JW NO. NFS8558-0024

TOURISM & RECREATION COMPONENT STUDY
TRANS LABRADOR HIGHWAY - PHASE III
(HAPPY VALLEY-GOOSE BAY TO CARTWRIGHT JUNCTION)

JANUARY 2003

PROJECT NO. NFS8558-0024

REPORT TO

DEPARTMENT OF WORK, SERVICES AND TRANSPORTATION
6TH FLOOR, CONFEDERATION BUILDING WEST
P.O. BOX 8700
ST. JOHN'S, NL A1B 4Y6

TOURISM & RECREATION COMPONENT STUDY
TRANS LABRADOR HIGHWAY - PHASE III
(HAPPY VALLEY-GOOSE BAY TO CARTWRIGHT JUNCTION)

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JANUARY 31, 2003

EXECUTIVE SUMMARY

The Department of Works, Services and Transportation (WST) is proposing to construct a two-lane,all-season gravel surface highway from Happy Valley-Goose Bay to Cartwright Junction. This highway section, approximately 250 km in length, would comprise Trans Labrador Highway (TLH) - Phase III and will link the existing TLH highway sections to the east and west.

The Tourism and Recreation Component Study was conducted by JW from November to December, 2002 to provide information on tourism and recreation activities in the general project region. The study focuses primarily on Central and Southern Labrador (Regional Economic Zones 3 (Central Labrador) and 4 (Southeastern Aurora)), as the proposed highway will pass directly through these regions. It also includes consideration of the other regions of Labrador to which the proposed project will indirectly provide improved access (i.e., the Labrador Straits and Western Labrador), as well as the island of Newfoundland and other areas, as applicable.

The study involved reviewing available information on tourism and recreation gathered from published reports, unpublished information from various public and private sector organizations, and interviews with government officials and tourism operators.

The study provides a general overview of Newfoundland and Labrador's tourism industry, providing information on tourism infrastructure and services, historical and recent tourist traffic and trends, and tourism management and promotion in the province. A discussion of tourism and recreation in Central and Southern Labrador includes information on the general socio-economic environment of the study area (e.g., communities, population and economy), and existing tourism operations and activities, including:

- recreational hunting and fishing;
- outfitting operations;
- natural areas and activities;
- cultural attractions and events; and
- the proposed Akamiuapishku/Mealy Mountains National Park.

The study explores a number of key benefits and potential issues for tourism and recreation that may be associated with highway developments, drawing on experience with other similar projects in northern environments. Construction activity can have both direct and indirect effects on tourism and recreation. The effects of highway operation can vary considerably between different aspects of the tourism industry.

KA MAMUSHTAKANT EIMUN

Nete Tshishe Utshimat ka ut pempant ne meshkanau ka tutakant (WST) ntuentakanu tshetshi itamut kie ashkennepuna tshetshi apishtakant meshkanau nete ut Apipani-Kuspe nuash nete Nutapiueunant. Miam 250 km tshipa tatupashkuniau, kie nete tshipa ut tapimu mishte meshkanau (TLH) - Phase III nuash nete Labrador City mak Uapush meshkanat.

Nete ut Manteut ka pepampinit kie nete kakussanut kie kantu-unanut nantusentamupant ntshe JW ishinikatakanut Tekuatshi Pishuma nuash Pishumussa 2002 pupunu kie mashineikanu tutamupant nete meshkananu tshe itamutakanit. Anu ute Kuspe itetshe etanunit kie nete mamit ut Labrador (Regional ka mishat atusseun ka ut pempantshi Zones 3 (Kuspe itetshe) 4 (nete mamit itetshe Aurora ishinikateu), ekute miam tshe pemut ne meshkanau kie nete (Labrador Straits mak Labrador City mak Uapush meshkanat) kie nete Newfoundland kie nete kutaka utenaua tekunikau.

Eku nete ut tshishe utshimat ut pempant ka tutakant mashineikan kie nete e-eimiakanit ntshe pempantat nenu atusseunu ekute ut utnikanipan ne eshi nantussentakant kie ntshe etushkatakau nenu atusseunu.

Mamunekanipan ne eshi nantussentakant mateut ka pepampanit kie kakussanut mak ka ntu-unanut euauitakant kie nete ut ueshket tshitshepant mashinateikanipan kie tshiitapatakanipan kie nete pet shashish mak anutshish tekuak ne atusseun, kie nete ut pempant kie eshi tutakant ut Newfoundland. Nete tshe tutakant ne meshkanau tan tshe ishpant ne atusseun (miam mate: nete uinepekut, etatishinanut kie nete tekuak ka mamishat atusseun), kie anutshish kashikat espant enantussentakantshi nenua:

- ka kussanut kie ka ntu-unanut
- ka kusset akeneshaut
- nete eshinakuak kie etutakant tshekuan
- eshinniut auen kie emetuenanut kamamuitunanut kie
- ne ka ui tutakant Akamiuapishku/Mealy Mountains National Park.

Nete niantussentakant ne tshiitapatakanipan eshi kaniupant ne atusseun kie tshipa ishi kaniupanu nete tutantshi ne meshkanau, kie nete kutaka eshinakuaki atusseuna ka mamishatshi katutanikau nete katak. Miam neta atushkatetshi ne meshkanau, tshika minupanu kie apu tshikut shuka minupant kie apu tshikut ishpish matentakuak ne atusseun manteut kapampanit kie ekussanut kie entu-unanut.

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1.0 INTRODUCTION

As part of the environmental assessment for the TLH - Phase III, Jacques Whitford Environment Limited (JW) on behalf of the Department of Works, Services and Transportation (WST), carried out a study on tourism and recreation in the vicinity of the proposed TLH – Phase III as per the Department of Environment guidelines (Appendix A). This report documents the results of this study.

1.1 General Project Description

WST is proposing to construct a two-lane, all-season, gravel surface highway from Happy Valley-Goose Bay to Cartwright Junction, a distance of approximately 250 km (Figure 1.1). This highway will be the final section of an all-season ground transportation route that links the Labrador Straits and Southern Labrador with Upper Lake Melville and west to Western Labrador and Québec.

The primary features of the TLH - Phase III are the highway and its right-of-way. The highway will be constructed to a Rural Collector Undivided 80 km/hr design standard and have a posted speed limit of 70 km/hr. This standard is similar to that used for existing sections of the TLH. The highway will consist of a 9.5-m wide gravel surface and a right-of-way width of 40 m. The normal clearing width of 30 m will be reduced wherever possible, particularly around waterbodies. Grubbing width will be 20 m rather than the standard 30 m.

Other features of the TLH - Phase III are intersections at the junction with the Phase I portion of the TLH near Happy Valley-Goose Bay and at Cartwright Junction, watercourse crossing structures, borrow pits and major excavations, maintenance depots, signage and roadside pull-off locations. Most borrow pits established for the TLH - Phase III will be temporary. However, some may continue to be used during operation for road maintenance and winter ice control materials. The project will also involve other temporary features during construction, including temporary watercourse diversions, construction camps, laydown areas and waste disposal facilities.

The TLH - Phase III will cross 95 watercourses between Happy Valley-Goose Bay and Cartwright Junction. The majority of the crossings will be made using cylindrical culverts or corrugated steel pipe (CSP) ranging in size from 1,200 to 3,000 mm. Seventeen of the crossings will require pipe arch structures, while six of the watercourses (Churchill River, Traverspine River, Kenamu River, South Branch of the Eagle River, Otter Brook and Paradise River) will require bridges. The Churchill River will also require a partial causeway of 500 m to be built in conjunction with the bridge.

N
W E
S

Grand Lake

Lake Melville

North West River

Sheshatshiu

Happy Valley-Goose Bay

TLH - Phase I

Mud Lake

River

Traverspine River

Kenamu River

Park Lake

Eagle River

Paradise River

Paradise River

Cartwright Junction

TLH - Phase II

Crooks Lake

LEGEND:

TLH - Phase III

TLH - Phase I/II

0 12.5 25

Kilometres

Figure 1.1

Trans Labrador Highway - Phase III (Happy Valley - Goose Bay to Cartwright Junction)

Jacques Whitford Environment Limited

Environmental Scientists Consulting Engineers

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Construction of the TLH - Phase III will begin in 2003 and occur in several phases between 2003 and 2008. Pre-design work for the highway is currently underway and detailed design will be ongoing throughout construction. Procurement/tendering will be completed each year prior to the start of the construction season, which will extend from mid-May to the end of November. Construction will start at both ends of the route (i.e., at Happy Valley-Goose Bay and at Cartwright Junction on the Phase II portion of the TLH) in 2003.

Construction will involve:

- site preparation, including surveying, right-of-way clearing, and grubbing and debris disposal (including disposing of organic soil, slash, grubbed material and wood fibre);
- transporting equipment, construction materials and related supplies to construction sites, including transporting, storing and handling hazardous materials, fuels, lubricants and explosives;
- establishing, operating and removing construction camps and laydown areas;
- blasting operations;
- excavating, including disposing of excess/waste rock, overburden and potential acid-generating rock;
- establishing and operating borrow pits, including identifying sources of borrow material;
- subgrade construction;
- installing watercourse crossing structures, and activities in and around watercourses; and
- site rehabilitation and environmental monitoring.

Construction will comply with all applicable standards and regulations, environmental protection guidelines and regulations, and WST specifications. A series of environmental protection measures will also be implemented in accordance with the potential project effects identified through the environmental assessment process. An EPP will be prepared for each construction phase.

The TLH - Phase III will be a permanent year-round highway requiring seasonal maintenance and periodic repair. It is anticipated that the TLH - Phase III will be operated and maintained in perpetuity. Traffic volume is expected to be light, with most travel occurring between spring and fall. Appropriate signage, including directional and safety signs, and moose crossing signs where necessary, will be posted. Development activities along the highway are controlled under the *Protected Road Zoning Regulations* under the *Urban and Rural Planning Act, 2000.* Waste and littering along the highway are subject to the *Highway Traffic Act* and *Environmental Protection Act*. The highway will be policed to ensure enforcement of speed limits and other regulations, as well as for emergency response.

Maintenance depots will be established for storage of graders, backhoes, loaders, trucks, snow plows and other required equipment. While most borrow pits will be temporary construction features, some will be used during highway operation and maintenance for road repair and winter ice control materials. These

permanent borrow pits will be maintained by WST throughout operations or until they are no longer necessary (i.e., all suitable materials at the site have been used). All borrow pit sites that are no longer required will be rehabilitated.

Regular maintenance programs will be established when the highway is operational year-round. The highway will be inspected regularly to ensure that the surface and subgrade do not deteriorate, and the highway will be graded one to two times per year. Watercourse crossings and drainage structures will be checked regularly to ensure that they are not blocked; any debris will be cleared. Care will also be taken to ensure that erodible areas are stabilized with vegetation (i.e., hydroseeding); these areas will be inspected to ensure effectiveness of revegetation. Highway signage and guide rails will be maintained and repaired as necessary. During the winter, snow will be cleared and sand applied for ice control.

The completed TLH will generate a number of social and economic benefits, including:

- increased and more economical transportation options for area residents travelling within the region or between the region and Québec and the Island of Newfoundland;
- increased and more economical transportation options for people travelling to Labrador;
- reduced dependence on air and marine transportation services;
- increased infrastructure to support economic development opportunities;
- increased access to health, education and recreational facilities in Labrador and on the Island of Newfoundland;
- reduced sense of isolation; and
- reduced cost for personal and business travel.

1.2 Rationale and Objectives

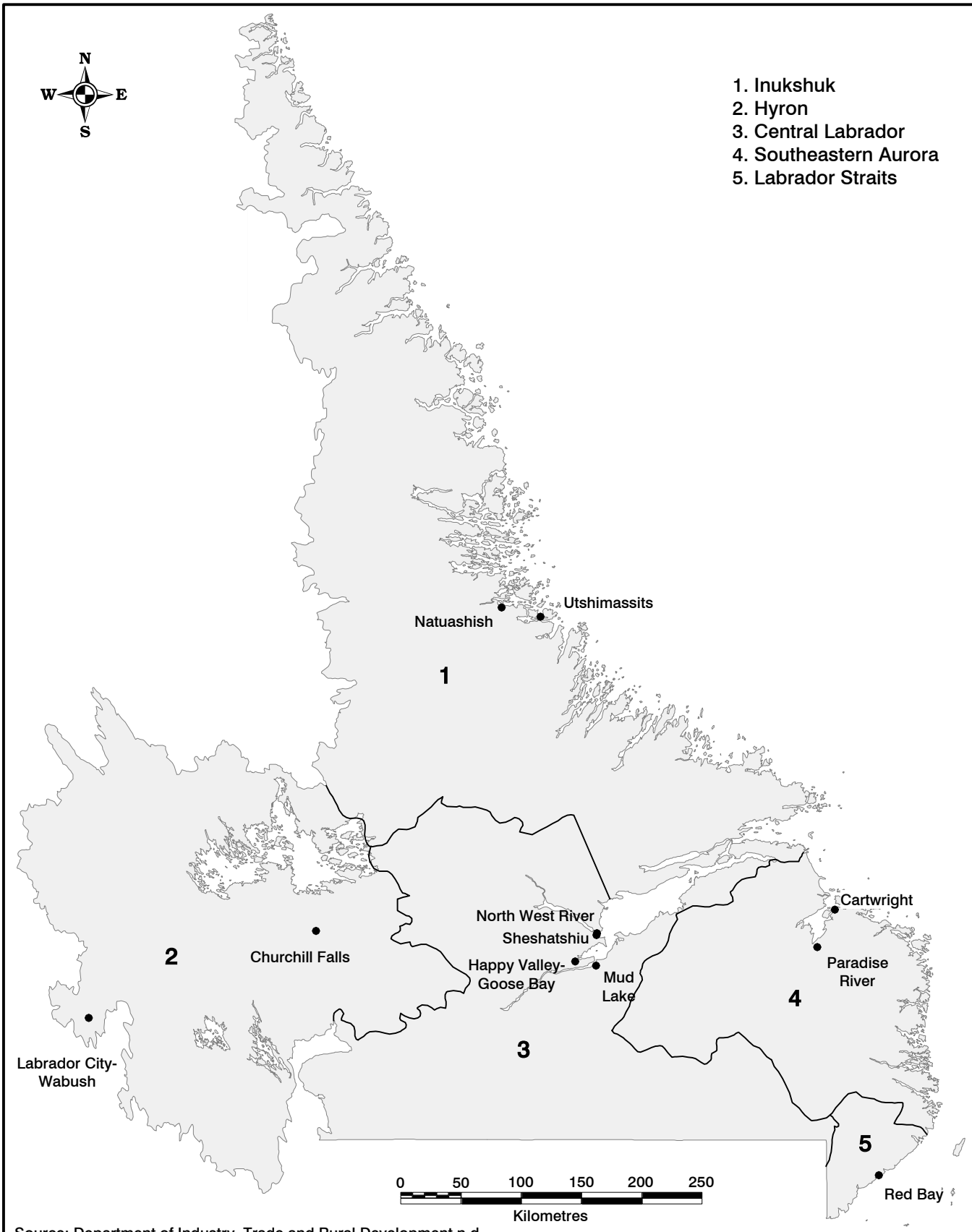
The opening up of a territory is a complex phenomenon extending over time and space. Completing the TLH road network will generate repercussions on the whole of Newfoundland and Labrador, with effects concentrated mainly in Central Labrador and Southeastern Aurora. Opening up results from the creation of new links between the region, different communities and the outside world. It represents the end of relative geographic isolation, with all the benefits and disadvantages that this entails for members of the different communities, individually and collectively. For some, increasing access to the region is considered beneficial and necessary. Freedom of movement even with anticipated changes is viewed as an essential ingredient in assuring healthy development for future generations. For others, the problems associated with the influx of people and of goods and services in a relatively pristine and isolated area come at too high a price.

Whatever the point of view, at every level, social, economic, cultural and psychological effects will mean profound changes to tourism and recreation, both locally and regionally. The tourism industry is an integral part of the economy of Newfoundland and Labrador. Tourism-related expenditures in the province exceed $620 million annually, and directly represent approximately 2 percent of the provincial gross domestic product (Department of Finance 2002). At present, the more popular tourism activities in Labrador include fishing and hunting, nature tourism (e.g., bird, whale and iceberg watching), adventure tourism (e.g., hiking, boating), and cultural and heritage tourism (e.g., visiting historic sites and festivals). All these activities will be substantially affected by the increase in affluence and other activities will surely develop.

In order to predict as accurately as possible upcoming repercussions, the provision a sufficiently detailed description of tourism and recreation in the region, as well as in the more immediate area of influence of the future road link is necessary. This will provide the basis for determining effects, devising appropriate mitigation measures and planning follow-up studies within the core of the EIS.

1.3 Study Area

Data presentation for tourism and recreation focus on Regional Economic Zone 3 (Central Labrador) and Regional Economic Zone 4 (Southeastern Aurora) as the proposed highway will pass directly through these regions (Figure 1.2). It also includes consideration of the other regions of Labrador to which the proposed project will indirectly provide increased access (i.e., the Labrador Straits and Western Labrador), as well as the Island of Newfoundland and other areas, as applicable. These boundaries were determined on the basis of the spatial and temporal extent of the project activities and their zones of influence. They extend beyond the right-of-way to include areas of existing and potential tourism and recreation activity. Temporal project boundaries encompass the Projects construction and operations phases.



Source: Department of Industry, Trade and Rural Development n.d.

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Environmental Scientists
Consulting Engineers

FIGURE 1.2

REGIONAL ECONOMIC ZONES
IN LABRADOR

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2.0 METHODOLOGY

Information gathered for the presentation of data for tourism and recreation include published reports, unpublished information from various public and private sector organizations, and information gathered through interviews with government officials and tourism operators. A review of existing and potential tourism activity and infrastructure was carried out as a basis for environmental effects analysis to be provided in the EIS.

