

ENVIRONMENTAL IMPACT STATEMENT
for the
MACKENZIE GAS PROJECT

Volume 4: Part B

Socio-Economic Baseline

**Kakisa
Community Report**

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1 INTRODUCTION

1.1 Background and Purpose

The purpose of this report on Kakisa is to present the response to the Joint Review Panel (JRP) request for a community-specific organization of the environmental impact statement (EIS) socio-economic baseline data. For consistency and ease of use, the document is similar in structure to, and has been assembled largely on the basis of, the regional-level material contained in the existing Volume 4 of the EIS. This report (hereinafter referred to as Volume 4B) presents a community focus on a stand-alone basis with the intent of meeting the needs of, and facilitating review by, each community without substantial reference to other EIS documentation. A corresponding document, Volume 6C, has been prepared to present the effects assessment on a community-specific basis.

1.2 How to Use this Report

Typical socio-economic material is presented in this report as follows:

- Section 2 – People and the Economy
- Section 3 – Infrastructure and Community Services
- Section 4 – Individual, Family and Community Wellness
- Section 5 – Traditional Culture

This volume also contains the following discussions:

- Section 6 – Nontraditional Land and Resource Use
- Section 7 – Heritage Resources

In order to help the reader locate content that may be of particular interest and to allow linkages for a given topic between the baseline information in Volume 4B and the effects assessment in Volume 6C, as well as to the existing Volumes 4 and 6 of the EIS, the following concordance table provides cross-references for the topics in each volume (see Table 1-1). Note that although the titles of sections match those found in the existing EIS Volumes 4 and 6, the numbering has changed in Volume 6C to accommodate new sections.

Table 1-1: Environmental Impact Statement Topic Areas

Topic	EIS, Volume 4	Volume 4B	EIS, Volumes 6A and 6B	Volume 6C
Introduction	1.0	1.0	1.0	1.0
Geographic Area of Interest	–	–	–	2.0
Public Participation	–	–	–	3.0
Project Expenditures	–	–	2.0	–
National Economic Effects	–	–	3.2	–
Population Composition and Dynamics (Demography)	2.2.1, 2.3.1, 2.4.1, 2.5.1, 2.6.1, 2.7.1, 2.8.1, 2.9.1	2.2	3.3	4.2
Economic Activity	2.2.2, 2.3.2, 2.4.2, 2.5.2, 2.6.2, 2.7.2, 2.8.2, 2.9.2	2.3	3.1	4.1
Labour Force	2.2.3, 2.3.3, 2.4.3, 2.5.3, 2.6.3, 2.7.3, 2.8.3, 2.9.3	2.4		
Income Sources and Amounts	2.2.4, 2.3.4, 2.4.4, 2.5.4, 2.6.4, 2.7.4, 2.8.4, 2.9.4	2.5		
Cost of Living	2.2.5, 2.3.5, 2.4.5, 2.5.5, 2.6.5, 2.7.5, 2.8.5, 2.9.5	2.6		
Transportation Infrastructure	3.2.1, 3.3.1, 3.4.1, 3.5.1, 3.6.1, 3.7.1, 3.8.1, 3.9.1	3.3	4.1	5.2
Utilities, Energy and Communications	3.2.2, 3.3.2, 3.4.2, 3.5.2, 3.6.2, 3.7.2, 3.8.2, 3.9.2	3.4	4.2	5.3
Housing	3.2.3, 3.3.3, 3.4.3, 3.5.3, 3.6.3, 3.7.3, 3.8.3, 3.9.3	3.5	4.3	5.4
Recreation	3.2.3, 3.3.3, 3.4.3, 3.5.3, 3.6.3, 3.7.3, 3.8.3, 3.9.3		4.4	5.5
Governance	3.2.4, 3.3.4, 3.4.4, 3.5.4, 3.6.4, 3.7.4, 3.8.4, 3.9.4	3.2	4.5	5.1
Health Conditions	4.2.1, 4.3.1, 4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1, 4.9.1	4.2	5.3	6.2
Health Care Facilities and Services	4.2.2, 4.3.2, 4.4.2, 4.5.2, 4.6.2, 4.7.2, 4.8.2, 4.9.2	4.3	5.2	6.1

Table 1-1: Environmental Impact Statement Topic Areas (cont'd)

Topic	EIS, Volume 4	Volume 4B	EIS, Volumes 6A and 6B	Volume 6C
Family and Community Conditions (Community Well-Being)	4.2.3, 4.3.3, 4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3, 4.9.3	4.4		
Human Health Risks	–	–	5.4	6.3
Accidents and Malfunctions	–	–	–	6.4
Social and Protection Facilities and Services	4.2.4, 4.3.4, 4.4.4, 4.5.4, 4.6.4, 4.7.4, 4.8.4, 4.9.4	4.5	5.5	6.5
Education and Training	4.2.5, 4.3.5, 4.4.5, 4.5.5, 4.6.5, 4.7.5, 4.8.5, 4.9.5	4.6	5.6	6.6
Traditional Harvesting	5.2.1, 5.3.1, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.8.1, 5.9.1	5.2	6.2	7.1
Trapping	5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2, 5.8.2, 5.9.2	5.3		
Aboriginal Language	5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3	5.4	6.3	7.2
Nontraditional Land and Resource Use	6.0	6.0	7.0	8.0
Heritage Resources	7.0	7.0	8.0	9.0
Cumulative Effects	–	–	9.0	–
Monitoring and Follow-Up	–	–	10.0	10.0
References, Glossary	end	end	end	end
NOTE: – = not included, or not discussed				

1.3 Study Area

The socio-economic study area includes all of the communities in the Northwest Territories in which the direct or indirect effects of gas production and pipeline construction may affect permanent residents.

The socio-economic study area also includes northwestern Alberta, where, in an ancillary project, NOVA Gas Transmission Ltd. (NGTL) is proposing to construct the Northwest Mainline (Dickins Lake and Vardie River Sections) and the NGTL interconnect facility.

Figure 1-1 illustrates the study area communities.

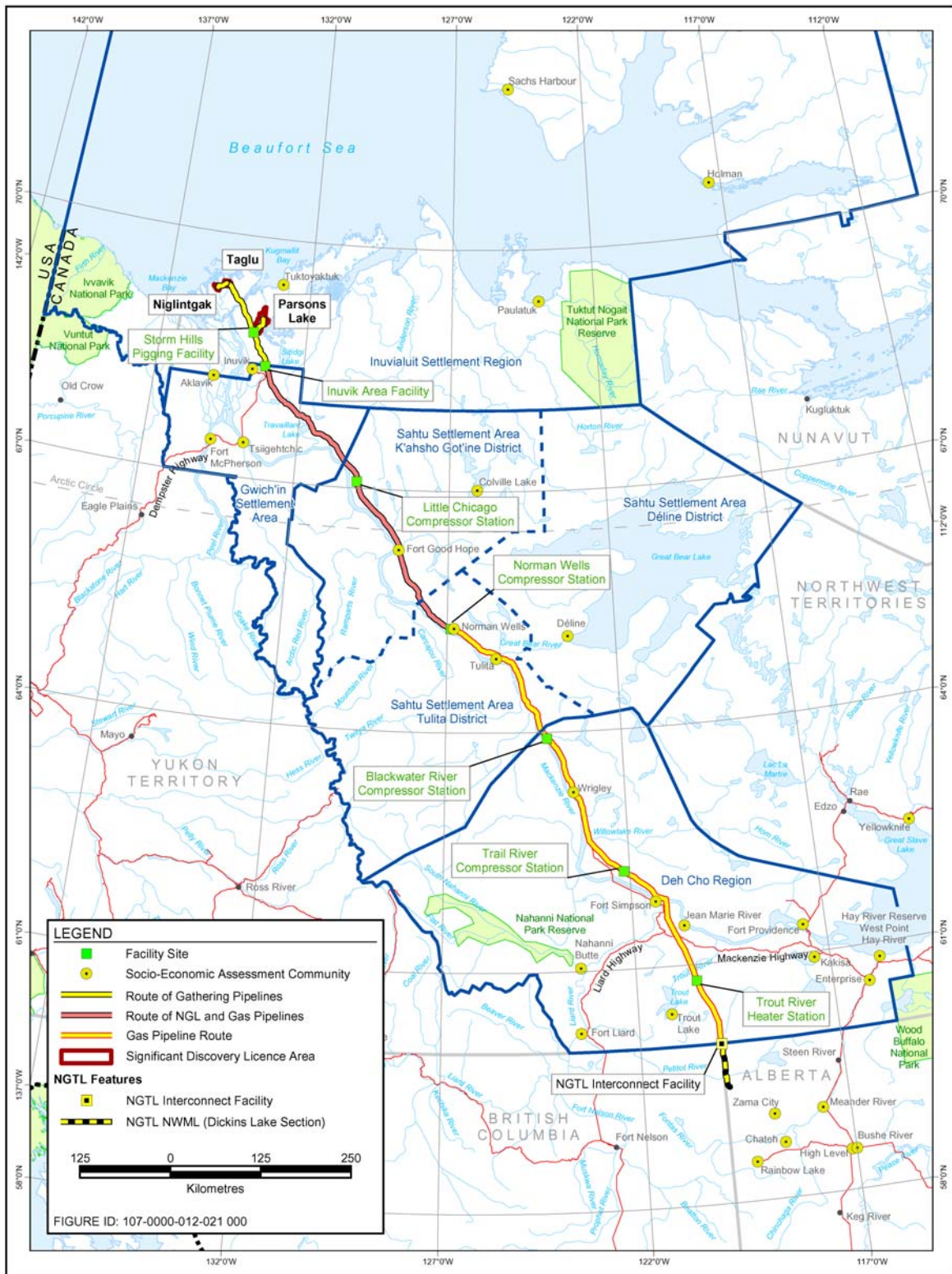


Figure 1-1: Study Area Communities

The nontraditional land and resource use, and heritage resources portions of the socio-economic impact assessment (SEIA) identify specific local study areas (LSAs) and regional study areas (RSAs) in relation to project component locations and activities.

1.4 Summary of the Socio-Economic Baseline for Kakisa

Kakisa is a very small community with a population of about 70 persons, located on Kakisa Lake, 14 km from the Mackenzie Highway, 233 km from Yellowknife and 90 km from Hay River. Some data is not available for Kakisa because it is suppressed to protect confidentiality or because, with protection and social services provided from Fort Providence, Kakisa statistics are unavailable.

Labour force participation, employment and unemployment rates and average earned income data for Kakisa is unavailable. The cost of living index for Kakisa is about 35% higher than in Edmonton.

In terms of utilities and recreation facilities, Kakisa is generally comparable with other very small territorial communities. The closest hospital and physician services are in Hay River.

Rates of physician treatments for respiratory diseases, infectious and parasitic diseases, and mental disorder rates are all lower than the Deh Cho Region (DCR) average rates, but the accidental injury rate is higher than the DCR total rates. No indicator data for alcohol abuse, spousal violence or children taken into care are available for Kakisa.

The percentage of high school graduates in Kakisa is comparable to the average for the other Aboriginal communities in the region, but the post-secondary training attainment level is below the DCR Aboriginal community average.

Data on participation in hunting and fishing, and consumption of predominantly country foods in Kakisa is unreliable. The percentage able to speak an Aboriginal language in Kakisa is comparable with the DCR Aboriginal community average.

From the perspective of heritage resources, no old sites have been identified within the DCR in the Kakisa area that have been scientifically dated. Artifacts similar to those from prehistoric occupations dated from 9,000 to 6,000 before present (BP) have been recorded. Sites dating up to the Protohistoric Period have been found in the area.

1.5 Approach

This SEIA is designed to focus on how the project may affect the wellness of a community. Wellness is often the most highly valued aspect of community life, and depends on the well-being of individuals, families and the community as a whole. Community wellness may be significantly enhanced by project benefits, and be vulnerable to adverse effects.

The effects assessment is focused on addressing community concerns, with the aim of designing and implementing the project using procedures that optimize beneficial effects and reduce effects the communities believe to be undesirable.

A community-driven approach requires:

- knowledge about the characteristics of the communities that may be affected
- understanding of the interests and concerns of these communities

Knowledge of community characteristics has been obtained by collecting information from administrative data and residents who are informed about a particular circumstance. Information on interests and concerns was gained in the meetings and community consultations held with residents of Kakisa and the other communities in the DCR.

1.5.1 Why the Baseline is Important

The baseline conditions provide the context for assessing the potential effects of the project. The data presented in this report allows an assessment of the capacity of the people, institutions, corporations and governments to respond to the project. Communities experience socio-economic effects in accordance with two primary interactions:

- physical, social or economic interaction between project component activities or personnel, and community residents and their economic, social or cultural resources and pursuits
- supplying workers or business services to the project, which generates income for firms and individuals. The spending or investment of this income will have both positive and negative effects.

1.6 Information Needed to Support the Effects Assessment

1.6.1 Background

The initial approach to collecting baseline information resulted in more than 440 tables of social and economic data with possible relevance to project effects.

To create a comprehensive yet readable document, the process of synthesizing and analyzing this tabular data to describe the baseline conditions succinctly, and eventually predict and monitor project effects included:

- presenting selected tables, some of which contain several indicators which are considered necessary to understand a particularly sensitive issue, such as:
 - alcohol abuse, which is captured by data on hospitalizations for alcohol-related illnesses, alcohol-offence data from the police and self reports of frequency of heavy drinking
 - traditional resource harvesting, which requires several indicators to understand its possibly changing significance
- providing some data-based conclusions without supporting tables

In this document, tabular information for Kakisa is bolded to make it stand out from the other, usually regional-based, presentations.

1.6.2 Specific Sources

1.6.2.1 People and the Economy

Information in Section 2, People and the Economy includes:

- labour force activity:
 - participation
 - employment and unemployment rates
 - jobs currently held
- labour force education and training achievements

Also relevant is information on the sizes of various sectors of the economy, as they are possible sources for the goods and services that might be needed.

1.6.2.2 Infrastructure and Community Services

Section 3, Infrastructure and Community Services contains detailed, community-specific information on infrastructure facilities, including descriptions of:

- water supply
- disposal of liquid and solid waste
- power supply and fuels used
- air, land, rail and water transport arrangements and frequencies
- communication facilities and services
- housing conditions and recreation facilities

This section also includes a discussion of governance.

1.6.2.3 Individual, Family and Community Wellness

Section 4, Individual, Family and Community Wellness describes individual, family and community wellness. Much of the information relates to wellness aspects and influence, including:

- physical, mental and emotional health
- family relationships
- community behaviours

Most of the data on wellness is negative, e.g., rates of illness, family violence and crimes, rather than positive, i.e., healthfulness, family solidarity or good citizenship, because official data is not often collected or reported publicly on positive indicators.

This section describes the following influences that affect wellness:

- individual, e.g., substance abuse, and the problems it causes
- institutional, e.g., levels of problem conditions reported by protective and helping agencies, health and social service professionals, and police

Section 4 also provides information on agencies and programs, and relevant statistics related to those influences.

1.6.2.4 Traditional Culture

Section 5, Traditional Culture provides information on traditional culture, which includes the knowledge, skills, disciplines, beliefs and values of the Aboriginal people. Traditional culture is important to them because it is:

- their principal source of pride, worth, distinctiveness and identity
- the basis for harvesting the benefits and meeting the challenges of survival on the land they respect and love
- their primary defence against the prejudice and discrimination sometimes experienced from Euro-Canadians

Indicator data for beliefs and values is currently unavailable for Kakisa. Some data is now being collected through ongoing traditional knowledge studies.

Three cultural indicators, based on people's activities, are currently available for DCR and Kakisa:

- involvement in traditional harvesting
- the amount of country food consumed
- the ability to speak a traditional language

Traditional harvesting has an important physical and psychological influence on wellness in Aboriginal communities. Wild fish, game, plants and berries are nutritionally superior to processed food and are sources of natural medicine (Usher 1976). Furthermore, country foods are shared within a community, thereby enhancing community solidarity. Preserving traditional language has an important psychological influence on wellness by helping to establish feelings of identity and purpose.

1.6.2.5 Nontraditional Land and Resource Use

Section 6, Nontraditional Land and Resource Use describes existing land and resource uses for nontraditional users, including residents and nonresidents within the DCR. The focus is on the land or resource uses that the project could affect, including:

- granular resources
- timber resources
- mineral resources
- oil and gas activities
- nontraditional resource harvesting, including hunting and fishing
- tourism and recreation
- other commercial activities
- environmentally protected areas
- visual and aesthetic resources

In addition to discussions of these valued components, a description of land ownership in the DCR is also provided.

1.6.2.6 Heritage Resources

The objective of Section 7, Heritage Resources is to provide a synopsis of the prehistoric and historic culture of the DCR, to:

- determine the relative heritage resource potential of project component areas
- interpret and evaluate the heritage resources encountered during the 2002 and 2003 field work program
- formulate recommendations to manage project effects on heritage resources

1.6.3 Information Collection and Verification

Collecting data for this volume involved:

- collecting quantitative and qualitative data
- verifying the data during community consultations

Quantitative data was obtained from:

- 1996 and 2001 censuses of Canada
- special surveys conducted by the Government of Canada and Government of the Northwest Territories (GNWT)
- GNWT Health and Social Services (HSS)
- Royal Canadian Mounted Police (RCMP) administrative records

Relevant information was also obtained from literature reviews. In addition, government agencies were helpful in providing several special tabulations.

Government agencies and NGOs provided details on staffing, resources, policies, training and other programs.

Qualitative data was obtained during interviews with community and territorial officials and other knowledgeable people during visits to all the study area communities that may be affected by the project. Many of these visits were to:

- collect baseline information
- review it with local knowledgeable people
- seek corrections, qualifications and valuable additional information

In the broader context of public participation in the EIS, two rounds of community meetings and regional workshops were held to:

- share project information
- gather community feedback on the project description
- identify and verify key issues and concerns
- identify potential effects and suitable mitigation measures

The meetings provided valuable qualitative information, based on local experience and insights.

To protect the identity of individuals, information obtained during interviews has usually been attributed to an organization, rather than citing an individual's name.

In other cases, names and dates have been cited in the text and the information about the personal communication provided in the list of references.

For further information on the public participation process, see Volume 1, Section 4, Public Participation of the EIS.

