

3 INFRASTRUCTURE AND COMMUNITY SERVICES

3.1 Introduction

This section describes the physical infrastructure, services and governance arrangements 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

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.

Devolution refers to 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 northern governments. The Aboriginal Summit is a negotiating body composed of virtually all the organized Aboriginal groups in the Northwest Territories except the Deh Cho First Nation, which is not currently participating.

The self-government negotiations primarily involve the GNWT, the Government of Canada and each of the Aboriginal settlement areas. As indicated following, the Inuvialuit and the Gwich'in are exceptional in jointly negotiating with the GNWT an innovative but complex system of regional government for the BDR.

Information included on the following devolution negotiation is from Chief Negotiators' Recommended Framework Agreement, Northwest Territories Lands and Resources Devolution Framework Agreement, as amended on June 26, 2003.

The goal of the devolution negotiations is the transfer by the Government of Canada of the administration and control of public lands and rights in respect of waters administered by the Northern Affairs Program of INAC to the GNWT and Aboriginal authorities. Both the GNWT and the Aboriginal Summit seek to gain,

through this process, province-like powers over Northwest Territories lands and resources. These negotiations have now achieved the *Framework Agreement* recommended by the Chief Negotiators, which specifies the subject matters for negotiation of an agreement-in-principle for devolution.

Included in the transfer will be:

- management of land and resource development
- oil and gas management regimes
- responsibilities for waste sites

Many subsidiary topics are included, such as:

- effects on federal employees
- transfer of federal properties, contracts and records
- provision of transitional and ongoing funding
- calculation of the net fiscal benefit to the Northwest Territories
- such other general provisions as the parties might agree to

Included in the other general category are:

- legislative authority
- the relationship of devolution to existing Aboriginal, treaty and other rights of the Aboriginal people of the Northwest Territories
- indemnities
- appropriation of funds
- jurisdiction of courts
- obligations and benefits arising under national and international agreements
- obligations pursuant to Aboriginal land and resource agreements, treaties, land claims agreements or self-government agreements in the Northwest Territories

The chief negotiators recommended on June 26, 2003 that the *Framework Agreement* be accepted, setting March 2004 as the target date for approval of this framework. A *Devolution Framework Agreement* was signed by leaders of the Aboriginal Summit, the Government of Canada and the GNWT on March 17, 2004. The *Framework Agreement* sets out the process for reaching a final *Devolution Agreement* and includes topics for negotiations and target dates (GNWT Ministry of Aboriginal Affairs 2004).

3.2 Baseline Conditions – Inuvialuit Settlement Region

3.2.1 Transportation Infrastructure

Table 3-1 shows the transportation infrastructure in the Inuvialuit communities. Inuvik is the transportation hub for the BDR, serving the ISR and GSA communities. It has an airport with an asphalt runway, frequent scheduled flights, resupply by barge in the summer, and access to the south on the all-weather, but seasonally restricted, Dempster Highway. The highway is seasonally restricted because the Mackenzie River crossing is closed during freezeup and breakup. Aklavik and Tuktoyaktuk only have winter road connections with Inuvik.

All of the Inuvialuit communities have scheduled air service and marine resupply. From mid-July to late September, Northern Transportation Company Limited (NTCL) resupplies the arctic communities via its staging site at Tuktoyaktuk, using three tugs and 12 barges. There is no rail access in any of the Inuvialuit communities.

3.2.2 Utilities, Energy and Communications

Water, sewage and solid waste disposal services meeting GNWT standards are available in the five Inuvialuit communities (see Table 3-2) (GNWT Water Board 1992). Because of the extreme cold temperatures and permafrost, most Inuvialuit communities do not have piped water and sewage disposal to individual homes.

Water is delivered to households by truck, and liquid waste disposal is by pumpout from a holding tank or by honey bags for which there is scheduled pickup. Diesel-fuelled generators provide power. The main heating fuel is P-50 fuel oil.

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

Mode of Transportation	Aklavik	Tuktoyaktuk	Holman	Paulatuk	Sachs Harbour
Road					
Road access	Winter road	Winter road	None	None	None
Average daily traffic (No. of vehicles)	No data since 1996 1996 = 41 1993 = 54	No data since 1997 1997 = 45 1996 = 74	N/A	N/A	N/A
Highway	Aklavik winter road (off Highway No. 8)	Tuktoyaktuk winter road (off Highway No. 8)	N/A	N/A	N/A
Road surface	Snow and ice	Snow and ice	N/A	N/A	N/A
Average opening and closing dates (1997–2000), winter roads and ice bridges	January 9 to April 24	December 21 to April 24	N/A	N/A	N/A
Rail					
Rail access	None	None	None	None	None
Water					
Marine resupply deliveries per week	2	6	1	1	1
Ownership of facility	T	T, P	P	P	P
Resupply facility classification	B	A	B	C	C
Small boating facilities	Jet float dock, community dock	Jet float dock, boat launch	Barge landing facility	Barge landing facility	Beach
Air					
Runway length	914 m	1,527 m	1,311 m	975 m	1,230 m
Runway surface	Gravel	Gravel	Gravel	Sand	Gravel
Owner	GNWT	GNWT	GNWT and hamlet (jointly owned)	GNWT	GNWT
Critical aircraft (largest aircraft able to use runway)	–	–	BE 10	Hercules	Hercules

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

Mode of Transportation	Aklavik	Tuktoyaktuk	Holman	Paulatuk	Sachs Harbour
Weather and communication type	CARS	CARS	CARS	CARS	CARS, weather and communication
Navigational aids	NDB	DME	NDB	NDB	NDB

NOTES:
 – = data not available
 N/A = not applicable
 Water Transportation:
 T = facility owned by federal government
 P = privately owned
 Water Facility Resupply Classification:
 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
 B = 2000–10,000 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
 C = <2000 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
 Air Transportation:
 CARS = community airport radio station
 DME = distance measuring equipment
 GNWT = Government of the Northwest Territories
 NDB = nondirectional beacon

SOURCES: GNWT Transportation (1995, 2000, 2001), Infonorth (2002), Dempsey (2004, personal communication)

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

Utility	Aklavik	Tuktoyaktuk	Holman	Paulatuk	Sachs Harbour
Water					
Delivery system	Trucked	Trucked	Trucked	Trucked	Trucked or piped
Water source	Peel Channel	Ice Lake, New Water Lake, reservoir fed by Kudluk Lake	Air Force Lake (2 km northeast of community)	New Water Lake	Unnamed lake water
Water treatment	Neptune Water Boy WB 82 package treatment plant installed in 1979	Wallace and Terman hypochlorinator kit Reservoir is batch fluoridated with hydrofluorosilicic acid	Wallace and Terman hypochlorinator kit	Wallace and Terman hypochlorinator kit	Wallace and Terman hypochlorinator kit
Water quality	Often challenged by seasonal fluctuations in sediment loading in the Peel River	Good chemical quality for domestic use	Good chemical quality for domestic use	Good chemical quality for domestic use	Good chemical quality for domestic use
Liquid Waste					
Type of system	Pumpout	Bagged or pumpout	Bagged or pumpout	Bagged or pumpout	Pumpout from holding tanks
Sewage disposal	Clearing Lake (16 ha), 2 km downstream of community Estimated retention time of three years Lake discharges into an array of lakes and ponds before reaching Peel Channel	Pumpout sewage is deposited onto a stretch of sloping ground and drains into a 4-ha lagoon	Bags are taken to a site 4.5 km northwest of the community Pumpout waste treated in a lagoon (17,671 m ² in area)	Sewage lagoon (25 m x 15 m) or deposited at the waste disposal site 0.5 km northwest of the community	Sewage lagoon, transformed from a natural lake (250,000 m ² in area), discharging into the Kellelt River

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

Utility	Aklavik	Tuktoyaktuk	Holman	Paulatuk	Sachs Harbour
Solid Waste					
Type of disposal	Cell disposal method: cells are excavated in the soil, and waste is compacted and covered until the cell is full	1,000 m ² site. Bulky and metal wastes are placed in a 500 m ² area next to the site. Combustible wastes are burned during summer.	Solid waste management site 1.5 km from the hamlet	Deposited in a 4 m x 20 m x 3 m trench, often compacted and covered once a year	Stored in a natural drainage ditch diked by gravel and covered annually by gravel fill
Electrical Power					
Installed capacity	1,800 kW	4,085 kW	910 kW capacity of diesel-generated power	800 kW capacity of diesel-generated power	800 kW capacity of diesel-generated power
Source	3 generators	3 generators	3 generators	3 generators	3 generators
Peak load requirement	597 kW	892 kW	435 kW	216 kW	250 kW
Spare power capacity ¹	1200 kW	4000 kW	450 kW	500 kW	500 kW
Heating Fuel					
Types of heating fuel	P-50 fuel oil	P-50 fuel oil	P-50 fuel oil	P-50 fuel oil	P-50 fuel oil
NOTE:					
1 No allowance made for reserve power requirements					
SOURCES: GNWT Municipal and Community Affairs (2002); Northwest Territories Power Commission (2002)					

Table 3-3 describes the existing communications infrastructure in the ISR communities. All have television, radio, newspaper and deliveries by mail two to five times per week. All the communities except Aklavik have private radio telephone connections. Internet access is available to the public in Aklavik, Holman and Paulatuk.