2.1 Existing Information Review

Information reviewed for this study include:

- documents and web-sites containing relevant information and statistical data on tourism and recreation for Newfoundland and Labrador;
- documents and web-sites containing relevant information and statistical data on Newfoundland and Labrador economy;
- the documents and web-sites related to community profiles for central Labrador and Southeastern Aurora.

2.2 Interviews with Key Contacts

JWEL representatives conducted a total of 14 interviews with key contacts in October and November, 2002. They include three officers from the provincial Department of Tourism Culture and Recreation and the federal Department of Fisheries and Oceans, and also 11 owner/operators of outfitting camps/lodges offering fishing, hunting or adventure activities.

2.3 Information Sessions and Communication Activities

An issue scoping process was undertaken to identify the VECs, both biophysical and socio-economic, for the TLH - Phase III environmental assessment and the issues and concerns to be considered in the assessment. The issue scoping process involved:

- reviewing the guidelines issued by the Department of Environment for the assessment;
- consulting with the Innu, including meetings with Innu Nation, a consultation program on route selection, information leaflets, public meeting, presentation to high school students, radio announcements and interviews with elders and others familiar with the area;
- holding public information sessions in Happy Valley-Goose Bay, North West River, Cartwright and Port Hope Simpson between October 7 and 10, 2002;

- consulting with outfitters, municipalities, and economic development and tourism organizations;
- reviewing public submissions received during the public review period for the project registration, including submissions from the Labrador Métis Nation and outfitters;
- reviewing results of field and archival research undertaken in relation to the assessment; and
- reviewing reports and documents related to work undertaken on Phases I and II of the TLH.

Issues and concerns identified regarding the project includes items relating to highway design and construction, highway operation and maintenance, biophysical environment, resource use and users, cultural and historic resources, tourism and recreation, Aboriginal way-of-life, culture and resource use, socio-economic environment, and aspects of environmental assessment and planning.

All outfitting operations in central and southern Labrador were contacted as part of the tourism and recreation component study prepared for the environmental assessment. During these contacts, outfitters were also asked whether they had any issues or concerns related to the proposed TLH - Phase III development. In addition, written correspondence was received from the Newfoundland and Labrador Outfitters Association and various operators during the public review period of the environmental registration for the project. Outfitters contacted and/or from which a written submission was received are:

- Adventure North;
- Goose Bay Outfitters;
- Labrador Angling Adventures (Eagle Lake, Awesome Lake and Lac Mercier);
- Six North;
- Camp 1155 Limited;
- Osprey Lake Lodge;
- Park Lake Lodge Inc.;
- Igloo Lake Lodge Limited;
- Rifflin Hitch Lodge;
- Labrador Sportsfish Limited (Eagle's Nest Lodge);
- Labrador Outdoors Limited;
- Whitey's Lodge;
- Cooper's Minipi; and
- Byrne Lake (private facility).

Issues and concerns identified by outfitters were:

- The need for consultation with and input from outfitters, municipalities and agencies such as Parks Canada and the Department of Tourism, Culture and Recreation regarding the routing options. An environmental assessment must be carried out on the project. As well, a development plan was also suggested for the area, which would include consideration of cottage development areas, fish and wildlife habitat protection, hook and release fishing, controlled access to waterways, and controlled use of off-road vehicles and water craft.
- Concern about the proposed route for the TLH - Phase III, in particular its proximity to the Eagle and other major rivers and whether the selected location was a good one due to the amount of wetland area. Suggested an alternative route further south that would address concerns about the highway. Also, questioned the economics being used to support the argument for the current preferred route.
- There was concern raised about the effect that the highway would have on fish stocks and water resources of the area, directly and indirectly through the improved access offered by the highway. Most concern and comment focused on the Eagle River system.
- Concern about the fish resources of the Eagle River watershed, in particular brook trout and Atlantic salmon, and the watershed's role as a breeding area for waterfowl. Felt a crossing of the Eagle River should be avoided.
- Concern about the proposed Akamiuapishku/Mealy Mountains National Park and how the highway may affect the park. Suggested that the entire watershed be included within the park boundary or the area should be designated as a heritage waters system as a means for protecting the resources.
- Concern about the effects of highway construction and any spills of hazardous substances on the area watersheds, including effects on water quality and fish resources. It was indicated that the watersheds were very productive and that recovery from any negative effect would be slow.
- Concern that the highway will be opening a wilderness frontier (a world class nature area) and the area will be changed forever, and the province will lose a valuable resource. The area should be protected from development.
- Concern about improved access provided by the highway, in particular, the fact that the highway would now create year-round access to the area. Concerned that there will be increased resource harvesting and cabin development, as well as increased overland travel on snowmobile and all-terrain vehicles (ATVs). In particular, felt the headwater areas of all rivers would be subject to an influx of people, including people from the island of Newfoundland. There was concern that the improved access, and subsequent increased use of the area, would lead to resource depletion.
- Concern about the ability of agencies to enforce regulations in the large area. Having policies and regulations on paper is one thing, but these are no good if they are not enforced. Also, felt that there was a need for changes or improvements to the regulatory controls on resource harvesting activity in order to protect the resource.

- Concern that illegal outfitting and resource harvesting activity will increase.
- Concern about increased vandalism problems. Vandalism is already a concern at many camps.
- Concern that there will be littering along the highway and problems with domestic garbage disposal associated with any cabins or camps along the highway. Felt that public education was necessary to address this matter.
- Concern about the social and economic effects of the highway development.
- Concern that the highway will ruin the Labrador fishing industry/outfitting industry. It was felt that the quality of the wilderness experience would be undermined leading to a decline in the tourists visiting the outfitting camps. This would lead to a decline in the value of existing outfitting operations, result in a loss of businesses and jobs for Labrador, and would be an economic loss for Happy Valley-Goose Bay and the province.

3.0 TOURISM AND RECREATION IN NEWFOUNDLAND AND LABRADOR

3.1 General

The Department of Tourism, Culture and Recreation define tourists as individuals who travel over 80 km from their place of residence for any purpose other than commuting to work (Department of Tourism, Culture and Recreation 1994). Tourists are typically segregated according to their origin (i.e., resident or non-resident), and the purpose of their trip (e.g., sightseeing, travel for business). A resident tourist is defined as travelling within Newfoundland and Labrador, while a non-resident tourist travels to the province.

This chapter presents information regarding tourism infrastructure and services in the province before presenting historical trends, visitation number data and tourism management information.

3.2 Tourism Infrastructure and Services

Year-round vehicle and passenger ferry service is provided by Marine Atlantic between North Sydney, Nova Scotia, and Port aux Basques, Newfoundland, with an additional ferry operate between North Sydney and Argentia in eastern Newfoundland from mid-June to mid-September. There is daily ferry service in summer between St. Barbe on Newfoundland's Viking Trail and Blanc Sablon on the Quèbec-Labrador border. Two coastal boats (not accessible to automobiles) based in Cartwright service isolated villages on Labrador's coast. The southern boat services communities between Cartwright and Pinsent Arm, while the northern boat goes as far north as Nain (Department of Tourism, Culture and Recreation n.d.).

Air Canada, Air Canada Tango, and Air Canada Jazz operate regular air service to Newfoundland and Labrador (Air Canada Jazz only, via Halifax), with connections available from all major centres in the United States and Canada. Air Transat offers charter flights from Toronto to Newfoundland and Labrador during the summer months. Air Canada jazz, Provincial Airlines, and Air Labrador provide regular service within Newfoundland and Labrador. Air Labrador also offers service through St. Anthony to many points in Labrador. Provincial Airlines also offers service to the French island of St. Pierre (Department of Tourism, Culture and Recreation n.d.).

The Trans-Canada Highway (Route 1) crosses Newfoundland west to east from Port aux Basques to St. John's, a distance of 905 km. There are numerous secondary highways along the route. Route 500 is a gravel road that crosses Labrador from Happy Valley-Goose Bay in the east to Labrador City/Wabush in the west for a distance of approximately 525 km . Québec is accessed from Labrador West on Route 389 (which is partially paved), which runs 581 km to Baie Comeau on the north shore of the St. Lawrence River (Department of Tourism, Culture and Recreation n.d.).

Québec North Shore & Labrador Railway provides rail service between Sept-Îles, Québec, and Labrador (Department of Tourism, Culture and Recreation n.d.).

The following sections provide greater detail on the air, marine and ground transportation within Labrador.

3.2.1 Air Transportation Infrastructure

There are seven operational airstrips in Southern Labrador administered and maintained by WST. They provide year-round air access to the communities of Cartwright, Black Tickle, Charlottetown, Port Hope Simpson, St. Lewis, Williams Harbour and Mary's Harbour. The airstrip at Paradise River is no longer operational. Airstrips at each location consist of a gravel-surface runway that can accommodate small single or twin-engine aircraft. Scheduled air service is provided between Southern Labrador and Happy Valley-Goose Bay and St. Anthony, Newfoundland. Chartered air services are also available in the area. A number of these airstrips will likely close as a result of the completion of the Trans Labrador Highway (Red Bay to Cartwright), and there are plans to establish a regional airport at Port Hope Simpson.

The Happy Valley-Goose Bay airport located at CFB Goose Bay is used for both civilian and military aircraft. The airport typically handles approximately 85,000 passengers a year, and is served by commercial air carriers, which provide scheduled and cargo flights (direct and indirect) to destinations throughout Labrador and Newfoundland, as well as to Québec. The airport also serves as an operations base for a number of aircraft charter and helicopter companies. In addition, there is a float plane base located at Otter Creek, approximately 7 km from the airport (GBAC n.d.).

In Western Labrador, Wabush Airport lies midway between Labrador City and Wabush. This modern airport complex has scheduled and charter air services which provide flights (direct and indirect) to destinations throughout Labrador and Newfoundland and Québec. A small airport at Churchill Falls is owned by the Government of Newfoundland and Labrador and operated by CF(L)Co. The airstrip there is xx metres long and can accommodate jet aircraft; it has scheduled air service several times per week.

Air access to and from the Labrador Straits is via Lourdes-de-Blanc Sablon Airport at Blanc Sablon, Québec and which accommodates scheduled daily flights from Québec and Labrador and Newfoundland. There is also a privately-owned airstrip at Red Bay.

3.2.2 Marine Transportation Infrastructure

A ferry service between Blanc Sablon, Québec and St. Barbe, Newfoundland links the Labrador Straits with the Island of Newfoundland, and typically operates from May to late December. The crossing time is approximately 105 minutes, but varies depending on weather conditions.

A coastal boat service operated by WST is currently the primary means of delivering supplies and transporting passengers to the Labrador coast during the ice-free season (typically June to November). At present, the Sir Robert Bond transports passengers, freight and automobiles between Lewisporte (Newfoundland), Cartwright and Happy Valley-Goose Bay. The Northern Ranger provides passenger and freight transportation services to numerous ports between St. Anthony, on the Island of Newfoundland, and Nain, on Labrador's North Coast.

As a result of the near completion of the TLH - Phase II (Red Bay to Cartwright), in March 2002, the Government of Newfoundland and Labrador announced a reconfiguration of the existing Labrador coastal marine service. The existing marine terminal at Lewisporte will close in 2003, with Cartwright becoming the southernmost marine terminal on the shipping route. Beginning in the 2003-2004 season, Labrador communities will be served by three vessels. One will carry passengers, cargo and vehicles between Cartwright, Rigolet and Happy Valley-Goose Bay (approximately a two-day round trip). A second will carry passengers and freight between Cartwright, Rigolet, Happy Valley-Goose Bay, and all ports to Nain and return on a weekly basis. A third, smaller vessel will serve the communities south of Cartwright not connected by the highway. It will carry passengers and vehicles between Charlottetown, Williams Harbour, Pinsent's Arm, Norman Bay, Black Tickle and Cartwright.

3.2.3 Ground Transportation Infrastructure

Until very recently, there was no road access to and within Southern Labrador. In 1999, construction began on the TLH - Phase II (Red Bay to Cartwright), a 325-km long, two-lane, all-season, gravel surface highway. Completed in late 2002, the highway provides a direct link to six communities (Red Bay, Lodge Bay, Mary's Harbour, Port Hope Simpson, Paradise River and Cartwright), with access roads connecting the communities of Charlottetown and St. Lewis to the main highway. This highway extends the highway network in coastal Labrador, linking these communities with those further south (the Labrador Straits) and along the Québec North Shore, as well as with the Island of Newfoundland via the ferry link between Blanc Sablon, Québec and St. Barbe, Newfoundland.

Phase I of the TLH (Route 500) provides year-round highway access between Central Labrador and Western Labrador. This high- standard, all-weather, gravel-surface road extends from Happy Valley-Goose Bay to Churchill Falls (approximately 290 km), and from there to Wabush (approximately 240 km) and on to the North American highway network via Baie Comeau, Québec.

Within Central Labrador, the communities of Happy Valley-Goose Bay, Northwest River and Sheshatshiu are connected by a paved highway (Route 520). Mud Lake is accessed via a small gravel road that extends from Happy Valley-Goose Bay to the Churchill River, and from there by boat in the summer and fall and by snowmobile in the winter and spring.

Western Labrador is accessible year-round by road and by rail. An all-season 600-km highway to Baie Comeau, Québec, connects Labrador City and Wabush with the national highway system. As described above, the TLH connects Labrador City and Wabush to Happy Valley-Goose Bay via Churchill Falls. A spur line of the Québec North Shore and Labrador Railway connects Wabush and Labrador City to the port of Sept-Îles, Québec. This rail service is maintained by the Iron Ore Company of Canada, and is used primarily to transport iron ore concentrate. Regular passenger and freight services are also provided year-round.

Communities in the Labrador Straits are connected by an 80-km paved highway which extends between Red Bay, Labrador and Blanc Sablon, Québec, connecting with the Québec North Shore highway to Vieux-Forte, Québec.

3.2.4 Main Services

With growth of the visitors, the tourism industry in the province enhanced its service quality initiative and product diversity. The number of higher quality accommodation rose quickly in the province between 1993 and 1999 (Table 3.1).

Table 3.1 Number of Accommodations According to Rating System in Newfoundland and Labrador in 1993 and 1999

Star Grade	1993	1999
0	8	4
1.0	25	0
1.5	111	20
2.0	148	73
2.5	46	294
3.0	9	56
3.5	0	42
4.0	2	26
4.5	0	4
Total	349	519
Accommodations Rating Council Source: Department of Finance 2002.		

Tourist accommodations are available in several Southern Labrador communities, including hotels/motels at Mary's Harbour, Battle Harbour, Port Hope Simpson and Cartwright. Bed and breakfasts and cabins/ efficiency units are available in these and other communities in the region. Many of these establishments operate on a year-round basis (Department of Tourism, Culture and Recreation 2002a). There are also one or more food establishments and service stations in each of the larger communities in the region (JW 1998).

Happy Valley-Goose Bay offers a range of accommodations, including several hotels, bed and breakfasts, and cottages, as well as numerous restaurants. There is also a bed and breakfast in Northwest River (Central Labrador Economic Development Board n.d.).

The Labrador craft industry was valued at approximately $2.5 million in 1999 (AMEC 2000). There are craft shops throughout Southern Labrador, including one or more shops in William's Harbour, Mary's Harbour, Battle Harbour, Lodge Bay, St. Lewis, Port Hope Simpson, and Cartwright. These shops typically feature handicrafts and artwork created by local individuals and organizations. In Central Labrador, local arts and crafts are available in various shops and galleries in Happy Valley-Goose Bay, as well as from retail establishments or local artists in Northwest River and Sheshatshiu.

There are hotels, cabins, bed and breakfasts and restaurants throughout the Labrador Straits (Labrador Straits Development Corporation n.d.; Labrador Straits Network n.d.). In Western Labrador, there are accommodations and food establishments available in each community. There are also craft and gift shops in each of these regions.

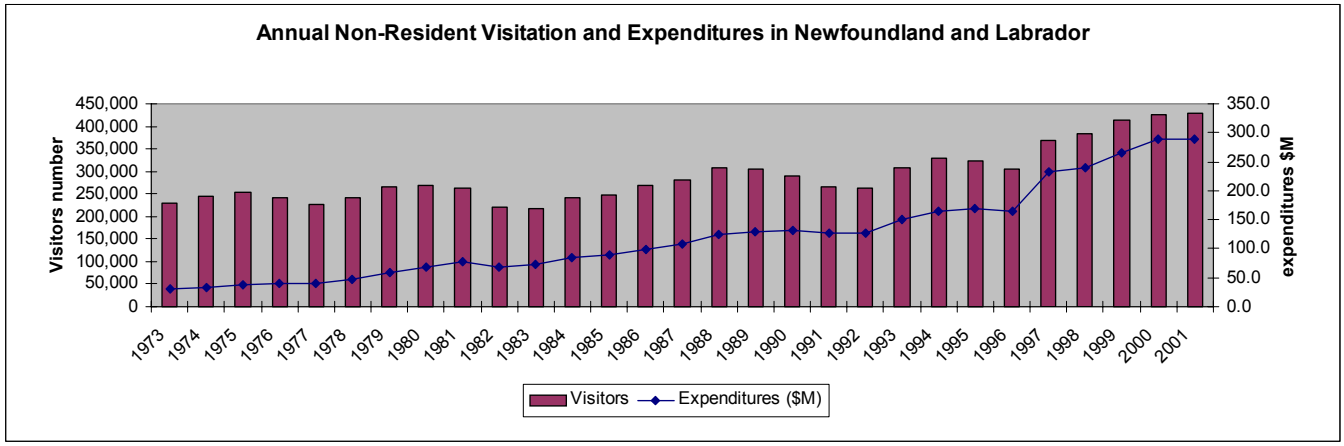
3.3 Historical Trends

In 1973, the total number of visitors in Newfoundland and Labrador reached close to 229,000 with expenditures of approximately $30 million. Fifteen years later, the number of visitors was approximately 309,000, with expenditures of $125.2 million (1988). In 1996, according to Statistics Canada (1998), tourism generated $206 million in direct Gross Domestic Product in the province. This represents approximately 2.3 percent of the total GDP. Tourism's share of total employment and labor income was 3.9 percent and 2.7 percent respectively.