1.7 Data Limitations

To the extent possible, information contained in the EIS has been supplemented by data and information available at the community level. For Volume 4B, in order that regional and community presentations are internally consistent and comparable, only limited new data is presented. However, the report may include data previously collected, but not presented in Volume 4 of the EIS. Many of the communities in the Northwest Territories have relatively small populations, which means that data collected by Statistics Canada and other agencies, at the community level, is either suppressed or has limitations for reasons of maintaining confidentiality. This means that in several instances information and analysis is constrained to a regional level discussion.

1.7.1 Context for Understanding the Data

In creating descriptions of baseline conditions, the analysts assessed and synthesized the qualitative and quantitative information collected. These descriptions are based on verified published data and reflect documented opinions of regional and local public service delivery personnel. However, the evaluation of socio-economic conditions is subjective. Both groups and individuals, whether trained social scientists or not, have valid but varied opinions on the importance of individual issues and what these might mean with regard to community wellness.

The socio-economic baseline conditions set the stage for predicting the specific aspects of a community that may change because of project influences, either those that may benefit from project effects, e.g., employment and income, or those that may be adversely affected, e.g., health and wellness conditions.

1.7.2 Data and Indicators

Accurate descriptions of existing baseline conditions, and the eventual monitoring of possible project effects, depend on quantitative and qualitative indicators, which are vulnerable to several types of distortion:

- quantitative, statistical data include administrative statistics, e.g., health care treatments, police, child welfare and suicide, and data from the census and special surveys. Administrative data may vary because of:
 - changes in policies, e.g., health care, police, child welfare policies
 - how individual practitioners interpret or implement policy

- the care with which data is recorded
- census and other survey data is flawed by under-enumeration. Particular difficulties occur in census taking in the Northwest Territories because many people leave communities to hunt, fish or visit. Attempts to reach them by telephone and repeated visits to small, outlying communities can fail. The GNWT Bureau of Statistics conducts a special survey in every census year to estimate census under-enumeration.
- qualitative data refers essentially to generalizations about past and current conditions and expected trends obtained from knowledgeable community residents. These include service delivery personnel, i.e., health, police, education and social services, personnel, and residents of local communities. Each group may not have previously shared their information with the other groups.

1.7.3 Limitations of Low-Frequency Data

Statistics Canada randomly rounds frequency data to zero or five. When such rounded and imprecise frequencies are converted to percentages, the totals of these percentages sometimes do not sum to 100%. When the rounded low-frequency data for very small populations is converted to percentages, the total is commonly higher or lower than 100%, depending on the distortions caused by the rounding.

For most of the small communities, creating community-specific socio-economic indicators based on statistical tabulations might not produce reliable results. In these situations, the qualitative data collected in interviews with knowledgeable individuals is often critical in clarifying the significance of available data and making valid interpretations. This situation applies to Kakisa.

Any problems associated with interpreting data for small community populations can be avoided by aggregating the data for such communities when they share similar characteristics. For example, Jean Marie River, Trout Lake, Kakisa and Nahanni Butte all have very small populations. As a result, the data for these communities, and perhaps other communities, may be pooled and reported only for the DCR. The aggregation is appropriate because of their similarities.

2 PEOPLE AND THE ECONOMY

2.1 Introduction

This section describes the people who live in Kakisa, together with similar information for the other DCR communities to provide context. The information presented describes the populations of the DCR and their economies, including:

- population composition and dynamics
- economic activity
- labour force
- income sources and amounts
- cost of living

Generally, in comparison with the rest of Canada, the territorial population is relatively young, although both the birth and the death rates have been declining for the past 20 years.

Migration rates are high, primarily because about half the population is non-Aboriginal.

Compared to other areas of Canada, the territorial population is small and geographically scattered. The economy has both traditional and monetary components, with the monetary component increasingly dependent on extracting mineral and hydrocarbon-related resources. See Section 5, Traditional Culture for information on participation in the dual economy.

2.2 Population Composition and Dynamics

The DCR includes Fort Simpson, a moderately sized administrative centre, and several smaller communities, i.e., Fort Providence, Fort Liard, Wrigley, Nahanni Butte, Trout Lake, Jean Marie River, Kakisa, Hay River Reserve and West Point Reserve. All these communities have mostly Aboriginal populations. In Kakisa, the population is Dene.

Table 2-1 shows that the estimated population of Kakisa in 2003 was 40, and for the whole DCR it was 3,428. Census counts for 1991 and 2001 show that the Kakisa population increased by about 3%, whereas in the DCR as a whole there was a 6% increase.

Table 2-1: Census Counts and Population Estimates for the Deh Cho Communities

Location	Census Population Numbers				Growth 1991–2001 (%)	2003 Estimated Population (No.)
	1986	1991	1996	2001		
Northwest Territories	33,830	36,405	35,370	37,360	3	41,872
DCR total ¹	2,543	2,953	3,208	3,147	6	3,428 ^a
Fort Simpson	987	1,142	1,257	1,163	2	1,237
Fort Providence	588	645	748	753	16	842
Fort Liard	395	517	539	530	2	588
Wrigley	161	174	167	165	-5	168
Nahanni Butte	84	90	75	107	17	109
Trout Lake	54	66	68	70	6	78
Jean Marie River	64	49	53	50	2	71
Kakisa	30	39	36	40	3	40
Hay River Reserve	180	231	265	269	17	295
West Point Reserve	–	–	–	–	–	–

NOTES:
 – = data not available
 1 Does not include data for West Point Reserve
 a Includes Kakisa 2001 census count population figures
 Estimates are calculated by the GNWT Bureau of Statistics by allocating the demographic components of growth, down to a community level, using information from a variety of sources

SOURCE: GNWT Bureau of Statistics (2003d, 2004)

Table 2-2 shows that census data for 2001 indicated mostly Aboriginal populations in all communities, including the regional centre of Fort Simpson. The census data for Kakisa indicated that 100% of the population was Aboriginal, more than the 86% found in the DCR total communities. In Kakisa, the Aboriginal component was entirely Dene.

Table 2-2: Ethnicity in the Deh Cho Communities (2001 Census Count)

Location	Total Population (No.)	Non- Aboriginal (%)	Aboriginal (%)	Aboriginal Components (Total = 100%)				
				Inuit (%)	Dene (%)	Métis (%)	Multiple (%)	Other Aboriginal (%)
NWT	37,360	50	50	21	57	19	1	2
DCR total ¹	2,855	14	86	1	87	9	–	3
Fort Simpson	1,150	31	69	3	86	13	–	4
Fort Providence	750	10	91	1	88	11	–	2
Fort Liard	530	10	89	–	92	6	–	2
Wrigley	165	6	91	–	97	–	–	–
Nahanni Butte	105	–	–	–	–	–	–	–

Table 2-2: Ethnicity in the Deh Cho Communities (2001 Census Count) (cont'd)

Location	Total Population (No.)	Non-Aboriginal (%)	Aboriginal (%)	Aboriginal Components (Total = 100%)				
				Inuit (%)	Dene (%)	Métis (%)	Multiple (%)	Other Aboriginal (%)
Trout Lake	65	–	–	–	93	14	–	–
Jean Marie River	50	22	100	–	90	–	–	–
Kakisa	40	–	100	–	100	–	–	–
Hay River Reserve	265	2	98	0	90	4	–	6
West Point Reserve	–	–	–	–	–	–	–	–

NOTES:
 – = data not available or too small to be expressed
 NWT = Northwest Territories
 1 Does not include West Point Reserve
 Percentages computed from randomly rounded data (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: GNWT Bureau of Statistics (2003e)

Statistics on five-year mobility status for 1996 indicate that about 51% of the DCR population moved to a different residence, and 22% of movements were from one community to another within the Northwest Territories. This data is not available for Kakisa (GNWT Bureau of Statistics 2003a).

2.3 Economic Activity

Table 2-3 presents the standard occupational groupings for the labour force for 1991 and 2001. The few small Statistics Canada changes in occupational categories between 1991 and 2001 make little, if any, difference given the level of aggregation in the table. Labour force data is unavailable for Kakisa.

Table 2-3: Labour Force by Standard Occupational Categories in the Deh Cho Communities

Occupation	Gender	Northwest Territories		DCR Total		Fort Simpson		Fort Providence		Fort Liard		Wrigley		Nahanni Butte		Trout Lake		Jean Marie River		Kakisa		Hay River Reserve		West Point First Nation	
		1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001
		Labour force, 15+ years	Total (No.)	20,070	20,785	1,300	1,515	575	660	275	340	220	255	85	75	-	-	40	45	25	30	-	-	80	110
	Male (No.)	11,225	11,115	765	880	325	365	175	200	125	150	55	45	-	-	20	25	15	20	-	10	50	65	-	-
	Female (No.)	8,850	9,670	530	650	250	295	100	135	90	105	30	25	-	-	20	20	15	15	-	-	25	45	-	-
All occupations	Total (No.)	19,675	20,425	1,245	1,470	565	650	245	315	205	250	85	70	-	-	40	45	30	30	-	-	75	110	-	-
	Male (No.)	11,030	10,935	740	860	320	360	160	185	120	145	55	45	-	-	20	25	15	20	-	10	50	70	-	-
	Female (No.)	8,645	9,490	505	625	245	285	85	130	85	105	30	25	-	-	20	20	15	10	-	10	25	40	-	-
Management, business, finance and administration occupations	Total (%)	18	21	12	14	15	18	12	4	10	12	0	14	-	-	25	0	0	33	-	-	13	0	-	-
	Male (%)	19	19	11	15	13	18	13	11	8	10	0	22	-	-	0	0	0	50	-	-	20	14	-	-
	Female (%)	16	24	15	18	18	23	12	19	12	14	0	0	-	-	50	0	0	0	-	-	0	0	-	-
Clerical occupations	Total (%)	17	9	11	7	15	8	6	6	10	10	12	0	-	-	0	0	0	0	-	-	13	9	-	-
	Male (%)	6	3	3	0	6	0	0	0	0	0	0	0	-	-	0	0	0	0	-	-	0	0	-	-
	Female (%)	32	16	24	13	27	14	18	8	24	19	33	0	-	-	0	50	0	0	-	-	40	0	-	-
Natural and applied sciences, and related occupations	Total (%)	4	7	2	4	4	8	4	0	0	4	0	0	-	-	0	0	0	0	-	-	0	0	-	-
	Male (%)	6	11	4	8	6	13	6	5	0	0	0	0	-	-	0	0	0	0	-	-	0	14	-	-
	Female (%)	1	3	0	3	0	0	0	0	0	10	0	40	-	-	0	0	0	0	-	-	0	0	-	-
Health occupations	Total (%)	3	4	3	2	3	4	4	3	0	0	0	0	-	-	0	0	33	0	-	-	0	0	-	-
	Male (%)	1	1	0	1	0	0	0	5	0	0	0	0	-	-	0	0	0	0	-	-	0	0	-	-
	Female (%)	6	7	8	4	6	9	12	0	0	0	0	0	-	-	0	0	100	0	-	-	0	0	-	-
Social services, education, government service and religious occupations	Total (%)	9	12	11	13	10	13	14	11	10	8	0	14	-	-	0	44	33	0	-	-	27	14	-	-
	Male (%)	6	7	4	6	3	7	0	5	8	7	0	0	-	-	0	0	67	0	-	-	0	14	-	-
	Female (%)	14	17	21	21	18	21	41	23	12	14	0	40	-	-	0	0	0	0	-	-	60	38	-	-
Art, culture, recreation and sport occupations	Total (%)	2	2	3	2	4	3	0	0	0	4	0	0	-	-	25	0	0	0	-	-	13	0	-	-
	Male (%)	2	2	4	3	3	4	0	0	0	0	0	22	-	-	50	-	-	-	-	-	20	0	-	-
	Female (%)	2	3	2	2	4	0	0	0	0	10	0	0	-	-	0	0	0	0	-	-	0	0	-	-

Table 2-3: Labour Force by Standard Occupational Categories in the Deh Cho Communities (cont'd)

Occupation	Gender	Northwest Territories		DCR Total		Fort Simpson		Fort Providence		Fort Liard		Wrigley		Nahanni Butte		Trout Lake		Jean Marie River		Kakisa		Hay River Reserve		West Point First Nation	
		1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	1991	2001
Sales and service occupations	Total (%)	18	22	22	25	21	22	31	29	29	22	12	29	-	-	25	33	0	33	-	-	0	27	-	-
	Male (%)	15	18	16	16	16	18	28	19	21	10	0	22	-	-	0	0	0	0	-	-	0	14	-	-
	Female (%)	23	27	31	36	29	28	35	42	41	38	33	40	-	-	50	50	0	0	-	-	0	50	-	-
Trades, transport and equipment operators, and related occupations	Total (%)	16	17	22	21	19	18	20	22	29	26	35	21	-	-	25	22	33	33	-	-	20	23	-	-
	Male (%)	27	30	36	35	33	29	31	35	50	41	36	44	-	-	50	40	67	50	-	-	30	36	-	-
	Female (%)	2	2	2	3	0	4	0	8	0	0	33	0	-	-	0	0	0	0	-	-	0	0	-	-
Occupations unique to the primary industry	Total (%)	5	4	7	10	2	5	12	13	10	14	12	14	-	-	0	0	0	33	-	-	27	18	-	-
	Male (%)	8	8	11	16	3	11	13	19	17	24	18	22	-	-	0	0	0	0	-	-	49	28	-	-
	Female (%)	1	1	2	0	0	0	12	0	0	0	0	0	-	-	0	0	0	0	-	-	0	0	-	-
Occupations unique to the processing, manufacturing and utilities industries	Total (%)	4	1	4	3	3	2	8	3	5	4	0	0	-	-	0	22	0	0	-	-	0	9	-	-
	Male (%)	7	2	5	1	5	0	13	0	0	7	0	0	-	-	0	0	0	0	-	-	0	0	-	-
	Female (%)	1	0	2	3	0	4	0	8	12	0	0	0	-	-	0	0	0	0	-	-	0	0	-	-
Occupations not classified elsewhere	Total (%)	3	0	4	0	4	0	4	0	5	0	12	0	-	-	0	0	0	0	-	-	0	0	-	-
	Male (%)	4	0	7	0	6	0	6	0	8	0	18	0	-	-	0	0	0	0	-	-	0	0	-	-
	Female (%)	1	0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	0	0	-	-	0	0	-	-

NOTES:

- = data not available or too small to be expressed
 Number and percentage of population, aged 15 years and older
 Data not available for DCR, excluding Fort Simpson (Aboriginal communities total), Nahanni Butte, Kakisa or West Point First Nation, all with very small populations. This data was probably held confidential by Statistics Canada to prevent identification of individual residents.
 Because census data is independently randomly rounded (all numbers end in a 5 or 0), totals may not add to 100, especially in small communities (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: Statistics Canada (1991, 2001), prepared by GNWT Bureau of Statistics

In the DCR, the most frequent occupational categories were sales and service, trades and transport, and management and business. Changes in the occupational distributions between 1991 and 2001 included a reduction in clerical occupations, an increase in management and business occupations, and only small changes in the occupational categories.

Changes in the distribution of male occupations between 1991 and 2001 included increases in management and business, science, and primary industry occupations, and declines in clerical, processing and manufacturing, and unclassified occupations. The few region-wide changes in female employment between 1991 and 2001 included a decline in clerical and health occupations. The percentage of women in sales and service, and science occupations increased.

2.4 Labour Force

Table 2-4 presents the relative participation, employment and unemployment rates of males and females, and the changes in these rates in the DCR between 1991 and 2001.

Between 1991 and 2001, male and female participation rates increased by 2% (male) and 5% (female) in the DCR. Participation and employment data is only available for Kakisa for 2001. However, the Kakisa population is so small the rates available are not reliable.

Unemployment rates fell in the DCR between 1991 and 2001, by 2% for males and 3% for females. Table 2-5 shows that in 1999, the potential labour supply in the DCR communities was 613 people, including five in Kakisa. The profile of this potential labour supply showed that 67% of the potential labour force in the DCR needed training. The potential labour supply is composed of people of working age who are unemployed and those not participating in the labour force who do want a job, less those who, because of disability, age, illiteracy, or lack of education, skills or training could be considered unemployable, according to the GNWT Bureau of Statistics definition.

