a population of 406 for Spence Bay plus 245 for Pelly Bay in 1974.				
⁴	Community polar bear skin prices for 74-75 from Smith and Stirling (1976).				

5.6.2 Domestic Importance

Seal meat forms the most important part of the diet; caribou, fish, and wildfowl are also important. Table 5-5 gives the estimated imputed income for major species where sufficient data are available for Spence Bay plus Pelly Bay.

Table 5-3. Harvest data - Spence Bay (and Pelly Bay).⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR (6) BEAR	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
Total 69-70 to 74-75	5235	28		415					140	4230						
Avg.	873/914	7		104					23	846/1268						
High Year	1652	18		250					25	1551						

- ¹ All data from Usher 1975, unless otherwise indicated and is for Spence Bay plus Pelly Bay where two numbers are given, the lower one is for Spence Bay only.
- ² NWT Game Management Division for Spence Bay only.
- ³ Palmer 1973 for Spence Bay only.
- ⁴ Villiers 1969 for Spence Bay only.
- ⁵ Mansfield et al. 1975 for Spence Bay only.
- ⁶ Polar bear quota for Spence Bay is 22.
- ⁷ Mean from 6 years of record for bearded seal and 3 for beluga from RCMP Game Records for 1962-1971 (Smith and Taylor 1977).

A 1973 survey found that 50% of the edible ringed seal meat was used for family food and 50% of the meat suitable for dogs was fed to dogs (Friesen 1975).

Table 5-5. Estimated annual imputed income from major food sources - Spence Bay plus Pelly Bay.

	Caribou	Ducks	Ptar- migan	Ringed Seal	Fish	Total
Average Annual Harvest (69-70 to 74-75) ¹	450 ⁵	550 ⁵	300 ⁵	1268	ND	
Edible lbs/animal ²	100	2.6	0.9	45		
Edible Meat lbs.	45,000	1430	270	57,060		103,760
Imputed value/lb ³	\$3.00	\$2.00	\$2.00	\$3.00		
Imputed Value	\$135,000	\$2860	\$540	\$171,180		\$309,580
Per Capita Value ⁴	\$207	\$4.40	\$0.80	\$263		\$476
¹	from Table 5-3, adjusted to eliminate Spence Bay only data.					
²	from Usher 1976, Bissett 1974, Thompson 1976.					
³	adapted from Usher 1976.					
⁴	based on a 1974 population of 406 for Spence Bay plus 245 for Pelly Bay.					
⁵	based on 1969-70 data only due to lack of reliable data for other years.					
ND	No data.					

5.7 Pipeline Implications

The proposed prime route passes through the core of the Spence Bay resource-use zone on southern Somerset Island, Boothia

Peninsula, the Boothia Isthmus, and the Murchison to Hayes River area of the mainland. The western alternate on the Arctic Islands also passes through most of this zone, avoiding only southern Somerset Island and northern Boothia Peninsula. However, as with Resolute, the western alternate on Prince of Wales Island may cause impacts to caribou populations harvested in the core of the Spence Bay resource-use zone on Boothia Peninsula.

Specifically, the prime route may conflict with resource harvest in the following key areas:

1. Brentford Bay-Bellot Strait. This is a remote but important hunting area for ringed and bearded seals, narwhals, and belugas. Some polar bear and walrus are also hunted here. Staging of materials, marine traffic, and construction of the crossing of Bellot Strait in summer or early fall could disturb mammals or degrade their habitat.
2. Northern Boothia Peninsula. This is an important caribou-hunting area; construction in spring and summer may interfere with caribou migrations and movements.
3. Boothia Isthmus. Lord Mayor and Spence Bays are important for ringed-seal hunting; belugas, narwhals, and polar bears are **also** hunted there. Fishing occurs throughout Boothia Isthmus and cod are jigged in Spence and Josephine Bays and Willersted Inlet. With the possible location of a materials staging area at Spence Bay, or possibly at Lord Mayor Bay, marine traffic, and construction through the Isthmus could disturb marine mammals or degrade their habitat. It may also interfere with fishing or degrade fish habitat.
4. Murchison to Hayes River. This is an important caribou-hunting area for Spence Bay; construction in winter could disturb caribou on their winter range.

6. ARCTIC BAY

6.1 The Community

Arctic Bay was established as a Hudson's Bay Company post in 1936. A Department of Transport weather station operated there from 1942 to 1952 (Brody 1976; Canada North Almanac 1976).

In 1976, the estimated population of Arctic Bay was 353; it has grown rapidly, almost tripling over the last decade. In 1974, the population was 311; in 1971, 257; in 1969, 231; and 1966, 123. In 1971, 90% of the population was Inuit.

Arctic Bay is served by two flights a week from Resolute. Resolute has air connections with Montreal, Edmonton, and Winnipeg. Marine transportation is provided by MOT ships from Montreal; the shipping season is limited to August and September (Canada North Almanac 1976).

6.2 The Economy

The economy of Arctic Bay has changed to a wage-based economy with an emphasis on part-time rather than full-time trapping, hunting, and fishing. Wage employment is provided by Panarctic Oils Ltd. and by Nanisivik Mines who have recently established a mine at Strathcona Sound, just north of Arctic Bay. The handicrafts industry is very important and soapstone, which is quarried locally, is an important resource (Canada North Almanac 1976).

There were 63 holders of General Hunting Licences in 1974-75. The number of licences issued has slowly increased over the last decade (Table 6-1).

Table 6-1. Number of General Hunting Licences issued - Arctic Bay.

1974-75	63	1970-71	50	1966-67	50
1973-74	50	1969-70	48	1965-66	ND
1972-73	53	1968-69	50	1964-65	ND
1971-72	55	1967-68	50	1963-64	ND
Source:	NWT Government		ND:	No Data.	

6.3 Resource-Use Areas

6.3.1 General Area

The resource-harvest zone of the Arctic Bay Inuit is extensive, reaching as far west as the eastern coast of Prince of Wales Island. Seal, polar bear, and caribou hunting define the outer limits of this zone which extends about 420 km west to the eastern shore of Prince of Wales Island, 400 km northwest into Barrow Strait, 210 km north to the southern coast of Devon Island, 100 to 150 km east towards the resource zone of the Pond Inlet Inuit,

450 km south towards Simpson Peninsula, and 520 km southwest into Larsen Sound (see Map 4). The most intensively used area is the Admiralty Inlet-Lancaster Sound area. In the eastern part of the Arctic Bay resource-harvest zone, it is difficult to distinguish between areas used by Arctic Bay and Pond Inlet hunters.

6.3.2 Trapping

Trapping occurs mainly along coasts with only a few trap-lines running inland or onto sea ice. Primary trapping areas are around the Steensby Peninsula, around the islands in Admiralty Inlet, along the western shore of Admiralty Inlet and into Berlinguet Inlet and Bell Bay. Other trapping areas are Bernier Bay, the Aqu Bay area, the west coast of the Brodeur Peninsula from Fitzgerald Bay to north of McBean Bay, the east coast of Boothia Peninsula from Cape Palmerston to Brentford Bay, the Brentford Bay area, the east coast of Somerset Island from Bellot Strait to Creswell Bay, Stanwell Fletcher Lake, and the western coast of Somerset Island from Four Rivers Bay to Howe Harbour. Many traplines follow routes to good caribou hunting areas (Brody 1976).

6.3.3 Land Mammal Hunting

Major caribou hunting areas include the interior of Baffin Island south of Arctic Bay and Pond Inlet and a small area east of Arctic Bay and west of Navy Board Inlet. Other areas are the southwest part of Somerset Island from McClure Bay to Bellot Strait, the northern part of Boothia Peninsula from Bellot Strait to Pasley Bay on the western coast, and the eastern coast of Prince of Wales Island from Browne Bay to Transition Bay including Prescott and Pandora Islands.

Brody (1976) reports a recent shift in hunting to the northern portion of the hunting area on Baffin Island. He notes that caribou populations of northern Baffin Island have increased in recent years. As a result, caribou hunters from Arctic Bay do not travel as far from the community as they used to.

6.3.4 Wildfowl Hunting

The most important duck and goose hunting area is at the southern end of Admiralty Inlet, a very productive waterfowl area. Other areas are around Strathcona Sound, Bernier Bay, Brentford Bay on Boothia Peninsula, and Creswell Bay on Somerset Island.

Eggs are collected inland during caribou hunting trips (Brody 1976). Egg-gathering locations are not included in the mapping of wildfowl hunting areas for Arctic Bay because they are so widespread.

Ptarmigan are hunted in virtually all areas of northern Baffin Island (Brody 1976); ptarmigan-hunting locations are also not included in the mapping of wildfowl hunting areas for Arctic Bay.

6.3.5 Marine Mammal Hunting

Polar Bear

Polar bears are hunted throughout the Arctic Bay marine-mammal harvest zone (see Map 4). Brody (1976) claims that the importance of polar bears has helped to maintain the overall hunting range of Pond Inlet and Arctic Bay hunters.

The most important hunting areas for Arctic Bay Inuit are in Admiralty Inlet and Lancaster Sound and across the Brodeur Peninsula. Brody (1976) notes that in recent times Arctic Bay hunters have hunted along the eastern coast of Prince of Wales Island, despite the general reduction in the polar bear hunting range which resulted from the introduction of the quota system.

Seals

Seals are not hunted over as extensive an area as polar bears. Major areas for seal hunting are Admiralty Inlet, along the north shores of Brodeur and Borden Peninsulas, in Lancaster Sound north of Admiralty Inlet, along the south coast of Devon Island, in Prince Regent Inlet south to Creswell and Brentford Bays, along the northeast coast of Somerset Island and across Barrow Strait to Maxwell Bay on Devon Island, from Griffith and Lowther Islands south into Peel Sound and Franklin Strait, in Bernier Bay on Baffin Island, and into the Gulf of Boothia towards Pelly Bay.