Non-resident visitation to the province has therefore been increasing steadily in recent years. In 2001, approximately 427,700 visitors were registered (separately 141,675 visitors by automobile, 266, 276 by airline and 19,755 by cruise ship). During that year, non-resident expenditures in Newfoundland and Labrador ($289.1 million) comprised approximately 47 percent of tourism-related spending in the province, with resident travel accounting for the remaining 53 percent (Department of Tourism, Culture and Recreation 2002a; 2002b).

The total numbers of visitors and combined expenses for three modes of transportation (automobile, air, cruise ships) between 1973 and 2001 are presented in Figure 3.1. It shows a general tendency for increase during the last 30 years. The information on which is based Figure 3.1 is presented in Table 3.2.

Figure 3.1 Annual Non-Resident Visitation and Expenditures in Newfoundland and Labrador



Source: Newfoundland Statistics Agency 2002.

Table 3.2 Annual Non-Resident Visitation and Expenditures in Newfoundland and Labrador: 1973 to 2001 according to Transportation Mode

Year	Automobile		Airline		Cruise		Total	
	Visitors	Expenditures ($M)	Visitors	Expenditures ($M)	Visitors	Expenditures ($M)	Visitors	Expenditures ($M)
1973	94,882	10.9	133,575	19.1			228,457	30.0
1974	99,073	10.9	146,130	23.1			245,203	64.0
1975	107,494	12.9	145,677	25.7			253,171	38.6
1976	99,270	12.9	142,746	27.2			242,016	40.1
1977	89,876	12.4	137,267	28.2			227,143	40.6
1978	100,500	16.1	139,800	30.1			240,300	46.2
1979	104,200	19.0	160,600	39.4			264,800	58.4
1980	102,080	21.1	166,776	46.7			268,856	67.8
1981	102,959	24.6	160,142	51.8			263,101	76.4
1982	89,557	23.3	132,378	44.9			221,935	68.2
1983	93,989	29.4	122,192	43.8			216,181	73.2
1984	88,947	29.2	153,186	56.3			242,133	85.5
1985	90,563	27.8	158,354	61.1			248,917	88.9
1986	96,838	29.6	171,626	69.5			268,464	99.1
1987	101,388	32.2	180,923	76.4			282,311	108.6
1988	108,042	39.3	200,941	86.0			308,983	125.3
1989	117,100	45.1	187,624	84.9			304,724	130.0
1990	114,334	45.1	175,910	85.3			290,244	130.4
1991	111,267	46.7	154,741	79.9			266,008	126.6
1992	110,778	46.8	153,432	79.8			264,210	126.6
1993	114,682	45.5	192,752	105.0			307,434	150.5
1994	114,629	46.2	214,800	119.0			329,429	165.2
1995	118,133	48.5	204,364	119.0			322,497	168.4
1996	109,626	46.3	195,436	118.2			305,062	164.5
1997	122,425	56.2	247,265	175.5			369,690	231.7
1998	127,960	60.3	244,253	177.8	10,344	0.8	382,557	238.9
1999	140,864	68.0	256,600	195.4	15,511	1.3	412,975	264.7
2000	149,975	75.3	266,480	212.1	9,792	0.9	426,247	288.3
2001	141,675	72.2	266,276	215.1	19,755	1.8	427,706	289.1
Source: Department of Tourism, Culture and Recreation 2002b.								

According to the Department of Finance (Department of Finance 2001), non-resident visitation growth was relatively low in 2000 and this could be linked to high fuel costs and the effect of the September 11, 2001 terrorist attacks and its aftermath effect on the airline industry.

3.4 Recent Tourist Traffic and Trends

Most of the information in this section was taken from "2000/2001 Travel/Tourism Indicators for Newfoundland & Labrador" (Department of Tourism, Culture and Recreation 2002a).

3.4.1 Visitation Numbers

As previously mentioned, non-resident visitation to the province increased steadily in recent years. Visitor numbers are provided according to transportation mode described in the following sections.

3.4.1.1 Visitors by Automobile/Bus

Data provided by both Marine Atlantic and Agriculture Canada indicate that non-resident Automobile Visitors to the province reached close to 142, 000 between January and December 2001. This is a decrease of 5.5 percent over 2000 levels. During the same period, over 97,000 Newfoundland and Labrador residents exited the province by automobile. This represents a decrease of 7.1 percent over 2000 levels. (Department of Tourism, Culture and Recreation 2002b).

Data provided by Marine Atlantic indicate that 236 buses exited the province between May and October 2001. This is a decrease of 40 buses or 15 percent lower than 2000 levels. (Department of Tourism, Culture and Recreation, 2002b).

3.4.1.2 Visitors by Airline (including Direct International Arrivals)

According to local airline data (Canada 3000, Air Transat, Royal Airlines, Air Canada, Air Nova, Canadian, CanJet and Canadian Regional) between January and December 2001, close to 1.1 million (1,091,366) passengers boarded or deplaned at the Province's major airports. Customs and Excise data indicate direct international arrivals of over 15, 000 (15,392). These passenger numbers represent a decrease of 1.3 percent and 0.1 percent lower than the volume recorded during the same time period in 2000. The level of activity at the province's airports was substantially affected by the reaction of travelers to the terrorist attack on the World Trade Center in New York. Prior to this event, non-resident arrivals had increased 13 percent and 15 percent during the first eight months of the year. (Department of Tourism, Culture and Recreation 2002a).

3.4.1.3 Visitors from Cruise Ships and Ferries

Data provided by the Cruise Ship Authority of Newfoundland and Labrador indicate that 17 cruise ships visited 69 ports of call around the province during the 2001 season compared to 14 ships that stopped at 66 ports of call in 2000 (Table 3.3). Cruise ships accounted for approximately 24,400 passengers and 13,700 cruise season. The number of ports of call during the 2001 cruise season maintained the experienced growth in this industry over the past number of years (Department of Tourism, Culture and Recreation 2002a).

Table 3.3 Cruise Ship Statistics for Newfoundland & Labrador

Port	2000			2001		
	No of Port Calls	Crew Visits (Approx.)	Passenger Visits	No of Port Calls	Crew Visits (Approx.)	Passenger Visits
St. John's	17	3,919	7,637	17	5,723	10,362
Corner Brook	3	1,074	1,817	9	4,538	8,504
St. Anthony	4	269	418	5	362	692
L'Anse Aux Meadows	4	611	880	8	1,027	1,754
Trinity				2	96	150
Bonne Bay- Gros Morne	6	351	592	4	293	424
Rey Bay	5	223	446	2	168	240
Rigolet	3	155	188	4	234	367
Cape Harrison	1	84	100			
Hebron	3	197	281	2	197	274
Nain	1	84	100	1	84	120
Port Au Choix	2	38	128			
Terra Nova	3	185	318			
St. Barbe	2	38	128			
Goose Bay	1	63	110			
Hopedale	1	63	104			
North West River	1	443	665			
Ramea	2	124	210	2	168	240
Francois	4	248	422	2	168	240
Battle Harbour	3	187	316	4	192	318
Fogo Island				1	12	30
Cartwright				1	12	48
St. Briges-Cap St. Mary's				1	113	154
Facheux Bay				1	84	120

Port	2000			2001		
	No of Port Calls	Crew Visits (Approx.)	Passenger Visits	No of Port Calls	Crew Visits (Approx.)	Passenger Visits
Nachuak Fjord				1	84	120
Remah Bay				1	84	120
Saglek Fjord				1	84	120
Total	66	8,356	14,860	69	13,723	24,397
Source: Department of Tourism, Culture and Recreation 2002a.						

Data provided by Customs and Excise for International Arrivals (Fortune Ferry Terminal) indicate 10,874 arrivals at Fortune between May and October 2001. This represents an increase of 1.5 percent over the same time period of 2000 (Department of Tourism, Culture and Recreation 2002b).

3.4.2 Tourism Trends by Type of Activity

Some of the more popular tourism activities in Labrador at present include fishing and hunting, nature tourism (e.g., bird, whale and iceberg watching), adventure tourism (e.g., hiking, boating), and cultural and heritage tourism (e.g., visiting historic sites and festivals). Some of these activities and associated visitor numbers were as follows (Department of Tourism, Culture and Recreation 2002a):

- data available at the Department of Tourism show that 44,698 travelers and 430 groups visited the province's system of historic sites between mid June and September 2001. This volume of travelers/visitors represents a decrease of 1.3 percent over the same time period of last year, while the number of groups decreased by 12 percent compared to the number visiting in 2000;
- according to Marble Mountain, skier visits reached a little over 62,500 during the 2000/2001 ski season. This represents an increase of 16 percent over the 1999/2000 ski season;
- close to 119,500 travelers visited the province's seven chalets between mid-May and mid-October 2001. This represents an increase of 0.1 percent over the same time period of 2000;
- Over 43,100 camping units were registered at the system of parks up to September 3, 2001. This represents an increase of 3.3 percent over the same time period of 2000; and
- Data provided by the Labrador West Tourism Association indicate that 3,025 visitors signed the guest book at the visitor information center in Wabush between June and September, 2001. This represents an increase of 17 percent over the level reported in 2000.

Other recreational activities that are available in the region include: scouting, swimming, biking, soccer playing, softball playing, hockey playing, gymnastics, skating, broomball, darts, dog sledding, ice fishing, angling, nordic skiing, snowmobile trekking, etc.

3.4.3 Tourist Origins

Non-resident Automobile Visitors by origin for the province for 2000 and 2001(Department of Tourism, Culture and Recreation 2002b). There was a general decrease in 2001 for all origins compared to the previous year are presented in Table 3.4. Travelers from the Maritimes decreased 7 percent during the specified time period while travelers from Ontario and Québec decreased 6 percent and 3 percent, respectively.

Table 3.4 Non-Resident Automobile Visitors by Origin (January to December)

Origin	2000	2001	% Change
Maritimes	68,013	63,446	-7
Ontario	44,527	42,097	-6
Québec	7,013	6,823	-3
Western Canada	9,353	87,211	-7
United States	211,081	20,586	-2
Province	149,975	141,675	-6
Source: Department of Tourism, Culture and Recreation 2002b			

Direct international arrivals for 2000 and 2001 at St. John's International Airport and at Fortune Ferry Terminal (Department of Tourism, Culture and Recreation 2002b) are presented in Table 3.5. Data show little change in air passenger arrivals but a slight increase in marine passenger arrivals.

Table 3.5 Direct International Arrivals by Origin

	Passenger arrivals at St. John's Airport (from January to December 1)			Passenger arrivals at Fortune Ferry Terminal (from May to October 2)		
Origin	**2000**	**2001**	**% Change**	**2000**	**2001**	**% Change**
Returning Residents	9,356	12,032	28,6	3,931	3,007	-23,5
Other Canadians	937	984	5,0	2,918	3,702	26,9
Great Britain	4,836	4,612	-4,6			
Germany	207	278	34,3			
France	756	783	3,6			
Saint-Pierre & Miquelon	4,627	4,608	-0,4	2,829	3,347	18,3
United States	471	341	-27,6	630	597	-5,2
Japan	5	1	-80,0			
Other Countries	3,562	3,785	6,3	409	221	-46,0
Overall (non-residents)	15,401	15,392	-0,1	10,717	10,874	1,5

Source: Customs and Excise, Revenue Canada (St. John's Office).
Source: Customs and Excise, Revenue Canada (Fortune Office).

3.5 Tourism Management and Promotion

The development and regulation of tourism and recreation falls within the jurisdiction of a number of organizations. Tourism and recreation in the province is within the mandate of the Newfoundland and Labrador Department of Tourism, Culture and Recreation. Other government departments and agencies also have direct or indirect responsibilities for managing aspects of tourism and recreation (e.g., the federal Departments of Canadian Heritage and Fisheries and Oceans; the provincial Departments of Forest Resources and Agrifoods and Industry, Trade and Rural Development). A summary of their respective responsibilities is provided in Table 3.6.

Table 3.6 Summary of Tourism and Recreation Responsibilities of Select Government Departments and Agencies

Department	Responsibility
Provincial	
Tourism, Culture and Recreation	• tourism • culture and heritage • contemporary arts • natural heritage (parks, wilderness reserves and ecological reserves)
Forest Resources and Agrifoods	• enforcement • conservation of resources • protection • forest management
Industry, Trade and Rural Development	• small business development • regional economic development • strategic industries development • business attraction - investment prospecting • renewal strategy for jobs and growth
Federal	
Canadian Heritage	• multiculturalism and Aboriginal peoples • heritage policy (including parks policy and liaison) • conservation
Parks Canada	• protect and present nationally significant examples of Canada's natural and cultural heritage • foster public understanding, appreciation and enjoyment • ensure ecological and commemorative integrity for present and future generations
Fisheries and Oceans	• conservation and sustainable resource use • environmental protection
Source: Department of Tourism, Culture and Recreation n.d.; Department of Forest Resources and Agrifoods n.d.; Department of Industry, Trade and Rural Development n.d.; Canadian Heritage n.d.; Department of Fisheries and Oceans n.d.; Parks Canada n.d.	

Regional economic development boards and economic development associations are also involved in the development and promotion of tourism and recreation, as are a number of local and provincial tourism-related associations and societies. In addition, various private-sector organizations and individuals offer tourism and recreational activities as well as services and infrastructure.

4.0 CENTRAL LABRADOR AND SOUTHEASTERN AURORA

This chapter presents information on the immediate area of influence of the project: Central Labrador and Southern Aurora.

4.1 Economic Development Zones

4.1.1 Central Labrador - Regional Economic Zone 3

Regional Economic Zone 3 covers approximately 68,000 km^2 and encompasses four main communities, with a total population of 10,240 (Statistics Canada 1998). The surface area of Regional Economic Zone 3 represents approximately 17 percent of the total provincial landmass but is home to only 2 percent of the population. Economic activity is based primarily on military and government administration, with some resources harvesting. A relatively small manufacturing sector started to develop in Central Labrador in the last 10 years, along with a few small agricultural initiatives. Major development projects such as the Voisey's Bay Nickel project, additional hydro projects in the lower Churchill River and the completion of the present project (TLH - Phase III) will combine to generate important economic activity in the region.

The four main communities in Economic Zone 3 are Happy Valley-Goose Bay, Mud Lake, and Northwest River, and the Innu/Inuit/Métis community of Sheshatshiu. Information on tourism and recreation for each of the four communities in Economic Zone 3 is provided in Appendix B.

In the 1996 census, the population of Happy Valley-Goose Bay was listed as 8,655 (Statistics Canada 1998). The majority of retail and services businesses in this community support the operation of the Military Air Base. To supplement their diets, many families in Happy Valley-Goose Bay depend also on the harvesting of local resources such as the caribou, small game and fish.

Mud Lake is isolated part of the year from other communities in Central Labrador zone. It is accessible by boat on the Churchill River in the summer and fall and by snowmobile in the winter and spring. Tourism services in Northwest River include a restaurant, convenience stores, arts and crafts businesses, a bed and breakfast and the Labrador Heritage Museum, etc. Northwest River is the home of one of the best known summer festivals in the province; the Northwest River Beach Festival.

The community of Sheshatshiu is the traditional trade centre for furs of the Innu people. Many of the indigenous people from this community still travel deep into the Labrador wildness to live off the land and harvest resources for many months each year.

4.1.2 Southeastern Aurora - Regional Economic Zone 4

Regional Economic Zone 4 encompasses 11 communities from Paradise River to Lodge Bay. Information on tourism and recreation for each of the four communities in Economic Zone 3 is provided in Appendix B. All are located along the coast of Labrador. The total population is approximately 2,900, primarily of Métis descent. The communities represent 0.5 percent of provincial population. Economy and employment in southeastern Aurora is largely dependent upon the fish/crab processing plant and fish harvesting and also on government, education, health services. Transportation facilities that are present include a ferry service operating out of Lewisporte and St. Anthony that connects southcoast communities to Happy Valley-Goose Bay and to the north. Construction started on the TLH - Phase II in the Spring of 1999, which includes Cartwright and Paradise River in the connection to Red Bay. Completion of the road network is scheduled for 2003. Other transpiration facilities, such as winter trails for snowmobiles, are used for tourism and recreation activities. Tourism, manufacturing and service industries are underdeveloped due to a small and scattered population base and deficient transportation linkages causing poor market access. In the future, forestry and mineral exploration may play an important role of the southeast coast of Labrador, along with the completion of the TLH.

Between 1996-1997 and 1997-1998, there were eight tourism projects in Zone 3 and five in Zone 4. Zones received $389,668 and $ 798,666 of assistance from Atlantic Canada Opportunities Agency (ACOA n.d.), the provincial Department of Development, Rural Renewal (DDRR) and from Community Business Development Centers (CBDC). The Tourism Commercial Lending per Capita is approximately $37.5 for Zone 3 and $277.7 for Zone 4.

4.2 Tourism Operation and Activities

4.2.1 Sport and Recreational Fishing and Hunting

Sports fishing and hunting have traditionally been the primary contributors to Labrador's tourism industry (Department of Development and Rural Renewal1996). Angling is a popular activity throughout Labrador. There are 28 scheduled salmon rivers in Labrador (DFO, 2002), 16 of which are located in Southern and Central Labrador south of Hamilton Inlet (Figure 4.1; Table 4.1). Nine of these rivers (numbers 178 to 186) were only recently scheduled.