Table 2-4: Participation, Employment and Unemployment in the Deh Cho Communities

Location	Gender	1991				2001				Difference (2001 minus 1991)		
		Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Part. (%)	Empl. (%)	Unempl. (%)
NWT	Male	13,540	83	73	12	13,810	80	72	10	-3	-2	-2
	Female	12,145	73	65	10	13,130	74	67	8	1	2	-2
NWT Aboriginal communities ¹	Male	2,425	73	54	27	2,470	66	52	23	-7	-2	-4
	Female	2,010	59	46	22	2,225	58	48	17	-1	2	-5
DCR total	Male	1,090	72	58	23	1,190	74	60	21	2	2	-2
	Female	900	60	49	18	1,005	65	55	15	5	6	-3
DCR, excluding Fort Simpson	Male	665	70	53	30	730	71	55	26	1	2	-4
	Female	510	57	44	21	615	58	47	18	1	3	-3
Fort Simpson	Male	425	76	67	12	460	80	68	14	4	1	2
	Female	390	64	55	14	390	76	68	12	12	13	-2
Fort Providence	Male	255	69	49	31	300	67	52	25	-2	3	-6
	Female	200	50	38	25	250	54	46	15	4	8	-10
Fort Liard	Male	180	69	56	20	200	75	58	23	6	2	3
	Female	140	64	54	17	175	63	51	14	-1	-3	-3
Wrigley	Male	75	73	53	36	65	69	54	33	-4	1	-3
	Female	45	67	44	0	55	46	36	0	-21	-8	0
Nahanni Butte	Male	35	71	43	40	-	-	-	-	-	-	-
	Female	30	33	33	100	-	-	-	-	-	-	-
Trout Lake	Male	30	67	50	50	30	83	50	40	16	0	-10
	Female	20	100	75	0	30	67	67	50	-33	-8	50
Jean Marie River	Male	15	100	67	67	20	100	75	50	0	8	-17
	Female	15	100	67	0	15	67	67	100	-33	0	100
Kakisa	Male	-	-	-	-	15	67	67	0	-	-	-
	Female	-	-	-	-	15	67	0	0	-	-	-
Hay River Reserve	Male	75	67	60	20	100	65	55	23	-10	-5	3
	Female	60	42	33	40	75	60	47	22	18	14	-18

Table 2-4: Participation, Employment and Unemployment in the Deh Cho Communities (cont'd)

Location	Gender	1991				2001				Difference (2001 minus 1991)		
		Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Pop. (No.)	Part. (%)	Empl. (%)	Unempl. (%)	Part. (%)	Empl. (%)	Unempl. (%)
West Point First Nation	Male	–	–	–	–	–	–	–	–	–	–	–
	Female	–	–	–	–	–	–	–	–	–	–	–
<p>NOTES:</p> <p>– = data not available</p> <p>1 All study area communities in the Northwest Territories except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise</p> <p>Pop. = population aged 15 years and older</p> <p>Part. = participation rate, which is the percentage of population, aged 15 years and older in the labour force</p> <p>Empl. = employment rate, which is the percentage of population, aged 15 years and older employed during the week before the survey</p> <p>Unempl. = unemployment rate, which is the percentage of the labour force that was unemployed during the week before the survey</p> <p>Statistics for very small communities are uncertain and should be considered with caution</p> <p>Because census data is independently randomly rounded (all numbers end in a 5 or 0), totals may not add to 100, especially in small communities (see Section 1.7.3, Limitations of Low-Frequency Data)</p>												
SOURCE: Statistics Canada (1991, 2001)												

Table 2-5: Profile of the Working-Age Population in the Deh Cho Communities (1999)

Profile Category	NWT Aboriginal Communities ¹	DCR Total ²	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve ³	West Point First Nation
Population 15+ (No.)	5,821	2,078	908	611	345	125	55	58	59	28	160	–
Potential labour supply (No.)	1,797	613	172	190	79	54	20	22	10	5	–	–
Potential labour supply ⁴ (%)	31	30	19	31	23	43	36	38	17	18	–	–
Need training ⁵ (%)	53	67	60	71	44	56	35	50	–	–	–	–
Would do rotational work ⁵ (%)	73	70	63	74	58	72	70	41	–	–	–	–
Male ⁴ (%)	60	63	49	57	53	57	75	82	–	–	–	–
Aboriginal ⁵ (%)	94	93	91	96	91	98	100	82	–	–	–	–
Less than high school education ⁵ (%)	68	65	45	62	73	91	35	68	–	–	–	–
<p>NOTES: – = data not available or too small to be expressed 1 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise 2 Does not include data for West Point First Nation (data not available) 3 1996 data, 1999 data is not available 4 Percentage of population, aged 15 years and older 5 Percentage of potential labour force</p>												
SOURCE: Calculated from GNWT Bureau of Statistics (1999)												

2.5 Income Sources and Amounts

In 2000, the 12 tax-paying companies in the DCR together paid a total of approximately \$42,000 in corporate income taxes (see Table 2-6).

Table 2-6: Corporate Tax Status in the Northwest Territories

Region	Year	Corporate Income Tax Paid (\$)	Tax-Paying Companies	Non Tax-Paying Companies	Total Companies
Northwest Territories	1995	32,650,756	895	1,158	2,053
	1996	31,369,701	887	1,193	2,080
	1997	27,024,079	932	1,356	2,288
	1998	23,965,218	953	1,335	2,288
	1999	89,778,543	957	1,342	2,299
	2000	382,558,653	920	1,126	2,046
	2001	80,931,551	–	–	–
Yellowknife region ¹	1995	31,996,748	721	817	1,538
	1996	30,715,198	710	830	1,540
	1997	26,312,437	757	974	1,731
	1998	23,128,104	774	955	1,729
	1999	88,148,015	811	1,021	1,832
	2000	380,858,591	771	817	1,588
BDR ²	1995	141,614	43	116	159
	1996	286,548	56	115	171
	1997	153,810	55	123	178
	1998	314,806	60	116	176
	1999	691,900	54	96	150
	2000	1,284,076	56	98	154
Sahtu Settlement Area (SSA)	1995	64,634	21	44	65
	1996	51,939	18	52	70
	1997	82,048	19	57	76
	1998	61,303	15	60	75
	1999	32,035	9	37	46
	2000	47,898	15	29	44
DCR	1995	40,256	18	38	56
	1996	40,786	20	38	58
	1997	40,839	17	39	56
	1998	41,665	12	39	63
	1999	238,010	13	38	51
	2000	41,665	12	39	51

NOTES:

– = data not available

1 Yellowknife region includes Yellowknife, and the N'dilo and Dettah suburbs

2 Only data aggregated for Inuvialuit and Gwich'in communities is available

Income tax amounts are not adjusted for inflation

SOURCE: GNWT Finance (2002)

The average annual employment income per tax filer for the DCR communities increased from approximately \$23,000 in 1996 to \$28,000 in 2001 (see Table 2-7). Although employment income data is unavailable for Kakisa, similar to the DCR, the number of income support beneficiaries decreased from 1996 to 2003.

Table 2-7: Employment Income and Income Support Beneficiaries in the Deh Cho Communities

Location	Average Employment Income			No. of Income Support Beneficiaries ¹			
	1996 (\$)	1999 (\$)	2001 (\$)	1996	1999	2001	2003
NWT	33,748	35,450	38,497	102	86	59	51
NWT Aboriginal communities total ²	22,228	23,551	26,135	–	–	–	90
DCR total ³	23,194	26,467	28,035	133	82	64	75
DCR, excluding Fort Simpson	18,485	22,559	24,357	–	–	–	102
Fort Simpson	28,115	30,588	31,444	116	41	22	26
Fort Providence	17,834	19,943	21,977	134	131	116	151
Fort Liard	19,174	27,355	27,458	177	60	58	97
Wrigley	19,756	–	–	110	39	28	30
Nahanni Butte	–	–	–	13	0	13	28
Trout Lake	–	–	–	82	24	12	0
Jean Marie River	–	–	–	138	59	15	0
Kakisa	–	–	–	134	78	78	38
Hay River Reserve	–	–	–	192	257	119	108
West Point Reserve	–	–	–	–	–	–	–

NOTES:
 – = data not available, or held confidential because of low frequencies
 1 Average monthly number of recipients and dependents per 1,000 population, calculated based on population estimates for 1996 to 2002, prepared by GNWT Bureau of Statistics
 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise
 3 Does not include data for West Point Reserve
 Dollar amounts not adjusted for inflation

SOURCE: GNWT Bureau of Statistics (2002a, 2003g)

2.6 Cost of Living

The data reported for cost of living comes from:

- a 2000 cost-of-living index that uses Edmonton as a base
- a 2001 food price index that uses Yellowknife as a base

Table 2-8 shows that the cost of living in Kakisa in 1997 was 35 to 40% above Edmonton levels. In 2000, food prices were about 55% above those found in Yellowknife.

Table 2-8: Cost of Living Differentials for the Deh Cho Communities

Region	Community	Cost of Living Differential ¹ (2000)	Estimated Food Price Index ² (2001)
DCR	Fort Simpson	135–140	128
	Fort Providence	130–135	113
	Fort Liard	130–135	129
	Wrigley	145–150	174
	Nahanni Butte	140–145	155
	Trout Lake	–	155 ^b
	Jean Marie River	145–150 ^a	143
	Kakisa	135–140^a	155^b
	Hay River Reserve	125–130 ^a	118 ^b
	West Point Reserve	125–130	125–130
<p>NOTES:</p> <p>– = data not available or too small to be expressed</p> <p>1 Cost of living differentials are used to calculate the Government of Canada federal isolated post allowances and use Edmonton as a base, e.g., Edmonton = 100</p> <p>2 Food price indexes are calculated using Yellowknife as a base, e.g., Yellowknife = 100</p> <p>a 1997 data</p> <p>b 2000 data</p>			
SOURCE: GNWT Bureau of Statistics (2003g)			

3 INFRASTRUCTURE AND COMMUNITY SERVICES

3.1 Introduction

This section describes the physical infrastructure and services that affect the quality of life of people, families and the communities in which they live. Included are:

- transportation infrastructure
- utilities, i.e., water and waste disposal
- energy and communications
- housing
- local recreation facilities

A discussion of governance is included in this section.

3.2 Transportation Infrastructure

The Deh Cho communities in the north and west parts of the DCR, use Fort Simpson as a transportation hub. The Deh Cho communities in the south and east, including Kakisa, use Hay River as a transportation hub. Hay River has scheduled air service and frequent flights to southern communities, and to the north through Yellowknife. None of the smaller Deh Cho communities are linked to Hay River by scheduled air service. Therefore, when necessary, these communities depend on periodic air charters. There is no rail access to these communities. Table 3-1 shows the transportation infrastructure for the DCR communities. Kakisa has access to an all-weather highway that facilitates truck-based resupply. Kakisa does not have a barging service.

3.3 Utilities, Energy and Communications

Water is delivered to households in Kakisa by truck from Hay River, and liquid and solid waste disposal services are provided. The Northland Utilities Dory Plant supplies power and the main fuel used for heat is P-50 fuel oil (see Table 3-2).

Table 3-3 describes the existing communications infrastructure in the DCR communities. Kakisa has satellite phone, television, radio and newspaper. Internet service is available in the school and community office.

Table 3-1: Transportation Infrastructure in the Deh Cho Communities (2001)

Transportation Mode	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
Road									
Road access	All-weather road	All-weather road, seasonally restricted	All-weather road, seasonally restricted	All-weather road, seasonally restricted	Winter road	Winter road	All-year highway access	All-year highway access	Gravel road
Average daily traffic (number of vehicles)	2000 = 911	2001 = 347	No data before 1998 1998 = 355	N/A	No data before 1997 1997 = 36	1999 = 8 1998 = 5	2001 = 43 2000 = 24	2000 = 49 1999 = 44	2001 = 455 2000 = 427
Highway	Fort Simpson access (off Mackenzie Highway No. 1)	Fort Providence access (off Yellowknife Highway No. 3)	Highway No. 7	Mackenzie Highway No. 1	Off Highway No. 7 (winter road)	Trout Lake winter road (off Highway No. 1)	Jean Marie River access road (off Highway No. 1)	Kakisa access road (off Highway No. 1)	N/A
Road surface	Paved, dust-controlled gravel, untreated gravel	Chip, sealed	Chip, sealed	Paved, dust-controlled gravel, untreated gravel	Snow and ice	Snow and ice	Gravel	Dust-controlled gravel	Gravel
Average opening and closing dates (1997–2000) winter roads and ice bridges	November 29 to April 19	January 2 to April 17 (ice crossing)	N/A	December 29 to April 19 (ice crossing)	November 24 to April 19	January 7 to March 16	N/A	N/A	November to April (community road)
Rail									
Rail access	None	None	None	None	None	None	None	None	Yes ¹
Water									
Marine resupply deliveries	No	Yes	Yes	Yes	Special charter only	No	Yes	No	No
Ownership of facility	T	N/A	P - Beaver Enterprises	T	P	N/A	T	N/A	N/A

Table 3-1: Transportation Infrastructure in the Deh Cho Communities (2001) (cont'd)

Transportation Mode	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
Resupply facility classification	C	N/A	P	C	N/A	N/A	C	N/A	N/A
Small boating facilities	Jet float dock, community boat launch, private docks	Jet float dock, community boat launch, private docks	Small floating dock and boat launch	Jet float dock, beach landing	Community docks	Jet float dock, beach landing	Float dock	Breakwater with floating dock and boat launch	Community docks
Air									
Runway length	1,829 m	914 m	–	1,067 m	762 m	700 m	762 m	None	None ¹
Runway surface	Asphalt	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	N/A	Asphalt, asphalt and gravel
Owner	GNWT	GNWT	GNWT	GNWT	GNWT	GNWT	GNWT	N/A	GNWT
Critical aircraft (largest aircraft able to use runway)	B737-200	Twin Otter	King Air, Twin Otter, Dash 7	Gulfstream 1	Twin Otter	Twin Otter	Twin Otter	N/A	B737
Weather and communication aids	FSS	AWOS	CARS	CARS	None	AWOS	None	N/A	FSS
Navigational aids	DME, NDB	NDB	NDB	DME, NDB	None (day service only)	None	None	N/A	ILS, DME, NDB
<p>NOTES:</p> <p>N/A = not applicable</p> <p>1 Hay River Reserve uses Town of Hay River facilities</p> <p>Water Transportation:</p> <p>T = Facility owned by federal government</p> <p>P = Privately owned</p> <p>Water Facility Resupply Classification:</p> <p>A = >10,000 t cargo and fuel in and out per year, protected access at all water levels, secure moorage for loading and unloading, access for heavy equipment, secure marshalling and storage site</p> <p>B = 2,000–10,000 t cargo and fuel in and out per year, secure moorage at all water levels, access 4 hours/day, access for heavy equipment, secure marshalling and storage site</p> <p>C = <2,000 t cargo and fuel in and out per year, access for loading and unloading 4 hours/day, access for heavy equipment, secure marshalling and storage site</p>									

Table 3-1: Transportation Infrastructure in the Deh Cho Communities (2001) (cont'd)

Transportation Mode	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
<p>Air Transportation: AWOS = automated weather observation station CARS = community airport radio station DME = distance measuring equipment FSS = flight service station GNWT = Government of the Northwest Territories ILS = instrument landing system NDB = nondirectional beacon Data for West Point First Nation not available</p>									
<p>SOURCES: GNWT Transportation (1995, 2000, 2001), Dempsey (2004, personal communication), Fort Simpson flight service station personnel (2004, personal communication)</p>									

Table 3-2: Utilities Infrastructure in the Deh Cho Communities (2001)

Utility	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
Water									
Delivery system	Piped or trucked	Trucked	Trucked	Trucked	Trucked	Trucked	Trucked	Trucked	Piped
Water source	Mackenzie River	Mackenzie River	2 wells on bank of Liard River, 3 rd is planned	Two wells	2 wells 500 m west of community	Trout Lake	From Jean Marie River into a reservoir	Hay River	Hay River
Water treatment	Water treatment consists of flocculation, sedimentation, chlorination, filtration and fluoridation	Microfloc Waterboy WB-82 system	Removal of iron, manganese, sulphides and calcium, hypochlorite chlorination	Wallace and Ternan chlorinator with a chemical feed pump	Chlorination	Chlorine solution is injected during filling	Chlorination using a calcium hypochlorite solution	Water is treated in Hay River	N/A
Water quality	Excellent chemical quality	Good chemical quality	Good chemical quality for domestic use	Acceptable chemical quality for domestic use	Acceptable chemical quality for domestic use	–	Good chemical quality for domestic use	Good	Good chemical quality for domestic use
Liquid Waste									
Type of system	Piped or pumpout	Pumpout	Septic tanks and pumpout	Outdoor pit privies or pumpout	Pit privies and septic tank	Outdoor pit privies	Holding tanks and pumpout	Holding tanks and pumpout	Vacuum truck
Sewage disposal	Sewage is ultraviolet and chemically treated Gravity outfall discharges treated sewage into Mackenzie River	Sewage is treated in a series of lagoons consisting of five cells Effluent is discharged into a wetland and overland flow for further treatment	900 m ³ sewage lagoon, 3-cell stage treatment	Government and institutional buildings have their own cesspools In 1990, a new sewage sump pit was built	Truck pickup and deposit at the liquid and solid waste site	–	Pit, with drainage into wetland	Four sites at a land fill site, 1 km from the village	Sewage lagoon

Table 3-2: Utilities Infrastructure in the Deh Cho Communities (2001) (cont'd)

Utility	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
Solid Waste									
Type of disposal	Modified landfill located 4 km from the community. Garbage is usually buried once per week.	Located 5 km east of community, near sewage lagoon.	Deposited in an excavated landfill, compacted and covered.	10,000 m ² site is 5 km northeast of community on flat land.	Truck pickup and deposit at solid waste site.	In winter, residents burn all combustibles before collection. Solid waste site is 3.2 km south of community.	A 10,000-m ² site west of community. A tank for hazardous waste storage before transport.	Four sites, covered over annually with excavated material.	Solid waste site.
Electrical Power									
Installed capacity	4,270 kW	1,350 kW	1,385 kW	465 kW	250 kW	364 kW	90 kW	302 kW	0
Provided by, source	NW Power, 4 diesel generators	NW Power, 4 diesel generators	NW Power, 3 diesel generators	NW Power, 3 generators	NW Power, 3 diesel generators	NW Power, 3 diesel generators	NW Power, 3 diesel generators	Northland Utilities, Dory Plant (diesel)	Northwest Territories Power Corporation
Peak load requirement	1,581 kW	640 kW	700 kW	257 kW	120 kW	86 kW	90 kW	102 kW – system total	450 kW
Spare Power Capacity ¹	2,700	650	200	200	200	0	– ²	200 kW	– ²
Heating Fuel									
Types of heating fuel	P-50, fuel oil, wood, power	P-50	P-50, some wood, fuel backup	P-50	P-50, wood	P-50	P-50, some with wood backup	P-50 and some wood	P-50, natural gas
<p>NOTES:</p> <p>– = data not available N/A = not available Data for West Point First Nation not available 1 No allowance made for reserve power requirements 2 Power supplied by Northwest Territories Power Corp. power grid. Spare power capacity cannot be determined</p>									
<p>SOURCES: GNWT Municipal and Community Affairs (MACA) (2002), GNWT MACA personnel (2002, personal communication), Northwest Territories Power Commission (2002), Roy (2004, personal communication), Northland Utilities personnel (2004, personal communication)</p>									

Table 3-3: Selected Communications Infrastructure in the Deh Cho Communities (2001)

Communication Type	Fort Simpson	Fort Providence	Fort Liard	Wrigley	Nahanni Butte	Trout Lake	Jean Marie River	Kakisa	Hay River Reserve
Satellite phone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cellular phone	No	No	Yes	No	No	No	No	No	Yes
Internet	Private	Office and school	Yes	No	Yes	No	Office and school	Office and school	Yes
Radio	CBC, CKLB	CBC, CKLB	CBC, CKLB	CBC, CKLB	CBC, CKLB	CBC, CKLB	CBC, CKLB	CBC, CKLB	Band Office Station, CKLB, CKHR, CBC, CJCD
Television	CBC, cable	CBC	CBC	CBC	CBC	CBC	CBC	CBC	Cable, CBC
Newspaper coverage	<i>News/North, Deh Cho Drum</i>	<i>News/North, Deh Cho Drum, Yellowknifer</i>	<i>News/North, Deh Cho Drum</i>	<i>News/North</i>	<i>News/North, Deh Cho Drum</i>	<i>News/North</i>	<i>News/North, Deh Cho Drum, Yellowknifer</i>	News/North	<i>Hub, News/North</i>
Frequency of mail delivery per week	5 times	5 times	2/week – Fort Nelson, 3/week – Fort Simpson	–	Weekly	Courtesy bag 1/week from Fort Simpson	Courtesy bag from Fort Simpson	N/A	5 times
NOTES: – = data not available N/A = not available Data for West Point First Nation not available									
SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT MACA (2002), Global Star Canada (2002), GB Superior Sound (Hay River) personnel (2002, personal communication), Hay River Reserve Band Office personnel (2002, personal communication)									

3.4 Housing and Recreation

In Table 3-4, GNWT data shows that in 2001, 67% of the houses in Kakisa needed major repairs, representing the highest value of the Deh Cho communities.