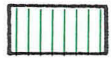
Admiralty Inlet is the major hunting area for bearded seals; some harp seals are taken there as well (Brody 1976).

Whales

Narwhals are taken mostly along shorelines or in favoured inlets. The northern end of Admiralty Inlet is among the most favoured narwhal hunting areas in the region. Brody (1976) reports that some hunters believed increased shipping and human activity in Admiralty Inlet was causing narwhals to avoid Admiralty Inlet and move into Prince Regent Inlet. Other narwhal hunting areas are small areas in Prince Regent Inlet, and around Creswell and Brentford Bays.

Belugas are not common in the area although they are occasionally taken by narwhal hunters in narwhal hunting areas (Brody 1976:165).

— LEGEND —



Marine mammal hunting

- seal
- whale
- walrus
- polar bear



Wildfowl



Fishing



Trapline boundaries
- almost exclusively fox



Land mammal hunting

- caribou
- muskox
- wolf

Proposed pipeline alignment

— Prime route

••••• Alternate route

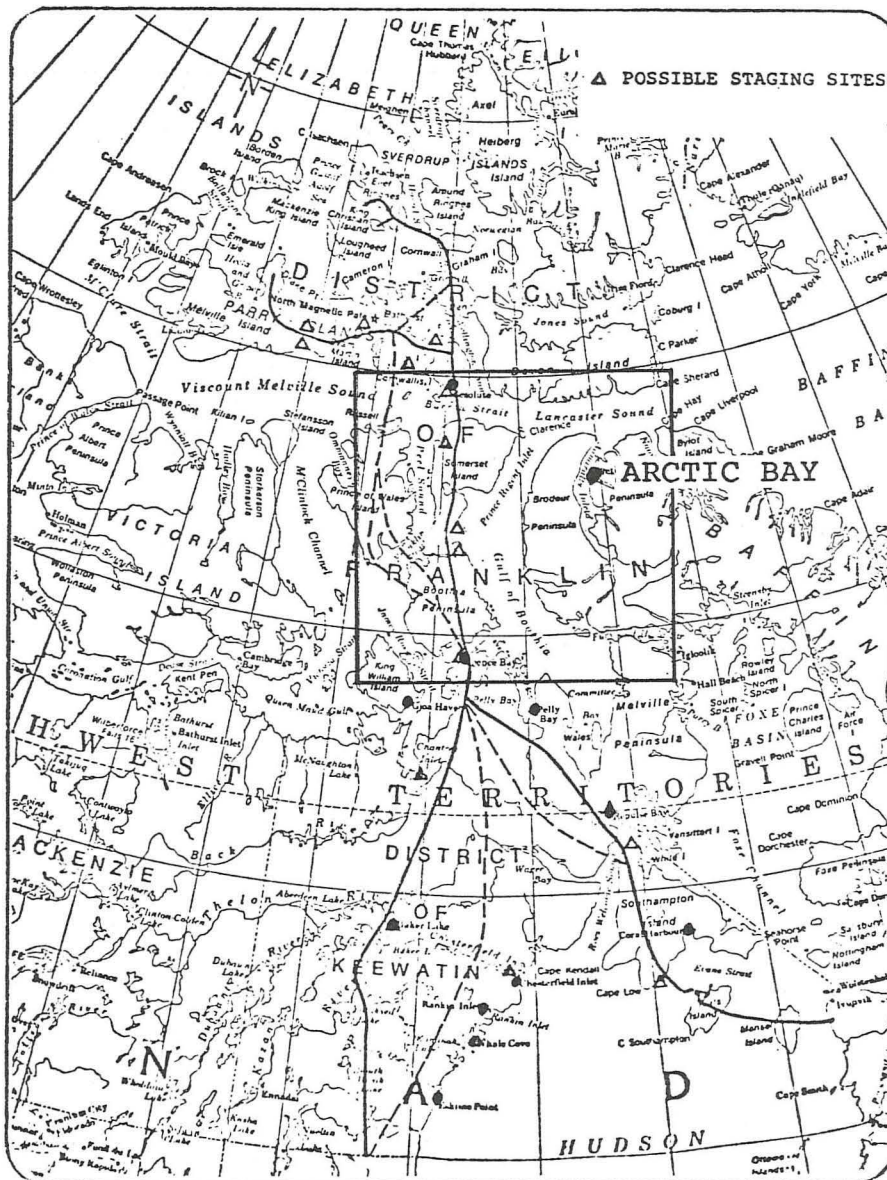


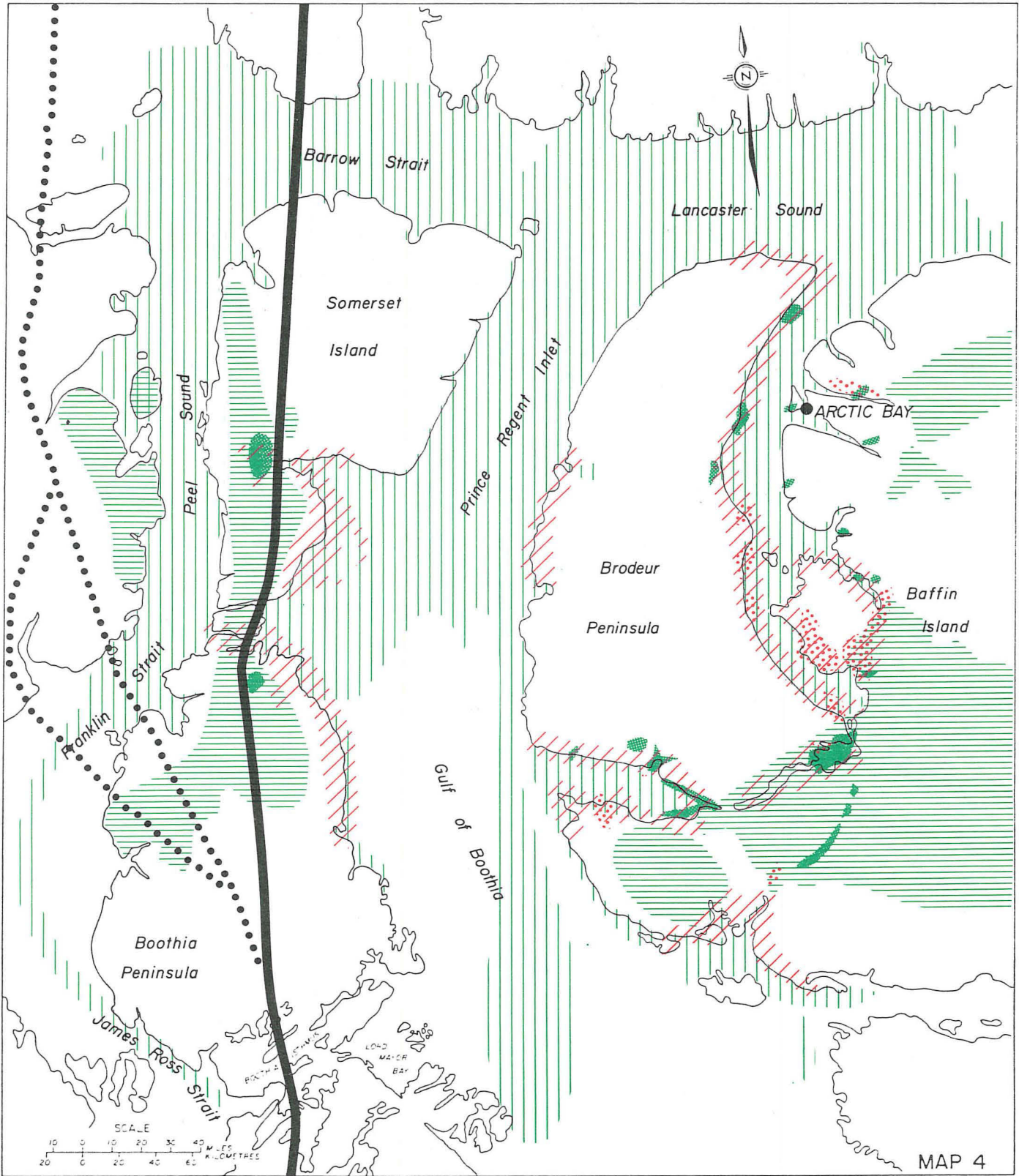
Trapping

- wolverine



Community location





4. Arctic Bay

Walrus

Important walrus hunting areas are around the head of Admiralty Inlet, around Strathcona Sound, around Peter Richards Islands (in Admiralty Inlet), south of Steensby Peninsula, along the south coast of Devon Island, and around Prince Leopold Island off the northeast tip of Somerset Island.

6.3.6 Fishing

The western part of the Borden Peninsula is dotted by small streams and lakes fished by the Arctic Bay Inuit. Other areas fished are Bell Bay, Berlinguet Inlet and Saputing Lake, around Bernier Bay, Stanwell Fletcher Lake and Creswell Bay, and the Brentford Bay area. Brody (1976) notes that in the spring of 1974, Baffin Island fishermen made journeys to lakes that had not been fished for a generation and concludes "it seems that the freshwater fishing range may well be on the verge of expansion". Marine fish such as sculpin and cod are of some importance and are caught along the west side of Admiralty Inlet (Brody 1976). No waterbodies in the area had commercial fishing quotas in 1976.

6.4 Harvest Patterns

Spring is an important season for caribou, goose, seal, and walrus hunting and fishing. Summer is important for caribou, wildfowl, seal, narwhal, beluga, and walrus hunting and fishing. Fall is important for trapping; some caribou, beluga, narwhal, and walrus hunting; and fishing. Winter is important for trapping; caribou, polar bear, and some seal and walrus hunting; and fishing (see Table 6-2).