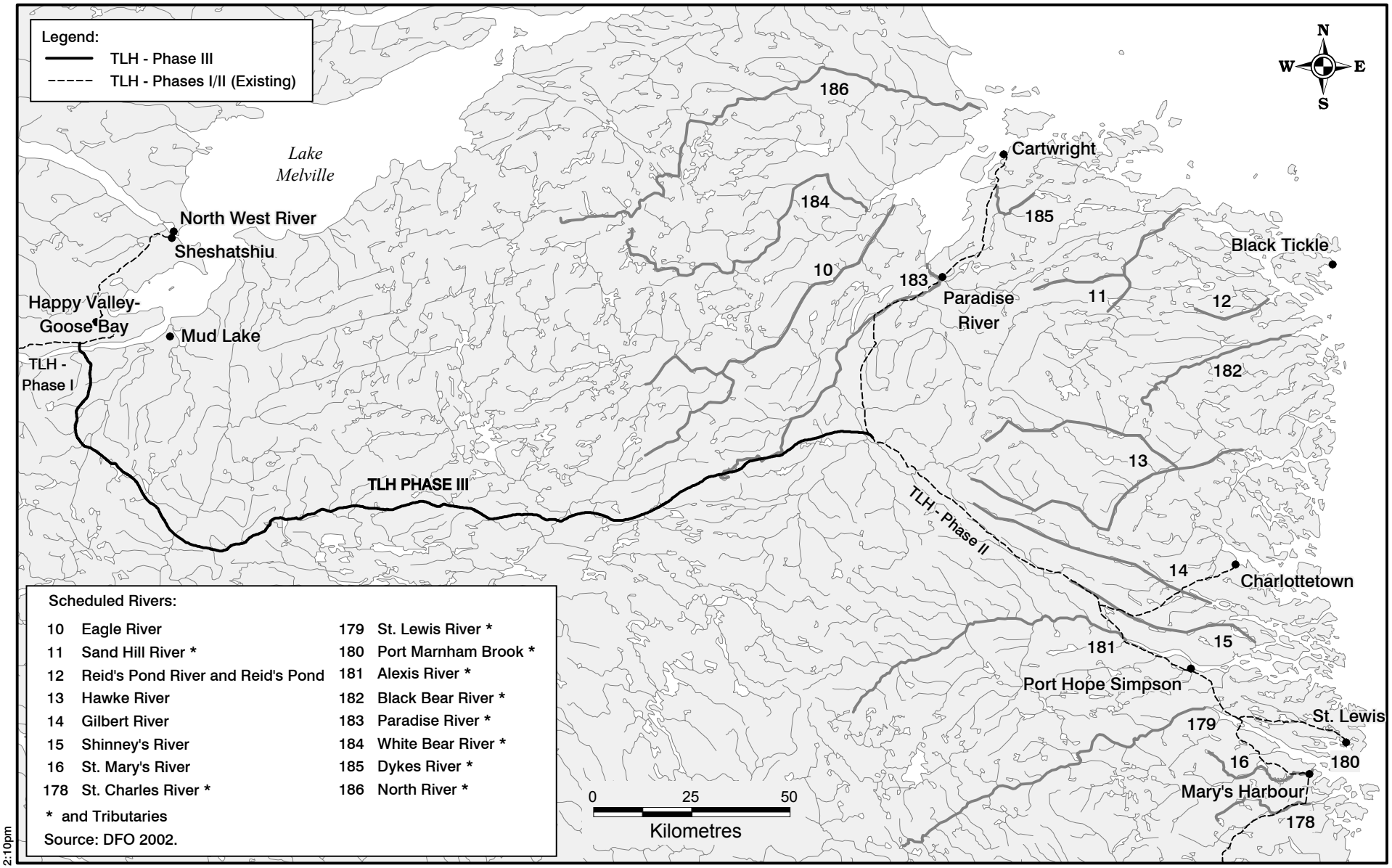


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Figure 4.1

Scheduled Salmon Rivers
in Salmon Fishing Zone 2

Table 4.1 Scheduled Salmon Rivers Central Labrador and Southeastern Aurora

River No.	River	Classification
10	Eagle River	Unclassified
11	Sand Hill River (and tributary streams)	Unclassfied
12	Reid's Pond River and Reid's Pond	Unclassified
13	Hawke River	Unclassified
14	Gilbert River	Unclassified
15	Shinney's River	Unclassified
16	St. Mary's River	Unclassified
178	St. Charles River (and tributaries)	Class III
179	St. Lewis River (and tributaries	Class III
180	Port Marnham Brook (and tributaries	Class III
181	Alexis River (and tributaries)	Class III
182	Black Bear River (and tributaries)	Unclassified
183	Paradise River (and tributaries)	Class III
184	White Bear River (and tributaries)	Unclassified
185	Dyke's River (and tributaries)	Class III
186	North River (and tributaries)	Unclassified
Source: DFO 2002.		

Anglers must have a valid salmon licence to fish on scheduled salmon rivers. The 2002 salmon angling season for these rivers extended from mid-June to mid-September, with daily bag limits of two fish retained and four caught and released (DFO 2002).

Scheduled salmon rivers in Newfoundland and Labrador are assigned a classification (Class I to Class IV), based on their capacity to sustain angling activity. The rating assigned to a river determines its season bag limit. Ten of the 16 rivers listed in Table 4.1 are "unclassified"and anglers can therefore retain a maximum of four fish per season, only one of which may be a large (63 cm) salmon. The remaining six rivers (Table 4.1) are Class III rivers, in which a maximum of two fish may be retained per season (neither of which may be large). Although scheduled rivers in Southern Labrador had previously been unclassified, these Class III designations were implemented in 2001 to ensure the conservation of salmon stocks. This preventive measure was put in place because of the expected influx of anglers to the region as a result of the completion of Phase II of the TLH between Red Bay and Cartwright (DFO 2002).

Angling data are available for 10 of these 16 scheduled rivers (Table 4.2). In 2001, there were a combined 4,247 rod days for these 10 rivers, with rod days for individual rivers ranging from 47 on the Gilbert River to 2,301 on the Eagle River. A total of 4,715 fish were reportedly caught (including those retained and released) in the 10 rivers that year, ranging from 0 on the Gilbert River to 3,071 on the Eagle River. Catch

per unit effort (CPUE) rates in 2001 ranged from 0.00 (Gilbert River) to 2.19 (Hawke River), with an average overall CPUE of 1.11 for the 10 rivers (Table 4.2).

There are also three scheduled salmon rivers in the Labrador Straits region. They are the Forteau River, L'Anse au Loup Brook and the Pinware River (DFO 2002).

Anglers may also fish for salmon in non-scheduled inland waters, provided they have a valid salmon licence and tags. For the purpose of retaining salmon, all non-scheduled inland waters are rated Class III, with a season and daily bag limit of two fish retained. Anglers may also fish year-round for salmon in coastal waters, but cannot retain these salmon (DFO 2002). Recreational fishing for other species such as trout and pike also occurs in numerous brooks, rivers, lakes and ponds throughout Labrador (please indicate the proper reference). Angling typically occurs between approximately May and September, and ice fishing between February and April (DFO 2002).

Recreational fishing is currently an integral component of Labrador's tourism industry. Angling is undertaken by both local residents and tourists, with numerous commercial outfitting camps throughout Labrador. It is feared that improved access to a previously isolated area may result in the over-harvesting of resources. This would, in turn, indirectly affect related tourism operations. The presence of a highway development itself and the associated increase in human activity may reduce the aesthetic appeal and wilderness image so important to anglers in Labrador. In a 1991 survey of Labrador anglers, 94.2 percent of respondents indicated that Labrador sports fishing is as good as or better than angling in other areas visited with regard to its "clean and unspoiled environment" (cited in LGL 1994). Another survey indicated that 64 percent of Labrador fishing outfitters felt that improved accessibility was an impediment to their business, while only 18 percent thought it enhanced it (Tucker 1995).

Hunting is also an important recreational activity throughout Labrador. Moose hunting takes place each year in portions of Central, Southern and Western Labrador. Most of the through which the proposed highway will pass is exempt from the moose hunt. Black bear is hunted each spring and fall throughout Labrador (Inland Fish and Wildlife Division 2002). Numerous waterfowl, upland game birds and small mammals are also hunted in season. Caribou is not hunted in the area. A detailed overview of hunting and trapping is provided in the *Report on Resource Use and Users in the Vicinity of the Trans Labrador Highway - Phase III (Happy Valley-Goose Bay to Cartwright Junction)* (JW 2003).

4.2.2 Outfitting Operations

Hunting and fishing are undertaken by local residents (please indicate the proper reference)), as well as by visitors from elsewhere in the province, Canada and from other countries. A licensed guide must accompany non-resident big game hunters in Newfoundland and Labrador. Small game hunting and waterfowl do not require guides (Department of Tourism, Culture and Recreation 2002c). Non-resident anglers in Labrador (north of 52˚N latitude) may not fish inland waters without engaging the services of an outfitter, with the following exceptions:

- a non-resident may fish without an outfitter or a licensed guide if accompanied by a direct relative who is a resident;
- when visiting a cooperative camp, a non-resident may fish without an outfitter (but must be accompanied by a licensed guide or direct relative) anywhere in the lake or pond that the camp is located on, or 800 m above or below the camp, if the camp is on a river;
- a non-resident may fish unaccompanied on non-scheduled waters within 800 m of a provincial highway; and
- a non-resident may fish scheduled salmon waters without engaging the services of an outfitter (but must be accompanied by a licenced guide or direct relative) if fishing 800 m above or below a bridge on a provincial highway.

On the island of Newfoundland and in Labrador south of 52˚N latitude, a non-resident angler cannot fish scheduled salmon waters unless accompanied by a licensed guide or by a direct relative who is a resident. Non-residents may only fish unaccompanied on non-scheduled waters within 800 m of a provincial highway (DFO 2002).

The 1991 Labrador Sport Fishing Survey indicated that approximately 57 percent of the non-resident anglers visiting Labrador in that year used the services of an outfitter (cited in LGL 1994).

There are currently approximately 70 commercial outfitting camps throughout Labrador which offer fishing and/or big game hunting adventures (Department of Tourism, Culture and Recreation 2002c). Of these, 19 are located in the general project area (Figure 4.2; Table 4.2).

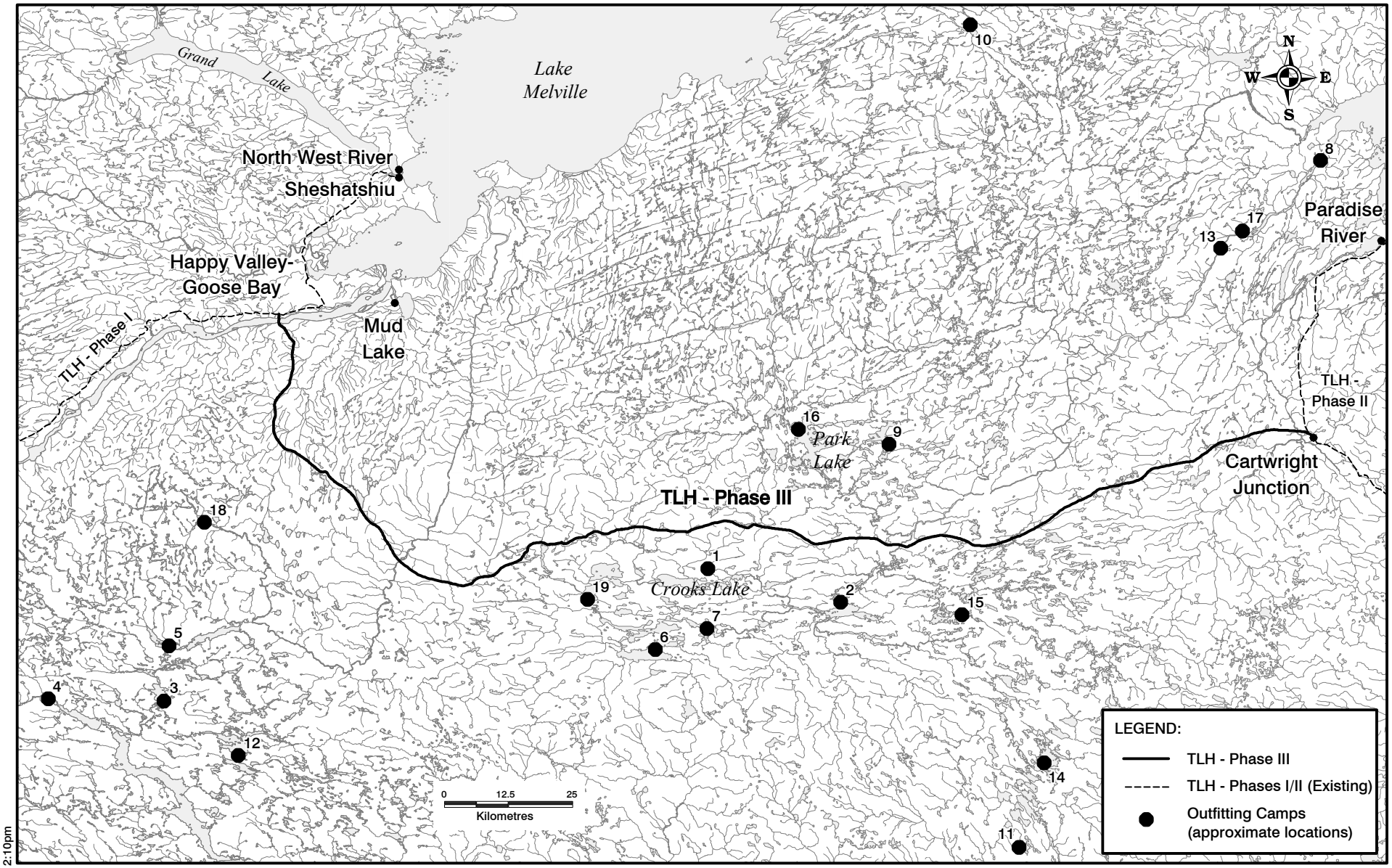

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Figure 4.2

Outfitting Camps

Table 4.2 Commercial Outfitting Camps in Central and Southern Labrador

No.*	Operator	Lodge	Location	Species Fished	Approximate Distance from Route (km)
1	Adventure North Ltd.	Crooks Lake	Crooks Lake	Northern pike and brook trout.	8.1
2	Camp 1155 Ltd.	Camp 1155	Upper Eagle River	Northern pike and brook trout.	11.9
3	Coopers' Minipi Camps	Anne Marie Lake Lodge	Upper Minipi River	Atlantic salmon, northern pike, Arctic char and brook trout.	53.1
4	Coopers' Minipi Camps	Minipi Lake Lodge	Upper Minipi River	Atlantic salmon, northern pike, Arctic char and brook trout.	66.9
5	Coopers' Minipi Camps	Minonipi Lodge	Upper Minipi River	Atlantic salmon, northern pike, Arctic char and brook trout.	44.5
6	Department of National Defence	No Name Lake (Family Wilderness Camp)	No Name Lake	Information not obtained.	23.3
7	Eagle Lake Sport Fishing Ltd.	Eagle Lake Lodge	Eagle Lake	Northern pike and brook trout.	19.1
8	Goose Bay Outfitters Ltd.	Lower Eagle River Lodge	Lower Eagle River	Atlantic salmon and brook trout.	52.7
9	Igloo Lake Lodge Ltd.	Igloo Lake Lodge	Igloo Lake	Northern pike and brook trout.	18.5
10	Labrador Angling Adventures Ltd.	Awesome Lake Lodge	Awesome Lake (English River)	Eastern brook trout.	93
11	Labrador Interior Outfitters Ltd.	St. Paul's Lodge	St. Paul's River (Headwaters)	Northern pike and trout.	58.8
12	Labrador Outdoors Inc.	Little Minipi Lake Lodge	Little Minipi River	Northern pike, landlocked char and brook trout.	49.2
13	Labrador Sportsfish Ltd.	Eagle's Nest	Eagle River	Atlantic salmon and brook trout.	36.4
14	Labrador Venture Ltd.	Birchy Lake Lodge	Birchy Lake, Upper St. Paul River	Information not obtained.	43.4
15	Osprey Lake Lodge	Osprey Lake	Osprey Lake (Eagle River watershed)	Brook trout.	13.7
16	Park Lake Lodge Inc.	Park Lake Lodge	Park Lake	Atlantic salmon, northern pike and brook trout.	19.6
17	Rifflin' Hitch Lodge Limited	Rifflin' Hitch Lodge	Eagle River	Atlantic salmon and brook trout.	39
18	Six North Fishing Lodge	Lac Mercier Lodge	Lac Mercier	Northern pike, lake trout and brook trout.	21.1
19	Warrick Pike	Whitey's Lodge	Whitey's Lake	Information not obtained.	11.1

* See Figure 4.2 for approximate camp locations.
Sources: DTCR 2002a; T. Kent, pers. comm.; P. Dawe, pers. comm.; Personal communications and interviews with outfitters.

There are currently three commercial outfitting lodges on the lower part of the Eagle River. The Lower Eagle River Lodge, Riffline Hitch Lodge and Eagle's Nest Lodge offer fishing for Atlantic salmon and brook trout (Department of Tourism, Culture and Recreation 2002c).

In the north-central portion of the area, the Park Lake Lodge offers fishing for brook trout, northern pike and Atlantic salmon, while the Igloo Lake Lodge caters to anglers of brook trout and northern pike (Department of Tourism, Culture and Recreation 2002c). There is also a private fishing camp at Byrne Lake, located south of Park Lake (J. Smith, pers. comm.).

In the south-central portion of the region, a fishing lodge at Crook's Lake offers fishing for brook trout and northern pike. The Osprey Lake Lodge caters to anglers of brook trout, and the Eagle Lake Lodge offers fishing for brook trout and northern pike. (Department of Tourism, Culture and Recreation 2002c). There is also a cooperative fishing camp in the area operated by Camp 1155 Ltd. The Department of National Defence has a fishing lodge on No Name Lake, which is used by military personnel and their families and guests. There is also a fishing camp at Whitey's Pond, located to the west of Crook's Lake (T. Kent, pers. comm.; P. Dawe, pers. comm.).

To the west of the proposed highway, the Six North Fishing Lodge on Lac Mercier offers fishing for brook trout, northern pike and lake trout. Three camps on the Upper Minipi River (the Anne Marie Lake, Minonipi and Minipi Lake Lodges) provide guests with fishing for brook trout, salmon, Arctic char and/or northern pike. Also, the Little Minipi Lake Lodge offers fishing for brook trout, Atlantic salmon landlocked char and northern pike (Department of Tourism, Culture and Recreation 2002c).