Table 3-4: Housing and Repairs Needed in the Deh Cho Communities (2001)

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
NWT	12,565	52	32	16
DCR total	965	44	34	21
Fort Simpson	405	48	33	20
Fort Providence	230	46	37	20
Fort Liard	160	50	31	16
Wrigley	50	30	40	30
Nahanni Butte	–	–	–	–
Trout Lake	25	40	40	40
Jean Marie River	20	0	0	0
Kakisa	15	0	0	67
Hay River Reserve	75	20	40	40
West Point Reserve	–	–	–	–
NOTES: – = data not available 1 Regular maintenance refers to such conditions as requiring painting or furnace cleaning 2 Minor repairs refers to such conditions as missing or loose floor tiles, brick or shingles, or to defective steps, railing or siding 3 Major repairs refers to such conditions as defective plumbing or electrical wiring, or structural repairs to walls, floors or ceilings				
SOURCE: Statistics Canada (2003a)				

The number of people living in DCR households is getting smaller. Compared with the other regions, this region has low percentages of households with six or more members, except in the smaller communities (GNWT Bureau of Statistics and Northwest Territories Housing Corporation 2002).

The recreation facilities in Kakisa are comparable with those found in other territorial communities of similar size.

3.5 Governance

Included in governance are the planning and decision-making organizations, such as band councils, community corporations, and town and city councils. The resources made available to these organizations by the GNWT and, in some cases, the Government of Canada, are also included.

All of the existing governance relationships between the federal and territorial governments, and the Aboriginal people, their organizations and communities in the Northwest Territories are in the process of change through ongoing negotiations. These ongoing processes involve negotiations to achieve devolution of authority, and to confer self-government responsibilities on Aboriginal peoples.

The Deh Cho First Nation is engaged in the Deh Cho Process with the Government of Canada and the GNWT to negotiate land, resources and governance rights to apply in the DCR. These negotiations are ongoing. However, several agreements have already been signed:

- the *Deh Cho First Nations Framework Agreement* was signed on May 23, 2001
- the *Deh Cho First Nations Interim Measures Agreement* was signed on May 23, 2001
- the *Deh Cho First Nations – Government of Canada Interim Resource Development Agreement* was signed April 17, 2003
- an interim land withdrawals process was confirmed on April 17, 2003

The Deh Cho process is expected to result in settlement of land claims and a self-government agreement. At present, all Deh Cho Aboriginal communities are involved in this process. In addition to the *Framework Agreement*, there is the *Interim Measures Agreement*. Both are indicative of the progress achieved. Current efforts are directed toward coming to an agreement-in-principle, and ultimately to a final agreement on Deh Cho self-government. However, the process will take time. At the current rate, it could take five to seven years to achieve an agreement-in-principle (Kalnay 2003, personal communication).

4 INDIVIDUAL, FAMILY AND COMMUNITY WELLNESS

4.1 Introduction

This section describes community wellness in the study area, which refers to the physical, emotional, social and economic well-being of all components of a community, including individuals and families.

Aboriginal people have long recognized the interaction and interdependence of physical, emotional, mental and social well-being. Viewing the spiritual as the centrally important component, some Aboriginal communities have formed healing circles to deal with family issues, sentencing and rehabilitation of offenders, and the debilitating problems of those who experienced various forms of abuse while attending residential schools.

In western healing and helping professions, recognizing a holistic approach to wellness has been much more recent. GNWT HSS personnel have sought to deal with intertwined physical, social and emotional health concerns using a community wellness approach for almost a decade (GNWT HSS 1995).

The present emphasis on a community wellness approach by the GNWT HSS originated from an assessment in 2000 of the challenges and problems in wellness services (GNWT HSS 2001a). The most recent evidence of the GNWT's commitment to health and well-being is found in *Health Promotion Strategy* (GNWT Bureau of Statistics 2003h), which provides a framework for increased investment in promotion and prevention activities at the territorial, regional, local and individual levels.

The influence of these interrelated concerns is seen in this section on individual, family and community wellness, which deals with wellness-conserving facilities and services, and the conditions and activities of people to which these services must respond. Information is provided on:

- health conditions
- health care facilities and services
- family concerns and community conditions
- social service facilities and services
- education and training

The most significant achievement of GNWT HSS has been the sharp reduction in new cases of tuberculosis, once a very serious health problem for northern people. With implementation of the *Action Plan to Strengthen Tuberculosis Management and Control in the Northwest Territories*, the numbers of new cases per year have been steadily reduced, from 24 in 1996 to four in 2002. Of the four in 2002, two were immigrants (Case 2003).

Currently, the most serious addiction in the Northwest Territories is alcohol, which is the most frequent source of wellness problems. According to a recent coroner's report, 40% of health costs relate to addictions or mental health problems (Penney 2003).

The effects of alcohol abuse include:

- foetal alcohol syndrome (FAS) or foetal alcohol effects (FAE)
- sexual abuse of family members
- sexually transmitted infections (STIs)

Additional effects of alcohol abuse are also discussed in the following sections.

The most costly effect is the birth of FAS/FAE babies to mothers abusing alcohol. Studies have shown that hospital use is many times higher by FAS/FAE children than by other children (Chatel 2003). These children are typically unable to learn from experience and thus have severe behavioural problems that may be life long. As a result, the lifetime health and social costs are estimated to be more than \$2 million per FAS/FAE person (Carey 2003). No further discussion of FAS/FAE children is provided here because statistical data is unavailable. This is because most births in the Northwest Territories are attended by nurse-midwives rather than by physicians, and only physicians can make a FAS/FAE diagnosis. However, from the accounts of nurses and teachers who work with FAS/FAE children in school, many such children exist in the Northwest Territories.

Incidents of sexual abuse are notably under-reported, thus the available data is unreliable (National Crime Prevention Centre 2001). Alcohol abuse and mental disorders are intimately related, as childhood abuse may lead to both, and increases in one may lead to parallel increases in the other. The RCMP reported over 400 cases of sexual assault for 2000 and 2001 in the Northwest Territories. Northwest Territories health centres report seeing 300 to 350 people annually for assessment and counselling related to sexual abuse or assault. Sexual abuse of children is the least acknowledged of offences, in part because the abuser is often well-known to the victim and his or her family. While between 2000 and 2003, child protection workers investigated 350 cases of suspected sexual abuse of children, this number should not be seen as a complete count, since many such incidents go unreported. Sexual abuse of children may infect them with STIs, and 15 children under 12 years of age were found to have STIs between 1998 and 2003 in the Northwest Territories. The STI incidence among children aged 12 to 15 years in the Northwest Territories more than doubled during this period, from 44 to 90 cases per year (White 2003).

The rates for STIs are very high in the Northwest Territories, and the contexts in which these infections are transmitted are often associated with alcohol consumption. In recent years, chlamydia rates in the Northwest Territories were six times as high as Canadian rates, and gonorrhoea infection rates were over

20 times the Canadian rate. Among those aged 16 to 18 years, a 63% increase occurred between 1996 and 2001 (Harrison 2002). Community-specific STI data is provided in the following sections.

Suicide is a health concern in the Northwest Territories, both because the incidence of suicide is so high relative to the rest of Canada, and because so many are teenage suicides. Because of the unreliability of suicide frequencies, given the small populations, this discussion is based on rates for the Northwest Territories as a whole.

The three-year average age-adjusted suicide rates, which compensate for differences in age distributions, were twice as high in the Northwest Territories as in Canada for 1999 to 2001 (Little 2002). The 1998 to 2002 suicide rate of youths aged 10 to 19 years in the Northwest Territories was four times the Canadian rate, and the rate for those aged 20 to 29 years in the Northwest Territories was almost three times the Canadian rate. Data on hospitalizations of females for self-inflicted injuries is relevant because of women's relatively frequent rates of attempted unsuccessful suicide. The rate of such hospitalizations in 1995 to 1999 for Northwest Territories females aged 10 to 19 years was over three times as high as the rate for Canadian females of this age (Little 2003).

Suicide deeply affects small Aboriginal communities because community members are so interrelated, with many residents being relatives of the victim. Mental health workers provide counsel, but community recovery from a suicide is a slow process.

Some wellness data for very small communities is unavailable because low frequencies are suppressed by Statistics Canada to protect privacy. Offence data is unavailable because policing services for Kakisa are provided by the Hay River detachment.

4.2 Health Conditions

Tobacco use data for adults aged 18 years and over in the Deh Cho communities shows that in Kakisa, about 19% of adults smoked in 1999. This rate is at least 20% lower than in the other DCR communities (GNWT Bureau of Statistics 1999).

Table 4-1 shows data on the three-year average rates per 1,000 population of respiratory illnesses in the DCR from 1996 to 2000. In Kakisa, the rates have tended inconsistently to decline since 1995–1997, and by 2000–2002 they were quite low.

Table 4-1: Cases of Respiratory Diseases Treated by Physicians in the Deh Cho Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	638	612	587	559	543	504	481
DCR total	303	305	307	290	269	242	211
Fort Simpson	340	350	334	289	264	231	183
Fort Providence	227	203	198	211	190	151	117
Fort Liard	317	329	383	380	366	384	380
Wrigley	308	305	336	344	351	283	218
Nahanni Butte	244	278	306	267	276	224	215
Trout Lake	408	338	327	356	359	342	393
Jean Marie River	352	237	245	200	272	242	190
Kakisa	314	642	600	533	175	92	183
Hay River Reserve	–	–	–	–	–	–	–
West Point Reserve	–	–	–	–	–	–	–
NOTES: – = data not available Numbers are claim counts by ICD-9 code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

Table 4-2 shows that the three-year average rates of infectious and parasitic diseases treated by physicians generally fell in the DCR but fluctuated widely in Kakisa. Overall, the Kakisa rates were consistently low.

Table 4-2: Cases of Infectious and Parasitic Diseases Treated by Physicians in the Deh Cho Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	253	245	250	235	232	222	218
DCR total	158	153	156	140	128	110	111
Fort Simpson	106	104	134	140	141	122	108
Fort Providence	96	100	89	77	67	64	78
Fort Liard	443	405	370	276	227	189	215
Wrigley	70	72	115	118	106	62	41
Nahanni Butte	117	99	95	102	88	73	60
Trout Lake	63	98	63	54	14	17	20
Jean Marie River	62	87	49	65	81	98	73
Kakisa	8	42	33	42	0	8	8
Hay River Reserve	–	–	–	–	–	–	–

Table 4-2: Cases of Infectious and Parasitic Diseases Treated by Physicians in the Deh Cho Communities (cont'd)

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
West Point Reserve	–	–	–	–	–	–	–
NOTES: – = data not available Numbers are claim counts by ICD-9 code for the particular group of conditions Claim frequencies for each community were divided by the population of the community, giving a figure, usually a decimal, for the number of cases per person. This was then multiplied by 1,000. Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

Table 4-3 provides data on STI three-year average rates, for both sexes and all ages, in the DCR for the years 1994–1996 through 2000–2002. Data for Kakisa is unavailable. In the DCR, there was an increase in the rate of STIs from 1997–1999 through 2000–2002.

Table 4-3: Cases of Sexually Transmitted Infections in the Deh Cho Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	11	11	12	12	14	15	16
DCR total	19	17	16	13	15	15	22
Fort Simpson	13	14	15	13	15	16	27
Fort Providence	23	19	18	12	15	13	20
Fort Liard	34	28	23	20	25	26	24
Wrigley	17	17	15	13	6	6	9
Nahanni Butte	–	–	–	–	–	–	–
Trout Lake	4	4	–	–	–	–	–
Jean Marie River	12	13	12	6	5	10	10
NOTES: – = incidences less than five held confidential to protect confidentiality STIs include chlamydia, gonorrhoea and hepatitis B Kakisa data is included with the Hay River data. Hay River and West Point Reserve data is not available. Numbers are claim counts by ICD-9 code for the particular group of conditions Calculated based upon population estimates prepared by GNWT Bureau of Statistics Three-year average rates per 1,000 population, both sexes and all ages							
SOURCE: GNWT HSS (2003b)							

Table 4-4 shows that the three-year average rates for treatment of accidents and injuries by physicians declined in the DCR from 1995–1997 through 2000–2002. Rates fluctuated in Kakisa, but overall they tended to be high in comparison with other DCR rates.

Table 4-4: Cases of Accidents, Injuries and Poisonings Treated by Physicians in the Deh Cho Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	442	424	408	399	394	371	353
DCR total	310	316	295	280	239	202	161
Fort Simpson	323	348	334	344	287	241	165
Fort Providence	235	225	214	224	203	167	148
Fort Liard	345	340	293	240	204	189	166
Wrigley	274	275	270	220	245	188	179
Nahanni Butte	318	287	248	218	193	267	210
Trout Lake	341	267	278	212	170	94	109
Jean Marie River	735	793	730	300	185	129	132
Kakisa	403	433	333	358	208	142	208
Hay River Reserve	–	–	–	–	–	–	–
West Point Reserve	–	–	–	–	–	–	–
NOTES: – = data not available Numbers are claim counts by ICD-9 code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

The DCR was the only region in the Northwest Territories that had no suicides between 1994 and 1998 (GNWT Bureau of Statistics 2003a).

Table 4-5 shows death rates in the Deh Cho communities. The five-year averages, from 1994 to 1998, of all accidental injury deaths as a percentage of total deaths in the DCR were 26%. This data is not available for Kakisa.

The Deh Cho, through the Assembly of First Nations, participated in the Mental Health Working Group that produced the *Mental Wellness Framework*, described in more detail in the EIS, Volume 4, Section 4.4.1, Health Conditions (DCR). The publication stated that: *current responses to mental wellness among (Aboriginal people) are not working* and that Aboriginal solutions to Aboriginal wellness are needed (Mental Health Working Group et al. 2002: F5).

Table 4-5: Deaths from Injuries in the Deh Cho Communities (1994 to 1998 average)

Location	Deaths from Injuries			Average Number of Deaths
	Average Number	Per 1,000 Population	Percentage of Total Deaths	
Northwest Territories	28.0	0.68	20	143.0
DCR total ¹	3.8	1.18	26	14.4
Fort Simpson	1.0	0.77	20	5.0
Fort Providence	1.0	1.26	50	2.0
Fort Liard	0.6	1.11	17	3.6
Wrigley	1.0	5.56	100	1.0
Nahanni Butte	0.2	2.50	33	0.6
Trout Lake	–	–	–	1.0
Jean Marie River	–	–	–	1.0
Kakisa	–	–	–	–
Hay River Reserve	–	–	–	–
West Point Reserve	–	–	–	–
NOTES: – = data not available or too small to be expressed 1 Hay River Reserve and West Point data is not included in this total Five-year average numbers, rates and percentages				
SOURCE: GNWT Bureau of Statistics (2003c)				

Table 4-6 presents the rates of mental disorders treated by physicians in the DCR communities. Kakisa experienced fluctuating rates. The DCR as a whole demonstrated a decrease in the three-year average rates from 1995–1997 through 2000–2002.

Table 4-6: Cases of Mental Disorder Treated by Physicians in the Deh Cho Communities

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
NWT	335	338	355	367	369	349	337
DCR total	230	238	235	207	185	167	161
Fort Liard	252	229	212	197	176	197	220
Fort Providence	124	132	154	138	139	109	102
Fort Simpson	267	271	253	208	194	165	150
Jean Marie River	148	212	331	300	255	180	127
Kakisa	177	192	158	217	175	183	150
Nahanni Butte	430	422	410	498	460	422	498
Trout Lake	238	284	327	230	215	150	89
Wrigley	300	420	411	377	210	234	216
Hay River Reserve	–	–	–	–	–	–	–

Table 4-6: Cases of Mental Disorder Treated by Physicians in the Deh Cho Communities (cont'd)

Location	1994–1996 (No./1,000)	1995–1997 (No./1,000)	1996–1998 (No./1,000)	1997–1999 (No./1,000)	1998–2000 (No./1,000)	1999–2001 (No./1,000)	2000–2002 (No./1,000)
West Point Reserve	–	–	–	–	–	–	–
NOTES: – = data not available Numbers are claim counts by ICD-9 code for the particular group of conditions Three-year average rates per 1,000 population							
SOURCE: GNWT HSS (2003b)							

4.3 Health Care Facilities and Services

The Deh Cho Health and Social Services Authority (DCHSSA) provide health and social services to the Deh Cho communities. Its administrative headquarters are in Fort Simpson. The authority consists of 13 members:

- the chair
- three members from Fort Simpson
- two members each from Fort Providence and Fort Liard
- one member each from the remaining six DCR communities

Table 4-7 shows that Kakisa depends on Fort Providence health and social services.

Table 4-7: Health Care Facilities in the Deh Cho Region (2004)

Location	Facility Name	Description
Fort Liard	• Fort Liard Health and Social Services Centre	• Health centre and Social Services office
Fort Providence	• Fort Providence Health and Social Services Centre	• Health centre and Social Services office
Fort Simpson	• Fort Simpson Health and Social Services Centre • Stanley Isaiah Centre	• Health centre and social services office, and long-term care facility • Use not yet determined
Hay River Reserve	• Nats'ejee' K'eh Treatment Centre • Judith Fabian Elders' Centre	• Alcohol and drug treatment centre • Supported independent living
Jean Marie River	• Jean Marie River Health Station • Jean Marie River Social Services	• Health station • Serviced by Fort Simpson
Kakisa	• none	• Serviced by Fort Providence
Nahanni Butte	• Nahanni Butte Health Station • Nahanni Butte Social Services	• Health station • Serviced by Fort Simpson
Trout Lake	• Trout Lake Health Station • Trout Lake Social Services	• Health station • Serviced by Fort Simpson

Table 4-7: Health Care Facilities in the Deh Cho Region (2004) (cont'd)

Location	Facility Name	Description
Wrigley	<ul style="list-style-type: none"> Wrigley Health Centre and Residence Wrigley Social Services 	<ul style="list-style-type: none"> Health centre Serviced by Fort Simpson
West Point First Nation	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> Serviced by Hay River
NOTES: A health centre is staffed by registered one or more nurses A health station is staffed by a community health worker, trained in basic first aid and cardiopulmonary resuscitation		
SOURCE: GNWT HSS (2004)		

Hospital services in the DCR are provided by the Stanton Hospital in Yellowknife. Air ambulances are stationed there to ensure fast response to medical emergencies in the other communities.