6.5 Harvest Data

(see Table 6-3).

6.6 Commercial and Domestic Importance

6.6.1 Commercial Importance

Seal skins, polar bear skins, and fox pelts are important for providing income for the Arctic Bay Inuit (Table 6-4).

A 1973 survey indicated that 75% of ringed seal, 50% of bearded seal, and 40% of harp seal skins are traded (Friesen 1975).

Brody (1976) claims that "... the significance of a family's trap lines can hardly be overemphasized. A trapping year that is bad, either because of poor prices or few furs, usually leads to some hardship. A succession of bad years could threaten disaster". Brody (1976) also notes that "The hunting

Table 6-2. Harvest patterns - Arctic Bay.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Trapping ¹ Arctic & Coloured Fox	Trapping.	Stops in Apr.	No trapping.	Starts in late Spring.
Land Hunting: ¹ Caribou	Important season. Shift in recent years towards more winter and early spring hunting.	Early Spring an important season.	Hunted for their skins which are in best condition in Summer - importance of summer hunting for skins now declining.	Some hunting.
Land Hunting: Wolf ¹	Hunted any time - most intensive from winter to early Spring - usually taken in conjunction with caribou hunting.			
Wildfowl Hunting: Ducks & Geese ¹	Eiders killed at floe-edge in late spring or summer. No hunting.	Geese hunted in nesting grounds.	Old squaw hunted on lakes and shorelines during open-water period. Geese hun- ted in nesting grounds or along shores in late summer.	Hunting only in early fall.

Table 6-2. Harvest patterns - Arctic Bay.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Ptarmigan ¹	Hunted.	Best in spring when they are conspicuous.	Hunted.	Hunted.
Marine Hunting: Polar Bear ¹	Almost all hunting between Jan. & Mar. since introduction of quota system.	Very little hunting.	No hunting.	No hunting.
Ringed Seal ¹	Hunted at breathing holes along ice-cracks.	Hunted while basking on ice.	Hunted in open water in fiords & inlets.	Some hunting.
Bearded Seal ¹	Occasionally taken at breathing holes in conjunction with ringed-seal hunting.	Important season-hunted at floe-edge.	Important season-hunted in open water with harpoons.	Very little hunting.
Harp Seal ¹	No hunting.	No hunting.	Hunted only in open water.	No hunting.
Narwhal ¹	Narwhals rarely taken in winter when they are trapped by sea ice.	Some narwhal hunting at the floe-edge.	Main narwhal hunting season as they migrate into area-taken along coastlines & in favoured inlets.	Some hunting in fall as narwhals migrate out of area.

Table 6-2. Harvest patterns - Arctic Bay.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Beluga ¹		Belugas occasionally taken at floe-edge.	Some Belugas hunted as they migrate into area.	Some Belugas hunted as they migrate out of area.
Walrus ¹	Hunted at floe-edge.	Hunted at floe-edge late Spring is primary hunting season.	Hunted in open water or at hauling out or breeding sites on land.	Hunted close to shore in early Fall taken at floe-edge after freeze-up.
Fishing ¹	Nets set under ice to catch char.	Jigging for char & lake trout through holes in the ice & at edge of fast ice in Spring. Marine fish jigging through cracks in sea-ice.	Most of year's catch taken by nets set in river mouths and along coasts.	Jigging through holes in lake ice.
¹	Brody 1976.			

Table 6-3. Harvest data - Arctic Bay. ⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF (3)	GEESE	DUCK	PTARMIGAN	POLAR BEAR (6)	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
63-64	396								6	1247						
64-65	1164								3	2099						
65-66	261								22	2816						
66-67	785			44		45	95	98	29	1255						
67-68	389								13							
68-69	75								7							
69-70				109			34	100	12	602 ⁽⁴⁾						
70-71	296			93		19	39	144	12							
71-72	1511	12		114 ⁽²⁾		17	17	123 ⁽²⁾	12	1235						
72-73	276			118 ⁽²⁾				72 ⁽²⁾	12	735	20 ⁽⁵⁾	25 ⁽⁵⁾	3 ⁽⁵⁾	101 ⁽⁵⁾	4 ⁽⁵⁾	
73-74	381 ⁽²⁾	59							13	1614 ⁽²⁾						
74-75	257								12 ⁽²⁾	1288 ⁽²⁾						
75-76																
Total All years	5791			478		81	185	537	153	12891						
Avg. All years	526			96		27	46	107	13	1432						

Table 6-3. Harvest data - Arctic Bay.⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF (3)	GEESE	DUCK	PTARMIGAN	POLAR (6) BEAR	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
Total 69-70 to 74-75	2721			434			90	439	73	5474						
Avg.	544			109			30	110	12	1095						
High Year	1511			118			39	144	13	1614						

- 1 All data from Usher 1975, unless otherwise indicated.
- 2 NWT Game Management Division.
- 3 Recent trend is towards more, rather than less, wolf hunting.
- 4 Palmer 1973.
- 5 Friesen 1975.
- 6 Polar Bear quota for Arctic Bay is 12.

of polar bears now has an importance probably greater than at any time within living memory". He adds that the polar bear quota is quickly filled and the restrictions imposed by the quota "... is a source of frustration and complaint".

The 1973 survey found that 100% of the walrus tusks and some narwhal tusks are used in the handicrafts industry (Friesen 1975).

Table 6-4. Expected annual income from sales of fur - Arctic Bay.

	ARCTIC FOX	POLAR BEAR	RINGED SEAL	TOTAL
Average Annual Harvest ¹ (69-70 to 74-75)	544	12	1095	
Average NWT Pelt Price ² (74-75)	\$17.59	\$959 ⁴	\$17.10	
Expected Income	\$9569	\$11,508	\$18,725	\$39,802
Per Capita Income ³	\$31	\$37	\$60	\$128
¹	from Table 6-3, except for polar bear which is based on allotted quota of 12.			
²	from Fur Traders Record Book - NWT Govt.			
³	based on a 1974 population of 311.			
⁴	Community polar bear skin prices for 1974-75 from Smith and Stirling (1976).			

6.6.2 Domestic Importance

Seal meat and caribou meat are the two most important foods, seal meat being the more important of the two. Fish, walrus, narwhal, and wildfowl are also important food sources (Table 6-5).

A 1973 survey found that 45% of edible ringed seal, 100% of edible bearded seal, and 10% of edible harp seal meat was used for family food. It also found that 25% of edible walrus meat was used for family food (Friesen 1975). The skin of the narwhal,

Table 6-5. Estimated annual imputed income from major food sources - Arctic Bay.

	Caribou	Ducks	Ptar- migan	Ringed Seal	Fish	Total
Average Annual Harvest ¹ (69-70 to 74-75)	109	30	110	1095	ND	
Edible lbs/ Animal ²	100	2.6	0.9	45		
Edible Meat (lbs)	10,900	78	99	49,275		60,352
Imputed Value/ Lb ³	\$3.00	\$2.00	\$2.00	\$3.00		
Imputed Value	\$32,700	\$156	\$198	\$147,825		\$181,149
Per Capita Value ⁴	\$105	\$0.50	\$0.64	\$475		\$582
¹	from Table 6-3.					
²	from Usher 1976, Bissett 1974, Thompson 1976.					
³	adapted from Usher 1976.					
⁴	based on a 1974 population of 311.					
ND	No Data.					

both fresh and deliberately rotted, has always been a favourite delicacy, but the meat is eaten only if other meats are unavailable (Brody 1976). Eider ducks are well liked as food, as are ptarmigan, but old squaw ducks are not a preferred food and are eaten less often. Char is an important food and lake trout makes for an interesting change in diet. Marine fish, such as sculpin and cod, have been important foods in times of scarcity (Brody 1976). Whale, walrus, some seal, and some fish are used as dog food.

The skins of caribou, ringed and bearded seal, and some eider ducks are used to make clothing although the importance of this use has declined in recent years. Brody (1976) reports that bearded seal skin is still preferred for boot soles.

Some animals are considered as "high prestige game" and have an importance to the Inuit that is not apparent in harvest and use statistics. Narwhals, walrus, and polar bears are considered to have this "high prestige" status. Brody (1976) reports "it is difficult to convey in words the enthusiasm that narwhal hunting inspires in the people of Pond Inlet and Arctic Bay".

6.7 Pipeline Implications

The proposed prime route passes through the remote western fringe of the Arctic Bay resource-use area. The two areas where conflicts may occur are the Creswell Bay-Stanwell Fletcher Basin area and the Brentford Bay-Bellot Strait area, which are occasionally used by some Arctic Bay people for whale, seal, caribou, and wildfowl hunting and some fishing.

7. GJOA HAVEN

7.1 The Community

Gjoa Haven owes its presence to a Hudson's Bay Company post built there in 1927. Its location was chosen to provide for easy access from the sea. Over the years people have moved into Gjoa Haven from the Chantrey Inlet, Sherman Inlet, Perry River, and Back River areas.

The estimated population of Gjoa Haven in 1976 was 402; it has more than doubled over the last decade. In 1974, it was 370; in 1971, 284; in 1969, 237; and in 1966, 162. In 1971, about 92% of the population was Inuit.

Gjoa Haven is served by four flights a week from Cambridge Bay. Air connections at Cambridge Bay are to Yellowknife and Edmonton. Marine transportation is supplied by the Northern Transportation Company Limited operating out of Hay River. Supplies are trucked from Edmonton to Hay River, barged down the Mackenzie River, and then loaded on a ship for Gjoa Haven. The shipping season is limited to August and September (Villiers 1969; Canada North Almanac 1976).