There is also a fishing lodge on Awesome Lake (English River) in the extreme northwestern portion of Southern Labrador, which provides fishing for eastern brook trout, as well as two camps on the headwaters of the St. Paul's River in the southwestern extent of the region, which offer northern pike and/or trout fishing (Department of Tourism, Culture and Recreation 2002c).

Each of these are "fly-in" camps, currently accessed by float plane and/or helicopter, usually from Happy Valley-Goose Bay. Fishing activity at these camps is usually within approximately 5 to 10 km of the camp location. Most, if not all, of the angling undertaken at these camps is hook and release only.

There are also a number of outfitting camps to the east of or adjacent to the existing TLH - Phase II (Red Bay to Cartwright) in Southern Labrador, as well as several camps in the Labrador Straits (Department of Tourism, Culture and Recreation 2002c).

4.2.3 Natural Area and Activities

4.2.3.1 Central and Southern Labrador

There are no existing provincial or federal parks in Southern or Central Labrador. Parks Canada have has identified the Mealey Mountains as a candidate for national park status. A detailed discussion of this proposed national park is provided in Section 4.6. There are currently no proposed provincial parks and reserves in the project area, and there has not been an in-depth study of candidate sites in Labrador to date (S. French, pers. comm.). A municipal park has been proposed for the Cartwright area (JW 1998).

Hunting and fishing activities are widely undertaken throughout Southern Labrador by both local residents and non-resident tourists. Non-consumptive outdoor activities such as hiking and cross-country skiing have traditionally not been widely undertaken in Southern Labrador (JW 1998), although increased access to, from and within the region due to the recently completed TLH-Phase II (Red Bay to Cartwright) may result in an increase in these activities in the future. Adventure tours and guided excursions are also offered throughout the region. For example, sea kayaking, whale watching and traditional craft tours are available from Cartwright, and whale and iceberg watching boat tours are offered at Mary's Harbour. There are also individual certified guides in many of the communities. Several tour operators based elsewhere in Labrador and on the Island of Newfoundland also offer tours in the area (Department of Tourism, Culture and Recreation 2002d).

A number of sites in Southern Labrador have been identified as having development potential for nature and adventure tourism activities. Several of these are currently visited by tourists in the region, but do not yet have developed infrastructure or interpretative facilities. For example, “Iceberg Alley” is a term given to the region’s coastline, which provides viewing opportunities for icebergs, marine mammals and sea birds. Similarly, the Wonderstrands, a 56-km long stretch of golden sandy beach to the immediate north of Cartwright recorded in the Viking sagas, is a potential tourist attraction. Southern Labrador’s economic plan also identifies several potential protected areas and reserves (e.g., St. Peter’s Bay), as well as the potential for such activities as canoeing and camping along the Eagle and Paradise Rivers, sea kayaking, white-water rafting and salt water fishing, coastal hiking, geological tours, and organized bird, whale and iceberg viewing tours in various areas (Southeastern Aurora Development Corporation 1997). Again, the recently completed highway will likely result in increased visitation to the area, which will increase the feasibility of developing new services and facilities.

Trail systems exist throughout the Southern Labrador area, and are currently used primarily by local residents for hunting, fishing, trapping and berry-picking activities. There is also an extensive snowmobile trail through Southern Labrador, which extends from Paradise River to Cartwright, from Cartwright to Black Tickle-Domino, and south along the coast to Red Bay. This winter road is used extensively by local residents, and has considerable tourism potential (JW 1998). The nearly completed Labrador Winter Trail

is a 1,500-km long groomed Labrador snowmobile trail. It extends from Western Labrador, through Churchill Falls, Happy Valley-Goose Bay, and Rigolet, and then branches off in two directions. Snowmobilers can travel the north coast through Postville, Makkovik, Hopedale and up to Nain, or south through coastal communities, ending in the community of L'Anse au Clair. There are also shorter branch trails throughout the system. The trail system includes signage and emergency shelters (Access North Labrador 2002).

Central Labrador residents and visitors take part in a wide range of outdoor recreational pursuits. There are several well-developed hiking routes in Central Labrador, including an extensive biking and walking trail within the Town of Happy Valley-Goose Bay, cross-country ski and hiking trails, as well as trailways in and around the communities of Northwest River and Sheshatshiu. Other outdoor tourism and recreational facilities in the region at present include a golf and sports club, a downhill ski facility, a marina, and a wilderness resort. Hiking, canoeing, kayaking, and snowmobile excursions are also available to tourists, as are boat tours and charters (Department of Tourism, Culture and Recreation 2002d; Town of Happy Valley-Goose Bay n.d.).

4.2.3.2 Adjacent Regions

Pinware River Provincial Park, Labrador's only provincial park, is located in the Labrador Straits. The park was established in 1974, and typically operates from approximately mid-June to early September. It covers an area of 68 ha, and contains 15 campsites and 25 picnic sites, as well as a 1.2 km long hiking trail (Parks and Natural Areas Division n.d..). There are several other well developed hiking trails in the Labrador Straits area. A number of operators offer whale, iceberg, and bird watching boat tours in the region (Labrador Straits Network n.d.; Labrador Straits Development Corporation n.d.; Department of Tourism, Culture and Recreation 2002d).

Western Labrador has a wide range of tourism and recreation facilities and services, including a golf course, hiking trails, ski trails, an alpine ski facility, and campgrounds. Snowmobiling, boating and outdoor sports are very popular activities in the region, and there are guided snowmobile and boating excursions available for tourists (Labrador West n.d.; Department of Tourism, Culture and Recreation 2002d).

4.2.4 Cultural Attractions and Events

4.2.4.1 Central and Southern Labrador

There are a number of existing and potential historic and heritage sites in Southern and Central Labrador, as well as various events which celebrate the culture and heritage of these regions.

The Battle Harbour National Historic District is the most developed and visited heritage site in Southern Labrador. Founded in the 1770s, Battle Harbour is one of the oldest European settlements on the Labrador coast and was a major centre for "floater fishermen" from Newfoundland who sailed to Labrador to take part in the summer cod fishery. It comprises the province's last intact traditional outport mercantile fish premises, with some buildings more than 200 years old. This restored fishing community is located on an island that is accessible by boat from Mary's Harbour, and operates from June to September (Battle Harbour Historic Trust n.d.; Department of Tourism, Culture and Recreation 2002d).

A number of other historic and heritage sites in Southern Labrador have been identified as having development potential. These include Fort York, near Henley Harbour; the remains of whaling stations at Grady Harbour, Hawkes Harbour, Henley Island, and Antles Cove; ballast material on Castle Island and at Table Head; churches at Dove Brook and Seal Islands; the site of George Cartwright's house; and the Loder Premises in St. Lewis (Southeastern Aurora Development Corporation 1997; JW 1998). Again, the recently completed highway will likely result in the development of new tourist attractions in the region.

The Mary's Harbour Crab Festival occurs each year in July or August, and features a variety of crab dishes, traditional music and activities. Other events include an Easter festival held annually in Port Hope Simpson, an annual fun day at Battle Harbour, and sled dog racing events in several communities. There are also various other sporting events and tournaments and other celebrations which occur throughout the region at various times of the year (Department of Tourism, Culture and Recreation 2002d).

A number of coastal Labrador communities and areas are visited by cruise ships each year. In 2001, there were 18 port calls by cruise ships in Labrador, including visits to the communities of Cartwright and Battle Harbour in Southern Labrador (Department of Tourism, Culture and Recreation 2002a).

There are a range of historic and heritage attractions in Central Labrador, including the:

- Labrador Interpretation Centre (Northwest River);
- Labrador Heritage Museum (Northwest River);
- Labrador Institute of Northern Studies (Happy Valley-Goose Bay);
- Moravian Church (Happy Valley-Goose Bay);
- Labrador Military Museum (Happy Valley-Goose Bay); and

- Northern Lights Military Museum (Happy Valley-Goose Bay) (Town of Happy Valley-Goose Bay n.d..; Town of Northwest River n.d.).

Festivals and events in the region include the annual Northwest River Beach Festival, which occurs in late July, the Labrador Canoe Regatta held on Gosling Lake in early August, and the Sheshatshiu summer festival, which is held in August and features traditional Innu food, crafts and music (Town of Northwest River n.d.). In recent years, cruise ships have also visited the towns of Happy Valley-Goose Bay and Northwest River (Department of Tourism, Culture and Recreation 2002a).

4.2.4.2 Adjacent Regions

The Red Bay National Historic Site is located in the Labrador Straits. Historical and archaeological research at the site revealed its status as the world's largest sixteenth century whaling port, and resulted in it being designated a site of national historic importance. The Red Bay site typically operates from June to October, and had a total of 7,961 visitors in 2001 (Department of Tourism, Culture and Recreation 2002a; 2002d). Other heritage and historic sites in this region (Labrador Straits Network n.d.) include the:

- Maritime Archaic Funeral Monument National Historic Site (near L'Anse Amour);
- Labrador Straits Museum (located between Forteau and L'Anse au Loup);
- Point Amour Lighthouse Provincial Historic Site (near L'Anse Amour at Forteau Bay);
- Gateway to the Straits Visitor Centre (L'Anse au Clair);
- L'Anse au Cotard Jersey Rooms (near L'Anse au Clair); and Wreck of the *HMS Raleigh* (near Point Amour).

The Labrador Straits Bakeapple Folk Festival is an annual event which takes place in Forteau in August, and features folk music, crafts and bakeapple dishes (Department of Tourism, Culture and Recreation 2002d). A measurable portion of the visitors to this region travel in groups on tour busses (VBNC 1997).

Cultural attractions and facilities in Western Labrador include a museum operated by the Labrador West Heritage Society, an Arts and Culture Centre, and an exhibit describing the history of the Royal Newfoundland Constabulary (Labrador West n.d.). Guided tours are also offered of the mines in Labrador City and Wabush and the Churchill Falls hydroelectric facility. There are also various winter sporting events and festivals which take place in the region (Department of Tourism, Culture and Recreation 2002d).

4.2.5 The Proposed Mealy Mountains National Park

The proposed Mealy Mountains National Park is located in central Labrador. It encompasses approximately 21,500 km extending from Lake Melville and Groswater Bay, south to the Eagle River and east from the Kenamu River to the coast of Labrador. The proposed road will travel through the southern portion of the Park Study Area, south of Park Lake (Figure 4.3).

Currently, the land under consideration for National Park status is Crown Land under the jurisdiction of the Province of Newfoundland and Labrador. Should the proposed park be acclaimed, the land would fall under federal government jurisdiction and would be subject to federal laws and regulations.

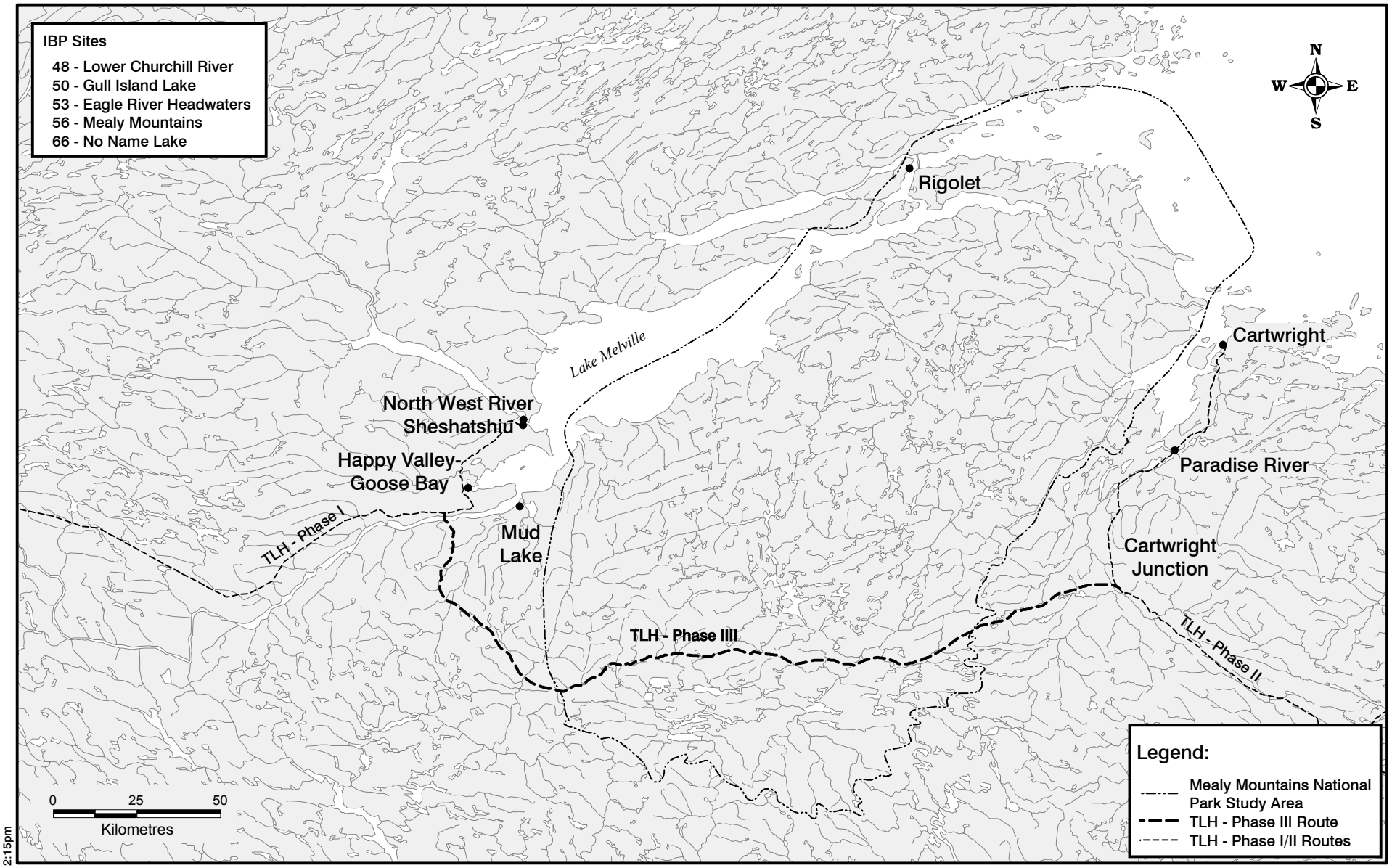
4.2.5.1 History of the Proposed Mealy Mountains National Park

The creation of a national park in the Mealy Mountains was first suggested in the early 1970s and the site was established as a preferred candidate in 1976. The project was shelved in 1979 following public concern and opposition from Aboriginal groups. In 2000, the Government of Newfoundland and Labrador announced that federal and provincial governments and representatives of Labrador Aboriginal peoples would embark on a joint feasibility study to examine the potential effects and benefits of establishing a national park in the Mealy Mountains (Government of Newfoundland and Labrador 2000). A steering committee has been put in place to lead public involvement and a public consultation process to determine whether or not a national park is feasible for the Mealy Mountains area.

The goal of Parks Canada with respect to the proposed national park is to protect ecosystems and important landscape features, while providing opportunities for enjoyment by humans. To accomplish this, it is understood that there will be some level of development within the national park (Blackmore 2001). Park boundary targets have not been defined, however, Parks Canada would like to see protection for river systems, wildlife, unique alpine vegetation, and a large area of forest to allow the natural cycle of the forest to evolve without interference (Blackmore 2001).

4.2.5.2 The Biophysical Environment of the Mealy Mountains National Park Study Area

The Mealy Mountains represent an area of Arctic tundra surrounded by boreal forests and coastal seascapes and is within the home range of the threatened Mealy Mountains Caribou Herd (Nature Federation 2000). The proposed park boundary would encompass five ecoregions, including Lake Melville, Kingurutik-Fraser River, Mecatina River, Eagle Plateau and Paradise River (ESWG 1995). The park is a candidate to represent Natural Region 21 - East Coast Boreal, within the national parks system.



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Jacques Whitford Environment Limited
Environmental Scientists
Consulting Engineers

Figure 4.3

Mealy Mountains National Park Study Area

The topography of the area is varied, a result of the underlying bedrock and structural geology, as well as influences of glacial erosion and deposition. Features include steep, glacially-scoured mountainous terrain, and flat plateaus with numerous lakes and wetlands. Other landforms found in the area include eskers, glaciofluvial terraces and raised marine beaches, plateau bogs, patterned fen complexes, coastal and alpine barrens, and boreal conifer forest (Keith 2001). The Mealy Mountains are the highest in southern Labrador, with elevations that exceed 1,150 m. Vegetation at these higher elevations includes some Arctic alpine species, typical of vegetation found in more northern latitudes (Keith 2001). Lake Melville extends 240 km from the mouth of Groswater Bay. This large salt-water inlet is the inland extension of Hamilton Inlet, the largest fiord complex along the Labrador coast (Keith 2001). South of the Mealy Mountains, the interior lowland region has some of the most productive forest in Labrador.

Several large rivers bisect the study area including the Kenamu and Eagle Rivers, both important Atlantic salmon rivers. The Eagle Plateau is dominated by lakes and wetland complexes, which provide nesting habitat for osprey and bald eagle. Mammals typical of the boreal forest are found in the study area, including woodland caribou, moose, black bear and a variety of furbearer, species including river otter, beaver, muskrat, lynx, wolf and red fox. Similarly, songbirds typical of the boreal ecosystem, a large percentage of them migratory, can be expected to use the study area. Waterfowl densities are generally low; however, an important segment of the Atlantic flyway population of ducks and geese nest in the region due to the large amount of wetland habitat.

4.2.5.3 Increased Access and Park Integrity

Since the early 1900s, managers and developers of national parks in Canada have struggled with two conflicting ideals. On the one part, ensuring that national parks are accessible to citizens and provide opportunities to spend time in natural environment settings and on the other, the desire to ensure that the ecological integrity and wilderness in national parks are maintained. In recent years, Parks Canada's mandate has evolved from primarily providing worthwhile visitor experiences to a position of greater concern for ecological integrity. Subsequently, human use of national parks has become the secondary consideration and ecological integrity has come to the forefront when developing park management plans (Neufield 2001).