4.4 Family and Community Conditions

Alcohol abuse is the source of most wellness and policing problems in the DCR. Table 4-8 shows the DCR three-year averaged rates of hospitalizations for alcohol-related illnesses, the indicator for alcohol abuse. This data is not available for Kakisa. On average, a steady decline was noted in the DCR between 1994–1996 and 1999–2001.

Table 4-8: Hospitalizations for Alcohol-Related Illnesses in the Deh Cho Communities

Location	1994–1996 (No./100,000)	1995–1997 (No./100,000)	1996–1998 (No./100,000)	1997–1999 (No./100,000)	1998–2000 (No./100,000)	1999–2001 (No./100,000)
NWT	367	391	430	464	460	443
DCR total	719	708	604	654	644	608
Fort Simpson	859	631	462	335	392	262
Fort Providence	43	85	40	119	200	239
Fort Liard	804	1,175	1,197	1,406	1,165	1,336
Wrigley	578	578	729	372	368	0
Nahanni Butte	0	0	0	417	412	406
Trout Lake	1,351	1,351	1,316	995	513	490
Jean Marie River	1,258	1,258	1,923	2,614	2,516	1,360
Kakisa	–	–	–	–	–	–
Hay River Reserve	–	–	–	–	–	–

Table 4-8: Hospitalizations for Alcohol-Related Illnesses in the Deh Cho Communities (cont'd)

Location	1994–1996 (No./100,000)	1995–1997 (No./100,000)	1996–1998 (No./100,000)	1997–1999 (No./100,000)	1998–2000 (No./100,000)	1999–2001 (No./100,000)
West Point Reserve	–	–	–	–	–	–
NOTES: – = data not available or frequencies are too small to be reported 0 = no hospitalization cases Three-year average rates per 100,000 population						
SOURCE: GNWT HSS (2003b)						

RCMP data for marijuana and other illegal drug offences shows low frequencies in the DCR (RCMP local detachments, 2002).

In the Deh Cho communities, the incidence of teenage motherhood decreased by over one half between 1994 and 1998 (GNWT Bureau of Statistics 2003b).

Table 4-9 shows the spousal assault rates per 1,000 population in the DCR. This data is not available for Kakisa. Results for the DCR demonstrated declining rates after 1998, with the exception of a slight increase in 2000. The rate of spousal assaults was at its highest in 1998 and lowest the year prior in the DCR as a whole. On regional and community levels, from 1998 to 2001, the rates fluctuated inconsistently.

Table 4-9: Spousal Assaults in the Deh Cho Communities

Location	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)	2001 (No./1,000)
NWT study area ¹	10	25	24	19	17
DCR total	8	28	25	27	17
Fort Simpson ²	1	13	18	23	14
Fort Providence	24	50	40	34	115
Fort Liard ³	2	34	24	29	30
Kakisa	–	–	–	–	–
Hay River Reserve	–	–	–	–	–
West Point Reserve	–	–	–	–	–
NOTES: – = data not available 1 Includes all of the communities in the ISR, GSA, SSA and DCR 2 The Fort Simpson RCMP detachment provides policing to Wrigley and Jean Marie River 3 The Fort Liard RCMP detachment provides policing to Nahanni Butte and Trout Lake Rates per 1,000 population					
SOURCE: RCMP local detachments (2002)					

Table 4-10 shows the rates of children taken into care in the DCR. Kakisa is included in Fort Providence. In the DCR as a whole, there were slight fluctuations in the two-year average rate from 1995–1996 onward and a pattern of decline in Fort Providence. Fort Providence rates fluctuated and were somewhat lower than DCR rates.

Table 4-10: Children Taken into Care in the Deh Cho Communities

Location	1995–1996 (No./1,000)	1997–1998 (No./1,000)	1998–1999 (No./1,000)	2000–2001 ¹ (No./1,000)	2001–2002 ¹ (No./1,000)	2002–2003 ¹ (No./1,000)
NWT	14	13	15	14	16	17
NWT Aboriginal communities ²	18	25	25	19	19	22
DCR total	16	13	13	14	12	17
Fort Simpson	25	23	21	20	22	18
Fort Providence ³	15	7	12	11	10	14
Fort Liard	18	15	7	12	10	27
Wrigley	–	–	–	–	–	–
Nahanni Butte	2	1	1	–	–	–
Trout Lake	–	–	–	–	–	–
Jean Marie River	–	–	–	–	–	–

NOTES:
 – = data not available or too small to be expressed
 1 Numbers of children taken into care during some part of the fiscal year, including plan of care, supervision, apprehension, temporary custody and permanent custody children
 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise
 3 **Kakisa is included in Fort Providence**
 Hay River Reserve, West Point Reserve and Enterprise are included in Hay River (see the EIS, Volume 4, Section 4.6.3)
 Average rates per 1,000 total population for fiscal years, calculated based upon population estimates prepared by GNWT Bureau of Statistics

SOURCE: GNWT HSS (2003b)

Table 4-11 shows the pattern for *Young Offenders Act* offence rates in the Deh Cho communities. Data is not available for Kakisa. In the DCR, rates more than doubled from 1997 to 1998, declined until 2000 and then increased from 2000 until 2002. A similar trend was seen in the DCR Aboriginal communities.

Table 4-11: Young Offenders Act Offences in the Deh Cho Communities

Location	1997	1998	1999	2000	2001	2002
NWT study area ¹	67	131	145	104	126	135
DCR total	61	146	101	73	103	122
DCR, excluding Fort Simpson	126	163	75	69	91	114
Fort Simpson	0	130	125	77	117	132

Table 4-11: Young Offenders Act Offences in the Deh Cho Communities (cont'd)

Location	1997	1998	1999	2000	2001	2002
Fort Providence	99	177	98	72	105	115
Fort Liard	168	141	41	64	70	113
Kakisa	–	–	–	–	–	–

NOTES:
1 Includes all of the communities in the ISR, GSA, SSA and DCR
Rates per 1,000 population, aged 10 to 19 years

SOURCES: RCMP G Division (2002), RCMP local detachments (2002, 2004)

Table 4-12 shows the violent and property crime rates in the DCR between 1997 and 2000. Data is not available for Kakisa. In the DCR, both property and violent crime rates tended to fluctuate.

Table 4-12: Violent Crimes and Property Crimes in the Deh Cho Communities

Location	Violent Crimes ¹				Property Crimes ²			
	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)	1997 (No./1,000)	1998 (No./1,000)	1999 (No./1,000)	2000 (No./1,000)
NWT	54	50	50	47	66	70	58	57
DCR total ³	92	104	87	99	78	81	76	67
Fort Simpson	94	94	83	86	86	80	100	81
Fort Providence	129	168	135	154	112	110	76	62
Fort Liard	136	145	118	153	98	132	105	118
Kakisa	–	–	–	–	–	–	–	–

NOTES:
– = data held confidential because of low frequencies
1 Violent crimes include homicide, attempted murder, sexual assault, nonsexual assault, other sexual offences, abduction and robbery
2 Property crimes include breaking and entering, theft of motor vehicles, theft over \$5,000, theft of \$5,000 and under, possession of stolen goods, and fraud
3 Data for Hay River Reserve and West Point Reserve is unavailable and therefore not included in these totals
Rates per 1,000 population

SOURCE: GNWT Bureau of Statistics (2003c)

4.5 Social and Protection Facilities and Services

The DCHSSA serves the Deh Cho communities, delivering a full range of services locally to the larger communities. Personnel from the larger communities serve the neighbouring small communities. Table 4-13 indicates that Kakisa residents use social services in both Fort Providence and Hay River.

Table 4-13: Social Services Facilities in Deh Cho Region

Small Community	Supporting Community
Wrigley	Fort Simpson
Jean Marie River	Fort Simpson
Nahanni Butte	Fort Liard
Trout Lake	Fort Liard
Kakisa¹	Fort Providence
Hay River Reserve	Hay River
West Point First Nation	Hay River
NOTE: 1 Many Kakisa residents prefer to go to Hay River, which is closer than Fort Providence	

Table 4-14 provides information regarding the staffing and facilities of the Deh Cho RCMP detachments, firefighting and emergency plans. Police services for Kakisa are available through Fort Providence. Kakisa has firefighting capacity but, as of 2001, did not have a current emergency plan.

Table 4-14: Protection Service Features in the Deh Cho Communities (2001)

Location	RCMP – Officers and Facilities			Number of Firefighters	Current Emergency Plan
	Number of Officers	Number of Cells	Maximum Capacity of Cells		
Fort Simpson	8	7	34	18 V	Yes
Fort Providence	3	3	6, not including holding cell capacity	8 V	Yes
Fort Liard	4	2	4	6 V	Yes
Wrigley	Policed from Fort Simpson	0	0	12 V	Yes
Nahanni Butte	Policed from Fort Liard	0	0	6 V	No
Trout Lake	Policed from Fort Liard	0	0	8 V	No
Jean Marie River	Policed from Fort Simpson	0	0	8 V	No
Kakisa	Policed from Fort Providence	0	0	5 V	No
Hay River Reserve	Policed from Hay River	0	0	V, assisted by Hay River	No
West Point Reserve	Policed from Hay River	0	0	Serviced by Hay River	No
NOTES: V = volunteer					
SOURCES: GNWT MACA (2002), RCMP G Division (2002)					

4.6 Education and Training

4.6.1 Levels of Education and Training

Table 4-15 shows the variation in education levels among the DCR communities. Between 1994 and 2001, the percentage of adults who had graduated from high school decreased from 47% to 46% in the DCR. The percentages of adults with some post-secondary education in the Deh Cho communities increased from 30% in 1994 to 37% in 2001. Increases were typical of communities experiencing increased demands for skills. In Kakisa, the percentage of adults graduating increased substantially from 1994 to 2001. However, between 1994 and 1999 the percentage of adults with secondary education decreased from 24% to 14%.

Table 4-15: Education Attainment Levels in the Deh Cho Communities

Location	High School Graduation			Some Post-Secondary Education		
	1994 (%)	1999 (%)	2001 (%)	1994 (%)	1999 (%)	2001 (%)
NWT	65	68	65	44	46	56
DCR total ¹	47	50	46	30	36	37
Fort Simpson	58	65	62	39	50	52
Fort Providence	45	45	38	28	31	30
Fort Liard	33	32	33	16	20	27
Wrigley	30	31	35	16	18	30
Nahanni Butte	20	55	–	16	26	–
Trout Lake	29	40	33	51	33	17
Jean Marie River	17	39	29	11	27	–
Kakisa	26	14	43	24	14	–
Hay River Reserve	40	40	37	33	36	31
West Point Reserve	–	–	–	–	–	–

NOTES:
 – = data is unavailable or held confidential because of low frequencies
 1 Does not include data for West Point Reserve
 Percentage of population, aged 15 years and older

SOURCES: Calculated from GNWT Bureau of Statistics (2003f), Statistics Canada (2003a)

Table 4-16 shows the gender differences in highest educational attainment in the Deh Cho communities in 2001. Data is not available for Kakisa. In the whole DCR, men had the highest percentages of high school graduation and attainment of post-secondary education. The percentages of males and females graduating from high school were equivalent for DCR Aboriginal communities, whereas attainment of post-secondary education was higher for females in 2001. Similarly, in the Northwest Territories Aboriginal communities, more females than males obtained some post-secondary education. It should be noted that the apparent

differences seen in Table 4-16 may not be reliable because they are based on randomly rounded low frequencies.

Table 4-16: Education Attainment by Gender in the Deh Cho Communities (2001)

Location	Gender	High School Graduate (%)	Some Post-Secondary Trades Training (%)	Some College or University Education (%)	Some Trades Training, College or University (%)
NWT	Males	64	30	26	56
	Females	66	22	34	56
NWT Aboriginal communities total ¹	Males	43	25	11	37
	Females	44	20	18	38
DCR total	Males	46	26	12	37
	Females	44	4	1	8
DCR Aboriginal communities total	Males	35	19	8	27
	Females	35	16	13	29
Fort Simpson	Males	63	36	18	54
	Females	60	26	23	49
Fort Providence	Males	38	21	7	28
	Females	36	16	14	30
Fort Liard	Males	33	18	10	28
	Females	34	14	11	26
Wrigley	Males	31	15	15	31
	Females	30	0	20	20
Trout Lake	Males	50	0	0	0
	Females	33	33	0	33
Jean Marie River	Males	25	0	0	0
	Females	33	0	0	0
Kakisa	Males	–	–	–	–
	Females	–	–	–	–
Hay River Reserve	Males	35	25	10	35
	Females	33	27	13	40

NOTES:

1 All communities in the Northwest Territories study area except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise

Percentages frequently do not sum to 100 for two cumulating reasons: Statistics Canada random rounding of frequencies, and small community populations (see Section 1.7.3, Limitations of Low-Frequency Data)

Rates per 1,000 population, aged 15 years and older

SOURCE: GNWT Education, Culture and Employment (ECE) (2002, 2004)

4.6.2 Education and Training Facilities

Table 4-17 shows that all of the Deh Cho communities offer kindergarten to Grade 12 schooling, except Wrigley and Kakisa, which have kindergarten to Grade 10 available. In 2004, school enrollment in Kakisa was less than its capacity.

Table 4-17: School Profile Data for the Deh Cho Communities

Location	School	Budgeted Full-time Equivalents ¹				Grades Offered ²	School Capacity ²	School Enrollment ²	Utilization ²
		Teachers (No.)	Support Staff (No.)	Admin. Staff (No.)	Other Staff (No.)				
Fort Simpson	Total	24	7	5.25	3	K to 12	616	273	44
	Bompass	12	–	–	–	K to 6	330	143	43
	Thomas Simpson	12	–	–	–	7 to 12	286	130	45
Fort Providence	Deh Gah ²	12	3	1	2	K to 12	266	173	65
Fort Liard	Acho-Dene School ²	10	–	–	–	K to 12	242	108	45
Wrigley	Chief Julian Yendo ²	2	1	0	0.3	K to 10	110	33	30
Nahanni Butte	Charles Yohin School ²	6	–	–	–	K to 12	48	28	58
Trout Lake	Charles Tetcho	1.6	0.52	0	0.09	K to 12	33	8	23
Jean Marie River	Louis Norwegian ²	2	1	0	0.2	K to 12	44	25	56
Kakisa	Territorial²	1	1	0	0.1	K to 10	22	6	27
Hay River Reserve	Chief Sunrise	–	–	–	–	K to 12	110	82	75

NOTES:
 K = kindergarten
 1 2002 data
 2 April 2004 data
 Enrollment data is full-time equivalents, e.g., two children attending kindergarten are counted as one full-time student
 GNWT ECE typically starts planning for new space when a school reaches a capacity of about 85%

SOURCE: GNWT ECE (2002, 2004)

5 TRADITIONAL CULTURE

5.1 Introduction

In common with all cultures, the Dene culture includes knowledge, skills, disciplines, beliefs and values. Of these, beliefs and values are the most important, because they inform what life is about and how it is to be lived. Knowledge, skills and disciplines make it possible for individuals to act on their beliefs and values, to be themselves and live a culturally determined good life.

Traditional culture is of prime importance to many Aboriginal people because it is their:

- principal source of pride, worth, distinctiveness and identity
- basis for harvesting the benefits of and meeting the challenges of surviving on the land they respect and love
- a way of dealing with prejudice and discrimination sometimes shown by those from other cultures

Indicator data showing adherence to traditional beliefs and values is currently not available for the Deh Cho communities.

Indicators of culture can be seen in people's behaviour. Culture is reflected in activities that are shaped by beliefs and values, activities that make use of traditional knowledge, skills and disciplines. What people do and are able to do thus serve as indicators of their involvement in traditional culture. The following activity-based indicators are used in this section:

- involvement in traditional harvesting
- the amount of country food consumed
- the ability to speak a traditional language

In Volume 4 of the EIS, the section on historical background and political organization provides an overview of:

- the Dene cultures
- contact with Euro-Canadians
- the changes induced by these many contacts over time on the Dene livelihood and culture

A result of these contacts is that some monetary income is now a necessity for Aboriginal people. Those who harvest wildlife are now active in a dual monetary and traditional in-kind economy.

Hunting and fishing, and consuming country food are discussed in the context of the dual economy, an important feature throughout most of the study area. Trapping is discussed because, by Euro-Canadian standards, it is lonely, hard and dangerous work. The trapper must have most of the same lore, skills and disciplines that were essential to the survival of forebearers in the precontact millennia. Language retention is taken as an indicator of cultural retention because appreciation of traditional, deeper, spiritual relationships can best be comprehended in traditional language terms.

The data presented in this section is from published statistical compilations. Additional information will be documented in ongoing traditional knowledge studies.

5.2 Participation in Traditional Harvesting

Detailed information is not currently available on:

- numbers of active harvesters
- types of animals harvested
- edible weights of harvested mammals

In comparison to the DCR Aboriginal communities, Table 5-1 indicates that the number of adults who hunted or fished in Kakisa decreased from 65% in 1993 to 18% in 1998. The DCR as a whole and the Aboriginal communities experienced an increase during the same period.

Table 5-1: Adults Who Hunted or Fished in the Deh Cho Communities

Location	1993 (%)	1998 (%)	2002 (%)
Northwest Territories	18	42	41
NWT Aboriginal communities ¹	42	48	51
DCR total	32	42	44
DCR, excluding Fort Simpson	42	44	44
Fort Simpson	16	37	44
Fort Providence	49	43	–
Fort Liard	64	53	–
Wrigley	8	34	–
Nahanni Butte	74	42	–
Trout Lake	43	67	–
Jean Marie River	33	58	–

Table 5-1: Adults Who Hunted or Fished in the Deh Cho Communities (cont'd)

Location	1993 (%)	1998 (%)	2002 (%)
Kakisa	65	18	–
Hay River Reserve	15	42	–
West Point Reserve	–	–	–
NOTES: – = data not available or too small to be expressed 1 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise Percentage of population, aged 15 years and older			
SOURCE: GNWT Bureau of Statistics (1994, 1999, 2002a)			

5.3 Consumption of Country Foods

Table 5-2 shows that about 79% of DCR Aboriginal households reported that in 2002, half or more of the food they consumed was country food; this was a 27% increase over 1993. Although data is not available for 2002, Kakisa showed an increase in country food consumption from 79% in 1993 to 100% in 1998.