7.2 The Economy

The economy of Gjoa Haven is still primarily land-based, although some wage employment is available. Carving is an important activity and handicrafts are marketed through the Kekertak Cooperative.

There were 84 holders of General Hunting Licences in 1974-75; this number has increased steadily over the last decade (Table 7-1). No commercial fishing licences were issued in 1975,

but an estimated 10 licences were issued in 1976 (D. Dowler personal communication).

Table 7-1. Number of General Hunting Licences issued - Gjoa Haven.

1974-75	84	1970-71	61	1966-67	47
1973-74	75	1967-70	59	1965-66	49
1972-73	76	1968-69	61	1964-65	47
1971-72	66	1967-68	61	1963-64	49
Source: NWT Government					

7.3 Resource-Use Areas

7.3.1 General Area

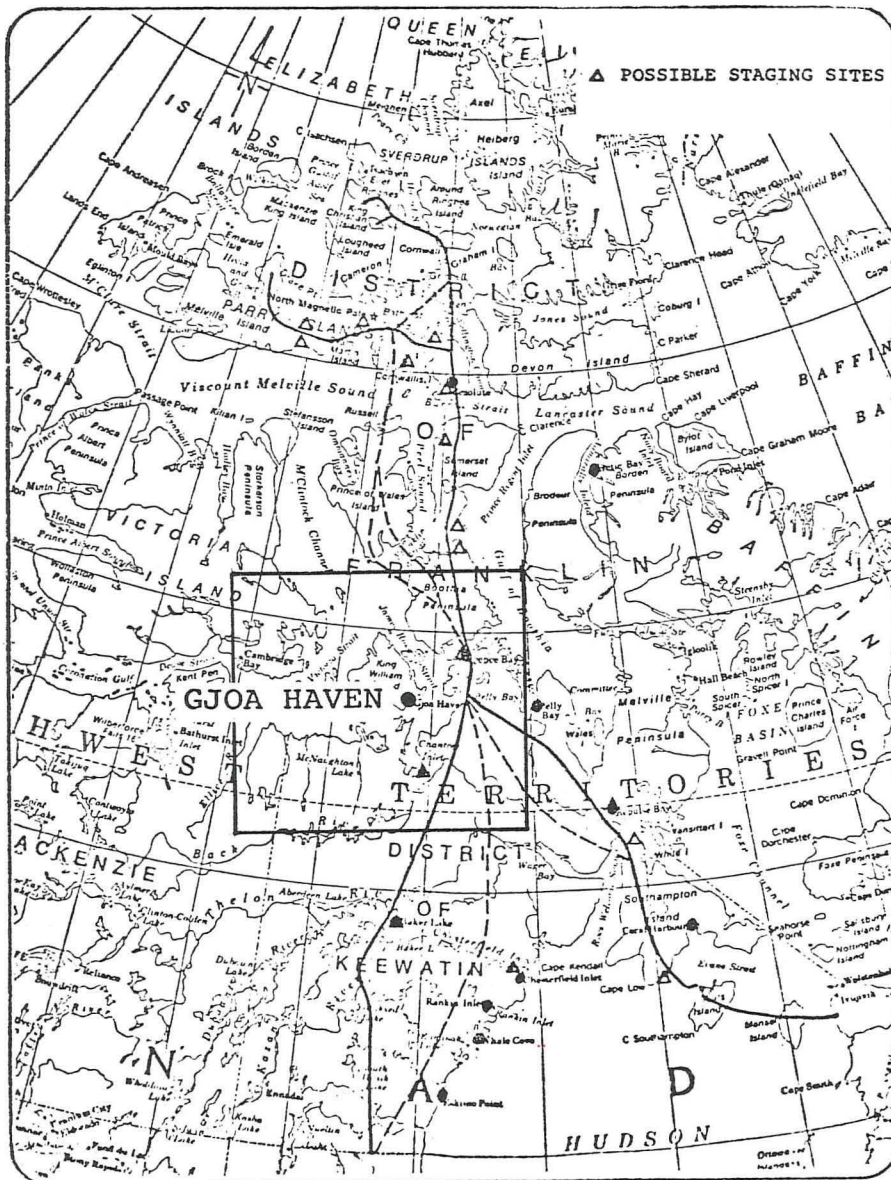
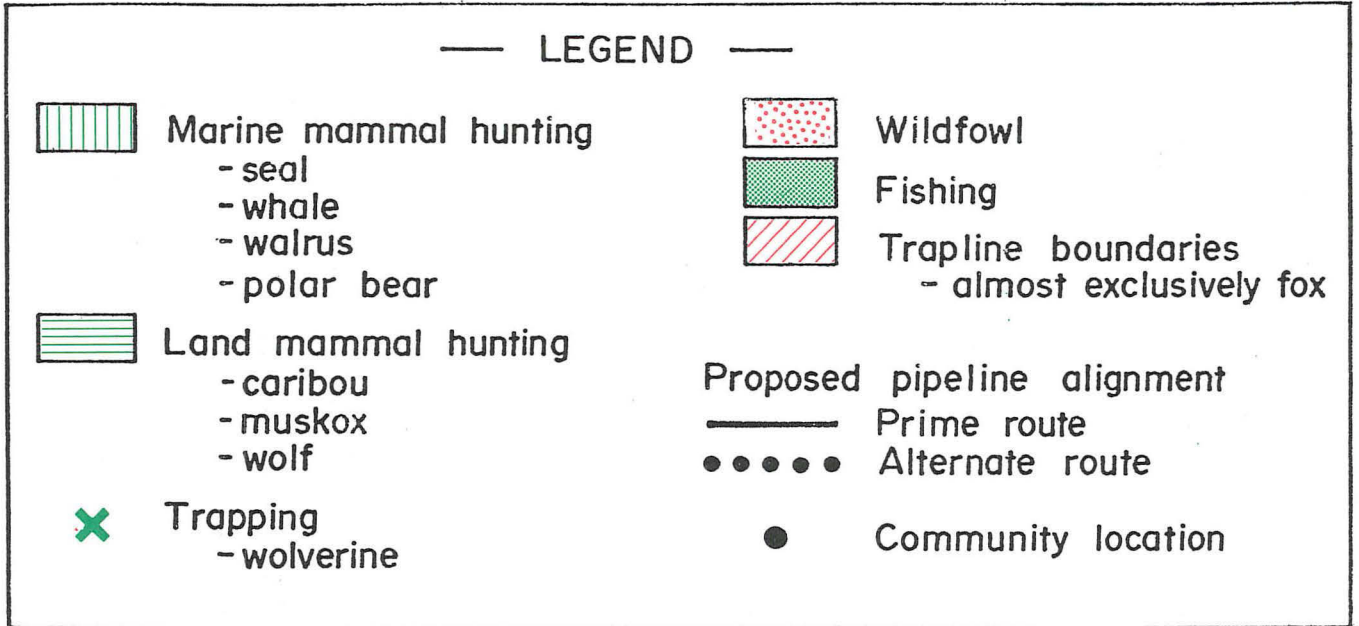
The resource-harvest zone of the Gjoa Haven Inuit is fairly extensive although it has decreased in area in recent years, particularly in areas to the south and southeast on the mainland. Seal and polar bear hunting define the northern extremes of this zone while caribou hunting defines the southern extremes. The zone extends about 330 km east to Melbourne Island in Queen Maud Gulf, 250 km north in Larsen Sound, 130 km northeast into Spence Bay, 160 km east in the Murchison River area, 280 km south into the Back River area, and 460 km southwest towards Bathurst Inlet (see Map 5). There is no indication of any permanent camps in the area.