Prior to the 1970s, most national parks established in Canada were located in relatively populated areas in the south. In the last 30 years, numerous parks have been established in the Canadian north, most in areas of little or no development (i.e., Aulavik in 1992, Auyuittuq in 1993). Kluane National Park in the Yukon was established in 1972 and much of the 129 km northern boundary of the park is made up of the Alaska Highway and the Haines Road (Canadian Parks 2000). Visitors to Kluane can enter the park at two locations; however, most park access is by foot, raft or horseback. When the boundaries of Kluane were defined, the Alaska Highway, constructed in 1942, remained outside.

Banff National Park is an instructive example of the conflict between preservation and development in national parks. The park was established in 1885 to preserve a 26 km^2 area encompassing thermal springs located on Sulphur Mountain (Pacas 1997). In the years since Banff was established, visitors have grown from 3,000 in 1887 to more than five million in 1995, with more than 20,000 vehicles entering the park each day (Pacas 1996, cited in Pacas 1997). The high visitation numbers and the accompanying development have placed pressure on many environmentally sensitive areas, particularly in the last 45 years. Vermillion wetlands, montane forest and linkage zones (particularly important to wolves and grizzly bears) between Banff National Park and surrounding areas have all been compromised by town, highway, railway, trail and other facility developments in the area (Green et al. 1996, cited in Pacas 1997). Similarly, aquatic biodiversity has been greatly altered through modification of wetlands and regulation of water flows and water levels (Schindler and Pacas 1996, cited in Pacas 1997). Studies in Banff have indicated the ecological integrity is compromised for various indicator species, suggesting that Banff may not meet the criteria for a national park in the future (Pacas 1997).

Ecological integrity is the capability of an area to maintain ecological processes and species, and to withstand changes and stresses (NRC 1998). Placing boundaries around an area will not ensure ecological integrity if human activities are not controlled. The introduction of exotic species can have a profound effect on the ecological integrity of an area (NRC 1998). For example, the introduction of an invasive plant species that can take advantage of areas of disturbance (such as along the sides of a new road) may disrupt the normal ecological range of variability to the point of endangering the viability of the existing regime, and thus the ecological integrity of an area (NRC 1998). Similarly, species may be introduced that prey on other species that have no natural resistance or have not developed mechanisms to avoid predation. As well, food species such as alien grasses and forbs along highway rights-of-way and other disturbed areas in a park may attract native animals and thus affect their population levels in the protected area.

In Canada, as in other parts of the world, certain habitats and ecosystems are far more susceptible to invasive plant species than others. As a generality, the problem of alien invasive species in natural systems is sometimes serious in parts of southern Canada but is essentially non-existent in tundra ecosystems of the North (Mosquin n.d.). However, where invasive plants from more southern regions are present, they will likely only occur in places heavily disturbed by human settlement, such as roadsides, docks, settlements and trails (Mosquin n.d.).

During a backcountry monitoring program in Riding Mountain National Park, Manitoba, analysis of backcountry campsites found that the dominant vegetation types were non-native species, generally those that prefer disturbed sites (MacKay and Campbell 2001). Backcountry areas were considered most susceptible to effects when moisture levels were high in the early spring and following periods of intense sustained precipitation. However, visitor levels during these sensitive periods were low. Overall, the study concluded that at current levels of use (14 backcountry campgrounds had 1,367 visitors in 1995), effects of human activity were minimal and were generally limited to trail erosion and braiding (in wet and muddy

sections), social trail development at campsites and increased soil compaction at heavily used campsites (MacKay and Campbell 2001).

In general, large and mid-size mammals that are otherwise protected within a national park may be at increased risk of mortality through vehicle collisions when roads are situated within park boundaries. For example, from 1971 to 1995, 73 grizzly bear mortalities were recorded in Banff National Park, of which 90 percent occurred within 500 m of a roadway or site of human activity. In recent years, Banff has made efforts to rectify problems associated with development, including removal of facilities in areas that are critical corridors for wildlife (Leeson 1997). A road density of approximately 0.6 km/km^2 appears to be the maximum to maintain a naturally functioning landscape that supports viable populations of large predators such as wolves (Forman and Alexander 1998). Further discussion on the potential for direct mortality of various species groups through vehicle collisions is provided in Sections 6.2 (Waterfowl and Passerine Birds), 6.3 (Caribou) and 6.4 (Furbearers) in the EIS (JW and IELP 2003).

In 1979, approval was given for twinning (i.e., creating four lanes) of the Trans Canada Highway through the Bow Valley (representing an area encompassing Banff and Yoho National Parks). Much effort has been expended to mitigate the effects of the highway on wildlife, including roadside fencing and underpasses (Leeson 1997). Parks Canada has stated that, while constructing a four-lane highway through a national park is not a desirable prospect, the environment has shown itself to be able to accommodate most stresses if care is taken to understand ecological integrity and minimize disturbance (Leeson 1997).

Vehicles emit exhausts such as oxides of carbon, nitrogen and sulphur, as well as minute particles of carbon and oil droplets (Bennett 1991). Gases emitted by vehicles contribute to acid rain that is known to cause forest decline and acidification of watercourses in the northern hemisphere. Road construction can affect the hydrology of the local environment, both within the right-of-way and beyond. Drainage from roads also causes erosion and transportation of soil particles and pollutants (Bennett 1991). In particular, erosion may affect aquatic communities by altering micro-habitats of invertebrates and spawning sites for fish. This will have secondary effects on the organisms higher up in the food chain (Bennett 1991).

Ecosystem fragmentation occurs when 'islands' or fragments of natural areas are created because of natural catastrophes and human activities. Plants and animals within these islands may be separated from the next nearest populations of those species, thus limiting opportunities for dispersal and gene flow between populations. Fragmentation also occurs within these areas on a smaller scale when roads, trails, golf courses and other human developments isolate portions of the natural landscape from other similar habitats. In general, species living within isolated forest fragments tend to be more vulnerable to biotic and abiotic influences than those that live within large contiguous habitat types (Perry 1994). Maintenance of ecological integrity in a protected area such as a national park can be achieved through complete protection from all human activity. However, complete protection of a large area is often not practical due to competing land uses or the desire to meet tourism and recreation objectives (NRC 1998). Another way to preserve ecological integrity is to define an area that is divided into zones with varying levels of protection

(i.e., a central or core zone of complete protection surrounded by a series of zones with decreasing levels of protection). These zones would be administered through management plans that would also outline controlled (or no) development policies along an existing road corridor.

5.0 KEY ISSUES

Socio-economic benefits provided by this highway projects include:

- all-weather reliability;
- lower transportation costs;
- increased access to markets for local goods and services;
- employment opportunities during construction and access to new employment centres during operation;
- better access to health care and social services; and
- strengthening of the local economies.

Potential negative effects include but are not limited to the following:

- loss of vegetation and wildlife in the right-of-way;
- destruction or damage to terrestrial wildlife habitats, biological resources and ecosystems;
- changes to hydrological regimes affecting wetlands and aquatic fauna;
- interruption of migratory routes for certain types of wildlife;
- induced development (roadside commercial, industrial, residential and urban);
- increased dependency on motorized transportation;
- impairment of non-motorized transportation economy;
- unplanned or illegal timber cutting and land clearing;
- illegal invasion by squatters and poachers;
- landscape disfiguration by embankments, deep cuts, quarries, induced erosion (landslides, slumps); and
- alteration of overland drainage and subsoil drainage (interception of perched water tables).

In one way or the other, all of the above may directly or indirectly affect existing tourism and recreation activities as well as its future development. Many of these issues and concerns was raised by tourism operators, regulatory agencies and the public during issues scoping and interviews conducted as part of the environmental impact assessment. The following lists the main concerns expressed during issues scoping:

- degradation of the pristine nature of the Labrador wilderness (real and perceived), which forms the basis for much of the tourism industry;
- increased access to fish, wildlife and forest resources as a result of the highway, which may result in their depletion;
- the close proximity of the highway to existing outfitting camps and to the upper eagle river watershed;
- increased access to inland waterways through snowmobile and ATV use;

- the potential establishment of snowmobile and ATV trails extending from the highway;
- increased cabin development;
- influx of anglers from the Island of Newfoundland and elsewhere once the highway is completed;
- the effectiveness of fishing and hunting regulations, and policies for increased protection of these resources;
- overcrowding and congestion in key recreational areas (e.g., prime fishing pools) due to increased access;
- increased vandalism of outfitting camps;
- increase in unlicenced outfitting and guiding operations;
- littering along the highway, and the difficulty of controlling litter;
- potential opportunities for further development of the tourism industry once the road is complete;
- the importance of adequate maintenance once the highway is operational;
- the identification and development of roadside pull-offs (for safety and scenic purposes);
- a current lack of readiness by communities to take advantage of the opportunities offered by the highway; and
- the potential for some communities to be by-passed completely once the highway is complete.

In the case of the proposed Mealy Mountains National Park, the potential interactions of the highway would be restricted to disturbance of vegetation and wildlife in the area surrounding the highway right-of-way and enhanced human access to the southern portion of the proposed park. The highway may also provide increased opportunity for tourism and recreational activities within the proposed park. Concerns in this case include:

- potential for degradation of the ecological integrity of various ecosystems through fragmentation or invasion of exotic species or pollution as a result of highway construction and operation; and
- disturbance to wildlife populations and their habitat within the proposed park through increased human access and activity as a result of the highway.

5.1 Experience with TLH - Phases I and II and Other Roads in Labrador

Experience with previous highway development in Labrador provides some indication of the type of activities that may result from the TLH - Phase III. For example, both the Phase I and Phase II portions of the TLH have been designated as protected roads and protected road zoning plans are being prepared for both sections of highway. This designation and associated management plans provide a means for controlling development along the highways.

Cabin development in Labrador has also been facilitated by road development in Labrador. In the section of Churchill River from Gull Island to Churchill Falls (along the Phase I portion of TLH), many private cabins are being built and anglers are experiencing good fishing for brook trout and ouananiche (W.

Maclean, pers. comm.). Armitage and Stopp (2003) indicate that, of a total 1,248 cottages in Labrador, 462 were located within 1 km of a road. Increasing trapping activity has been noted along the Phase I portion of the TLH, as well as dust covering vegetation along the route (Innu Nation 2002). Increased incidences of trapping along roadways has occurred around other roads in Labrador, including the Grand Lake Road and Orma Road located along the eastern edge of the Smallwood Reservoir. Wooden top boxes have been set for marten every 2 to 5 km along many of these roads (JW 1999).

There has also been an increase in the number of anglers fishing newly accessible areas associated with the construction of the Phase II portion of the TLH. C. Poole (pers. comm.) notes that angling activity has increased (as much as tripled) with the completion of Phase II. Correspondingly, the number of patrols by conservation officers and the number of charges laid have probably doubled. Anglers frequenting the area are mainly from communities in southern Labrador. However, anglers from the island of Newfoundland, the maritime provinces and Québec are also common and anglers from outside Canada have also been noted.

Due to expected influx of anglers as a result of the TLH - Phase II, a number of previously unscheduled rivers in Southern Labrador were scheduled and given Class III designations in 2001 for salmon conservation purposes (DFO 2002). In addition, special trout management plans were put in place for Gilbert's Lake and Chateau Pond in Southern Labrador. These plans were put in place in response to the anticipated increase in angling pressure that may result from the completion of the Phase II portion of the TLH (B. Slade, pers. comm.).

Past experience in the Labrador Straits also illustrates the potential effects of road access on recreational fisheries. This region saw an influx of anglers from the island of Newfoundland when Atlantic salmon quotas were changed to permit fishers in Labrador to retain one large salmon, resulting in overcrowding along the Pinware, Forteau and other rivers in the region. This eventually resulted in a requirement to implement fish quotas and retention regulations for the Labrador Straits similar to those for the island of Newfoundland (JW 1998).

Highway access will also increase the potential for developing new lodges along the TLH - Phase III route. This has occurred along the Phase I portion of the TLH between Happy Valley-Goose Bay and Western Labrador. In the Labrador Straits, a number of outfitting operations currently exist in very close proximity to the highway, and the ability to access these camps directly by road has allowed these operations to offer fishing packages at somewhat lower prices than those who rely on air transportation (JW 1998).

However, there are also cases which illustrate the potential positive effects of highway development on tourism. The Labrador Straits highway, for example, has also been a key factor in the development of that region's very successful tourism industry. Year-round road access has resulted in relatively high levels of visitation, with an estimated 8,000 to 10,000 tourists visiting the area each year (JW 1998).

5.2 Lessons from Road or Highway Construction on the Eastern Coast of James Bay

The road system built to accommodate the hydroelectric development of the La Grande River (northern Québec) and the subsequent linking of isolated James Bay coastal communities opened up territories that were not accessible previously to visitors from the south. Cree communities such as Wemindji, Eastmain and Waskaganish were gradually linked to the provincial road system after the Matagami to LG 2 highway was opened. All communities experienced substantial repercussions, both positive and negative.

The following sections presents information from these projects that may be useful to effects analysis from a tourism and recreation standpoint. Information is from follow-up studies undertaken for the villages of Wemindji and Eastmain and also from the Environmental Impact Statement published in 1998 for the village of Waskaganish (Hydro-Québec 1996; 1997; INRS 1998; Proulx 1998a; 1998b; 1998c). In some instances, information may be more applicable to isolated native communities. The information is structured around four themes directly or indirectly linked to tourism and recreation in a broad sense. They are:

- opening up of communities;
- increased access to the territory;
- social relations; and
- safety.

5.2.1 Opening up of Communities

Both existing literature and people who have experienced a new road consider that it brings positive spin-off benefits. It helps boost economic development, create new business opportunities and lower costs in general.

Compared to former transportation charges and supply difficulties, road construction had the immediate effect of contributing to a marked decline in freight costs and regular arrival of a greater variety of items that cost less. According to the follow-up study done for the James Bay area village of Wemindji, one year after the road opened, the price of food and household products decreased by approximately 20 percent, furniture and appliances by 6 percent, and clothing by 5 percent.

However, experience gathered in northern communities shows that not all is positive in term of economic spin-offs from road construction. New economic conditions for families did not necessarily translate into reduced spending after roads opened. At Eastmain and Wemindji, a rise in consumption was observed following the appearance of new products in the different communities and especially following purchases in southern stores. This rise in consumption, together with the purchase of motor vehicles, put pressure on the family budget. In Wemindji, more than 120 vehicles were sold in the first year after the road opened.

The trend toward increased expenses after the opening up of a road is driven by two motivations associated with support given by the presence of a road: freedom of movement in its widest sense, and the possibility of obtaining goods outside the community.

Some businesses in northern Québec had problems adjusting with competition from the south or from surrounding villages. In Wemindji, two businesses experienced sharp decreases in sales and had to lay a number of people off the first year after the road opened. However, the handicraft stores and gas station saw their sales increase because of higher visitor rates. As part of follow up studies, some restaurant owners advised that sales to visitors compensated for lower sales to local consumers.

The experience of Cree localities demonstrates clearly that the effects of the road on the local economy are both positive and negative. Effects include:

- boost to economic development;
- wider choice of product available at more competitive prices;
- decrease in the price of consumer goods resulting from lower transportation costs;
- increased family expenses; and
- increased debt burden.

5.2.2 Increased Access to the Territory

The first result of building the TLH will be to make the territory more accessible. This accessibility will mean both increased access to the territory from locals for harvesting activities and or recreational activities, and increased access to the territory for people from the outside.

The experience of Wemindji and Eastmain clearly demonstrates how the presence of the road affected the use and harvesting of the territory by inhabitants of the communities. Follow up studies shows that:

- travel costs went down providing substantial savings for the families of hunters and fishermen;
- Vehicles provided flexibility in organising hunting and fishing pursuits; individuals no longer being at the mercy of weather conditions or of charter plane schedules;
- inhabitants that could not afford to charter a plane for hunting and fishing before the road was constructed could travel to harvesting areas (traplines) easily and more economically;
- trappers could spend more time in traplines and even had material and food shipped to them instead of leaving their camps;
- the road gave access to areas were harvesting effort had been limited in the past;
- the road became the main axis from where a multitude of secondary trails and access roads were started; and

- harvesting of the coastal area decreased in favour of the interior because of the advantage provided by the presence of the road.

However, several individuals interviewed as part of follow up studies advised that they believed that easier access to the territories resulted in a decline in the abundance of game and that traffic on the roads was chasing away certain local species.

In follow-up studies covering the main road system for the La Grande hydroelectric development (Matagami-LG2 road, the road linking LG2, LG3, and LG4), tallymen reported the disappearance and growing scarcity of certain species along a corridor 10 km wide on both sides of these main roads.

Interviewed tallymen for studies in Eastmain and Wemindji advised that they feared the arrival of large numbers of hunters and fishermen from the south and that this would bring about a decline in wildlife resources. The risks associated with over-exploitation in areas where fishing and hunting are particularly popular was often mentioned as a concern, as well vandalism to camps located close to the roads and the leaving of roadside debris.

5.2.3 Social Relations

The travel possibilities offered by the TLH highway would no doubt encourage individuals to travel with family and to visit relatives and friends in neighbouring communities.

According to the follow-up study undertaken following the linking of Wemindji to the provincial road network, the opening up of the village reportedly increased contacts with inhabitants of other Cree communities. Community events in the village doubled following completion of the road, this includes sports tournaments, winter and summer games, etc. The members of the community could travel more cheaply to other Cree villages for family ceremonies and for recreational activities.

During communication activities held in Waskaganish as part of the Environmental Impact Assessment (INRS 1998; Proulx 1998a; 1998b; 1998c), it was noted that half of the respondents intended to visit family and relatives as well as travel south as soon as the road would be opened.

Reportedly, hunters in Eastmain and Chisasibi started to spend more times in traplines and young left the villages more often. The villages were said to empty during weekends, with consequences on social relations within the villages.

Repercussions noted in northern Québec villages therefore are:

- increased visiting of friends and families; and
- increased participation in tournaments and other recreational activities.