Table 5-2: Country Food Consumption in the Deh Cho Communities

Location	Households Where Country Food is Consumed ¹		
	1993 (%)	1998 (%)	2002 (%)
NWT	29	30	33
NWT Aboriginal communities ²	73	68	70
DCR total	43	46	61
DCR, excluding Fort Simpson	52	49	79
Fort Simpson	30	42	40
Fort Providence	46	57	–
Fort Liard	59	40	–
Wrigley	–	53	–
Nahanni Butte	100	22	–
Trout Lake	75	48	–
Jean Marie River	61	31	–
Kakisa	79	100	–
Hay River Reserve	55	58	–
West Point Reserve	–	–	–
NOTES: – = data not available 1 Half or more of food consumed is country food 2 All study area communities in the Northwest Territories, except Inuvik, Norman Wells, Fort Simpson, Yellowknife, Hay River and Enterprise			
SOURCE: GNWT Bureau of Statistics (1994, 1999, 2002a)			

5.4 Trapping

Table 5-3 shows that the percentages of men from the DCR communities engaged in trapping declined after 1987. In Kakisa, there was a substantial decline in trapping after 1987 that was consistent with an abrupt reduction in average trapping income. Trapping increased in 2002, but the average trapping income remained low.

Table 5-3: Active Trappers and Average Income in the Deh Cho Communities

Location	Trappers ¹				Average Annual Income ²			
	1987 (%)	1993 (%)	1999 (%)	2002 (%)	1987 (\$)	1993 (\$)	1999 (\$)	2002 (\$)
NWT Aboriginal communities ³	47	18	18	14	2,514	672	919	991
DCR total	67	35	30	25	2,876	602	814	628
Fort Simpson	44	18	21	19	1,965	523	870	768
Fort Providence	69	29	31	19	1,560	281	851	210
Fort Liard	99	69	41	19	3,707	853	754	662
Nahanni Butte	78	59	31	29	4,765	759	827	489
Wrigley	100	65	43	24	3,031	574	513	684
Trout Lake ⁴	94	63	90	90	8,867	967	687	974
Jean Marie River	92	73	45	38	1,256	236	1,522	646
Kakisa⁴	87	20	23	64	4,723	165	870	790
Hay River Reserve	–	–	–	–	–	–	–	–
West Point Reserve	–	–	–	–	–	–	–	–

NOTES:
 – = data not available
 1 Males, aged 25 to 59 years
 2 Income not adjusted for inflation
 3 All study area communities in the Northwest Territories except for Yellowknife and Hay River
 4 These very high percentages may reflect errors introduced by random rounding of low frequencies, and perhaps other indeterminate errors as well (see Section 1.7.3, Limitations of Low-Frequency Data)

SOURCE: GNWT RWED (1987, 1993, 1999, 2002)

For the DCR, the pattern was confirmed by the GNWT RWED area manager, who reported a decline in trapping because of sharply reduced earnings. The data indicates a consistent pattern of declining earnings per trapper between 1987 and 2002, with few exceptions. Moreover, the ranks of experienced trappers are reduced as increasing numbers become too old to continue trapping activities (GNWT RWED area manager 2002, personal communication).

5.5 Aboriginal Language

Table 5-4 shows that in 1999, 65% of Deh Cho adults reported they could speak an Aboriginal language, down from 78% a decade earlier. During the same decade, language retention in Kakisa dropped from 86% to 68%.

Table 5-4: Aboriginal Language Speakers in the Deh Cho Communities

Location	1989 (%)	1994 (%)	1999 (%)
NWT	56	50	45
DCR total	78	70	65
Fort Simpson	72	61	55
Fort Providence	68	64	61
Fort Liard	89	82	79
Wrigley	100	96	92
Nahanni Butte	98	99	75
Trout Lake	100	62	91
Jean Marie River	83	67	62
Kakisa	86	85	68
Hay River Reserve	–	–	–
West Point Reserve	–	–	–
NOTES: – = data not available Percentage of Aboriginal people, aged 15 years and older			
SOURCE: GNWT Bureau of Statistics (2002b)			

6 NONTRADITIONAL LAND AND RESOURCE USE

6.1 Introduction

6.1.1 Setting

This section describes existing land and resource uses for nontraditional users within the study area. Nontraditional land and resource users in the Mackenzie Valley include:

- non-Aboriginal residents
- nonresident hunters and anglers
- tourists
- government and industry representatives who travel north for business

In this section, information on resource harvesting is limited to nontraditional harvesting only. See Section 5, Traditional Culture for more information on traditional land and resource use, and traditional knowledge.

6.1.2 Objectives

The objectives of the nontraditional land and resource use baseline study are to:

- collect the most recent available information for all valued components in the study area
- document the existing conditions for all valued components for each settlement region within the study area
- identify and describe all nontraditional land and resource use that could be affected by the project

6.2 Methods

6.2.1 Baseline Information

Baseline information for each valued component was collected from available literature, maps and web sites, and through discussions with resource managers and other knowledgeable individuals living and working in the Mackenzie Valley. Discussions were conducted via phone, e-mail and sometimes in person. Additional information was provided by a fixed-wing flight over the study area in September 2001 and fieldwork conducted by other disciplines, e.g., vegetation, wildlife and aquatics.

6.2.2 Study Area

Study area boundaries ensure that the land and resource uses potentially affected by the project are identified and assessed. The study area for the land and resource use baseline is defined by a 15-km-wide buffer around the three anchor fields, on each side of the gathering pipelines in the gathering system, and on each side of the gas pipeline right-of-way. This approach resulted in a study corridor about 30 km wide. Although many resource-related activities occur on lands within the study corridor, these lands are more frequently used to access activities outside the corridor.

6.2.3 Baseline Components

For nontraditional land and resource use, baseline components are defined as the valued components upon which the EIS is based. The valued components are land or resource uses, or in some cases, the available resources that the project could affect, including:

- land ownership
- granular resources
- timber resources
- mineral resources
- oil and gas activities
- nontraditional resource harvesting (hunting and fishing)
- tourism and recreation
- other commercial activities
- marine operations (ISR only)
- environmentally protected areas
- visual and aesthetic resources

In addition to these valued components, a description of the land ownership in each region is also provided. A brief general description of each of the land and resource use valued components in the study area follows.

6.2.3.1 Land Ownership

The lands traversed by the project typically fall into five categories of ownership:

- federal Crown lands – federal lands administered by Indian and Northern Affairs Canada (INAC) (also referred to as territorial lands in the *Territorial Lands Act*)
- Commissioner's lands – federal lands administered by the territorial government

- private lands – administered by the land administration within the settlement region
- municipal lands – administered by the territorial government or the municipality
- provincial Crown lands – administered by the Alberta Public Lands Administration

Land ownership was chosen as a valued component because the project will traverse both public and private lands, and permission to use the lands will be required. These lands might be zoned for uses contrary to the project, particularly municipal lands, and this potential for zoning conflict is another reason why land ownership was chosen as a valued component.

6.2.3.2 Granular Resources

Granular resources refer to sand, gravel, clay, quarry materials and silt. Some of these resources will be required for project construction. Granular resources were chosen as a valued component because industrial developments and local communities need these resources for construction and maintenance. These materials are sometimes difficult to obtain in the North.

6.2.3.3 Timber Resources

Although the anchor fields do not contain timber, other segments of the project go through forested lands where timber is important for firewood, construction materials and other uses. The vegetation changes from tundra in the ISR to transitional forest near the ISR–GSA boundary. Farther south, from Travaillant River to northwestern Alberta, the study area is predominantly forested with a mixture of black and white spruce, birch, pine, aspen and tamarack. Land clearing during construction, and an increase in access to forested areas, has the potential to affect available timber resources.

6.2.3.4 Mineral Resources

Mineral resources were chosen as a valued component to assess potential impacts on future potential mineral development, i.e., areas where mineral potential has been found or where mineral leases are held.

6.2.3.5 Oil and Gas Activities

Oil and gas activities include exploration and development for oil and natural gas production outside the scope of the project. Oil and gas activities were chosen as a valued component because of the strong potential for future oil and gas development in the Northwest Territories in general, and specifically in the study area.

6.2.3.6 Nontraditional Resource Harvesting

Nontraditional resource harvesting includes hunting, fishing and trapping pursued by non-Aboriginal residents and nonresidents. These activities may be for domestic, sport or commercial purposes. Nontraditional resource harvesting was chosen as a valued component because of the high level of concern for potential impacts on these activities.

6.2.3.7 Tourism and Recreation

Tourism and recreation activities include ecotourism, guided outfitting, river tours, cultural tours or recreational activities, such as hiking or cross-country skiing. Construction and operation of the project, and what exists after decommissioning, have the potential to affect the nature and levels of these activities.

6.2.3.8 Other Commercial Activities

Other commercial activities include reindeer herding in the ISR, commercial transportation and agriculture. These might occur near the study area. Directly or indirectly, project activities might affect these commercial activities.

6.2.3.9 Marine Operations

The Beaufort Sea is used by a variety of vessels for several different purposes. As the currently preferred development approach at Niglintgak includes transport of a barge-based facility through the Beaufort Sea, marine operations may be affected.

6.2.3.10 Environmentally Protected Areas

The project occurs near or within areas with special designations that, through legislation or other means, are protected in some form, or are given special status. These areas include:

- the Kendall Island Bird Sanctuary, a migratory bird sanctuary
- Inuvialuit Community Conservation Plan category areas
- a potential heritage river, i.e., the Mackenzie River
- Gwich'in and Sahtu conservation zones and special management areas
- territorial parks
- proposed and existing protected areas
- International Biological Program sites
- national historic sites
- caribou protection areas
- recreation areas

6.2.3.11 Visual and Aesthetic Resources

Currently, there is little physical presence on the landscape that has an effect on the visual or aesthetic value within the study area. Installation of the project components, particularly the facilities, has the potential to affect visual and aesthetic values.

6.3 Baseline Conditions

6.3.1 Land Ownership

Most lands to be traversed by the project in the DCR are currently under the legal ownership of the federal government, and are administered by INAC. It is expected that under the ongoing Deh Cho Process, involving the Deh Cho First Nations and the federal government, ownership to some of these lands will eventually be transferred to the Deh Cho. However, such lands have not yet been identified. In the north DCR, near the Blackwater River, are several parcels of Sahtu private land (see Figure 6-1). The Tulita District Land Corporation administers these parcels.

Some project components will be located in Fort Simpson and Hay River on municipal lands administered by the towns. These components include existing barge landing sites and storage areas that will be upgraded for the project. As these components already exist, no zoning conflicts are expected.

In addition to municipal lands, Commissioner's lands, administered by the territorial government, could be located within the community boundaries.

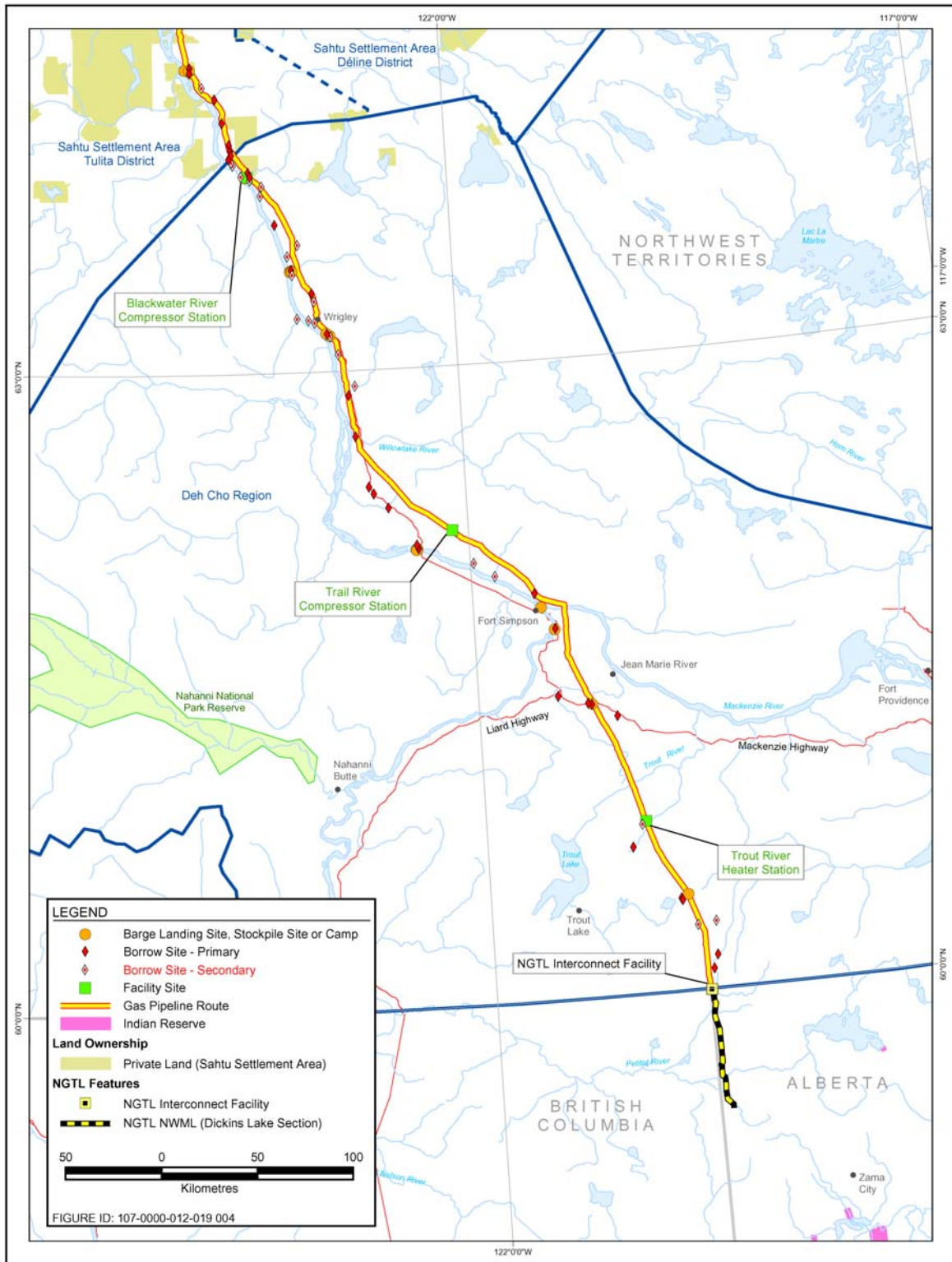


Figure 6-1: Land Ownership – Deh Cho Region and Northwestern Alberta

6.3.2 Granular Resources

Several existing borrow sites are located along the Mackenzie Highway between Wrigley and Fort Simpson. Most of these sites were used during highway construction and have since been abandoned. Except for these sites, no other known borrow sites are located within the DCR part of the study area.

As the DCR is currently primarily Crown land, most of the granular resources are owned by INAC. However, the current land ownership and subsurface rights to resources could change once the Deh Cho First Nations have negotiated and finalized their land claim settlement.

6.3.3 Timber Resources

Within the DCR, upland areas are forested with aspen, spruce, birch and pine. Poorly drained areas are also forested, and much of the northern half of the region has been burned within the past 20 years.

No major timber harvesting operations occur in the DCR part of the study area. Jean Marie River residents operate a small community lumber mill and log home operation. However, timber is currently harvested outside the pipeline corridor (Davidge 2002, personal communication; Kraft 2002, personal communication). There is also one sawmill at Checkpoint, but it is inactive (Moore 2002, personal communication). Residents harvest fuel wood throughout the DCR and use the highway for access (Davidge 2002, personal communication; Kraft 2002, personal communication).

6.3.4 Mineral Resources

Mineral showings for copper, iron and zinc have been identified north of Wrigley (CS Lord et al. 2002). A gold deposit (placer) has been reported near the River Between Two Mountains and a zinc deposit has been identified in the Ebbutt Hills area. The development stage of these showings has not been assigned. However, these deposits were identified in the 1960s and 1970s, and have yet to be further explored. Several mineral claims are held south of Fort Simpson within the pipeline corridor (INAC 2003b). An individual from Ontario holds five mineral claims within the pipeline corridor and several more within 50 km to the west. The primary minerals sought are unclear as no known mineral deposits exist in this area (Quevillon 2003, personal communication).

6.3.5 Oil and Gas Activities

Existing petroleum industry activity in the DCR part of the study area is limited to the Enbridge Norman Wells pipeline and the Fort Liard activity. Some exploration has taken place along the pipeline corridor near Wrigley and south of the Mackenzie River (GNWT Renewable Resources 1985).

Figure 6-2 shows oil and gas dispositions for the DCR. There is one significant discovery licence, held by BP Canada Energy Co., which lies close to the pipeline study corridor in the DCR (Significant Discovery Licence [SDL] 003). Other current activities in the DCR are located in the Fort Liard and Cameron Hills areas (INAC 2002b, 2002c). Fort Liard is within the socio-economic study area, but outside of the 30-km-wide study corridor. Cameron Hills is located outside the study area.

6.3.6 Nontraditional Resource Harvesting

Some hunting occurs within the DCR part of the study area, primarily along (Kraft 2002, personal communication):

- the Mackenzie River
- the Mackenzie Highway
- other highways, winter roads and access roads
- the Enbridge pipeline right-of-way
- seismic lines

Hunters travel by truck, all-terrain vehicle and boat. There are currently no access restrictions for resident hunters regarding traditional lands. However, it is likely that restrictions for resident hunters will be included in a settlement agreement between the Deh Cho First Nations and the Government of Canada.

Species for which hunting is permitted within the DCR include:

- black bear
- moose
- woodland caribou
- wolf
- wolverine
- small nonfurbearing mammals

Game-bird hunting is permitted for ptarmigan and grouse. Hunting of migratory birds is regulated by the Canadian Wildlife Service, and requires a Migratory Game Bird Hunting Permit and a Habitat Conservation Stamp.

The study area within the DCR has no designated guide–outfitter areas. Two Mackenzie Mountain outfitters have operations either entirely or partially within the DCR. At least one of these two outfitters is based in Fort Simpson (Davidge 2002, personal communication).