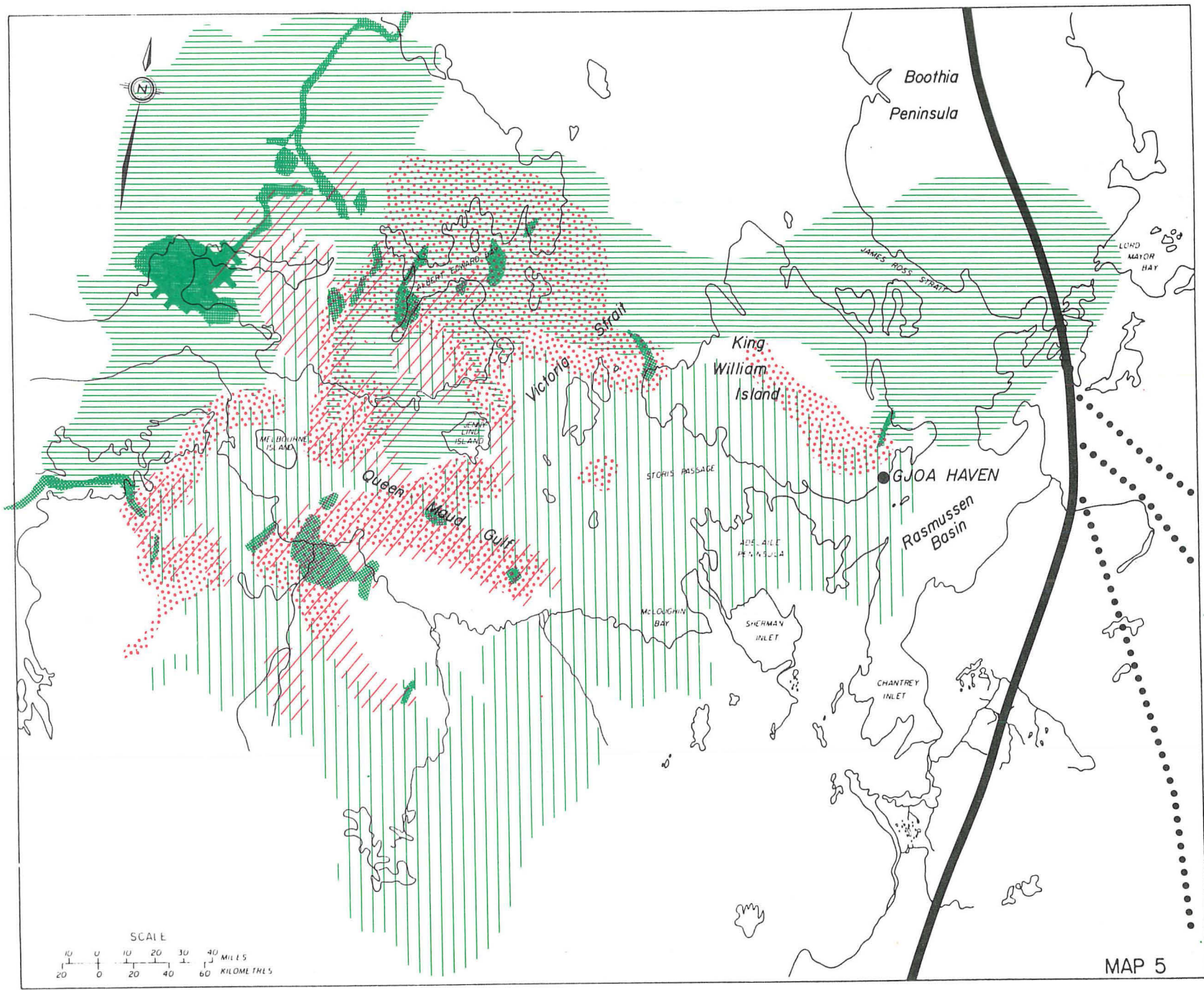
7.3.2 Trapping

Important trapping areas are the coasts of King William Island, Adelaide Peninsula, Sherman Basin, Chantrey Inlet, and Shepherd Bay and Arrowsmith Bay on the mainland.

7.3.3 Land Mammal Hunting

The most important caribou hunting areas are the Adelaide Peninsula, from the west shore of Chantrey Inlet to Sherman Basin, south along the west shore of Chantrey Inlet to Franklin Lake, and along the east shore of Chantrey Inlet and inland in the area from the Back River to Hayes River (Brice-Bennett 1976). Secondary caribou-hunting areas are along the south shore of Queen Maud Gulf and inland and between the Hayes and Murchison Rivers. All caribou hunting is done south of Gjoa Haven.





5. Gjoa Haven

MAP 5

The important wolf-hunting areas are the Back River and Hayes River areas. Other wolf-hunting areas are along the northern shore of Simpson Strait along the south coast of King William Island, a small area just south of Sherman Basin, and around the mouth of the Ellice River along Queen Maud Gulf. An important wolverine-hunting area is along the Hayes River (Brice-Bennett 1976).

7.3.4 Wildfowl Hunting

Important wildfowl hunting areas are along the south and east coasts of King William Island, along the north coast of Adelaide Peninsula, along the west and south shores of Chantrey Inlet and south to Franklin Lake, along the east shore of Rasmussen Basin from Cape Britannia to Balfour Bay, along the southern shore of Queen Maud Gulf and for a considerable distance inland from the mouth of the Simpson River to Sherman Basin, Hat Island, and along the southern shore of Queen Maud Gulf from the Ellice River to Perry River.

7.3.5 Marine Mammal Hunting

Polar Bears

The main polar bear hunting area extends north along the eastern side of Victoria Strait from the Adelaide Peninsula and from Matty Island in James Ross Strait into Larsen Sound. The most important area is around their denning sites on the Royal Geographical Society Islands and around Cape Felix on the northern tip of King William Island (Brice-Bennett 1976).

Seal

Seals are hunted throughout the marine-mammal hunting zone except for northern Larsen Sound (see Map 5). The most intensive hunting areas are Rasmussen Basin, Simpson Strait, and the eastern part of Queen Maud Gulf (Brice-Bennett 1976).

Whales and Walrus

Whale and walrus hunting are not major activities in Gjoa Haven.

7.3.6 Fishing

Char, trout, and whitefish are taken from major rivers and lakes close to the mainland coast and near the community. Important fishing areas are Back River and Franklin Lake, Hayes River and adjacent lakes, Murchison River, and river draining into Elliot Bay (Chantrey Inlet), Kaleet River, Simpson River, Perry

River, Ellice River, and the lakes and streams along the southeast coast of King William Island. Important cod fishing areas are Simpson Strait and Barrow Inlet (Brice-Bennett 1976).

Water bodies in the area that had commercial fishing quotas in 1976 are the Murchison River - 20,000 lbs (char); and the Port Perry area on King William Island - 5,000 lbs (char). Of these, only the Murchison River has a record of recent commercial harvest, and was probably fished by Pelly Bay fishermen for the Pelly Bay Co-op.

7.4 Harvest Patterns

Spring is an important season for caribou, wildfowl, and seal hunting and fishing. Summer is important for wildfowl and seal hunting and fishing. Fall is important for trapping; caribou and polar bear hunting; and fishing. Winter is important for trapping and polar bear hunting (Table 7-2).

7.5 Harvest Data

(See Table 7-3).

7.6 Commercial and Domestic Importance

7.6.1 Commercial Importance

Fox pelts and, to a lesser extent, seal skins and polar bear skins are important for providing income for the Gjoa Haven Inuit (Table 7-4).

A 1973 survey indicated that of the seals harvested, 90% of the skins were traded and 10% were used for handicrafts (Friesen 1975).

7.6.2 Domestic Importance

Caribou, followed by ringed seal and fish, are the important food sources. Table 7-5 gives the estimated imputed income for major species where sufficient data are available.

Friesen (1975) reported that, in 1973, 90% of the edible seal meat was used for family food and 10% of the seal meat suitable for dogs was fed to dogs.

Table 7-2. Harvest patterns - Gjoa Haven.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Trapping ¹ Arctic & Coloured Fox	Intensive in Dec. Ends in mid-Mar.	No trapping.	No trapping.	Starts in Nov. intensive in Nov.
Land Hunting: Caribou ¹	Hunting in Mar.	Hunting in Apr. May.	No hunting.	Hunting in Oct. Nov.
Wildfowl Hunting: Ducks & Geese ^{2,4}	No hunting.	Starts in Jun.	Hunting in Jul, Aug.	Stops in Sept.
Ptarmigan ⁴	Hunted in all seasons.			
Marine Hunting: Polar Bear ⁴	Hunting more impor- tant in late winter.	Ends by Jun as pelts becoming less valuable.	No hunting.	Hunting more important in late fall.
Ringed Seal ¹	Breathing hole hunt- ing recorded in 1971.	Hunted on ice from mid-May to end of Jun.- nets set in leads in mid-Jun.	Hunted along leads Hunted from boats & nets set along coast in open- water season.	Ends with freeze- up in Sept. or Oct.
Bearded Seal ^{1,3}	No hunting.	Usually shot from canoes as they are resting on moving ice.		No hunting.

Table 7-2. Harvest patterns - Gjoa Haven.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Fishing ^{1,4}	No fishing.	Starts in Jun on inland lakes.	Fishing on coast after break-up in conjunction with seal or caribou hunting.	Continues into fall.
1 Treude 1975.				
2 Brice-Bennett 1976.				
3 Villiers 1969.				
4 inferred from analysis of pattern in Resolute (see Table 4-2).				

Table 7-3. Harvest data - Gjoa Haven.⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR ⁽⁴⁾	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
63-64	1643	3		84			73	146	21	420						
64-65	697								12	500						
65-66	497								20	490						
66-67	1456								10	288						
67-68	587			568					7	575						
68-69	497	1		46		33	83	50	5							
69-70				250 ⁽³⁾					8 ⁽³⁾	400 ⁽³⁾						
70-71	1806	1							6							
71-72	1755	1		84					8	249						
72-73	3258								8	219						
73-74	3256	5							9 ⁽²⁾	312						
74-75	1558 ⁽²⁾								9 ⁽²⁾	393 ⁽²⁾						
Total All Years	16480	11		1032					123	3846						
Avg. All Years	1498	2.2		206					10	385						

Table 7-3. Harvest data - Gjoa Haven. (1)

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR (4)	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES
Total 69-70 to 74-75	11633								48	1573						
Avg.	2327								8	315						
High Year	3258								9	400						

1 All data from Usher 1975, unless otherwise indicated.

2 NWT Game Management Service.

3 Palmer 1973.

4 Polar Bear quota for Gjoa Haven is 9.

5 Villiers 1969.

6 Friesen 1975.

Table 7-4. Expected annual income from sales of fur - Gjoa Haven.

	Arctic Fox	Polar Bear	Ringed Seal	Total
Average Annual Harvest ¹ (69-70 to 74-75)	2327	9	315	
Average NWT Pelt Price ² (74-75)	\$17.59	\$333	\$17.10	
Expected Income	\$40,932	\$2997	\$5387	\$49,316
Per Capita Income ³	\$111	\$8	\$15	\$133
¹	from Table 7-3, except for polar bear which is based on allotted quota of 9.			
²	Fur Traders Record Book - NWT Govt.			
³	based on a population of 370 in 1974.			
⁴	Community polar bear skin prices in 1974-75 from Smith and Stirling (1976).			

7.7 Pipeline Implications

The proposed prime route passes through the eastern part of the Gjoa Haven resource-use zone from the Murchison River south. The possible use of Chantrey Inlet-Lower Back River as a staging area and marine traffic through Simpson Strait could conflict with resource harvest in the core of the Gjoa Haven resource-use zone.