5.2.4 Safety

In the context of permanent road projects giving access to isolated areas, the issue of safety can be placed into three categories: road safety; public safety within the communities; and forest safety.

The opening of roads results in new risk factors for accidents, not only on the new roads but also in the different communities. These risk factors are the regular arrival of vehicles and visitors into the community, as well as drunk driving. Public safety refers to the issue of visitors coming into the communities and engaging in criminal activities such as vandalism, theft, crimes against the person, contraband, harassment, etc. Forest safety issues relate to the increased access to the territory. The regular arrival of tourists, including hunters and fishers might pose a risk of forest accidents.

After the Eastmain road opened, various people noted that drivers were going too fast and that the number of traffic accidents rose. In Wemindji, the Sûreté du Québec noted that many residents quickly obtained a provincial driver's licence rather than a regional permit, which allowed driving only within or near the communities. Individuals were noted to lack driving experience when the road opened, but the situation improved very quickly. Before the road opened, Wemindji residents were concerned about the possibility of accidents that could result from an increased number of heavy vehicles within the village. It was generally thought than old people and children would be the most likely victims of this new traffic, since they were less familiar with vehicle traffic and less aware of the danger it represents.

However, there were no accidents due to heavy vehicles in the village recorded in the follow-up study. The study noted a slight rise in accidents with property damage in the community, but no personal injuries. A total of 37 accidents were reported in 1995 on roads outside the village. The Sûreté du Québec recorded several cases of impaired driving involving residents of the village. Unfortunately, two fatal accidents were recorded after the road opened.

Regarding the concern about accidents in the villages, people were worried about outsiders' driving habits being different from the way residents drive. They feared for the safety of the community's children, who had a tendency of not being concerned about vehicles. Snowmobile path intersections were also indicated as being risky.

In northern villages forest safety was indicated as a concern in terms of:

- local trappers and hunters having to protect themselves from non-native sport hunters because of the fact that they did not wear brightly coloured clothing; and
- accidents to non-native sport hunters and fishermen unaccustomed to local conditions.

6.0 SUMMARY

Construction activity can have both direct and indirect effects on tourism and recreation. Access to some areas and attractions may be restricted during construction activities (e.g., for safety reasons). In addition, the noise, dust and human presence associated with construction activities may affect the aesthetic quality of an area (particularly those which were previously isolated and pristine) and, thus, its use for certain tourism and recreational activities. Construction activities may also affect fish and wildlife, which can indirectly affect the outfitters and other establishments which depend upon these resources. The use of existing services and infrastructure (e.g., transportation services, accommodations) by construction personnel could also affect their use by tourists, especially as construction seasons will coincide with peak tourism periods.

Once operational, highways increase the mobility of local residents, as well as increasing visitation by non-resident tourists. The highway will provide improved access to existing tourism services and facilities, and may increase the viability of developing additional attractions and facilities. Increased access may also have adverse effects on certain aspects of the tourism industry, particularly those that depend on the remoteness and pristine nature of the Labrador wilderness. Any effects to fish and wildlife as a direct result of the highway and/or due to increased hunting and fishing can also affect those tourism establishments which use these resources. The effects of highway operation can therefore vary considerably between different aspects of the tourism industry.

Tourism and recreation may also be affected in the case of an accidental event, such as a forest fire, or a fuel or chemical spill. Such an event could occur during project construction or operations, and may affect fish and wildlife populations, and thus, fishing and hunting activities. A forest fire could also destroy tourist attractions and recreational areas, and reduce the aesthetic appeal of the area for some types of activities. During operations, vehicle accidents or highway failure could also affect visitor travel by restricting movement to and within an area.

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APPENDIX A

Trans Labrador Highway - Phase III
Environmental Impact Statement and
Comprehensive Study Guidelines

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR
Department of Environment

Honourable Kevin Aylward
Minister

December 2002

G U I D E L I N E S

for

Environmental Impact Statement

(Pursuant to Part X of the Newfoundland and Labrador *Environmental Protection Act*)

and

Comprehensive Study

(Pursuant to the Canadian Environmental Assessment Act)

Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway

Proponent: Department of Works, Services and Transportation

INTRODUCTION

The Department of Works, Services and Transportation has been required through the provincial environmental assessment process to prepare an Environmental Impact Statement (EIS) for the Trans Labrador Highway (TLH) between Cartwright Junction and Happy Valley-Goose Bay, Labrador. The purpose of the EIS is to describe present environmental conditions, identify the potential environmental effects associated with the proposed undertaking, to identify appropriate mitigative measures and the significance of any residual environmental effects. Component Studies shall be carried out to address baseline information gaps for particular Valued Ecosystem Components (VECs). The EIS shall contain a review of all available pertinent information as well as such additional new information or data as provided by the proponent or requested by the Minister of Environment. The contents of the EIS will be used by the Minister of Environment, in consultation with Cabinet, and with the Innu Nation in accordance with a Memorandum of Understanding signed by the Ministers of Environment and Labrador and Aboriginal Affairs, to determine the acceptability of the proposed project based on its anticipated impacts, proposed mitigation, and significance of residual effects. The EIS shall also be used to address the requirements of a Comprehensive Study Report (CSR) pursuant to the Canadian Environmental Assessment Act, and a subsequent decision on the project by the federal Minister of Environment. The EIS shall be as concise as possible while presenting the information necessary for making an informed decision.

The undertaking is subject to a cooperative environmental assessment that will meet the requirements of both the Newfoundland and Labrador *Environmental Protection Act* and the Canadian Environmental Assessment Act (CEAA). The Department of Fisheries and Oceans (DFO) is the Lead Responsible Authority (RA) for the CEAA assessment since there is a requirement for approvals under the Navigable Waters Protection Act (NWPA) and the potential for issuance of Fisheries Act authorizations. Environment Canada, Parks Canada and Health Canada are other Federal Authorities who are providing expert advice to DFO on the environmental assessment.

As more specific information is provided and as additional baseline information is gathered, other concerns and potential effects may be required to be considered by the Minister as recommended by the Environmental Assessment Committee.

The proponent shall hold public information sessions in the communities of Happy Valley-Goose Bay, North West River/Sheshatshiu, Port Hope-Simpson and Cartwright.

The EIS shall also assess the location of the road with reference to the Innu Land Claim currently under negotiation between the federal and provincial governments and the Innu Nation. The EIS must acknowledge that, when a land claim has been settled and lands selected, the proponent will abide by the terms of whatever arrangements are contained within the settlement.

The proponent shall initially submit 20 paper copies of the EIS and 20 electronic copies on compact disks. Additional copies may be required depending on demand. In addition, an electronic copy suitable for posting on the Department website is required. All electronic copies must comply with the Department's Guidelines for Preparing Computerized Copies of Environmental Assessment Documents.

The contents of the EIS should be organized according to the following format and address the identified information requirements:

1. EXECUTIVE SUMMARY

The executive summary shall contain the following information: identification of the proponent; a detailed project description; a description of the present environmental baseline conditions (including environmental change agents other than the project), a discussion of predicted significant environmental effects; mitigative measures; residual effects; cumulative effects; an outline of the component studies; proposed monitoring programs and a summary of the fundamental conclusions of the EIS. Key public and stakeholder concerns identified during the public information sessions shall also be summarized. The executive summary will allow reviewers to focus immediately on areas of concern.

The summary shall be written in terms understandable to the general public and it shall include a Table of Concordance which will identify where specific Guideline requirements are addressed in the EIS. Sufficient quantities of the Executive Summary and as necessary, key sections of the EIS, shall be made available in Innu-aimun to allow for meaningful review of the EIS by members of the Innu Nation.

2. INTRODUCTION

2.1 Name of Undertaking

The undertaking has been assigned the Name "Cartwright Junction to Happy Valley-Goose Bay Trans Labrador Highway." The proponent should identify the name which it proposes to use for the undertaking.

2.2 Identification of Proponent

Name the corporate body and state the mailing address.

Name the chief executive officer and state the official title, telephone number, fax number and e-mail address.

Name the principal contact person for purposes of environmental assessment and state the official title, telephone number, fax number and e-mail address.

2.3 Purpose of the Environmental Impact Statement

The purpose of the Environmental Impact Statement is to report on the results of the process by which the change in the present or future environment that would result from an undertaking is predicted and evaluated before the undertaking has begun or occurred.

3. THE PROPOSED UNDERTAKING

3.1 The Prospective Site and Study Area

A precise description of the preferred and alternative routes for the highway is to be presented, accompanied by maps of an appropriate scale showing the entire area of each alternative with:

- principle structures and appurtenant works; and,
- kilometers (km) of road and types and quantities of hectares (ha) of habitat to be disturbed.

A description of the study area shall be presented to describe the setting in which the undertaking is proposed to take place. This description shall integrate the natural and human elements of the environment in order to explain the interrelationships between the physical and biological aspects of the environment and the people and their communities. The study area boundaries shall be determined in relation to:

- the physical extent of the highway and any alternatives;
- the extent of aquatic and terrestrial ecosystems potentially affected by the highway;
- the extent of land use for subsistence, commercial, cultural, recreational, spiritual and aesthetic purposes by Aboriginal and non-aboriginal persons and communities which may be affected by the highway; and
- the zones of economic impact, including local and regional effects, of the highway.

The descriptions shall be presented according to the appropriate spatial scale (large landscape to site level) which best illustrates the interactions between the project and the environment being described. Temporal data necessary to establish normal parameters, trends and extremes shall be integrated into the description of the study area where appropriate.

The information on the alternative routes and extent of the project study area is to be considered for a digital form on computer discs in a format suitable for incorporation in a Geographic Information System (GIS). Maps should be at a 1:50,000 scale and possibly in ARC shape format. As a minimum, the information is to consist of sufficient number of geographic coordinates of point locations, line locations and/or spatial extent, as appropriate, of the features at the selected map scale and projection to either re-create the hard-copy versions provided as part of the EIS or to accurately display the features digitally. (Information already available on the National Topographic maps need not be provided.) The information must be organized and labeled such that each unique feature is distinguishable from all others. Appropriate descriptive parameters of each data set such as projection, UTM Zone, datum and data collection method (e.g., GPS, aerial survey, etc.) must also be included. The format should be in ASCII tabular format or in a spreadsheet or database format such as Lotus 1-2-3, Excel, dBase or similar software.

3.2 Rationale/Need/Purpose of the Project

The rationale for the project shall describe its perceived benefits, both local and provincial. If the undertaking is in response to an established need, this should be clearly stated.

3.3 Alternatives

3.3.1 Alternatives to the Project

This section shall describe functionally different ways to meet the project need and achieve the project purpose. The discussion shall address, but not necessarily be limited to, other modes of transportation and the null (do nothing) alternative.

3.3.2 Alternative Methods of Carrying Out the Project

This section shall detail the process the proponent undertook to determine potential corridors, including discussion of all alignments considered. The proponent's public consultation process shall be described and relate the project alternatives to the results of the consultations.

A detailed discussion of technically and economically feasible alternatives, and the environmental and socio-economic selection criteria (e.g., construction costs, fuel savings, technical factors) for the alternatives shall be provided. The discussion shall include, among other things, routing, location, design, construction standards, maintenance standards, watercourse crossings, etc., which were or could have been considered.

The proponent must specifically include the route identified by Innu members after the proponent's consultations with the Innu community as one of the alternative methods of carrying out the undertaking.

The proponent must specifically include the route identified by the Newfoundland and Labrador Outfitters Association members after the proponent's consultations with the outfitters as one of the alternative methods of carrying out the undertaking.

Alternative routing criteria discussion shall include, but is not limited to:

- avoidance of wetland areas;
- avoidance of adverse effects and enhancement of benefits on existing or potential tourism operations;
- avoidance of environmentally sensitive areas;
- avoidance of additional stress on land and resources through increased access;
- avoidance or reduction of effects on Innu land use;
- avoidance or reduction of effects on the proposed Akamiuapishku/Mealy Mountain National Park; and
- avoidance or reduction of effects on Woodland Caribou (Red Wine and Mealy Mountain herds).

If only one alternative is viable or possible, a statement will be made to this effect with supporting argument. Additional information on any alternatives which may have been considered and rejected, but which may still be regarded as viable should be provided. Reasons for the rejection of those alternatives will be stated.

3.4 Relationship to Legislation, Permitting, Regulatory Agencies and Policies

The EIS shall identify and discuss the project within the context of all existing relevant legislation and policies (municipal, provincial and federal). The proponent shall provide a comprehensive list of permits and regulatory approvals required for the undertaking. The list shall include the following details:

- activity requiring regulatory approval;

- name of permit and/or regulatory approval (eg. authorization).;
- legislation requiring compliance; and
- regulatory agency.

3.5 General Project Description

The EIS shall describe the scope of the undertaking for which an assessment is being conducted.

The EIS shall provide a written and graphic description (e.g. maps and drawings) of the physical features of the undertaking particularly as it is planned to progress through the construction and operation phases of its lifespan. The description should also address other phases of the project as can reasonably be foreseen, including modification, decommissioning and abandonment. Any assumptions which underlie the details of the project design shall be described, including impact avoidance opportunities inclusive of pollution prevention, and adherence to best management practices. Where specific codes of practice, guidelines and policies apply to items to be addressed, those documents shall be cited and included as appendices to the EIS, including mapping at an appropriate scale. Physical features include, but are not limited to:

- highway corridor location: ultimate boundaries of the proposed corridor and highway route in a regional context in relation to existing and proposed land uses and infrastructure such as road networks, trails, power lines, proximity to settled areas, individual and community water supplies, Innu land use areas, proposed or contemplated protected areas, wetlands, ecologically sensitive areas and archaeological sites shall be described;
- roads;
- right-of-way;
- intersections;
- stream crossings;
- temporary stream diversions;
- temporary construction camp(s), laydown areas;
- borrow pits and major excavations; and
- temporary sewage and waste disposal facilities.

3.6 Construction

The details, materials, methods, schedule, and location of all planned construction activities related to the physical features shall be presented including estimates of magnitude or scale where applicable. This is to include but not be limited to, the following:

- specific construction practices incorporating erosion and sedimentation control;
- construction schedule, including proposed time frames for right-of-way clearing, slash disposal, highway construction and construction adjacent to watercourses;
- site preparation (ie., grubbing/clearing of right-of-way, cut and/or fill operations, etc.);
- subgrade construction;
- stream crossing structures: location of watercourse crossings and their proposed infrastructure (e.g., bridge, culvert) as well as any feasible alternatives; their proposed specifications (e.g., clearance from watercourse, height, width, length, diameter); partial causeways and their infill area or footprint together with design criteria and standards; length, width, cross section and estimated types and amount of fill material required; best practices to be employed; and, all applicable regulatory requirements;
- instream activities (i.e., scheduling, duration);
- proposed structures, design features or construction practices intended to mitigate impacts on terrestrial species or habitats (e.g. wildlife corridors, wetland crossings, etc.);
- proposed structures, design features or practices to manage visual and noise impacts of construction activities;
- proposed methods for controlling dust from construction activities;
- excavations;
- blasting operations;
- vehicle types, truck routes, hours of operation of vehicles;
- transport, storage and use of hazardous materials, fuels, lubricants and explosives;
- establishment, operation and removal of construction camp and yard areas;
- sources and estimated volumes of acceptable types of aggregate and pit-run material with identification of any currently known sources likely to be used;
- methods for identifying and managing acid producing rock;
- disposal areas for excess/waste rock and overburden, including locations of any currently known or planned disposal sites, especially those for acid producing slate;
- disposal areas for organic soil, slash, grubbing and wood fibre, including locations of any currently known or planned disposal sites;
- methods of handling waste and refuse at work and camp locations*;*
- removal of temporary operations; and
- site rehabilitation and monitoring plans for all disturbed areas.

In order to properly assess the socio-economic impacts in the region specific information on the 2,800 seasonal construction jobs shall be detailed. Specific numbers by occupation, gender and period of employment, as well as an indication of whether these positions are normally filled by local area contractors shall be provided. Initiatives to increase opportunities for women and Innu people in

occupations in which they are under-represented shall be described using the experience of employment of women and Innu people for the Red Bay to Cartwright Trans Labrador Highway and construction of site infrastructure at Natuashish and Voisey's Bay to establish targets.

3.7 Operation and Maintenance

All aspects of the operation and maintenance of the proposed development shall be presented in detail, including information on operation and maintenance positions by occupation, gender and period of employment. In addition to the employment information related to operation and maintenance it is important to include environmentally relevant information such as the location of maintenance support areas, types of maintenance proposed (e.g., dust control, use of salt), material storage locations, and the likely sources of aggregates or maintenance and winter surface treatment for a reasonable operational period of the road.

3.8 Abandonment

The predicted lifespan of the highway and temporary facilities shall be indicated. If the highway is not intended to operate in perpetuity, details regarding decommissioning and abandonment shall be presented.

4. ENVIRONMENT

4.1 Existing Environment

The EIS shall identify the study area and shall describe the existing biophysical and socio-economic environment of the study area, and the resources within it, taking an ecosystem approach. **Valued Ecosystem Components (VEC's) (as defined by Beanlands and Duinker, 1983)** shall be identified and described. In addition, the EIS shall describe environmental interrelationships and sensitivity to disturbance.

The description of the existing environment shall be in sufficient detail to permit the identification, assessment and determination of the significance of potentially positive and adverse effects that may be caused by the highway.

This description shall focus on environmental components, processes, and interactions that are either identified to be of public concern or that the proponent considers likely to be affected by the proposed highway. The EIS shall indicate to whom these concerns are important and the reasons why, including social, economic, recreational, cultural, spiritual, and aesthetic considerations. The EIS

shall also indicate the specific geographical areas or ecosystems that are of particular concern, and their relation to the broader regional environment and economy, (e.g., the contribution of the Eagle River Plateau ecoregion to critical habitat and populations of fish and migratory birds, the presence of particular species such as woodland caribou (Red Wine and Mealy Mountain herds), and the contemporary use of the area by Innu and other residents of Labrador).