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

Communication Type	Aklavik	Tuktoyaktuk	Holman	Paulatuk	Sachs Harbour
Cellular telephone	No	Yes	No	No	No
Radio telephone	No private	VHF	VHF	VHF	VHF
Internet	Microwave	No private	Ardicom, SSI, DirectPC (no local ISP)	Yes (local school hosts server)	No local ISP
Transmission of telecommunications	CBC, community radio station	Microwave	Microwave	Microwave	Microwave
Radio	CBC	CBC	CBC	CBC	CBC
Television	CBC via Anik satellite	CBC via Anik satellite	CBC via Anik satellite, cable	CBC via Anik satellite, cable	CBC via Anik satellite
Newspaper coverage	<i>News/North, Inuvik Drum</i>	<i>News/North</i>	<i>News/North</i>	<i>News/North</i>	<i>News/North, Inuvik Drum</i>
Frequency of mail delivery per week	5 times	5 times	3 times	2 times	2 times
<p>NOTES: CBC = Canadian Broadcasting Corporation ISP = Internet service provider VHF = very high frequency</p>					
<p>SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT Municipal and Community Affairs (2002)</p>					

3.2.3 Housing and Recreation

Table 3-4 shows that according to 2001 census data, the condition of housing in the ISR was inferior to that of the Northwest Territories as a whole. This was the case for housing in the study area Aboriginal communities in general. Higher proportions of houses in the Inuvialuit communities needed major or minor repairs than in the Northwest Territories as a whole. Holman housing required fewer repairs than housing in other communities. Housing in Paulatuk required the most repairs.

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

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
Northwest Territories	12,565	52	32	16
ISR total	725	41	37	20
Aklavik	220	39	32	27
Tuktoyaktuk	275	40	40	20
Holman	130	54	35	8
Paulatuk	65	31	38	31
Sachs Harbour	35	29	57	0

NOTES:
 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
 Because the percentages are based on census data that is independently randomly rounded (all numbers end in a 5 or 0), totals might not add to 100, especially in small communities (see Section 1.8.3, Limitations of Low-Frequency Data)

SOURCE: Statistics Canada (2003a)

Current economic growth conditions in the Mackenzie Delta have created a housing shortage in Tuktoyaktuk, but this is not the case in Holman, Paulatuk and Sachs Harbour. The number of people per household in the Inuvialuit communities is decreasing (GNWT Bureau of Statistics and Northwest Territories Housing Corporation 2002, Statistics Canada 2003a).

For recreational facilities, Aklavik has most of the facilities one would expect to find in a well-equipped southern town. Tuktoyaktuk has a range of facilities, including a golf course. The smaller communities are less well equipped, but all have at least a multi-purpose gymnasium and hall, and a playground. Typically, even the smaller communities offer diverse recreational programs (GNWT RWED 2002e).

3.2.4 Governance

The Inuvialuit were the first to participate in the land claim settlement process, formally known as the *Inuvialuit Final Agreement*. They signed the claims agreement that defines the boundaries of the ISR, and Inuvialuit rights and responsibilities in 1984. Under the terms of this agreement, the five hamlets of Aklavik, Tuktoyaktuk, Paulatuk, Sachs Harbour and Holman were all included within the ISR. The Inuvialuit Regional Corporation was created to administer the various governmental responsibilities in this region.

Each hamlet has its own mayor and hamlet council, elected by the residents of each community. In addition, each community in the ISR has a community corporation. This is the local branch of the Inuvialuit Regional Corporation, elected by the Inuvialuit residents of the hamlet to deal with the interests and issues resulting from the Inuvialuit lands claims settlement.

Remarkably, the Inuvialuit and Gwich'in are in the process of negotiating an agreement with the Governments of Canada and the Northwest Territories, under which they will share self-government of their combined areas, identified as the BDR. The *Gwich'in and Inuvialuit Self-Government Agreement-in-Principle for the Beaufort Delta Region* was signed on April 16, 2003 by:

- the Gwich'in, as represented by the Gwich'in Tribal Council
- the Inuvialuit, as represented by the Inuvialuit Regional Corporation
- the GNWT
- the Government of Canada

This agreement deals with the ethnic mix of the BDR. In this region, about one half the population is Inuvialuit, one quarter is Gwich'in and one quarter is non-Aboriginal. The multi-ethnic issue is resolved by providing for separate Gwich'in and Inuvialuit governments, each to act on behalf of its own ethnic group through a council. Details of the legal status and capacity, structure, constitution, delegation, authority and liability for each governing body will be provided.

In addition to these ethnic governments, there are Beaufort Delta public governments that include a Beaufort Delta regional government and a Beaufort Delta community government in each Beaufort Delta community. The Beaufort Delta regional government will have a constitution and will act through an elected regional council, exercising jurisdictions, powers and privileges, and carrying out the duties and responsibilities set forth for the regional government in the agreement. If authorized by a regional law, a Beaufort Delta regional government will be empowered to:

- borrow money
- make or guarantee loans

- forgive debts
- acquire or dispose of property

The mandate of these regional governments will be to deal with issues of concern to the whole BDR.

In each community, there will be a Beaufort Delta community government, acting through an elected community council. These governments will have a constitution with content, approval and amendment procedures stipulated. Each will exercise the jurisdictions, powers and privileges, and will carry out the duties and responsibilities set forth for a community government in the agreement. If authorized by a community law, a Beaufort Delta community government will be empowered to:

- borrow money
- make or guarantee loans
- forgive debts
- acquire or dispose of property

Because Aklavik and Inuvik have ethnically mixed populations, the elected community councils of each include at least one Gwich'in and one Inuvialuit member, with each having no more than half the number of at-large councillors.

As an agreement-in-principle, this Gwich'in–Inuvialuit document provides a detailed list of the topics to be included in a final agreement. Content includes culture and language, social services, and six chapters dealing with education and training, e.g., early childhood education through training. Health, income support, justice and policing are addressed in other chapters, and where relevant, there are separate Gwich'in, Inuvialuit and regional government discussions in each of these. Consideration is given to financial agreements, own source revenue and taxation. The final few chapters deal with process, such as: dispute resolution, review, intergovernmental relations, implementation, and training and transition.

Currently, self-government negotiations are ongoing between the GNWT, Government of Canada and Sahtu people. The Deh Cho Process will also address self-governance. The result of the devolution negotiations will be to transfer jurisdiction over land, water and resources, and therefore control over these possible sources of revenue, to the northern governments. The result of the devolution and self-government negotiations will be to substantially increase the relative political and fiscal autonomy of the Gwich'in, Inuvialuit, Sahtu and eventually, the Deh Cho people.

3.3 Baseline Conditions – Gwich’in Settlement Area

3.3.1 Transportation Infrastructure

Inuvik serves as the transportation hub for Fort McPherson and Tsiigehtchic. Inuvik has the most frequent scheduled flights, the all-weather, but seasonally restricted, Dempster Highway and barge-based resupply in the summer (see Table 3-5). Fort McPherson has an all-weather highway connection to the south with seasonal restrictions. There is no rail access to any of the Gwich’in communities.

Table 3-5: Transportation Infrastructure in the Gwich’in Communities (2001)

Transportation Mode	Inuvik	Fort McPherson	Tsiigehtchic
Road			
Road access	All-weather road, seasonally restricted	All-weather road, seasonally restricted	All-weather road, seasonally restricted
Average daily traffic (No. of vehicles)	2001 = 1,120 2000 = 1,120	2001 = 80 2000 = 80	2001 = 80 2000 = 80
Highway	Dempster Highway No. 8	Dempster Highway No. 8	Dempster Highway No. 8
Road surface	Paved, dust-controlled gravel, untreated gravel	Paved, dust-controlled gravel, untreated gravel	Paved, dust-controlled gravel, untreated gravel
Average opening and closing dates (1997–2000), winter roads and ice bridges	November 28 to April 29	November 13 to May 1	November 13 to May 1
Rail			
Rail access	None	None	None
Water			
Marine resupply deliveries per week	7	2	1
Ownership of facility	T, P	P	T
Resupply facility classification	A	C	C
Small boating facilities	Jet float dock, private docks, boat launch	Beach landings	Jet float dock, steel frame dock
Air			
Runway length	1,829 m	1,067 m	N/A
Runway surface	Asphalt	Gravel	N/A
Owner	GNWT	GNWT	N/A
Critical aircraft (largest aircraft able to use runway)	B737	Dornier 228	N/A

Table 3-5: Transportation Infrastructure in the Gwich'in Communities (2001) (cont'd)

Transportation Mode	Inuvik	Fort McPherson	Tsiigehtchic
Air (cont'd)			
Weather and communication type	FSS	CARS	N/A
Navigational aids	ILS, DME, NDB	NDB	N/A
NOTES: N/A = not applicable Water Transportation: T = facility owned by federal government P = privately owned Water Facility Resupply Classification: 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 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 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 Air Transportation: 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			
SOURCE: GNWT Transportation (1995, 2000, 2001)			

In addition to their usual highway connections, both Fort McPherson and Tsiigehtchic have scheduled seasonal air service to Inuvik during breakup and freezeup. All three Gwich'in communities have marine resupply. All are well served by highway-based transport, but there is no bus service and no rail service to any of these communities.