Specifically, the prime route may conflict with resource harvest in the following key areas:

1. Murchison River-Inglis Bay. This is an important seal and waterfowl hunting area; the Murchison River is an important fishing area. Construction in this area may interfere with char migrations or degrade fish, seal, or waterfowl habitat.

Table 7-5. Estimated annual imputed income from major food sources - Gjoa Haven.

	Caribou	Geese	Ducks	Ptar- migan	Ringed Seal	Fish	Total
Average Annual Harvest ¹ (69-70 to 74-75)	250 ⁵	ND	ND	ND	315	ND	
Edible lbs/ Animal ²	100	3.5	2.6	0.9	45		
Edible Meat (lbs)	25,000				14,175		39,175
Imputed Value/ lb ³	\$3.00	\$2.00	\$2.00	\$2.00	\$3.00		
Imputed Value	\$75,000				\$42,525		\$117,525
Per Capita Value ⁴	\$203				\$115		\$318
¹	from Table 7-3.						
²	from Usher 1976, Bissett 1974, Thompson 1976.						
³	adapted from Usher 1976.						
⁴	based on a 1974 population of 370.						
⁵	based on 1969-70 data only due to a lack of reliable data for other years.						
ND	No Data.						

2. Hayes River South. This is part of the primary caribou hunting area for Gjoa Haven. Construction in winter and spring could disturb caribou populations on their winter range or interfere with caribou movements. The Hayes River and its tributaries are important fishing areas. Construction across the Hayes may interfere with char migrations (if they ascend that far upstream) or degrade fish habitat.

3. Chantrey Inlet-Lower Back River. This is an important waterfowl hunting and fishing area. Location of a staging area here and marine traffic could degrade fish and waterfowl habitat or interfere with fishing activities.
4. Simpson Strait. This is part of the primary seal-hunting area and is also important for cod fishing. Marine traffic could disturb seal populations or interfere with fishing activities.

8. BAKER LAKE

8.1 The Community

Baker Lake is the only inland settlement of Inuit in Canada. Its history as a settlement dates back to 1924 when Revillon Freres opened a trading post there and the Hudson's Bay Company opened a post nearby the following year. Over the years, Inuit have moved into Baker Lake from camps in the Garry Lakes area, Back River area, Kunwak-Kazan Rivers systems to Yathkyed Lake and Ferguson Lake, and the Thelon River system west to Beverley Lake (Welland 1976).

The estimated population of Baker Lake in 1976 was 900; it has increased substantially over the last decade. In 1974, it was 860; in 1971, 765; in 1969, 495; and in 1966, 596. In 1971, about 91% of the population was Inuit.

Baker Lake is currently served by three flights a week from Churchill with connections to Winnipeg. Marine transportation is supplied by the Northern Transportation Company Limited operating out of Churchill; the shipping season is limited to August and September (Canada North Almanac 1976).

8.2 The Economy

The economy of Baker Lake is still primarily land-based, although many wage employment opportunities are available. The Ministry of Transport maintains a large establishment with a meteorological station and an airstrip and is an important employer. Arts and crafts (including parkas, sewn goods, footwear, soapstone carvings, and prints), marketed through the Sanavik Cooperative, are an important activity and Baker Lake is said to have a world-wide reputation for the tapestries produced there. Baker Lake also supports a tourist facility, the Baker Lake Lodge (Canada North Almanac 1976).

There were 169 holders of General Hunting Licences in 1974-75; this number has decreased and then increased again over the past decade (Table 8-1). Six commercial fishing licences were issued to Baker Lake fishermen in 1975 (D. Dowler personal communication).

Table 8-1. Number of General Hunting Licences issued - Baker Lake

1974-75	169	1970-71	116	1966-67	133
1973-74	155	1969-70	104	1965-66	126
1972-73	135	1968-69	96	1964-65	128
1971-72	100	1967-68	121	1963-64	121
Source:	NWT Government				

8.3 Resource-Use Areas

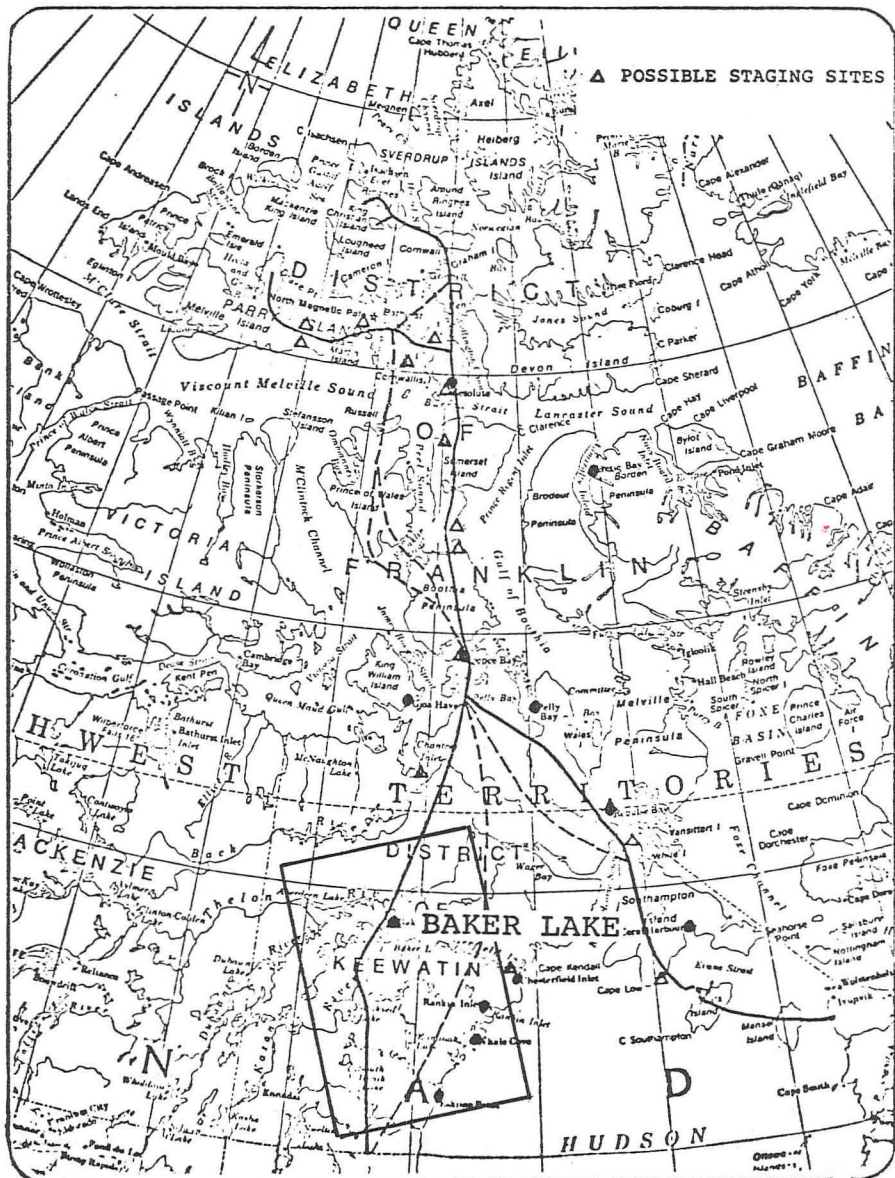
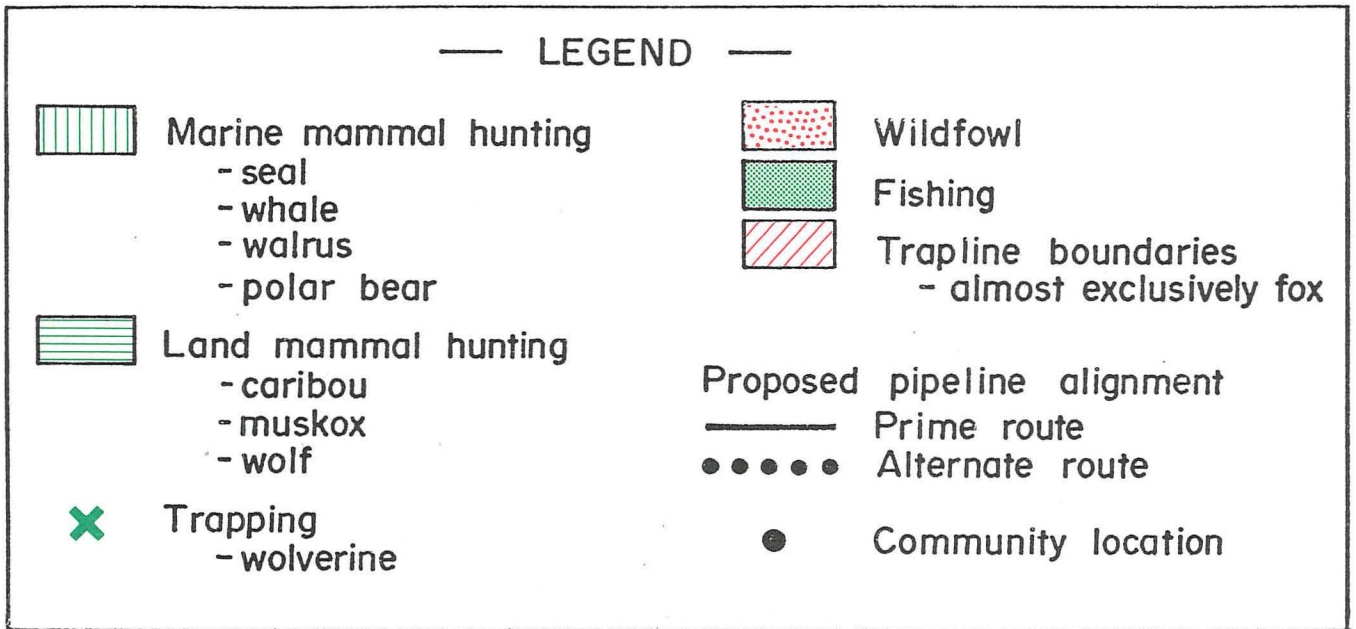
8.3.1 General Area