Most DCR residents using the lands within the study area for hunting or to access hunting areas live in Fort Simpson. In Wrigley, only about three residents hunt using these lands. The primary big game species hunted in this area are moose and woodland caribou, although some incidental wood bison hunting occurs. There is a bison control area within the pipeline corridor where hunters may harvest bison. A full description of the bison control area can be found in the *Northwest Territories Wildlife Act, Nuisance Bison Control Regulations R-070-92* (Davidge 2002, personal communication). The study area in the DCR is also used for small game and waterfowl hunting.

Commercial fishing occurs in Trout Lake, Kakisa Lake and Great Slave Lake (Kraft 2002, personal communication). None of these lakes is near the proposed pipeline corridor. Most domestic fishing occurs in the larger rivers, and little fishing occurs in the smaller watercourses throughout the study area. Trout Lake is the only waterbody with the potential for domestic fishing other than the Mackenzie River. However, Trout Lake is outside the study area (Davidge 2002, personal communication).

The GNWT RWED licences sport fishing in the DCR (GNWT RWED 2002h). No access restrictions currently exist for sport anglers. However, it is likely that restrictions on sport fishing will be included in a settlement agreement between the Deh Cho First Nations and the Government of Canada. Most sport fishing occurs along the road system near Fort Simpson, only a small part of which is within the study area (Davidge 2002, personal communication). Sport fish species present in the DCR include (GNWT RWED 2002h):

- Arctic grayling
- burbot
- bull trout
- inconnu
- lake trout
- northern pike
- walleye
- whitefish

Details regarding catch limits are in the annual *Northwest Territories Sport Fishing Guide* (GNWT RWED 2002h).

One trapping licence is issued to a resident of Liidlii Kue. However, the trapping area is west of Wrigley, well away from the study area. It is likely that upon completion of the claims process, the Deh Cho First Nations will introduce trapping regulations similar to those applied in the GSA and SSA.

6.3.7 Tourism and Recreation

Within the DCR, several tourism-based businesses operate in the area that might be traversed by the pipeline corridor. Activities offered include:

- boat charters
- river cruises
- day-trip fishing charters for walleye and pike
- package vacations
- various tours of the DCR from Fort Simpson
- canoeing
- sightseeing
- bush camps
- road safaris
- tours of the Wrigley community
- hiking
- mountain biking

Throughout the DCR, particularly in the Fort Simpson area, those pursuing recreational activities frequently use all-weather and winter road corridors for touring by snowmobile or all-terrain vehicle (Davidge 2002, personal communication).

6.3.8 Other Commercial Activities

In the DCR, some minor areas of forage crop production occur near Fort Simpson (Dome et al. 1982).

The Mackenzie Highway, which passes through Fort Simpson and ends in Wrigley, is a permanent highway that allows transportation of goods by truck to Wrigley. During the winter, the Mackenzie Highway is extended via a winter road from Wrigley to Fort Good Hope. It is a transportation corridor for trucks carrying goods to the valley communities. The winter road is normally open December to March, depending on weather conditions and commercial requirements for the road.

The Mackenzie River is an important transportation corridor for barges and other boats delivering goods to many of the towns along its banks, and communities on the Beaufort Sea and in other parts of the Arctic. Barging activities along the Mackenzie River occur from mid-June through September.

6.3.9 Environmentally Protected Areas

Several existing and proposed protected areas occur in the DCR part of the study area (see Figure 6-3). Ebbutt Hills, north of Fort Simpson on the east side of the Mackenzie River, was considered for designation as an International Biological Program site because the accumulated permafrost there has resulted in peat landforms considered exceptional for the Great Slave Lowlands (Hardy Associates Ltd. 1980).

The Edézhíe Candidate Protected Area in the DCR was withdrawn from development under the Northwest Territories Protected Areas Strategy process (Canadian Parks and Wilderness Society 2002) (see Figure 6-3). This area includes a large piece of land known as the Horne Plateau, and extends west to the Mackenzie River along the Willowlake River Valley. The *Guidelines for Interim Protection* (Canadian Parks and Wilderness Society 2003) stipulate that no new dispositions will be granted in the area, but that existing rights will be honoured. Under the *Territorial Lands Act*, an Order in Council respecting the *Withdrawal from disposal of certain lands in the Northwest Territories (Edézhíe (Horn Plateau), Northwest Territories)* states there is a 4-km-wide corridor, required for a future pipeline and the associated infrastructure, in the Willowlake River area. It is centred on an existing pipeline right-of-way (Department of Justice Canada 2004). The candidate area includes the Enbridge Norman Wells pipeline right-of-way and the Mackenzie Highway.

Edézhíe is an important First Nations cultural and spiritual gathering place. The land is ecologically important. Local residents often refer to it as a giant sponge because of its exceptional wetland values. There are provisions for a pipeline corridor at the western tip of Edézhíe.

Pehdzeh Ki Deh, located near Wrigley, is designated an area of interest by Northwest Territories Protected Areas Strategy for its lakes and watersheds, and its traditional use by Pehdzeh Ki First Nation people (Northwest Territories Protected Areas Strategy Secretariat 2002). This area is also important for protecting sacred sites of the Pehdzeh Ki First Nation (Benjamin 2003, personal communication).

Liard River Crossing Territorial Park is located on the east side of the Liard River, south of Fort Simpson, less than 5 km west of the pipeline corridor (GNWT RWED 2003b). This area provides overnight facilities for travellers arriving at the Liard River Crossing outside the ferry service operating hours. The park has four unserviced campsites, day-use and picnic facilities.

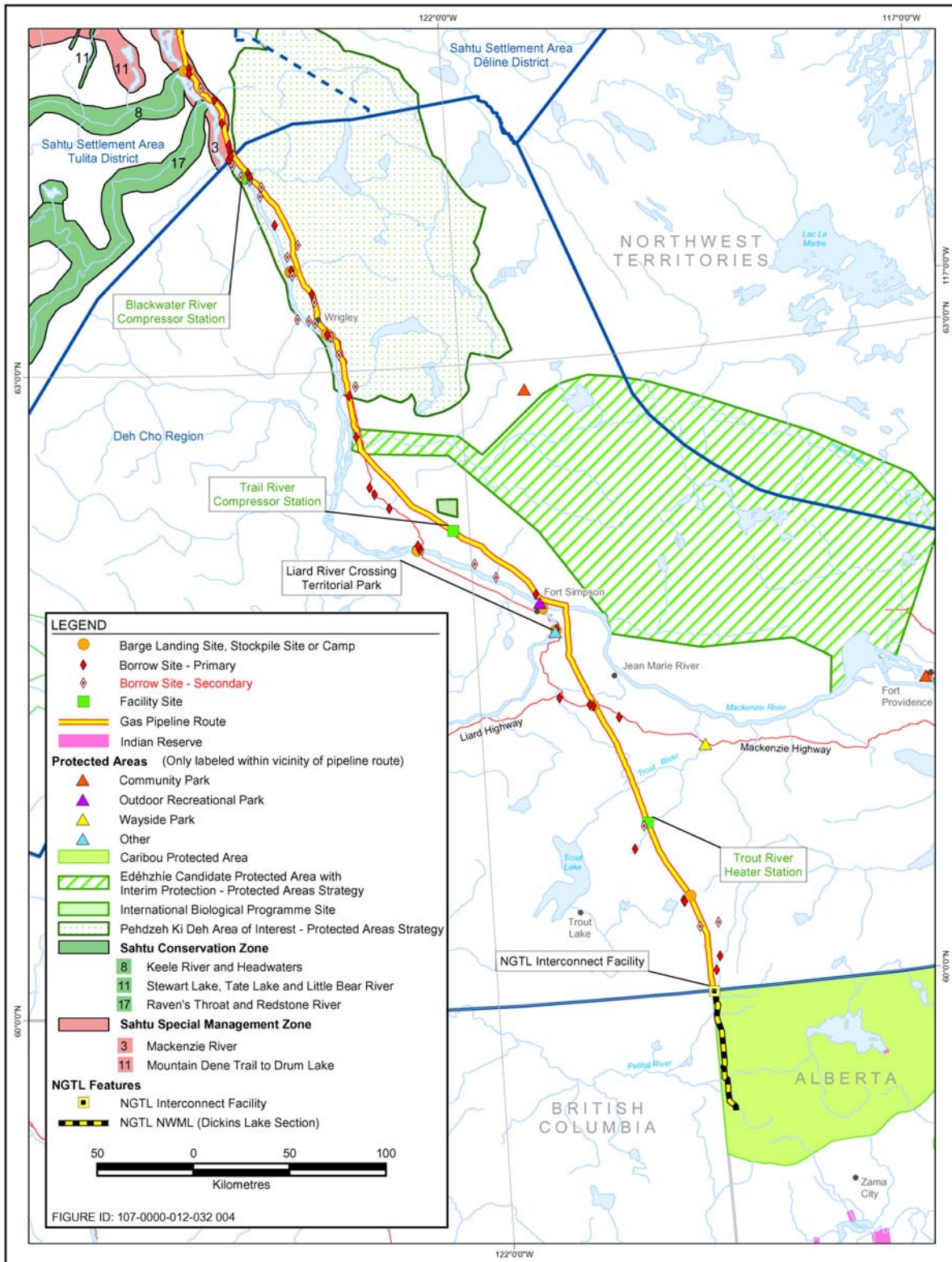


Figure 6-3: Protected Areas – Deh Cho Region and Northwestern Alberta

Fort Simpson Park and Visitor Centre is located in Fort Simpson. Fort Simpson Territorial Park and Campground is located at the confluence of the Mackenzie and Liard rivers, and is surrounded by the Snye wetland ecosystem. Many species of migratory waterfowl are seen in this area during spring and fall (GNWT RWED 2002i).

As part of its land withdrawal process with INAC, the Deh Cho First Nation has established buffer areas, about 2 km wide, for future pipeline construction through lands that otherwise have been withdrawn because of environmental issues, cultural importance or traditional use.

6.3.10 Visual and Aesthetic Resources

Within the DCR, upland areas are forested with aspen, spruce, birch and pine. Poorly drained areas are also forested, and there are patterned fens near Fort Simpson. South of Trout River are upland plateau areas. Much of the northern half of the region has been burned within the past 20 years, which has changed the visual and aesthetic qualities of the area. Evidence of seismic activity is especially noticeable south of Fort Simpson. The Mackenzie River is a prominent terrain feature in this area. Most proposed infrastructure sites within the DCR will likely be located on previously disturbed sites.

7 HERITAGE RESOURCES

7.1 Introduction

The baseline is discussed under the broad headings of prehistory and history because of the nature of the data. Relatively little specific data is available for the prehistoric context of the community areas of individual settlement regions. Therefore, the information was based, in part, on comparable data previously recorded in areas with similar subsistence strategies. This information applies to broader areas than the more specific historic data.

The cultural backgrounds of the people within the traditional areas are also presented in some detail, as this is a fundamental link for archaeologists as they find and understand the physical remains of cultures.

7.2 Overview of the Kakisa Area

7.2.1 Prehistory

The prehistory of the Kakisa area is adapted from the EIS, Volume 4, Section 7.3.1.2, Gwich'in, Sahtu and Deh Cho Areas Prehistory.

The Mackenzie Valley, in its present form, did not exist in this area until after 9,900 before present (BP), so occupation was not likely before this time. Although the earliest human habitation of the Mackenzie Valley is unknown, it may have been associated with populations moving south from a Beringian refugium. Although there have not been any very old sites identified within the DCR in the Kakisa area that have been scientifically dated, tools that are similar to those from prehistoric occupations that are dated from 9,000 to 6,000 BP have been recorded. Sites dating up to the Protohistoric Period have been found in the area.

The subsistence pattern of the Kakisa area is commonly referred to in archaeological literature as a boreal strategy.

More systematic archaeological research has been conducted and more archaeological sites have been recorded in the Mackenzie Valley than in the delta and coastal areas to the north. Therefore, from a prehistoric perspective, considerably more is known about the prehistoric occupation of the Mackenzie Valley. However, many questions remain about specific dates, transition in the complexes and phases that represent the major periods and changes in technology.

Canadian boreal forest prehistory is divided into three major components:

- Early Prehistoric Period (about 11,000 to 7,000 BP)
- Middle Prehistoric Period (about 7,000 to 2,500 BP)

- Late Prehistoric Period (about 2,500 to 250 BP)

These correspond to periods of cultural development marked by changes in weapons, and reflect complex cultural evolutionary processes that include major technological advances. The prehistory of the Mackenzie River Basin, especially in the northern portions, is intermixed with coastal cultural expansions and is less well defined than areas farther south.

Sites from the oldest part of the Early Prehistoric are not expected, particularly in the area from Fort Simpson to Fort Good Hope. The earliest incontrovertible evidence of prehistoric occupation of the Mackenzie Basin comes from south of the study area near Fort Liard. The tool kit found there is similar to assemblages recovered elsewhere dating between 9,000 and 6,000 BP (Millar 1981). Sites dating up to the Protohistoric/Historic Period have been recorded in the area (250 BP to present).

7.2.2 History and Cultural Context

The history overview and cultural context of the Kakisa area are adapted from the EIS, Volume 4, Section 7.3.2, History Overview and Section 7.4.4, Baseline Conditions – DCR.

Most people in the DCR are Slavey. Initial contact between the Slavey of the Mackenzie Valley and the Europeans occurred with Alexander Mackenzie's expedition in 1789. During the period of European contact, the DCR sustained a population of about 1,250. This region was a rich source of fish, and terrestrial animals provided much of the livelihood for the Slavey, as did edible plants. The Chipewyan or Cree likely introduced trade goods in the mid-eighteenth century. The fur trade disrupted traditional land use patterns, including travel routes and settlement areas, as the Cree began to move northward in response to trade rivalries. The influx of fur traders and missionaries was followed by the Klondike gold rush to the west, arrival of the Northwest Mounted Police, and steam-powered boats along the river. Airplanes, the Mackenzie Highway and a pipeline to support war efforts also dramatically changed the face of the region. Treaty 8 was negotiated in the southern reaches of Slavey territory in 1900 at Fort Resolution and Fort Vermillion, and at Fort Nelson in 1911. Treaty 11 was not signed with the Slavey residing north of the Great Slave Lake and Mackenzie Valley until 1921.

The first trading post in Slavey territory was Livingston's Fort, established by the North West Company about 1796, on the Mackenzie River downstream of Great Slave Lake (Asch 1981). With the North West Company fur trade posts on the Mackenzie River, the Dene were afforded direct access to Euro-Canadian goods (Innis 1962). Between 1800 and 1810, five short-lived posts were established along the Mackenzie and Liard rivers. By 1879, when Wrigley was established, the posts operating along the lower Mackenzie included Fort Norman (now

Tulita), Wrigley, Fort Simpson and Fort Good Hope. The Inuvialuit traded with the Dene at Fort Good Hope. Fort McPherson on the Peel River was also in operation.

By the end of the nineteenth century, Christian missionaries had been in contact with the people in the Mackenzie Valley. Euro-Canadian activities within the Mackenzie Valley encouraged regional concentration of the dispersed populations centred on trading posts and missions (Savishinsky and Hara 1981). These centres drew in people from several ethnic or dialectic groups, making communities more sedentary and redefining their identities in association with specific posts, thus creating bands with which treaties could be signed.

The Canadian government did little to assert its presence in Slavey and Hare Territory until its first treaty negotiations at Fort Resolution and Fort Vermilion brought segments of the Slavey into Treaty 8 in 1900. The Fort Nelson Slavey was added to Treaty 8 in 1911. Under the advisement of Bishop Breynat, the Gwich'in signed Treaty 11 in July 1921 (Heine et al. 2001). A treaty with the Gwich'in, the rest of the Slavey and the Hare was not signed until 1921 (1922 in Fort Liard) (Asch 1981). The terms of this treaty are still in dispute.

Competition between companies, followed by mergers, resulted in fur trade posts being closed and new ones being opened. However, by the 1930s, exploitation of mineral resources replaced the fur trade as the principal industry of the Northwest Territories. The World War II period was pivotal in this, with development of the oil reserves at Norman Wells and construction of the Canol pipeline. With these industrial developments, the Dene found temporary and permanent wage employment, further concentrating populations in established communities.

Through the first half of the twentieth century, the Dene life changed only gradually because of the influx of Euro-Canadian goods and influences. Subsistence still depended on traditional pursuits, self-reliance and mobility (Asch 1981). During the early and middle portion of the century, the high price of furs persuaded many Slavey to become seriously involved in trapping and in the market economy of the dominant culture. Coupled with an increasing reliance on government services, this has resulted in a more sedentary existence. With the recent collapse in the fur market, the supplementary income formerly provided by trapping has had to be replaced with wage work, where available (see Section 2, People and the Economy).

The Métis are the descendants of non-Aboriginal and Aboriginal parents, usually with Dene maternal and Euro-Canadian paternal ancestries. Since about 1850, the Métis in the SSA have participated in traditional subsistence activities, working as interpreters, trappers and provisioners, and at trading posts. The Métis were most recognized for their role in transporting goods via canoe, York boats and steamboat (Slobodin 1981b). Today, the Métis live throughout the Mackenzie region, although they have a collective identity based on a shared heritage.

During the 1977 Berger inquiry into the Mackenzie Valley pipeline (Berger 1977), the Dene and Métis insisted that outstanding land claim issues be resolved before planning further development in the Mackenzie Valley. Negotiations to settle these claims began in October 1991, with the final agreement signed in 1994 (Simpson 2002).

The Slavey people also extend into northern Alberta, where they are known as the Acha'ottine, or woodland people. These Athapaskan-speaking people refer to themselves as the Dene Tha'. Although culturally and linguistically similar to the Slavey of the Northwest Territories, they are geographically located in the northwest corner of Alberta. The traditional lands of the Dene Tha' extend from northwestern Alberta into northeastern British Columbia and the southern regions of the Northwest Territories (Ross 2001). Although the Dene Tha' adhered to Treaty 8 in 1900, their reserves were not surveyed until 1946.