3.3.2 Utilities, Energy and Communications

Table 3-6 shows the types of water, and liquid and solid waste disposal services available in the Gwich'in communities. Inuvik and Fort McPherson have piped water service and sewage. In Tsiigehtchic, water is delivered to households by truck, and liquid waste disposal is by pumpout from a holding tank or by honey bags, for which there is scheduled pickup. Power in Inuvik is supplied by generators fuelled by natural gas and diesel, whereas only diesel-fuelled generators provide power in Fort McPherson and Tsiigehtchic. The main heating fuel is P-50 fuel oil. However, Inuvik also uses locally supplied natural gas.

Table 3-6: Utilities Infrastructure in the Gwich'in Communities (2001)

Utility	Inuvik	Fort McPherson	Tsiigehtchic
Water			
Delivery system	Trucked or piped	Trucked or piped	Trucked
Water source	Winter: East Channel, Mackenzie River Summer: Three-Mile Lake	Water Lake	Tso Lake
Water treatment	Built in 1980, the treatment plant has a capacity of 5,239 m ³ /day and can serve a population of 8,000	Neptune Water Boy WB 133 treatment package installed in 1990	Chlorination system consists of two 114-L polyethylene tanks and a Wallace and Tiernan 1/20-hp mixer to mix chlorine solution
Water quality	Good chemical quality for domestic use	Good chemical quality for domestic use	Good chemical quality for domestic use
Liquid Waste			
Type of system	Bagged or piped	Pumpout or piped	Bagged or pumpout
Sewage disposal	20 ha sewage lagoon constructed using berms along three sides of a low-lying area Outlet weir discharges through a natural channel to the East Channel below the town	Old shale borrow site, 8 km from the community along the Dempster Highway Sewage eventually drains into Peel Channel downstream from the community Piped sewage is discharged into a 101-ha lake east of community	Lake E situated 115 km west of the community
Solid Waste			
Type of disposal	500 m x 350 m solid waste site Site is covered with clay-based silty soil and coarse sand as required Packer truck is used for added compaction	Buried in a landfill	Modified landfill is located just south of Lake E
Electrical Power			
Installed capacity	12,250 kW	1,800 kW	400 kW
Source	natural gas turbines (4,900 kW) diesel (5,500 kW)	3 generators	3 small generators
Peak load requirement	5,000 kW	752 kW	187 kW
Spare power capacity ¹	7,000 kW	1,000 kW	200 kW
Heating Fuel			
Types of heating fuel	P-50 fuel oil, natural gas (local supply)	P-50 fuel oil	P-50 fuel oil
NOTE: 1 No allowance made for reserve power requirements			
SOURCES: GNWT Municipal and Community Affairs (2002), Northwest Territories Power Commission (2002), Watt (2004, personal communication)			

Table 3-7 describes the existing communications infrastructure in the GSA communities. All have television, radio and newspapers. All the communities have Internet connections accessible to the public and microwave transmission systems.

Table 3-7: Selected Communications Infrastructure in the Gwich'in Communities (2001)

Communication Type	Inuvik	Fort McPherson	Tsiigehtchic
Cellular telephone	Yes	No	No
Internet	Sympatico, 10 public	No private, 2 public	No private, 2 public
Transmission of telecommunications	Microwave	Microwave and LPRT system	Microwave
Radio	CBC, local production centre	CBC, community radio station	CBC
Television	CBC via cable	CBC, cable	CBC
Newspaper coverage	<i>News/North, Inuvik Drum</i>	<i>News/North</i>	<i>News/North</i>
Frequency of mail delivery per week	5 times	4 times	4 times
NOTES: – = data not available LPRT = low-power relay transmitter			
SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT Municipal and Community Affairs (2002)			

3.3.3 Housing and Recreation

Table 3-8 shows that the percentages of households needing major repairs in Fort McPherson and Tsiigehtchic are considerably higher than in the Northwest Territories as a whole. The comparable percentage in Inuvik is just above the Northwest Territories average. The number of people per household is declining in Inuvik and Fort McPherson, but the reverse is true in Tsiigehtchic (Statistics Canada 2003a; Northwest Territories Housing Corporation 2000).

Table 3-8: Housing and Repairs Needed in the Gwich'in Communities (2001)

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
Northwest Territories	12,565	52	32	16
Inuvik	1,015	45	36	18
Fort McPherson	240	54	27	21
Tsiigehtchic	60	50	17	25

NOTES:

- 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)

Homelessness is a concern in Inuvik, where rent money is often spent on substance or gambling addictions (Inuvik Housing Authority personnel 2002, personal communication). Current economic growth conditions in the Mackenzie Delta have created a housing shortage in Inuvik, but not in Fort McPherson or Tsiigehtchic.

According to the executive director of the Inuvik Housing Authority, Inuvik had a severe housing shortage in 2002 because of the economic growth conditions that began about 2000. The vacancy rate was 0%. Because of the increase in demand, and the increase in rent charged for subsidized public housing as the earnings of the housing occupants increased, the rent charged for a two-bedroom housing unit increased from \$200 to \$500 per month within the first few months of 2002. High rents continue to be a source of hardship for those with fixed incomes or those who do not own their own homes.

Recreation facilities in the Gwich'in communities reflect the size of the communities. Inuvik has a seasonal pool, all-year arena and curling rink, outdoor track, mini-golf, school gyms, parks and playgrounds, tennis courts, softball fields, ski trails, beach area, and a library. Additions to the Inuvik Recreation Centre are under construction and include two squash courts, a swimming pool, a

children's water slide, and wading and activity pools. This will increase the activity options for children and adults in this community (Inuvik Region diabetes educator 2002, personal communication). Fort McPherson has a combined arena and hall facility, school gym, seasonal pool, playground and park, softball field and ski trails. Tsiigehtchic, on the other hand, only has a community hall and community centre, playgrounds and a school gym (GNWT RWED 2002e).

3.3.4 Governance

The Gwich'in signed a land claims agreement that defined the boundaries of the GSA and established it as a political entity in 1992. Inuvik, Fort McPherson and Tsiigehtchic are within this area. The GSA is administered by several organizations responsible for specific functions. The Gwich'in Tribal Council is responsible for administering the land claim. Other organizations with key responsibilities are the:

- Gwich'in Renewable Resources Board
- Gwich'in Land and Water Board
- Gwich'in Land Use Planning Board

As noted previously in Section 3.2.4, Governance, the Inuvialuit and Gwich'in are in the process of negotiating an agreement with the Governments of Canada and the Northwest Territories, under which they will share self-government of their combined areas, the BDR. The *Gwich'in and Inuvialuit Self-Government Agreement-in-Principle for the Beaufort Delta Region* was signed on April 16, 2003 by:

- the Gwich'in, as represented by the Gwich'in Tribal council
- the Inuvialuit, as represented by the Inuvialuit Regional Corporation
- the GNWT
- the Government of Canada

See Section 3.2.4, Governance for a more detailed description of the agreement-in-principle.

3.4 Baseline Conditions – Sahtu Settlement Area

3.4.1 Transportation Infrastructure

Table 3-9 shows the transportation infrastructure in the SSA. Norman Wells is the transportation hub for the SSA, with daily scheduled air service to Inuvik and population centres to the south. From this centre, scheduled air services fan out to all the smaller Sahtu communities, including Colville Lake.

Norman Wells has river-based marine resupply, but the only highway connections to the north or south are via the winter road. Thus, truck-based resupply is

possible only during the winter. All of the small Sahtu communities have winter road connections with Norman Wells and thus with southern centres as well, permitting winter resupply.

Riverside locations make summer marine resupply possible for Fort Good Hope and Tulita (GNWT Transportation 1995, 2000, 2001). There is no rail access to any of the Sahtu communities in the study area.

3.4.2 Utilities, Energy and Communications

Table 3-10 shows that water, mostly trucked, and liquid and solid waste disposal services are available in the Sahtu communities. Diesel-fuelled generators provide power. The main heating fuel is P-50 fuel oil. However, central areas of Norman Wells also use locally supplied natural gas.