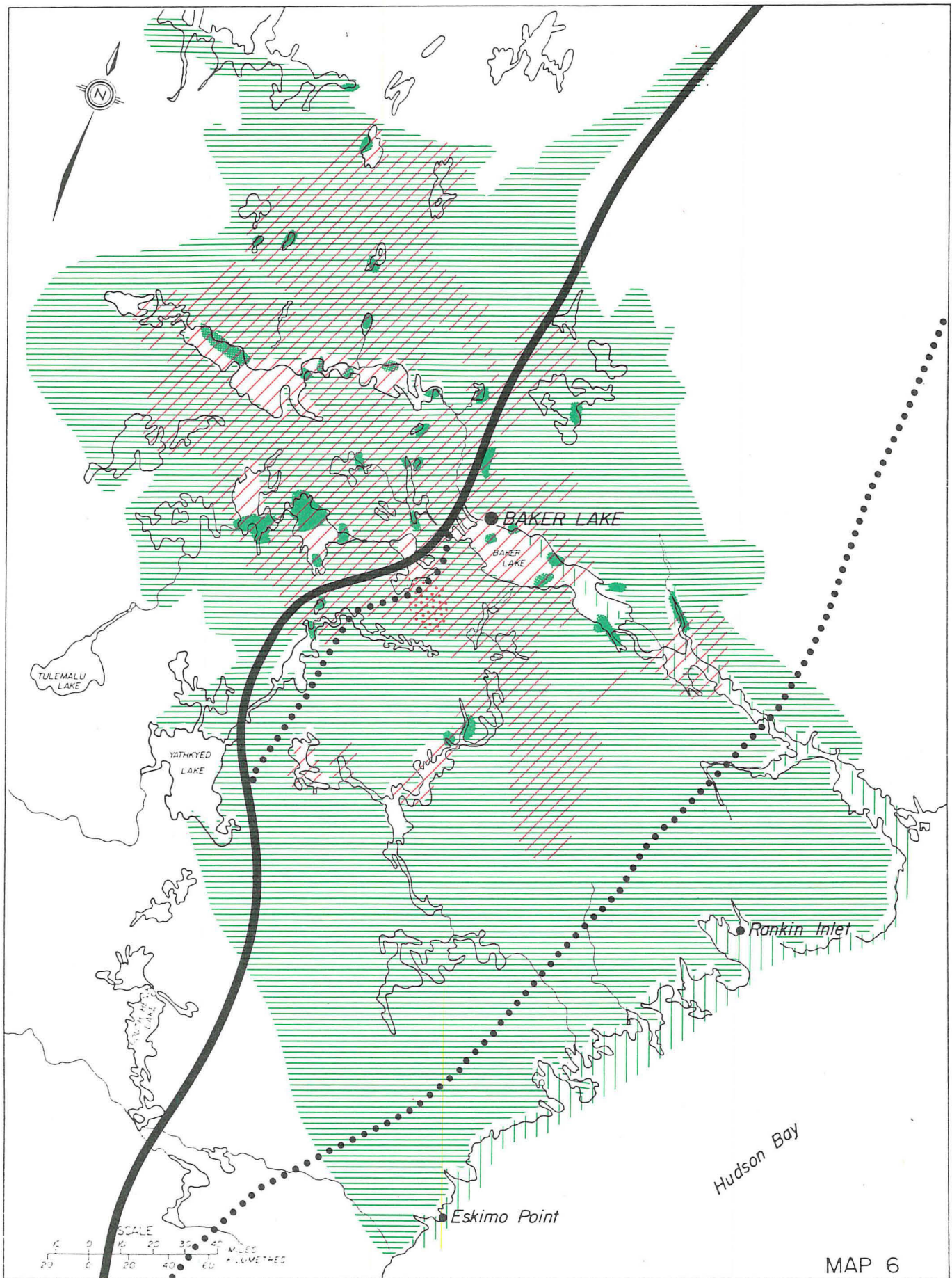
The resource-harvest zone of the Baker Lake Inuit is the largest of any of the Keewatin communities' zones. Caribou hunting defines the outer boundaries of this zone which extends about 250 km north to the Garry Lakes area and up the Back River, 280 km southeast down Chesterfield Inlet to Hudson Bay, 360 km south along the coast of Hudson Bay towards Eskimo Point, and 220 km southwest to Yathyked Lake. The coastal area is rarely used by Baker Lake hunters (see Map 6).

Baker Lake hunters set up spring and summer camps at fishing sites, caribou crossings, or goose and duck hunting areas. The main camping areas are along the Kazan River; in Chesterfield Inlet, along the Thelon River; at Beverly, Aberdeen, and Schultz Lakes; and the Whitehills Lake area. There is also camping along the shores of Baker Lake (Welland 1976). There is no indication of any permanent camps in the area.

8.3.2 Trapping

The most intensively trapped areas are: along the Thelon River to Schultz Lake on the west; towards Whitehills Lake on the north; towards Parker and Thirty Mile Lakes to the south; and towards Princess Mary and Mallery Lakes to the southwest. Remote trapping areas extend to Sand Lake and Garry Lake and the





6. Baker Lake

MAP 6

Back River to the north; the Quoich River and Cross Bay on the east; Banks and Kaminuriak Lakes to the south; and Forde, Mallery, Wharton, and Beverly Lakes on the west and southwest.

8.3.3 Land Mammal Hunting

The most intensively hunted area for caribou is within 160 km of the community. In summer and fall, narrows along the Thelon River between Beverly and Baker Lakes, along the Kazan River between Forde and Baker Lakes, and just east of Baker Lake are good hunting areas. In summer, caribou are hunted by boat along the shores of Baker Lake and Chesterfield Inlet and along the Kazan and Thelon Rivers (Welland 1976).

Caribou are hunted throughout the land-mammal hunting zone (see Map 6), although the most probable southern limit is defined by Yathkyed Lake, Ferguson Lake, Kaminuriak Lake, Banks Lake, and Chesterfield Inlet. The lower Thelon River between Schultz and Baker Lakes is the best area for wolf hunting (Welland 1976).

8.3.4 Wildfowl Hunting

Wildfowl hunting is not a widespread activity in the Baker Lake resource-harvest zone; it is limited to the shores and islands in the vicinity of Aberdeen, Beverly, and Pitz Lakes.

8.3.5 Marine Mammal Hunting

Marine mammal hunting is not an important activity for Baker Lake hunters. Some seals are hunted in Baker Lake, Chesterfield Inlet, and south along the coast of Hudson Bay. Seals are taken mostly by residents who originally came from coastal areas such as Chantrey Inlet, Queen Maud Gulf, or Wager Bay (Welland 1976).

8.3.6 Fishing

Important domestic fishing areas are the mouths of the rivers draining into Baker Lake, the lower Thelon and Kazan Rivers, and Pitz Lake. Other fishing areas are Beverly, Aberdeen, and Schultz Lakes and several small lakes farther north; Princess Margaret and Mallery Lakes; several small lakes north and west of Baker Lake; Whitehills and Tehek Lakes; Bissett and Parker Lakes; and the lower Quoich River.

The Baker Lake area is fished primarily for lake trout and whitefish; there is also a small cisco fishery on Baker Lake. Lakes in the area that had 1976 commercial quotas are: Baker Lake (50,000 lbs); Garry Lake (100,000 lbs), Mallery Lake (35,700 lbs);

Parker Lake A (25,000 lbs), Parker Lake B (20,000 lbs); Pitz Lake (30,000 lbs); Princess Mary Lake (50,000 lbs); Schultz Lake (40,000 lbs); Tehek Lake (50,000 lbs), and Whitehills Lake (18,000 lbs). All of these quotas were for lake trout and whitefish. Of these lakes, only Baker Lake, Garry Lake, Parker Lake, Pitz Lake, and Schultz Lake have a record of recent commercial harvest. These lakes, and possibly other large lakes closer to Rankin Inlet such as Kaminuriak and Banks Lake, are probably fished by Baker Lake commercial fishermen for the Rankin Inlet cannery.

Some Baker Lake commercial fishermen also fish for the Rankin Inlet cannery from Barbour Bay to the mouth of Chesterfield Inlet. See Section 10.3.6 for a list of commercially-licenced waterbodies along Chesterfield Inlet.

Sport fishing occurs in Baker Lake, through the Baker Lake Lodge. The Lodge also has an outpost at the mouth of the Back River in Chantrey Inlet, which operates from July 15 to September 8.

8.4 Harvest Patterns

Spring and summer are important seasons for caribou and wildfowl hunting and fishing. Fall is important for trapping, caribou hunting, and fishing while winter is important for trapping and caribou hunting (Table 8-2).

8.5 Harvest Data

(See Table 8-3).

8.6 Commercial and Domestic Importance

8.6.1 Commercial Importance

Furbearers are not an important source of income for the Baker Lake Inuit, although fox pelts provide some income (Table 8-4).

Sale of lake trout, whitefish, cisco, and char to the Rankin cannery or to the local co-op is an important source of income. Using an average annual commercial harvest of 32,451 lbs (Table 8-3), and assuming that Baker Lake commercial fishermen sell fish for \$0.50/lb, then the expected annual income from sale of fish would be \$16,226 and the per-capita income \$19.

Table 8-2. Harvest patterns - Baker Lake.