Member communities of the Deh Cho First Nation include:

- Acho Dene Koe in Fort Liard
- Deh Gah Got'ie First Nation in Fort Providence
- K'atlodeeche First Nation in Hay River
- Liidlii Kue First Nation in Fort Simpson
- N'ah adehe First Nation in Nahanni Butte
- Pehdzeh Ki First Nation in Wrigley
- Sambaa K'e First Nation in Trout Lake
- Ts'uehda First Nation in West Point
- Tthe'K'ehdeli First Nation in Jean Marie River

The Métis members include (Deh Cho First Nation 2002):

- Fort Liard Métis Nation
- Fort Providence Métis Nation
- Fort Simpson Métis Nation

The territory of the Slavey during contact was from the western edge of the Great Slave Lake along the Mackenzie River to the current site of Fort Norman (Osgood 1932). This area sustained a population of about 1,250 during contact (Kroeber 1939). Small lakes and rivers in low-lying plains, with tree cover of jack pine, white spruce and birch, characterize the area. This environment was a rich source of fish (Asch 1981). Moose, woodland and barren-ground caribou, black bear, beaver, marten, waterfowl and hare provided much of the livelihood for the Slavey, as did edible plants (Asch 1981). However, because the area was not particularly ecologically diverse, the Slavey likely stayed in small groups for most of the year, gathering together once a year at a central meeting place (Asch 1981).

Material culture of the Slavey included snares, bows and arrows or spears used to take large and small game, and nets and weirs for harvesting fish. Clothing was usually made from moose hide, with personal adornment in the form of tattooing, wood and bone jewellery, and nose piercings. Housing was usually of two types: a tepee-like structure of bark or moose hide (Lamb 1970), or log-style cabins chinked with moss and covered with spruce boughs (Mason 1946). Like other cultural groups in the region, travel was by snowshoe and toboggans in winter, and by foot or bark canoe in the snow-free months.

The Chipewyan or Cree likely introduced trade goods in the mid-eighteenth century. Certain trade goods were useful to the Slavey, including metal goods, guns, tea, flour, rice and tobacco (Asch 1981). The fur trade disrupted traditional land use patterns, including travel routes and settlement areas, as the Cree began to move northward in response to trade rivalries (Lamb 1970). After Alexander Mackenzie's initial contact with the Slavey in 1789, trade expansion saw posts being established throughout the region. By the late 1800s, the Slavey traded at seven posts (Asch 1981):

- Fort Norman
- Wrigley
- Fort Simpson
- Fort Providence
- Hay River
- Fort Nelson
- Fort Liard

The South Slavey name for Wrigley is *Pehdzeh Ki*, which means *clay place* (Prince of Wales Northern Heritage Centre 2002). The first site of this community, about 30 km north of the present location, was called Old Fort Island. Dene people settled there after the North West Company closed Fort Alexander, its post at Willowlake River. When famine and tuberculosis killed nearly one third of the residents of Old Fort Island, the families established a new site for the community near a landform known as *Roche-qui-trempe-a-l'eau*, the rock that plunges into water. The site is now known as Old Fort Wrigley, as the community was moved to its present location on higher ground in the 1970s (Northern News 2002b).

To the south is Trout Lake. Fort Simpson is located at the confluence of the Mackenzie and Liard rivers, and is the oldest continuously occupied trading post on the Mackenzie River (Northern News 2002b). Jean Marie River began as an outpost camp in 1935 as part of a traditionalist movement. Wrigley became a base for Slavey people after 1905, although they continued a traditional lifestyle (Northwest Territories Protected Areas Strategy Advisory Committee 2001).

The nineteenth and twentieth centuries have witnessed rapid change for the Deh Cho. The influx of fur traders and missionaries was followed by the Klondike

gold rush to the west, arrival of the Northwest Mounted Police, and steam-powered boats along the river. Airplanes, the Mackenzie Highway and a pipeline to support war efforts also dramatically changed the face of the region. Treaty 8 was negotiated in the southern reaches of Slavey territory in 1900 at Fort Resolution and Fort Vermillion, and at Fort Nelson in 1911. Treaty 11 was not signed until 1921, with the Slavey residing north of the Great Slave Lake and Mackenzie Valley. Disputes surrounding Treaty 11 have continued since that time, and came to a head during the proposed Mackenzie Valley Pipeline Inquiry in 1977. Negotiations regarding a land claim in the DCR continue to the present day.

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GLOSSARY

Aboriginal	Any Indian, Inuit or Métis person who was born in the Northwest Territories or who is descended from an Aboriginal person born in the Northwest Territories.
abandonment	The act of permanently stopping operations, discontinuing service, removing facilities and restoring land to a productive state.
Aboriginal community	A community in which the majority of residents are Aboriginal.
anchor field	The three natural-gas fields, Taglu, Parsons Lake and Niglintgak, whose production will provide the initial volume of gas shipped in the Mackenzie Valley Pipeline.
archaeological site	A site where an archaeological artifact is found.
artifact	Any tangible evidence of human activity that is more than 50 years old, in respect of which an unbroken chain of possession cannot be demonstrated.
AWOS	The abbreviation for automated weather observation station.
baseline conditions	Existing conditions in the communities and ethnic regions of the area before any project effects are experienced.
baseline information	The current state of the environment or environmental setting for a particular element. This information will help to determine potential environmental effects of a project by providing an environmental reference point for the element, with which to compare future environmental conditions and potential project effects.
BDR	The abbreviation for Beaufort Delta Region.

biophysical environment	The components of the earth including: <ul style="list-style-type: none">• land, water and air, including all layers of the atmosphere• all organic and inorganic matter and living organisms• the interacting natural systems that include components referred to in the previous bullets
borrow site	An area that could be excavated to provide material, such as gravel or sand, to be used as fill elsewhere.
BP	The abbreviation for before present.
CARS	The abbreviation for community airport radio station.
CBC	The abbreviation for Canadian Broadcasting Corporation.
commercial harvest	Occupied with or engaged with harvest intended for commerce, i.e., buying and selling a product, including transportation from place to place.
Commissioner's lands	Federal lands administered by the territorial government.
compressor station	A facility containing equipment that is used to increase pressure to compress natural gas for transportation.
country food	Food traditionally harvested and eaten by local Aboriginal residents.
critical habitat	The habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species, according to the Species at Risk Act.
DCHSSA	The abbreviation for Deh Cho Health and Social Service Authority.
DCR	The abbreviation for Deh Cho Region.
decommissioning	The act of taking a processing plant or facility out of service and isolating equipment, to prepare for routine maintenance work, suspending or abandoning.

devolution	Ongoing negotiations between the Government of Canada, the GNWT and the Aboriginal Summit that will transfer the current INAC control over land, water and resources to Aboriginal settlement area governments.
DME	The abbreviation for distance measuring equipment.
ECE	The abbreviation for Education, Culture and Employment (GNWT Department).
EIS	The abbreviation for environmental impact statement.
employment rate	Percentage of population, aged 15 years and older employed during the week before the survey.
environmental effect	<p>For a project, any change that the project might cause in the environment, including any change it might cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as defined in the Species at Risk Act. Also, any effect of any project-induced change on:</p> <ul style="list-style-type: none">• health and socio-economic conditions• physical and cultural heritage• the current use of lands and resources for traditional purposes by aboriginal people• any structure, site or thing that is of historical, archaeological, palaeontological or architectural significance <p>Also, any change to the project that might be caused by the environment.</p>
environmentally protected areas	Areas with special designations that, through legislation or other means, are protected in some form or are given special status.
environmentally sensitive area	An area designated in regional or local land use plans, or by a local, regional, provincial or federal government body as being sensitive to disturbance, or identified by an applicant as being sensitive for some reason.

facilities	Structures of the gathering and gas pipeline systems, including compressor and pump stations, block valves, pigging facilities, heater stations and meter stations.
FAS/FAE	The abbreviation for foetal alcohol syndrome/effects.
federal Crown lands	Federal lands administered by INAC (also referred to as territorial lands in the Territorial Lands Act)
five-year mobility status (migration)	The relationship between a person's usual place of residence on May 14, 1996 compared to the previous five years.
FSS	The abbreviation for flight service station.
gas pipeline	The pipeline that transports compressed natural gas from the Inuvik area facility to the southern terminus near the Northwest Territories–Alberta boundary.
gathering pipelines	Four pipelines, also known as laterals, that transport natural gas and NGLs from the anchor fields to the Inuvik area facility. These include the Niglintgak lateral, Taglu lateral, Parsons Lake lateral and Storm Hills lateral.
gathering system	A system of pipelines, compressor stations and other related facilities that gather natural gas and associated NGLs from the anchor fields and transport it to the gas pipeline system located at the Inuvik area facility.
GNWT	The abbreviation for Government of the Northwest Territories.
granular resources	Sand, gravel, clay, quarry materials and silt.
GSA	The abbreviation for Gwich'in Settlement Area.
heavy drinking	Consuming five or more drinks at one sitting.
heritage resources	Locations where events took place in the past, or all of the objects that they contain, including any contextual information that may be associated with them that will aid in their interpretation, including natural specimens and documents or verbal accounts.

heritage resources	Cultural, historic, archaeological and palaeontological resources are collectively known as heritage resources and can include pre-contact and post-contact features.
historic archaeological resources	Sites, artifacts, structures and documents that relate to the influx of Euro-Canadians in the region, and date to the last 250 years.
honey bag	A plastic liner used in non-flush toilets which is removed when full.
HSS	The abbreviation for Health and Social Services (GNWT Department).
human health	A state of complete physical, mental and social well-being, and the ability to adapt to the stresses of daily life. It is not merely the absence of disease or infirmity.
human health assessment	Considers the effect of hazardous substances, environmental factors and exposure conditions on local and regional populations. It might consist of qualitative and quantitative assessments.
ICD-9 code	The abbreviation for International Classification of Diseases, Version 9.
ILS	The abbreviation for instrument landing system.
INAC	The abbreviation for Indian and Northern Affairs Canada (Government of Canada).
infrastructure	Basic facilities, such as transportation, communications, power supplies and buildings, which enable an organization, project or community to function.
Inuvik area facility	The gas and NGL processing facility for the Mackenzie Gas Project to be located near Inuvik.
ISR	The abbreviation for Inuvialuit Settlement Region.
JRP	The abbreviation for Joint Review Panel.
lateral	A pipe that branches away from the central and primary part of the system.

limiting factor	Anything that has a measurable controlling effect on a species' growth or expansion, or on a biophysical element's continued capability to support its ecosystem.
local study area	A 1-km-wide buffer or corridor around each of the three lease areas, gathering system right-of-way, facility infrastructure sites, pipeline right-of-way and borrow sites.
LSA	The abbreviation for local study area.
MACA	The abbreviation for Municipal and Community Affairs
major repairs (housing)	Refers to such conditions as defective plumbing or electrical wiring, or structural repairs to walls, floors or ceilings.
Métis	A person with a mixture of Aboriginal and non-Aboriginal ancestry.
migrants	Individuals moving to a different community.
migratory bird	Any migratory bird as referred to in the Migratory Birds Convention Act, including the sperm, eggs, embryos, tissue cultures and parts of the bird.
minor repairs (housing)	Refers to such conditions as missing or loose floor tiles, brick or shingles, or to defective steps, railing or siding.
mitigation	The elimination, reduction, or control of a project's adverse environmental effects, including restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or other means.
monitoring	Resolving specific outstanding environmental issues, observing the potential environmental effects of a project, assessing the effectiveness of mitigation measures undertaken, identifying unexpected environmental issues and determining the action required based on the result of these activities.
municipal lands	Lands administered by the territorial government or the municipality.
N/A	The abbreviation for not applicable.

NDB	The abbreviation for nondirectional beacon.
NGL	The abbreviation for natural gas liquid.
NGL pipeline	The pipeline connecting the Inuvik area facility with the Enbridge Pipeline facilities at Norman Wells.
NGO	The abbreviation for nongovernmental organization.
NGTL	The abbreviation for NOVA Gas Transmission Limited.
NGTL interconnect facility	The southernmost point of the gas pipeline where it connects either directly with the natural gas pipeline system in northwestern Alberta or to a third-party extension that subsequently connects to the existing system.
Niglintgak	The anchor field to be developed by Shell. The field includes three well pads, one gas conditioning facility, flow lines and supporting infrastructure. The gas conditioning facility might be barge or land based.
Niglintgak lateral	The gathering pipeline connecting the Niglintgak gas conditioning facility to a connection point on the Taglu lateral at the outlet of the Taglu gas conditioning facility.
nonrenewable resources	Resources, such as fossil fuels (oil, gas, coal) and minerals that occur naturally but cannot be replaced once exploited.
nonresident	An individual who resides outside the Northwest Territories.
nontraditional land use	Existing land and resource uses for nontraditional users, including residents and nonresidents within the study area.
nontraditional resource harvesting	Includes hunting, fishing and trapping pursued by non-Aboriginal residents. May be for domestic, sport or commercial purposes.
NWT	The abbreviation for Northwest Territories.
Operations Phase	The phase of a project during which the pipeline and associated facilities are operated.

palaeontological sites	Sites bearing evidence of multi-cellular invertebrate, vertebrate faunal remains and plant materials that have been fossilized or otherwise preserved.
Parsons Lake	The anchor field to be developed by ConocoPhillips and ExxonMobil. Initially, the field will consist of a north pad for the well sites and gas conditioning facility. A second well pad will be developed five to 10 years after the north pad.
Parsons Lake lateral	The gathering pipeline connecting the Parsons Lake gas conditioning facility to a connection point at the Storm Hills pigging facility.
participation rate	Percentage of population, aged 15 years and older in the labour force.
physical infrastructure	All of the physical facilities, roads, barge landings, airstrips and other infrastructure that may require maintenance or repair, or which may have a shortened lifespan as a result of project-related activities.
pipeline	A line used for transmitting oil, gas or any other commodity and that connects a province with any other province or provinces or extends beyond the limits of a province or the offshore area as defined in section 123 of the National Energy Board Act.
pipeline corridor	The 1 km-wide area that generally centres on the combined right-of-way for the NGL and gas pipelines, from the Inuvik area facility to the southern terminus.
potential labour supply	People of working age who are unemployed and those not participating in the labour force who do want a job, less those who, because of disability, age, illiteracy, or lack of education, skills or training could be considered unemployable, according to the GNWT Bureau of Statistics definition.
prehistoric archaeological resources	Archaeological sites, objects and affiliated materials that represent occupation by Aboriginal peoples before the arrival of European goods, people and the historic records that characterize their culture (in North America).
private lands	Lands administered by the land administration within the settlement region.

production area	The area that encompasses all project components located north of the Inuvik area facility, including Niglintgak, Taglu and Parsons Lake, the gathering pipelines, facilities, infrastructure, and the 1 km-wide area surrounding each of these project components.
project proponents	The five organizations (Imperial, the APG, ConocoPhillips, Shell and ExxonMobil) that are undertaking the Mackenzie Gas Project.
project, the	The abbreviation for the Mackenzie Gas Project.
project-specific effect	An effect caused by the project. Such effects are sometimes referred to as direct effects as they only include the project's contribution to the effect (as opposed to cumulative effects, in which case other projects would contribute to the effect).
property crime	Breaking and entering, theft of motor vehicles, theft over \$5,000, theft \$5,000 and under, possession of stolen goods, and fraud.
provincial Crown lands	Lands administered by the Alberta Public Lands Administration.
RCMP	The abbreviation for Royal Canadian Mounted Police.
reclamation	The process of re-establishing a disturbed site to a former or other productive use, not necessarily to the same condition that existed before disturbance. The land capability might be at a level different, i.e., lower or higher, than that which existed prior to the disturbance, depending on the goal of the process. Reclamation includes the management of a contaminated site and revegetation where necessary. Reclamation is not considered complete until the goals for reclamation have been achieved.

recovery strategy	A strategy for the recovery of a listed extirpated, endangered or threatened species prepared by the competent minister (as defined under the Species at Risk Act). If the recovery of the listed species is feasible, the recovery strategy must address the threats to the survival of the species identified by the Committee for the Status of Endangered Wildlife in Canada, including any loss of habitat. The recovery strategy and any amendments will be included in the public registry established under the Species at Risk Act.
regional study area	A 15-km-wide buffer around the three anchor fields, on either side of the gathering system right-of-way and on either side of the pipeline right-of-way.
regular maintenance (housing)	Refers to such conditions as requiring painting or furnace cleaning.
resident	A Canadian citizen or landed immigrant who has been living in the Northwest Territories for at least two years.
residual effects	Environmental or socio-economic effects that remain after mitigation. Effects that are present after mitigation is applied.
right-of-way	The strip of land a company has acquired, for which it has obtained the rights to construct and operate a pipeline.
RSA	The abbreviation for regional study area.
RWED	The abbreviation for Resources, Wildlife and Economic Development (GNWT Department).
scrip	A document given by the Government of Canada to Métis who applied, promising either land or money, usually 140 acres or \$140, but increased to 240 acres or \$240 after 1885.
SDL	The abbreviation for significant discovery licence.
SEIA	The abbreviation for socio-economic impact assessment.
social infrastructure	Health, social wellness and education services that may require enhancement or expansion as a result of project-related activities.

socio-economic effect	For a project, any effect on a social or economic element, including direct effects as well as effects resulting from a change in the environment.
species at risk	An extirpated, endangered or threatened species or a species of special concern, as defined in the Species at Risk Act.
species of special status	Species listed under provincial jurisdiction or of recognized local importance because they are vulnerable, threatened, endangered or extirpated.
SSA	The abbreviation for Sahtu Settlement Area.
STI	The abbreviation for sexually transmitted infection.
Storm Hills lateral	The gathering pipeline connecting the Storm Hills pigging facility to a connection point at the inlet of the Inuvik area facility.
study area	The area within the spatial boundaries of the scope of the environmental and socio-economic effects assessment.
subsistence harvest	The minimum harvest necessary to provide food to support families living within the communities.
Taglu	The anchor field to be developed by Imperial Oil Resources Limited. It consists of one site, which will include the drill sites, gas conditioning facility, flow lines and supporting infrastructure.
Taglu lateral	The gathering pipeline connecting the Taglu gas conditioning facility to a connection point at the Storm Hills pigging facility.
unemployment rate	Percentage of the labour force that was unemployed during the week before the survey.
valued component	Characteristic or features that represent important environmental or socio-economic conditions identified by assessment specialists, communities or stakeholders.
violent crimes	Homicide, attempted murder, sexual assault, nonsexual assault, other sexual offences, abduction and robbery.

visual resources	Land, water, vegetation, animals and structures that are visible on the land.
waterbody	A body of water up to the high-water mark, including canals, reservoirs, oceans and wetlands, but not including sewage or waste treatment lagoons.
well-being	Everything that affects the experience of life, except physical and mental health, including the circumstances of physical existence, the quality of relationships and the threat of violence and crime.
wellness	Includes physical, emotional and mental health, and relationship well-being.