Table 3-9: Transportation Infrastructure in the Sahtu Communities (2001)

Transportation Mode	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Road					
Road access	Winter road	Winter road	Winter road	Winter road	Winter road
Highway	Winter road	Winter road	Déline Winter Road (off Highway No. 1)	Winter road	Colville Lake Winter Road (off Highway No. 1)
Average opening and closing dates (1997–2000), winter roads	January 11 to March 16	January 6 to March 16	January 28 to March 16	Late January to March 16	–
Rail					
Rail access	None	None	None	None	None
Water					
Marine resupply deliveries per week	8	4	0	4	0
Ownership of facility	2 by GNWT 1 by Imperial Oil	T	N/A	T	N/A
Resupply facility classification	1 private (Imperial Oil facility) 2 Class A	B	N/A	C	N/A
Small boating facilities	Community use facility, beach landing	Beach landing only	Wharf, beach landing, private docks	Public landing, beach landings	Beach landing, community and private docks
Air					
Runway length	1,829 m	914 m	762 m	914 m	823 m
Runway surface	Asphalt	Gravel	Gravel	Gravel	Gravel and sand
Owner	GNWT	GNWT	GNWT	GNWT	GNWT
Critical aircraft (largest aircraft able to use runway)	B737	Twin Otter	Twin Otter	Twin Otter	Twin Otter

Table 3-9: Transportation Infrastructure in the Sahtu Communities (2001) (cont'd)

Transportation Mode	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Weather and communication aids	FSS	CARS	CARS	CARS	AWOS
Navigational aids	DME, NDB	DME, NDB	NDB	NDB	None
<p>NOTES:</p> <ul style="list-style-type: none"> - = data not available N/A = not applicable Water Transportation: <ul style="list-style-type: none"> T = facility owned by federal government P = privately owned Water Facility Resupply Classification: <ul style="list-style-type: none"> 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 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 C = <2,000 t cargo and fuel in and out per year, access for loading and unloading 4 hours/day, access available for heavy equipment, secure marshalling and storage site Air Transportation: <ul style="list-style-type: none"> AWOS = automated weather observation station CARS = community airport radio station DME = distance measuring equipment FSS = flight service station NDB = nondirectional beacon 					
SOURCE: GNWT Transportation (1995, 2000, 2001)					

Table 3-10: Utilities Infrastructure in the Sahtu Communities (2001)

Infrastructure	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Water					
Delivery system	50% piped, 50% trucked	Trucked	Trucked	Trucked	Buckets and blocks of ice
Water source	Mackenzie River	Pumped from the Mackenzie River into a reservoir	Great Bear Lake	Bear River The water intake system in 2002 is now problematic	Colville Lake
Water treatment	Class 2 treatment, plant filtration and chlorination	Wallace and Tierman Model 745 hypo-chlorinator	Two Wallace and Tierman Model 745 hypo-chlorinators	Chlorinated while delivery truck is being filled Some boiling of water in the spring	Water not treated
Water quality	Acceptable chemical quality for domestic use	Good chemical quality	Excellent quality	Satisfactory, except at times in the spring	Good chemical quality
Liquid Waste					
Type of system	50% piped, 50% holding tank and pumpout	Pumpout	Bagged and pumpout	Pumpout	Bagged
Sewage disposal	Sewage is 50% trucked, 50% pumped via a force main to a sewage lagoon Sewage is retained in the sewage lagoon and discharged every two years into a nearby lake Discharge flows eastward in a natural stream for 4.5 km	240 m x 300 m waste management area located on a flat gravel (12-m thick) esker	Sewage lagoon located 1.5 km northwest of community Original lagoon constructed in 1977, secondary cell added in 1987	Sewage is discharged into 5-ha lake-lagoon, 3 km northeast of community Lake has outlet to Mackenzie River upstream from community	-

Table 3-10: Utilities Infrastructure in the Sahtu Communities (2001) (cont'd)

Infrastructure	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Solid Waste					
Type of disposal	Modified landfill site Six-year life on current facility Expansion plan to 2020	Cell disposal method – cells are excavated in soil, and waste is compacted and covered until cell is full	In 1995, a fenced, 40 m x 40 m site was constructed, along with a waste wood area, bulky waste site and honeybag pit	Modified landfill site	No landfill site
Electrical Power					
Installed capacity	3 large Imperial Oil Resources Limited generators 1,600 kW backup	1,230 kW	1,280 kW	1,080 kW	190 kW
Source	Imperial Oil Resources Limited diesel-fuelled generators 2 – 800 kW backup units ¹	3 generators	3 generators	3 generators	3 small generators
Peak load requirement	1,564 kW	593 kW	513 kW	440 to 450 kW	85 kW
Spare power capacity ²		600	700	600	100
Heating Fuel					
Types of heating fuel	Natural gas, P-50	P-50	P-50	P-50	P-50
NOTES: – = data not available 1 Norman Wells' main power supply is purchased from Imperial Oil Resources Limited 2 No allowance made for reserve power requirements					
SOURCES: GNWT Municipal and Community Affairs (2001), GNWT Municipal and Community Affairs personnel (2002, personal communication), Northwest Territories Power Commission (2002)					

Table 3-11 describes the existing communications infrastructure in the SSA communities. Communications facilities vary depending on the size of the community. None of the communities has cellular telephone coverage.

Table 3-11: Selected Communications Infrastructure in the Sahtu Communities (2001)

Communication Type	Norman Wells	Fort Good Hope	Déline	Tulita	Colville Lake
Cellular telephone	No	No	No	No	No
Internet	Sympatico, no public	No private, 2 public	No private, 7 public	No private, 3 public	No
Radio	CBC, Vancouver station, CGMI	CBC, community radio station	CBC	CBC AM and FM service, and one community FM	CBC
Television	CBC, cable	CBC, cable, satellite	CBC, cable	Private satellite	None
Newspaper coverage	<i>News/North, Hub, Edmonton Journal, Edmonton Sun</i>	<i>News/North</i>	<i>News/North</i>	<i>News/North</i>	<i>News/North</i>
Frequency of mail delivery per week	5 times	3 times	3 times	3 times	Courtesy bag from Fort Good Hope
SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT Municipal and Community Affairs (2002)					

3.4.3 Housing and Recreation

In 2004, Norman Wells and Fort Good Hope have had serious housing shortages. The senior administrative officer for Norman Wells reported in April 2004 that the housing situation was quite strained and there were no vacancies in town that they were aware of. The last lot for mobile homes, which are easily imported, had recently been sold (CBC 2004b).

A severe shortage was reported as a major concern in Fort Good Hope in September 2002, when 110 people aged 18 to 26 years were actively looking for housing, according to personnel at the local housing authority. According to the Fort Good Hope economic development officer, many houses, built by inexperienced labour within the last 10 years, were inadequately insulated and had no vapour barrier. This resulted in 48% of the homes needing major repairs and many houses being abandoned as unfit for habitation in 1999 (Fort Good Hope economic development officer 2002, personal communication).

Housing conditions in Tulita were better. The Tulita housing coordinator reported in 2002 that rental housing under her control was generally in good condition, with only minor repairs required for most units. In fall 2002, nine of the 74 housing units were vacant (Tulita housing coordinator 2002, personal communication).

In Table 3-12, GNWT data shows that 20% of housing in the Sahtu communities needed major repairs in 2001. The situations in Colville Lake and Norman Wells were better than in the Northwest Territories as a whole. The community with the highest percentage of housing needing major repairs was Fort Good Hope, at 35%.

Table 3-12: Housing and Repairs Needed in the Sahtu Communities (2001)

Location	Total Houses (No.)	Needs Regular Maintenance¹ (%)	Needs Minor Repairs² (%)	Needs Major Repairs³ (%)
Northwest Territories	12,565	52	32	16
SSA total	735	50	30	20
Norman Wells	270	63	24	11
Fort Good Hope	155	29	35	35
Déline	150	50	33	23
Tulita	130	46	31	23
Colville Lake	30	50	33	0
NOTES: 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 requiring structural repairs to walls, floors or ceilings				
SOURCE: Statistics Canada (2003a)				

The number of people living in SSA households is declining. Conditions in the community had improved because people were having smaller families, and people with large families could be accommodated in the larger units (Tulita housing coordinator 2002, personal communication).

For recreational facilities, most of the Sahtu communities have seasonal pools, ski trails, arenas and many other facilities. The exception is Colville Lake, which has only a park, a playground and a museum (GNWT RWED 2002e).

3.4.4 Governance

The legislation defining and establishing the *Sahtu Dene and Métis Land Claim Settlement Act* came into effect June 23, 1994 (Sahtu Secretariat Inc. 2004). There is no Sahtu Dene band in Norman Wells. Functionally responsible boards administer the SSA, including the:

- Sahtu Renewable Resource Board
- Sahtu Land Use Planning Board
- Sahtu Land and Water Board
- Sahtu Secretariat
- Sahtu Dene Métis Council

Within the Sahtu Dene Métis Council are organizations representing the Métis of Norman Wells, Fort Good Hope and Tulita.

In contrast to the Gwich'in and Inuvialuit joint self-government agreement, two Sahtu communities, Déline and Tulita, are in the process of negotiating separate self-government agreements. On August 23, 2003, the Déline Dene Band (Métis), Déline Land Corporation, Government of Canada and GNWT signed the *Déline Self-Government Agreement-in-Principle*. These negotiations began with signing of the *Self-Government Process and Schedule of Agreement* in October 1998.