Activity	Winter (Dec to Mar)	Spring (Apr to Jun)	Summer (July, Aug)	Fall (Sept. to Nov.)
Trapping ^{2,3}	Primary season.	No trapping.	No trapping.	Starts in Nov.
Land Hunting: Caribou ¹	Hunting.	Hunting.	Important season, hunted at river crossings & from boats.	Important season Hunted at river crossings.
Wolf ⁴	Hunted inland in association with caribou hunting.			Hunted inland.
Wildfowl Hunting: Ducks & Geese ^{1,2}	No hunting.	Starts in Jun.	Hunting in Jul, Aug.	Stops in Sept.
Ptarmigan ²	Hunted in all seasons.			
Marine Hunting: Ringed Seal ¹	No hunting.	No hunting.	Hunted in summer.	No hunting.
Fishing ¹	Little fishing.	Ice fishing on lakes.	Open-water fishing.	Ice fishing on lakes important commercial season.
¹	Welland 1976.			
²	inferred from analysis of pattern in Gjoa Haven (see Table 7-2).			
³	inferred from analysis of pattern in Rankin Inlet (see Table 10-2).			
⁴	inferred from analysis of pattern in Chesterfield Inlet (see Table 9-2).			

Table 8-3. Harvest data - Baker Lake.⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	PTARMIGAN	POLAR BEAR	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES ⁽³⁾
63-64	1252	2		2351	2			234								
64-65	747	1		2325	3											
65-66	518			1452	6											
66-67	891	1		2149	1	127	28	5206								
67-68	396	5		826	3	35		1976								
68-69	292	5		1009	7	70										
69-70	281	4		2030	1	23		499								35,000 lbs
70-71	1194	7		1763	10	41		792								43,715 lbs
71-72	703	9		1586	9	28	46	984								20,400 lbs
72-73	389	3		2388 ⁽²⁾	8											115 lbs
73-74	2402			2392 ⁽²⁾												575 lbs
74-75	361 ⁽²⁾															
75-76																30,690 lbs
Total All Years	9426	37		20271	50	324		9691								
Avg. All Years	786	4.1		1843	5	54		1615								

Table 8-3. Harvest data -- Baker Lake.⁽¹⁾

	TRAPPING			LAND MAMMAL HUNTING		WILDFOWL HUNTING			MARINE MAMMAL HUNTING						FISHING	
	ARCTIC FOX	COLOURED FOX	WOLVERINE	CARIBOU	WOLF	GEESE	DUCK	P TARMIGAN	POLAR BEAR	RINGED SEAL	BEARDED SEAL	HARP SEAL	BELUGA	NARWHAL	WALRUS	ALL SPECIES ⁽³⁾
Total 69-70 to 74-75	5330	23		10159	28	92		2275								129,805 ⁽⁴⁾ lbs
Avg.	888	5.8		2032	7	31		758								32,451 ⁽⁴⁾ lbs
High Year	2042	9		2392	10	41		984								43,715 lbs

1 All data from Usher 1975, unless otherwise indicated.

2 NWT Game Management Division.

3 Commercial records: primarily lake trout & whitefish (R. Peet, personal communication)
Low harvest statistics for 1972-73 to 1974-75 reflect either a change in commercial marketing strategy or unreliability of data.

4 Total and average do not include the 1972-73 to 1974-75 period.

Table 8-4. Expected annual income from sales of fur - Baker Lake.

	Arctic Fox	Coloured Fox	Wolf	Total
Average Annual Harvest (69-70 to 74-75) ¹	888	5.8	7	
Average NWT Pelt Price (74-75) ²	\$17.59	\$28.61	\$62.72	
Expected Income	\$15,620	\$166	\$439	\$16,225
Per Capita Income ³	\$18	\$0.20	\$0.50	\$19
¹	from Table 8-3.			
²	Fur Traders Record Book - NWT Govt.			
³	based on a 1974 population of 860.			

8.6.2 Domestic Importance

Caribou provide most of the food for the Baker Lake Inuit; fish are the second major food source (Table 8-5).

8.7 Pipeline Implications

The proposed prime route passes through the core of the Baker Lake resource-use zone from the Meadowbank River south to Yathkyed Lake. The coastal alternate traverses the eastern fringe of this zone but could interfere with migrations and movements of the Kaminuriak caribou herd, which is important to the people of Baker Lake.

Specifically, the prime route may conflict with resource harvest in the following key areas:

1. Thelon River-West End of Baker Lake. The mouths of Thelon River and other tributaries to the west side of Baker Lake are important areas for domestic fishing. Construction activities may block char migrations in the Thelon River or degrade fish habitat there or

Table 8-5. Estimated annual imputed income from major food sources - Baker Lake.

	Caribou	Geese	Ptar- migan	Fish	Total
Average Annual Harvest (69-70 to 74-75) ¹	2032	31	758	ND	
Edible lbs/Animal ²	100	3.5	0.9		
Edible Meat (lbs)	203,200	108.5	682		203,991
Imputed Value/lb ³	\$3.00	\$2.00	\$2.00		
Imputed Value	\$609,600	\$217	\$1364		\$611,181
Per Capita Value	\$709	\$0.25	\$1.60		\$711
¹	from Table 8-3.				
²	from Usher 1976, Bissett 1974, Thompson 1976.				
³	adapted from Usher 1976.				
⁴	based on a 1974 population of 860.				
ND	No Data.				

in the other tributaries to Baker Lake and materials staging activities near the community could degrade fish habitats or interfere with fishing activities.

2. Baker-Lake-Chesterfield Inlet. Char are fished domestically and commercially in bays, inlets, and river mouths and caribou are hunted along shores, particularly at favourite crossings. There is also sport fishing in Baker Lake. Water traffic to a major staging area near the community could interfere with fishing activities or caribou crossings or degrade fish habitat.
3. Pitz Lake. It is important for domestic and possibly commercial fishing and is crossed by the prime route. This could cause direct mortality of fish, degrade fish habitat, and interfere with fishing activities.

The eastern alternate in the south-of-Baker Lake area would avoid the crossing.

4. Kazan-Kunwak Rivers. The mouth of the Kazan River is important for domestic fishing. The route crosses the Kunwak upstream of Thirty Mile Lake and the Kazan downstream of Yathkyed Lake; the eastern alternate avoids crossing the Kunwak but crosses the Kazan farther downstream at Thirty Mile Lake. Neither of the crossings are at fishing areas but construction activities at the crossings could degrade fish habitat downstream.
5. Yathkyed Lake South. Spring, summer, and early fall construction in this area could interfere with migrations and post-calving movements of the Kaminuriak caribou which are hunted farther north.
6. Chantrey Inlet-Back River. The sport fishery in this area may be affected by aesthetic conflicts, harvest conflicts, or degradation of fish habitat if a major materials staging area is located in Chantrey Inlet or on the Lower Back River.

9. CHESTERFIELD INLET

9.1 The Community

Chesterfield Inlet is one of the oldest settlements in the study area. It was established when the Hudson's Bay Company built a trading post there in 1911. Over the years, Inuit have moved into Chesterfield Inlet from inland and coastal camps in the Barbour Bay - McManaman Lake, Quoich River, Bowell Islands, and Wager Bay areas. There have also been movements to and from Rankin Inlet when the mine opened in 1956 and when it closed in 1962.

The estimated population of Chesterfield Inlet in 1974 was 294; it has climbed slowly over the last decade. In 1971, it was 276; in 1969, 216; and in 1966, 199. In 1971, 89% of the population was Inuit.

Chesterfield Inlet is currently served by two flights a week from Churchill, with connections to Winnipeg. Marine transportation is supplied by the Northern Transportation Company Limited operating out of Churchill. The shipping season extends from July to September (Canada North Almanac 1976).

9.2 The Economy

The economy of Chesterfield Inlet is primarily landbased. Carvings and handicrafts (including parkas, sewn goods, footwear, and soapstone carvings) are marketed through the Pitsilak Cooperative.

There were 20 holders of General Hunting Licences in 1974-75; the number has fluctuated widely over the past decade (Table 9-1). Six commercial fishing licences were issued to Chesterfield Inlet fishermen in 1975 (D. Dowler, personal communication).

Table 9-1. Number of General Hunting Licences issued - Chesterfield Inlet.

1974-75	20	1970-71	23	1966-67	32
1973-74	42	1969-70	29	1965-66	36
1972-73	38	1968-69	29	1964-65	38
1971-72	16	1967-68	37	1963-64	19
Source:	NWT Govt.				

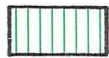
9.3 Resource-Use Areas

9.3.1 General Area

Animal resources are plentiful close to the community; hence the area used by Chesterfield Inlet hunters is smaller than the resource-harvest zones of other Keewatin communities (Welland 1976). Caribou hunting defines the inland boundary of the Chesterfield Inlet resource-harvest zone while seal hunting defines the marine boundary. The harvest zone extends 180 km north towards Wager Bay, 230 km northeast along the coast into Roes Welcome Sound, 160 km south along the coast to Whale Cove, 130 km west to Gibson Lake, and 120 km northwest to Fehet Lake (see Map 7).

Chesterfield Inlet hunters use camps along the coast, on small islands, at river mouths and sometimes inland. Most of these are spring and summer camps for fishing, seal hunting, wildfowl hunting, and egg collecting. The most popular camping area is along the coast from Baker Foreland to Cape Fullerton and along Chesterfield Inlet to Barbour Bay (Welland 1976).

— LEGEND —



Marine mammal hunting

- seal
- whale
- walrus
- polar bear



Wildfowl



Fishing



Trapline boundaries
- almost exclusively fox



Land mammal hunting

- caribou
- muskox
- wolf

Proposed pipeline alignment



Prime route



Alternate route



Trapping

- wolverine



Community location