In terms of governmental structure, the Déline agreement provides for the following bodies:

- the Ehkw'atide, selected by Déline First Nation Government (DFNG) citizens for a term not to exceed four years, who presides over, and is a voting member of, the Main Council and the Executive Council
- the Main Council, which is the legislative branch of the DFNG and is composed of 8 to 12 members elected for terms not to exceed four years, the Ehkw'atide and the Elders Advisor. The Council is responsible for administration of the DFNG and may appoint an Executive Council.
- the Executive Council, if appointed, will be composed of the Ehkw'atide and up to five members of the Main Council, and will discharge the duties and functions assigned to it by the Main Council
- the Justice Council, composed of three to five members elected for terms not to exceed four years, and will exercise the authorities and responsibilities set out in DFNG law
- the Elders Council, recruitment unspecified, might advise the Main Council, Executive Council and Justice Council, and will appoint one member to the Main Council as a voting member

Substantively, the *Déline Self-Government Agreement-in-Principle* resembles the Inuvialuit and Gwich'in agreement. The sections delineated in detail include the following (GNWT Ministry of Aboriginal Affairs 2003):

- DFNG citizenship
- elections
- education, including:

- kindergarten to Grade 12 – jurisdiction, assessment tools, agreements with other jurisdictions, consultation with the GNWT, information sharing (student enrollment and records), conflict of laws
- early childhood education
- adult education and training
- local services, i.e., needed services of all kinds to be provided to the Community of Déline
- adoption
- child and family services, notably with provision for interim authority and capacity building – Déline Child and Family Services Agency
- community lands
- health, relating to the delivery of health care programs and services
- social housing
- income support
- justice, law enforcement, prosecutions and alternative dispute resolution
- language, culture and spirituality, including traditional Déline Sahtu Dene and Métis healing services
- liquor
- marriage

Tulita has recently begun initiating a self-government process that will take about six to ten years to complete (Kalnay 2003, personal communication).

3.5 Baseline Conditions – Deh Cho Region

3.5.1 Transportation Infrastructure

The Deh Cho communities in the north and west parts of the DCR use Fort Simpson as a transportation hub, whereas those in the south and east use Hay River. Both of these larger communities have scheduled air service, although Hay River has more frequent flights to southern communities, and to the north through Yellowknife. Fort Simpson has scheduled flights to Yellowknife, Hay River and Whitehorse. None of the smaller Deh Cho communities is linked to Fort Simpson or Hay River by scheduled air service. When necessary, these communities depend on periodic air charters. There is no rail access to these communities.

As Table 3-13 shows, most of the communities, i.e., Fort Simpson, Fort Providence, Fort Liard, Wrigley, Jean Marie River, Kakisa and Hay River Reserve, have at least seasonally restricted access to an all-weather highway. Nahanni Butte and Trout Lake are the most isolated, with only rough ice road connections with a highway and no driveable summer connection.

The highway connections of all the Deh Cho communities except Trout Lake facilitate truck-based resupply. Fort Simpson, Fort Liard and Fort Providence have bus service, although the Fort Providence service is seasonally restricted. Hay River is the only community in the DCR with a railroad connection. Barging service is available to both Fort Simpson and Fort Providence, but these communities do not need marine resupply as they receive all their deliveries by truck. Jean Marie River, Wrigley and Fort Liard also have barging service available, as does Nahanni Butte by special charter.

3.5.2 Utilities, Energy and Communications

Table 3-14 provides information on the utilities infrastructure in the DCR. Water, mostly trucked, and liquid and solid waste disposal services are provided in each Deh Cho community. Diesel-fuelled generators supply power. The main heating fuel is P-50 fuel oil, with wood as a supplement in many communities.

Table 3-15 describes the existing communications infrastructure in the DCR communities. Communications infrastructure is present in all DCR communities. Cellular phone coverage is available in only two communities. Radio, television and newspaper coverage are available in all the communities. Internet service is available in all communities except Wrigley and Trout Lake.

Table 3-13: 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	-	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 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

Table 3-13: 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
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
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

Table 3-13: Transportation Infrastructure in the Deh Cho Communities (2001) (cont'd)

<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> <p>Air Transportation:</p> <p>AWOS = automated weather observation station</p> <p>CARS = community airport radio station</p> <p>DME = distance measuring equipment</p> <p>FSS = flight service station</p> <p>GNWT = Government of the Northwest Territories</p> <p>ILS = instrument landing system</p> <p>NDB = nondirectional beacon</p> <p>Data for West Point Reserve 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 3-14: 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 3-14: 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 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	2600700	650	200	200	200	0	DNA ²	200 kW	DNA 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</p> <p>N/A = not available</p> <p>Data for West Point Reserve not available</p> <p>1 No allowance made for reserve power requirements</p> <p>2 Power supplied by Northwest Territories Power Corp. power grid. Spare power capacity cannot be determined</p>									
<p>SOURCES: GNWT Municipal and Community Affairs (2002), GNWT Municipal and Community Affairs personnel (2002, personal communication), Northwest Territories Power Commission (2002), Roy (2004, personal communication), Northland Utilities personnel (2004, personal communication)</p>									

Table 3-15: 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 telephone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cellular telephone	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	News/North, Deh Cho Drum	News/North, Deh Cho Drum, Yellowknife	News/North, Deh Cho Drum	News/North	News/North, Deh Cho Drum	News/North	News/North, Deh Cho Drum, Yellowknife	News/North	Hub, News/North
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 Reserve not available

SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT Municipal and Community Affairs (2002), Global Star Canada (2002), GB Superior Sound (Hay River) personnel (2002, personal communication), Hay River Reserve Band Office personnel (2002, personal communication)

3.5.3 Housing and Recreation

Table 3-16 shows that most of the communities in the DCR had considerably higher percentages of houses needing major repairs than the Northwest Territories as a whole. The community with the highest percentage of houses needing major repairs was Kakisa, with 67%.

Table 3-16: 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 (%)
Northwest Territories	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	–	–	–	–
<p>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</p>				
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).

For recreation facilities, the three large communities of Fort Simpson, Fort Providence and Fort Liard are well equipped. The smaller communities all have community halls, playgrounds and, in several cases, an outdoor rink. Nahanni Butte is located near the resources of Nahanni National Park (GNWT RWED 2002e).

3.5.4 Governance

The Deh Cho First Nation is engaged in the Deh Cho Process with the Government of Canada and the Government of the Northwest Territories, 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).

3.6 Baseline Conditions – Industrial and Commercial Communities in the Northwest Territories

3.6.1 Transportation Infrastructure

Table 3-17 shows the transportation infrastructure for the three ICCs in the Northwest Territories, Yellowknife, Hay River and Enterprise.

Table 3-17: Transportation Infrastructure in Yellowknife, Hay River and Enterprise (2000)

Transportation Mode	Yellowknife	Hay River	Enterprise
Road			
Road access	All-weather road, seasonally restricted	All-year highway access	All-year highway access
Average daily traffic (number of vehicles)	2001 = 5,060 2000 = 4,980	2001 = 2,440 2000 = 2,420	–
Highway	Highway Nos. 1 and 3	Highway Nos. 1 and 2	Highway Nos. 1 and 2
Road surface	Paved, dust-controlled gravel, untreated gravel	Paved	Paved
Average opening and closing dates (1997–2000), ice bridges	January 2 to April 17	N/A	N/A
Rail			
Rail access	None	All-year (with Edmonton)	All-year (with Edmonton)
Water			
Marine resupply available	Yes	Yes	No
Ownership of facility	P	T, P	N/A
Resupply facility classification	A	A	N/A
Small boating facilities	City boat launch, private and government-owned wharfs and floats	Porritt Landing, west channel beach landing and wharf, floating dock	Yes
Air			
Runway length	2,286 m, 1,524 m	1,829 m, 1,220 m	None
Runway surface	Asphalt	Asphalt, asphalt and gravel	N/A
Owner	GNWT	GNWT	N/A
Critical aircraft (largest aircraft able to use runway)	B737	B737	N/A
Weather and communication aids	FSS	FSS	N/A
Navigational aids	ILS, DME, NDB	ILS, DME, NDB	N/A
<p>NOTES:</p> <p>– = data not available</p> <p>N/A = not applicable</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> <p>Air Transportation:</p> <p> DME = distance measuring equipment</p> <p> FSS = flight service station</p> <p> GNWT = Government of the Northwest Territories</p> <p> ILS = instrument landing system</p> <p> NDB = nondirectional beacon</p>			
SOURCE: GNWT Transportation (2000, 2001)			

Hay River, located on the Great Slave Lake near the outflow of the Mackenzie River, at the terminus of the railway from the south, and near the junctions of Highway Nos. 1, 2 and 5, is the barging transportation hub of the Northwest Territories. It services the communities around Great Slave Lake, including Yellowknife, along the Mackenzie River and along the Arctic coast to the east.

The origins of Hay River go back to 1868, but it was only with completion of the Mackenzie Highway from Grimshaw, Alberta to Hay River in 1948 that the community began to develop as a transportation and communications centre. In 1964, Hay River's position as a transportation centre was further strengthened with completion of a Canadian National Railways rail link from Hay River south to Alberta. At present, rail freight service to Enterprise and Hay River from Edmonton is provided by the Mackenzie Northern Railway, a division of Rail Link Canada, owned by Rail America.

Enterprise is located at the junction of the Mackenzie Highway with Highway No. 2 into Hay River, and onward to Fort Resolution (Highway No. 6) and Fort Smith (Highway No. 5). The settlement is a small service centre for highway traffic, and has a rail link for handling freight, and several small production facilities.

Six air carriers offer scheduled passenger and cargo service to Yellowknife. Hay River's airport facility is similarly equipped but has two shorter runways – one asphalt and one gravel. Three air carriers offer scheduled passenger and cargo service to Hay River.

Hay River and Enterprise, located on the Mackenzie Highway, have all-weather roadway connections to Alberta and Fort Simpson. The all-weather Highway No. 3 connection to Yellowknife is seasonally restricted by freezeup and breakup on the Mackenzie River at Fort Providence. Hay River and Enterprise have scheduled trucking and bus services all year. Yellowknife has such services except during periods of seasonal restriction (Northwest Territories Arctic Tourism 2003).

Marine resupply is available to Yellowknife and Hay River but not to Enterprise. Hay River is the main staging and transshipment site for cargo to be shipped by barge. Community marine facilities include wharves, breakwaters, landings, staging and marshalling sites, and other infrastructure required for loading, unloading and protecting resupply vessels. Based in Hay River, NTCL has a fleet of 13 tugs and 70 barges that operate on the Mackenzie River and Beaufort Sea (GNWT Transportation 2000, 2001).

3.6.2 Utilities, Energy and Communications

Water is sourced from the Yellowknife River for Yellowknife and from Great Slave Lake for Hay River. Water in Enterprise is from private wells, or piped from Hay River. Arrangements exist in all three communities for liquid waste and solid waste disposal (see Table 3-18). The Northwest Territories Power

Commission supplies hydroelectric power, with diesel backup. The most common type of heating fuel is P-50 fuel oil, but propane is also used.

Table 3-18: Utilities Infrastructure in Yellowknife, Hay River and Enterprise (2001)

Utility	Yellowknife	Hay River	Enterprise
Water			
Delivery system	Trucked or piped	Piped	Trucked or piped from private wells
Water source	Yellowknife River	Great Slave Lake	Piped from Hay River and private wells
Water treatment	Chemical feed equipment treats water with chlorine and fluoride	Treatment system includes absorption clarifiers, filters, chemical systems, automatic process valves and controls, an air scour system, and an automatic control system	Hay River's treatment system Private wells have none.
Water quality	Good to excellent quality	Good chemical quality for domestic use	Hay River water – good. Private wells – have H ₂ S.
Liquid Waste			
Type of system	Bagged, pumpout or piped	Pumpout or piped	Pumpout
Sewage disposal	Long retention lake-lagoon discharges into Great Slave Lake	Sewage is discharged through forcemains into a 6.5-km drainage ditch, which directs the effluent to a wetlands treatment area and eventually into Great Slave Lake	Trucked to a 12,000-m ³ sewage lagoon
Solid Waste			
Type of disposal	Landfill site with baler system	150 m x 40 m x 4 m municipal landfill site located 8 km southeast of community Site compacted daily when possible	Weekly pickup, trucked to 10-cell modified waste management site, compacted and covered every two weeks, backfilled when full
Electric Power			
Installed capacity	30.3 MW Snare System 26.2 MW diesel	7.1 MW, reserve Max take off from Northland Utilities power grid is 8 MW	Supplied from Hay River
Provided by, source	Northwest Territories Power Commission Snare System hydro plant, with diesel backup	Northland Utilities (NWT) Limited, Taltson Hydro system, with diesel backup	Supplied from Hay River
Peak load requirement	29.1 MW	5.9 MW (in 2003)	N/A
Installed capacity	20 MW (hydro) 7.2 MW (diesel backup)	Supplied by Northwest Territories Power Commission Grid	Included in Hay River capacity
Surplus power capacity ¹	9,000 kW	1,000 kW	– ²
Heating Fuel			
Types of heating fuel	P-50 fuel oil, propane	P-50 fuel oil, propane	–
<p>NOTES:</p> <p>– = data not available N/A = not applicable 1 No allowance made for reserve power requirements 2 Power supplied by Northwest Territories Power Commission power grid. Spare power capacity cannot be determined.</p>			
<p>SOURCES: GNWT Municipal and Community Affairs (2002), Northwest Territories Power Commission (2002), Northland Utilities (2004, personal communication), Rust (2004, personal communication)</p>			

Table 3-19 describes the existing communications infrastructure in Yellowknife, Hay River and Enterprise. Both Yellowknife and Hay River have all of the communication facilities and resources typical of most towns and small cities in Canada.

Table 3-19: Selected Communications Infrastructure in Yellowknife, Hay River and Enterprise (2001)

Communication Type	Yellowknife	Hay River	Enterprise
Cellular telephone	Yes	Yes	No
Radio telephone	VHF	VHF	VHF
Video conference	Yes	–	–
Internet	Yes (also high speed available)	Sympatico and public	Sympatico
Transmission of telecommunications	Microwave transmitters	Microwave transmitters	Microwave transmitters
Radio	CBC regional production centre, CJCD, CKLB, French language radio station	CBC, CJCD, community radio station	CBC, CJCD
Television	CBC via Anik satellite, cable (75 channels)	CBC via Anik satellite, three Cancom channels	CBC via Anik satellite, three Cancom channels
Newspaper coverage	<i>News/North, Yellowknifer, L'Aquilon</i>	<i>News/North, Hay River Hub</i>	<i>News/North, Hay River Hub</i>
Frequency of mail delivery per week	5 times	5 times	5 times
NOTES: – = data not available VHF = very high frequency			
SOURCES: GNWT RWED (1999), Northwestel personnel (2001, personal communication), GNWT Municipal and Community Affairs (2002), GB Superior Sound (Hay River) personnel (2002, personal communication)			

3.6.3 Housing and Recreation

The housing vacancy rate in Yellowknife for much of 2003 was near zero because of the diamond mining industry and other development projects in the Northwest Territories. By March 2004, more housing was available, but rental costs were still steadily increasing (CBC, 2004a). In April 2004, rental units were still available in Hay River.

Table 3-20 shows that the quality of housing in Yellowknife is generally the best in the Northwest Territories. Only 10% of houses needed major repairs in 2001, well below the Northwest Territories average of 16%. The territorial average is heavily influenced by the fact that almost half the houses in the Northwest Territories are in Yellowknife. Compared to the territorial average, housing in

Hay River was less satisfactory, with 21% in need of major repairs. In Enterprise, 40% of the housing needed major repairs.

Table 3-20: Housing by Repairs Needed in the Northwest Territories, Yellowknife, Hay River and Enterprise (2001)

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
Northwest Territories	12,565	52	32	16
Yellowknife	5,795	59	31	10
Hay River	1,240	44	35	21
Enterprise	25	60	0	40
NOTES:				
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)				

Because the vacancy rate in Yellowknife is low and rental costs are high, homelessness is a concern. According to Yellowknife residents interviewed in 2002, much homelessness is the result of substance or gambling addictions, when money needed for rent is spent otherwise. In these situations, an occupant of either privately owned or public housing is evicted and becomes homeless. This is similar to Inuvik.

In both Yellowknife and Hay River, only 4% of community households had six or more members in 2001, compared to 7% in the Northwest Territories as a whole (Northwest Territories Housing Corporation 2000).

Recreation infrastructure varies throughout the Northwest Territories, depending on the size of the community. Larger communities, such as Yellowknife and Hay River, have substantial recreation infrastructure (GNWT RWED 2002e).

3.6.4 Governance

The industrial and commercial communities include a city, Yellowknife, a town, Hay River, and an incorporated settlement, Enterprise. A mayor and eight counsellors, serving for terms of three years, exercise administrative authority in Yellowknife and Hay River. Enterprise has a mayor, a deputy mayor and four counsellors, all serving for two-year terms. Hay River and Enterprise are both in the Deh Cho land claims area, whereas Yellowknife is in the North Slave land claims region. All three are primarily Euro-Canadian communities. There are local Dene bands in Yellowknife and Hay River.

3.7 Baseline Conditions – Dene Tha’ First Nation in Northwestern Alberta

3.7.1 Transportation Infrastructure

All three Dene Tha’ communities, Chateh, Meander River and Bushe River, have convenient highway access, and railway access through High Level. Several flights connect High Level with Edmonton, Calgary, Peace River, Fort St. John and Fort Nelson. There is also air service between Rainbow Lake and Edmonton.

3.7.2 Utilities, Energy and Communications

Utilities in the Dene Tha’ communities are similar to those available to other small communities in northern Alberta. Power is provided in all three communities, and Chateh and Bushe River use natural gas fuel from gas wells owned by the Dene Tha’. In Meander River, propane fuel is piped into homes from several large holding tanks.

Telephone lines, TV, radio and Internet service are available to all of the Dene Tha’ communities.

3.7.3 Housing and Recreation

No statistical data is available on housing conditions in the Dene Tha’ communities. According to DTFN residents interviewed in 2002, much substandard housing and overcrowding exist in all three communities.

The Dene Tha’ communities are less well equipped with recreational facilities than the territorial communities and, in particular, facilities for children and young people are lacking. However, communal recreation facilities in High Level are easily accessible to residents of Bushe River.

3.7.4 Governance

The DTFN comprises seven reserves, of which three, i.e., Chateh, Meander River and Bushe River, are permanently inhabited. The total population of the Dene Tha’ reserves in 2003 was 2,358 (Statistics Canada 2003a). The head office of the DTFN is in Chateh, Alberta. The administrative authority of the DTFN is the Aboriginal Council, composed of the chief and eight council members, all elected for four-year terms according to a community-based election system devised by the Dene Tha’.

3.8 Baseline Conditions – Industrial and Commercial Communities in Northwestern Alberta

3.8.1 Transportation Infrastructure

Table 3-21 shows the transportation infrastructure in High Level, Rainbow Lake and Zama City. High Level serves as the transportation hub for the northwestern Alberta region, and is increasingly important as a stopover for trucks travelling to the Northwest Territories. The importance of this function has been driven by:

- the extensive oil industry activity to the west and north, around Rainbow Lake and Zama City
- its position on the main highway midway between Edmonton and Hay River, which continues on to Yellowknife and Fort Simpson

Table 3-21: Transportation Infrastructure in High Level, Rainbow Lake and Zama City (2003)

Transportation Mode	High Level	Rainbow Lake	Zama City
Road			
Road access	Main access is by Highway No. 35 with alternative access by Highway No. 58 via Highway No. 88, both are all-weather highways	Main access is by Highway No. 58 via Highway No. 35, both are all-weather highways	Main access is by public unpaved, all-weather Zama Road (maintained by MD 23) via Highway No. 35
Average daily traffic (number of vehicles)	1,940	810	110
Highway	Highway Nos. 35 and 58	Highway Nos. 35 and 58	Highway No. 35 and Zama Road
Road surface	Paved	Paved	Paved and unpaved
Rail			
Rail access	Yes	No	No
Water			
Marine resupply	No	No	No
Air			
Runway length	1,524 m x 46 m	1,372 m x 31 m	Hamlet of Zama airstrip – 732 m Zama plant airstrip – 1,311 m
Runway surface	Paved	Paved	Paved (plant) and unpaved (hamlet)

Table 3-21: Transportation Infrastructure in High Level, Rainbow Lake and Zama City (2003)
 (cont'd)

Transportation Mode	High Level	Rainbow Lake	Zama City
Owner	Town of High Level	Town of Rainbow Lake	Maintained by the Municipal District of Mackenzie (hamlet), owned by Apache Corporation (plant)
Critical aircraft	Boeing 737-200	Hercules	Baron 1900, Metro 23
Weather and communication aids	FSS	Provided out of High Level	None
Navigational aids	NDB, VOR, DME	ADF	None
NOTES: – = data not available Air Transportation: ADF = automatic direction finding 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			
SOURCES: Airport managers (2003, personal communication), Town of High Level personnel (2003)			

Rainbow Lake is connected to Highway No. 35 by Highway No. 58 which, although paved and without shoulders, carries much heavy truck traffic and is considered somewhat dangerous by residents in the area. Heavy trucks also frequently use the gravel-paved and un-numbered Zama Road, which connects Zama City with Highway No. 35. Although it is a good, broad highway during freezeup, it is unpleasant to drive in the summer – muddy when it rains and dusty during dry spells (Rainbow Lake and Zama City residents 2004, personal communication).

Table 3-22 lists the distinctive characteristics of the highway traffic near High Level. Figure 3-1 illustrates the geographic relationships. The volume of long-distance tractor-trailer trucking on Highway No. 35 is 14% south of High Level and 20%, north of Meander River. On every road, i.e., Highway Nos. 35 and 58, and the Zama Road, the all-year average daily weight of road traffic is heavier than the summer average daily weight, signifying heavier traffic in winter than summer.

Table 3-22: Summer Daily Traffic on Highways No. 35 and 58 (2002)

Traffic Check-point	Road	Annual Traffic (No.)	Summer Traffic (No.)	Single-unit Trucks (%)	Tractor-trailer Combinations (%)
1	Highway No. 35 south of Highway No. 58	1,781	1,669	7	14
2	Highway No. 35 between High Level and Meander River	1,200	1,100	5	7
3	Highway No. 35 north of Meander River	450	420	8	20
4	Highway No. 58 east of High Level	230	170	7	2
5	Highway No. 58 west of High Level	715	580	11	11
6	Zama Road	750	680	–	–

NOTE:

1 The values for Checkpoint 6 were estimated by subtracting the values of Checkpoint 3 from those of Checkpoint 2

SOURCE: Government of Alberta (2004a)

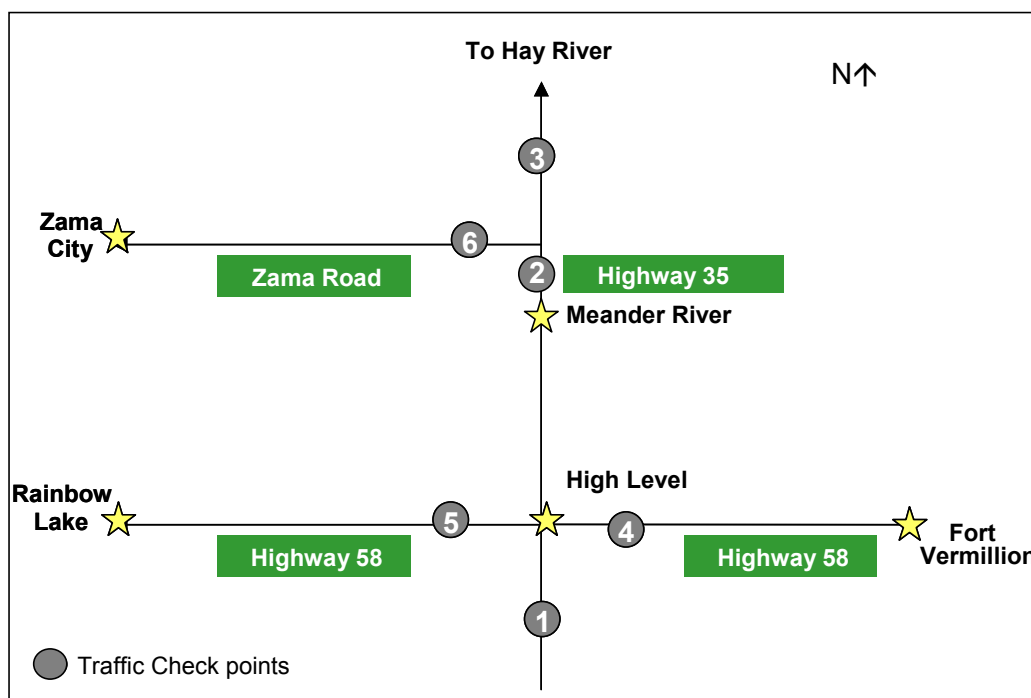


Figure 3-1: Selected Traffic Checkpoints on Highways No. 35 and 58

Several scheduled flights connect High Level with Edmonton, Calgary, Peace River, Fort St. John and Fort Nelson. There is also air service between Rainbow Lake and Edmonton. None of the communities has marine resupply capacity.

3.8.2 Utilities, Energy and Communications

Table 3-23 shows the utilities infrastructure in High Level, Rainbow Lake and Zama City. Water for High Level is sourced from three reservoirs and one storage tank. It is treated using a new \$8 million treatment plant. Rainbow Lake water is sourced from surface run-off. Modern arrangements exist in all three communities for liquid waste, and High Level and Rainbow Lake share solid waste disposal facilities with Municipal District 23. ATCO supplies hydroelectric power.

Table 3-23: Utilities Infrastructure in High Level, Rainbow Lake and Zama City (2004)

Utility	High Level	Rainbow Lake	Zama City
Water			
Delivery system	Piped High Level has three reservoirs and one storage tank	Piped	Piped
Water source	Footner Lake	Surface runoff	Water well south of hamlet
Water treatment	Treatment at a new \$8 million treatment plant by coagulation, filtration and chlorination	Run through a clarifier, chlorinator, and otherwise treated at the town's water treatment plant to generate potable water	Run through a clarifier and chlorinator, and otherwise treated at the hamlet's water treatment plant to generate potable water
Water quality	Run through a clarifier and chlorinator, and otherwise treated at the town's water treatment plant to generate potable water	Good chemical quality for domestic use	Good chemical quality for domestic use
Liquid Waste			
Type of system	Collection through piped system	Collection through piped system	Collection through piped system
Sewage disposal	Sewage treatment provided by four short-term and two long-term lagoons, which are running out of capacity	One long-term and four short-term sewage detention ponds	One lift station and one lagoon
Solid Waste			
Type of disposal	Scheduled pickup system and regional landfill Shared with Rainbow Lake, Municipal District 23 and neighbouring bush camps	Scheduled pickup system and regional landfill Shared with Rainbow Lake, Municipal District 23 and neighbouring bush camps	Scheduled pickup system from transfer station and regional landfill Shared with High Level, MD 23 and neighbouring bush camps
Electric Power			
Installed capacity	Power accessed through power grid	Power accessed through power grid	Power accessed through power grid
Provided by	ATCO	ATCO	ATCO
Peak load requirement	14–15 MW, including industrial loads	2.5 MW, with small remaining capacity	1.5 MW, with medium remaining capacity

Table 3-23: Utilities Infrastructure in High Level, Rainbow Lake and Zama City (2004) (cont'd)

Utility	High Level	Rainbow Lake	Zama City
Surplus power capacity ¹	_ ²	_ ²	_ ²
Types of heating fuel	Natural gas	Natural gas	Natural gas
<p>NOTES: – = data not available 1 No allowance made for reserve power requirements 2 Power supplied by Northwest Territories Power Commission power grid. Spare power capacity cannot be determined.</p>			
<p>SOURCE: Information obtained from service providers or informed users of services (2004)</p>			

Table 3-24 describes the existing communications infrastructure in High Level, Rainbow Lake and Zama City. Despite their somewhat northerly locations, all have the communication facilities and resources typical of most towns and hamlets of comparable size in other parts of Canada.

Table 3-24: Selected Communications Infrastructure in High Level, Rainbow Lake and Zama City (2004)

Communication Type	High Level	Rainbow Lake	Zama City
Cellular telephone	Yes	Yes	Yes, quality varies with location
Radio telephone	–	–	–
Video conference	Yes	Yes	No
Internet	Yes	Yes	Public access at Zama City Library
Transmission of telecommunications	–	–	–
Radio	CBC-AM 740, CISN-FM 103.9 (Edmonton), YL Country (Peace River), and Classic Rock 101 FM (Vancouver)	CBC-AM 740, CISN-FM 103.9 (Edmonton), YL Country (Peace River), and Classic Rock 101 FM (Vancouver).	89.9 FM, rebroadcasting YL Country
Television	Cable	Cable	Satellite (Bell and Star Choice)
Newspaper coverage	<i>High Level Echo, Edmonton Sun, Edmonton Journal</i>	<i>High Level Echo, Edmonton Sun, Edmonton Journal (weekdays)</i>	<i>High Level Echo, Edmonton Sun, Edmonton Journal (weekdays)</i>
Frequency of mail delivery per week	6 times	5 times	Courier 6 days per week brings mail
<p>NOTE: – = data not available</p>			
<p>SOURCE: Information obtained from service providers or informed users of services (2004)</p>			

3.8.3 Housing and Recreation

Table 3-25 shows that the housing in High Level and Rainbow Lake is generally in good condition, with less than 10% needing major repairs. However, in Zama City, one third of the housing needed major repairs in 2001, and a further quarter needed regular maintenance.

Table 3-25: Housing and Repairs Needed in High Level, Rainbow Lake and Zama City (2001)

Location	Total Houses (No.)	Needs Regular Maintenance ¹ (%)	Needs Minor Repairs ² (%)	Needs Major Repairs ³ (%)
High Level	1,165	51	40	9
Rainbow Lake	345	74	20	6
Zama City	170	24	44	32
NOTES: 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 (1991, 2001)				

As elsewhere in the study area, recreation infrastructure varies depending on the size of the community. Larger communities, which cater to substantial transient populations, often have a well-developed recreation infrastructure. This is the case with High Level (Town of High Level 2003), which has:

- an indoor arena with artificial ice
- an indoor swimming pool
- a curling rink with three sheets of artificial ice
- three tennis courts
- six ball diamonds
- three gymnasias

The Town of Rainbow Lake offers many outdoor sports activities, and has an arena, a recreation complex and a school gymnasium. Outdoor activities are the primary recreation resources available in Zama City.

3.8.4 Governance

High Level and Rainbow Lake are both incorporated as towns under the Alberta *Municipal Government Act*. Zama City is a hamlet.

3.9 Synopsis

3.9.1 Transportation Infrastructure

All study area communities have substantial surplus capacity for barge, highway, water and air transport facilities. Present traffic on Highway No. 58 and Zama Road is heavy before and during the winter oil and gas exploration season.

Transportation facilities and services are important in the Northwest Territories because it covers a large geographic area, and has a small population. Except for Yellowknife, Hay River and Inuvik, most settlements are small and widely scattered. In this context, the Northwest Territories is well served by transportation facilities and services.

All the communities, except Tsiigehtchic, Kakisa, Hay River Reserve and Enterprise have airstrips, and all the airstrips are equipped with some form of navigational aid. The remaining communities have some scheduled air service, except for Fort Providence, because of its proximity to Hay River. The territory is dominated by the Mackenzie River, which provides barge or sea-lift access to 17 of the 26 study area communities in the Northwest Territories. Those dependent on barge transport or sea-lift have adequate loading and unloading facilities. Thirteen of the 26 communities have road access via Highway Nos. 1, 2, 3 or 7, except during breakup and freezeup in some cases (GNWT Transportation 1995, 2000, 2001).

Four communities in the study area have rail access, Hay River, Hay River Reserve, Enterprise and High Level. There is substantial excess capacity on this railroad, but the road bed is said to be in poor condition because of heavy rains.

3.9.2 Utilities, Energy and Communications

All the communities have an electric power supply, and some facilities for storing heating fuel and other fuel supplies. All but a few communities have provisions for safe potable water, and sanitary disposal of liquid and solid waste (GNWT Municipal and Community Affairs 2002, Northwest Territories Power Commission 2002).

All the communities have telephone connections, radio and television broadcasts, Internet access, and mail service, although mail to Colville Lake is via a courtesy bag from Fort Good Hope, and mail to Trout Lake and Kakisa comes in a courtesy bag from Fort Simpson (GNWT RWED 1999; Northwestel personnel 2001, personal communication; GNWT Municipal and Community Affairs 2002).

3.9.3 Housing and Recreation

Mackenzie Delta communities have a shortage of housing, possibly because of increased petroleum exploration, and in Yellowknife mainly because of activity in

the diamond and other minerals sector. Throughout most of the study area, the number of people per household has declined.

Housing conditions have been evaluated in terms of the need for regular maintenance, minor repairs and major repairs. The proportion of houses needing major repairs in most study area communities is close to the territorial average of 16%. However, the largely Aboriginal communities of Paulatuk, Fort Good Hope, Wrigley, Trout Lake, Kakisa and Hay River Reserve have much higher percentages. Enterprise and Zama City also had high percentages of housing needing major repairs.

Substantial planning, money and volunteer labour have gone into providing recreation resources for the communities in the study area. As a result, these places have diverse facilities, especially the small communities.

3.9.4 Governance

The Canadian government signed treaties with Aboriginal bands in the prairie provinces during the late 1800s and early 1900s, including Treaty 8 to which some Northwest Territories bands and the Dene Tha' were signatories in 1900. Chiefs, headmen and others signed Treaty 11 in the Northwest Territories in summer 1921 in Fort Providence, Fort Simpson, Wrigley, Tulita, Fort Good Hope, Tsiigehtchic and Fort McPherson (Cloutier 1926).

Since the 1980s, the authority structure of the Northwest Territories has been in transition, with the negotiation of land claims settlements. The process is now complete for the Inuvialuit, Gwich'in and Sahtu, and ongoing for the Deh Cho. Devolution of tax power and nonrenewable resource management from the Government of Canada to local Northwest Territories bodies is now under negotiation. The goal is to achieve devolution of authority, and to confer self-government responsibilities on Aboriginal peoples. The Aboriginal Summit, composed of virtually all the organized Aboriginal groups in the Northwest Territories, except the Deh Cho First Nation, is negotiating on behalf of the Aboriginal people.

The Inuvialuit and the Gwich'in are jointly negotiating with the GNWT to form a regional government for the whole of the BDR. Representatives of the Gwich'in, Inuvialuit, and territorial and Canadian governments signed an Agreement-in-Principle on April 16, 2003.

In contrast to the joint agreement of the Gwich'in and Inuvialuit, two Sahtu communities, Déline and Tulita, are in the process of negotiating separate self-government agreements. The *Déline Self-Government Agreement-in-Principle* was signed on August 23, 2003. Tulita has recently begun initiating its own self-government negotiations.

The Deh Cho Process is expected to result in settlement of Deh Cho land claims and a self-government agreement. Progress to date includes a *Framework Agreement* and an *Interim Measures Agreement*.