Aboriginal and other local knowledge of the existing environment shall be an integral part of the EIS, to the extent that it is available to the proponent. In describing the physical and biological environment, the EIS shall consider available Aboriginal and scientific knowledge and perspectives regarding ecosystem health and integrity. The EIS shall identify and justify the indicators and measures of ecosystem and social health and integrity used, and these shall be related to project monitoring and follow-up measures.

Description shall reflect four seasons in the study area where appropriate, through the use of original baseline studies or existing data. If the study results or data has been extrapolated or otherwise manipulated to depict environmental conditions in the study area, modeling methods and equations shall be described and identify calculations of margins of error.

The timing and extent of any surveys for flora, fauna and ecologically sensitive areas must be provided.

A qualitative and quantitative description of the present environment shall include, but is not limited to:

- meteorological conditions are to be described, including weather patterns along the proposed route(s) as they relate to highway operation and maintenance. Include how snow, ice and wind conditions may be expected to change with geographic conditions and seasons, and how these relate to the proposed highway;
- atmospheric conditions are to be described, including wind speeds and directions, precipitation amounts and precipitation chemistry. Identify what Probable Maximum Precipitation levels are used and how they relate to the proposed highway. Particular attention is to be paid to ambient dust levels in areas where construction activities may contribute to increased dust levels;
- background ambient noise levels are to be characterized for various locations along the corridor where traffic noise on the proposed highway could be expected to be heard and felt to be a negative impact (e.g., sensitive wildlife habitat);
- hydrological conditions consisting of hydrologic, hydraulic and design parameters and the methodologies used to determine the dimensions and

capacities for all watercourse crossings, including but not limited to: design return period, climate data, watershed characteristics, ice formation, ice breakup and movement, and estuarine features; detailed information (to meet the requirements of the Water Resources Division of the Department of Environment) concerning number, location, and estimated (identified from 1:50,000 topographic mapping, aerial photography and aerial reconnaissance) site information on each proposed crossing including: water depth, width, flow rate, substrate type, and potential obstructions to navigation;

- hydrological conditions consisting of hydraulic and water quality of representative surface water bodies in the vicinity of the highway, especially downstream. Water quality samples being collected in conjunction with fish habitat surveys may be sufficient but in addition to the parameters being measured a metal scan must be included. Baseline water quality and quantity study will form the basis of a subsequent environmental effects monitoring program. Drainage areas of individual streams both above and below the proposed highway shall be described, including calculations of each watercourse's upstream drainage area as well as water quality prior to construction. Based on seasonal flow estimates, and on prior salt loading data for the area, estimate salt and budget loading to the surface waters and potential change in water quality;
- geography and topography of the study area is to be described;
- geology (both bedrock and surficial), and geomorphology utilizing existing geomorphological data, along proposed corridor(s) including information concerning the location, estimate of the volume, and acid production/consumption data of acid bearing bedrock formations to be encountered and disturbed and the locations and areas of ground instability prone to slumping or landslides. Identification of surficial cover, including overburden depth, soil types, permeability and porosity and areas of high risk erosion, including possible permafrost. The potential for disturbance of contaminated soils is to be identified. Any areas having known or proven economic mineral deposits, areas under advance mineral exploration, and the location and extent of existing and abandoned mines, pits and quarries is to be identified;
- wetland resources including location, size and class of any wetland within a predicted zone of influence and conduct of a wetland evaluation. The true ecosystem value of each wetland is to be examined using comprehensive valuation methodology that assesses component, functional and attribute values. Field surveys and investigations required to supplement available data must be completed in an acceptable manner. The Federal Policy on Conservation of Wetlands shall take into account all wetlands which will potentially be impacted directly or indirectly;
- flora, including typical species, rare plants, species-at-risk, and potential habitat for flora species-at-risk. Current information can be obtained from appropriate

sources and augmented by field surveys and investigations required to supplement available data. Available data, survey results and detailed mitigation measures that demonstrate a special emphasis on avoidance of environmental effects is to be included in the EIS;

- fauna (including migratory species), fauna species-at-risk, and potential habitat for fauna species-at-risk, including, but not limited to Woodland Caribou. Current information can be obtained from appropriate sources and augmented by field surveys and investigations required to supplement available data. Information on furbearers may utilize surveys conducted as construction proceeds or surveys conducted during component studies. Available data, survey results and detailed mitigation measures that demonstrate a special emphasis on avoidance of environmental effects is to be included in the EIS; and,
- fish, including, but not limited to, Eastern Brook Trout and Atlantic Salmon.

The identification of known data gaps is imperative.

Discussion of the description of the existing environment shall be developed for each alternative drawing specific reference to the VECs. Detailed discussions shall be developed for the following VECs:

- Raptors;
- Caribou;
- Furbearers;
- Migratory birds, including waterfowl with particular consideration of Harlequin Duck and forest birds, and their habitats, with emphasis on species at risk or species under hunting pressure;
- flora and fauna species at risk, including rare or endangered plant species;
- geomorphology;
- Water resources, including water quality parameters sensitive to erosion and sedimentation, acid rock drainage and road salt;
- Wetlands, including wetland function;
- Riparian habitat and other known sensitive habitats;
- Historic resources, including, but not limited to archaeological, paleontological, burial, cultural, spiritual, and heritage sites;
- Tourism and recreation (emphasis on sport and recreational fishery, adventure tourism and other activities which may be sensitive to increased access);
- the Akamiuapishku/Mealy Mountain National Park Feasibility Study Area and the Feasibility Study of potential establishment of a national park, including its size, geographic area, ecological integrity and wilderness character (including landscape aesthetics, vistas and noise-scapes);
- Resource use and users including:

- information on historic and contemporary land use by the Innu shall be described. Contemporary land use will include land use within "living memory" of informants, and with reference to the Innu, shall describe both pre-settlement (circa 1960) and post-settlement land use patterns;
- information on historic and contemporary land use by other residents of Labrador;
- existing uses and users of watercourses;
- a description of patterns of current and planned land use and settlement along the proposed highway corridor(s) including, but not limited to, planning strategies, proposed development, utilities and development boundaries;
- a detailed description of the historical and current utilization (e.g., recreational, commercial, subsistence) of all proposed watercourse crossings for navigational purposes;
- access to and alienation of forest resources relating to the alternative routes;
- information on potential protected areas such as parks, sanctuaries or preserves, including the potential for designation of the Eagle River under the Canadian Heritage Rivers System; and,
- wilderness characteristics, including landscape aesthetics, vistas and noise-scapes;

- Fish and fish habitat; and,
- Community Life, Employment and Business.

4.2 Component Studies

Component studies generally have the following format: (i) Rationale/Objectives, (ii) Study Area, (iii)Methodology, and (iv) Study Outputs.

(i) Rationale/Objectives

In general terms, the rationale for a component study is based on the need to obtain additional data to determine the potential for significant effect on a valued ecosystem component due to the proposed undertaking, and to provide the necessary baseline information for monitoring programs.

(ii) Study Area

The boundaries of the study area shall be proposed by the proponent and will be dependent on the valued ecosystem component being investigated.

(iii) Methodology

Methodology shall be proposed by the proponent, in consultation with resource agencies, as appropriate. The methodologies for each component study shall be summarized in the EIS.

(iv) Study Outputs

Study outputs shall be proposed by the proponent. Information and data generated shall be sufficient to adequately predict the impacts of the highway on the valued ecosystem component.

Component Studies shall be prepared for the following VECs (where new information becomes available as a result of baseline studies, additional component studies may be required):

1) Land and Resource Use

The Component Study shall describe historical and contemporary uses of the study area, including the use of lands and resources by Innu people. In addition it shall describe and analyze changes in land and resource use resulting from previous road developments in Labrador.

2) Migratory birds (with emphasis on waterfowl and including but not limited to Harlequin Duck)

3) Raptors

4) Caribou

5) Fish and Fish Habitat

In consultation with Fisheries and Oceans Canada (DFO), and in compliance with the guidance document "Standard Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador: Rivers and Streams" (1998), field survey information using the Beak Classification System (e.g., qualitative assessment of fish habitat types, approximate stream width and length, area, bank material and backslope, vegetation, presence of potential barriers, etc.) shall be required upstream and downstream (250 m each way depending upon stream morphology) of all proposed watercourse crossings identified from 1:50,000 mapping, aerial photography and aerial reconnaissance. Any additional fish habitat information requirements (e.g., quantitative assessment, ground survey, etc.) for purposes of assessment identified during consultation with DFO shall also be provided. In addition to describing the quality and quantity of fish habitat, the proponent should also discuss existing fish species and fisheries (e.g., recreational, commercial, subsistence, etc.). DFO will require such information in order to fully

assess the potential impacts of the proposed undertaking and ensure the protection of fish and fish habitat.

Qualitative descriptions of fish populations, including abundance and life history parameters, in each of the four watersheds that the highway will traverse shall be provided.

Fish population sampling is to be conducted in accordance with the sampling protocol developed by Inland Fish and Wildlife Division. Sampling may occur as construction proceeds.

6) Historic Resources

The Component Study and the EIS shall not contain any data or maps which indicate the exact locations of known historic resources. All data or maps should reference specific historic resource locations in a general context, within a one kilometer block. Exact locations of known historic resources shall be provided only to the proponent, the Innu Nation and the Provincial Archaeology Office, on a confidential basis.

7) Tourism and Recreation

Describe existing sport and recreational fishing and hunting, adventure tourism and other tourism and recreational activities carried out within the study area, including outfitting camps, and identifying the contribution of the tourism and recreation industry to the local economy, including employment, expenditures and revenue generated.

8) Community Life, Employment and Business

Describe the functioning and health of the socio-economic environment, addressing a broad range of matters that affect the people and communities in the study area. Describe the local economies of individual communities and the region as a whole. Describe the production and supply of goods and services within individual communities and the region.

4.3 Data Gaps

Information gaps from a lack of previous research or practice shall be described indicating baseline data/information which is not available or existing data which cannot accurately represent environmental conditions in the study area over four seasons. If background data have been extrapolated or otherwise manipulated to depict environmental conditions in the study area, modeling methods and equations shall be described and shall include calculations of margins of error.

4.4 Future Environment

The predicted future condition of the environment described under 4.1 within the expected life span of the undertaking, if the undertaking were not approved. This information is required when attempting to distinguish highway-related environmental effects from environmental change due to natural processes, such as, surface erosion, cyclical population changes, etc. Specific characteristics of the future environment to be considered if the undertaking were not approved include degree of forest habitat fragmentation, boundaries of the potential Mealy Mountain National Park, greenhouse gas (GHG) emissions and losses of GHG sinks, negative and positive environmental effects of forest fires, variations in wildlife abundance and distributions, and demographic and socio-economic trends. Boundaries and scale of such descriptions shall be appropriate to those elements of the environment discussed, e.g., site-specific or landscape-level; biological, socio-economic, cultural, etc.

5. ENVIRONMENTAL EFFECTS

The EIS shall describe the scope of the assessment being conducted for the undertaking.

The EIS must also address environmental effects as defined under CEAA. "Environmental effect" refers to any change that the project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and includes any change in the project that may be caused by the environment.

The EIS shall contain a comprehensive analysis of the predicted environmental effects of each project alternative for the VEC's and on any other environmental components, processes, and interactions that are identified to be of public concern or that the proponent considers likely to be affected by the proposed highway. If the effects are attributable to a particular phase of the project (construction, operation or maintenance) then they will be designated as such. As part of the comprehensive analysis the following must receive particular attention:

- land and resource use: predictions of any change in land and resource use resulting from the highway, for each phase (construction, operation, modification, abandonment). Discuss the negative effects and benefits of the project on the use of lands and resources by Innu people and other residents of Labrador with particular attention paid to considerations related to the contemporary use of lands and resources by Innu people;

- proposed Akamiuapishku/Mealy Mountain National Park: potential effects of the highway on the establishment and operation of the proposed Akamiuapishku/Mealy Mountain National Park, with an emphasis on the potential effects of the highway on the establishment, operation and ecological integrity of the proposed park;

- fish and fish habitat: identification and assessment of fish stocks potentially affected by the highway; an assessment of ecosystemic considerations relating to the health and productivity of aquatic resources potentially affected by the highway, including migratory patterns and sensitive periods; a quantification of any aquatic habitat loss, impairment of ecosystem function, or potential change in productivity or population likely to result from the highway;

- water resources: identify and discuss water resources issues associated with the highway, effects of erosion, sedimentation, diversions, channeling resulting in changes in water quality, quantity or rate of flow. Potential sources of contamination resulting from all phases of the highway (e.g., petroleum products, road chemicals including road salt and dust control agents) shall be assessed;

- tourism and recreation: an assessment of the likely effects of the highway on tourism and recreation within the study area, including any increase or decrease in existing activities or the introduction of new activities; an assessment of likely effects of the project on the establishment or operation of federal and provincial parks, sanctuaries or preserves (other than the Akamiuapishku/Mealy Mountains National Park), including the potential for designation of the Eagle River under the Canadian Heritage Rivers System; and

- community life, employment and business: identification of direct and indirect effects of the highway on local economies of individual communities and the region as a whole; identification of the effects of the highway on the production and supply of goods and services within individual communities and the region; identification of employment and business opportunities during each phase of the highway, including construction and highway maintenance, which would be available to local people, with particular reference to members of the Innu Nation; description of training and education requirements required for local people, with particular reference to members of the Innu Nation, to take advantage of any jobs or business opportunities associated with each stage of the project, and discussion of how such training and education requirements might be met prior to each stage; discussion of the effects of the project on employment and business opportunities for women; discussion of any environmental effects of the highway which may affect women differently than men; description of predicted effects of the project on the availability of goods and services throughout the region; description of

predicted effects of the project on transportation and shipping within the region, including any mode shifting that may occur.

The EIS shall also assess the effects of the environment on the highway, and measures to address those effects (e.g., road salt) and the effects on the environment of such measures as well as the potential environmental effects of structural failures that may result from effect of the environment on the highway.

The capacity of renewable resources that are likely to be significantly affected by the highway to meet the needs of the present and those of the future must be addressed.

Predicted environmental effects (positive and negative, direct and indirect, short and long-term) shall be defined quantitatively and qualitatively for each alternative and for each valued ecosystem component. In this regard, the EIS shall offer the study strategy, methodology and boundaries of the assessment which includes the following considerations:

- the VEC within the study boundaries and the methodology used to identify the VEC;
- definition of the spatial and temporal study boundaries for the interactions of the highway, as proposed or subject to subsequent modification, with VECs and the methodology used to identify the study boundaries;
- the temporal boundaries (i.e., duration of specific project activities and potential effects) for construction and operation;
- the strategy for investigating the interactions between the project and each VEC and how that strategy will be used to coordinate individual studies undertaken;
- the strategy for assessing the project's contribution to cumulative effects on each VEC;
- the strategy for predicting and evaluating environmental effects, determining necessary mitigation, remediation and/or compensation, and for evaluating residual effects;
- definition of effect significance criteria against which to evaluate the potential effect of interactions;
- description of potential interactions;
- discussion of issues and concerns which relate to specific interactions;
- discussion of the existing knowledge on information related to the interactions; and
- analysis of potential effects (significance, positive or negative, etc.).

In the latter regard, the proponent shall offer a definition of significance for each category examined (eg. biological, physical, economic, social, cultural, archaeological, etc.) and shall indicate to whom these concerns are important and the reasons why, including social, economic, recreation, cultural, spiritual, and aesthetic considerations.

Environmental effects shall be defined and discussed in the following terms for the phases of the highway (construction, operation, modification and decommissioning): nature, spatial extent, frequency, duration, magnitude (qualitative and quantitative), significance, and level of certainty.

The environmental effects of the project, including the environmental effects of malfunctions or accidental events that may occur in connection with the project shall be discussed with respect to risk, severity and significance. Consequences of low probability, high impact events, including design failure, shall also be described. In particular, the potential for forest fires must be addressed due to the remote nature of the road. The proponent must demonstrate adequate prevention, control and fire fighting capabilities.

Sustainable Development

The contribution of the project to sustainable development shall be assessed in the EIS, with emphasis on the following objectives:

- the preservation of ecosystem integrity, including the capability of natural systems to maintain their structure and functions and to support biological diversity;
- respect for the right of future generations to the sustainable use of renewable resources; and,
- the attainment of durable and equitable social and economic benefits.

The EIS shall include an evaluation of:

- the extent to which the highway may make a positive overall contribution towards the attainment of ecological and community sustainability, both at the local and regional levels;
- how the planning and design of the highway have addressed the three objectives of sustainable development stated above;
- how the monitoring, management and reporting systems will attempt to ensure continuous progress towards sustainability; and,
- the identification of appropriate indicators to determine whether this progress is being maintained.

Cumulative Environmental Effects

Consideration of any cumulative effects on valued ecosystem components that are likely to result from the project in combination with other projects or activities that have been or will be carried out shall be discussed in the EIS. Particular emphasis shall be placed on the significant increase in human access and the attendant implications for increased development pressure along with induced development (e.g., forest

harvesting, fish harvesting, fur harvesting). The assessment of cumulative environmental effects shall specifically address, but shall not be limited to, a consideration of the impact of the highway on:

- future road and related infrastructure development scenarios in central and southern Labrador;
- the Akamiuapishku/Mealy Mountain National Park Feasibility Study and potential establishment of a National Park;
- hydroelectric developments, including transmission infrastructure;
- forestry development;
- tourism and recreation; and
- use of lands and resources by Innu and other residents of Labrador.

Addressing cumulative environmental effects shall involve considering:

- temporal and spatial boundaries;
- interactions among the highway's environmental effects;
- interactions between the highway's environmental effects and those of existing projects and activities;
- interactions between the highway's environmental effects and those of planned projects and activities; and,
- mitigation measures employed toward a no-net-loss or net-gain outcome (e.g., recovery and restoration initiatives pertinent to a VEC that can offset predicted effects).

6. ENVIRONMENTAL PROTECTION

6.1 *Mitigation*

Mitigative measures that are technically and economically feasible, that have or will be taken, to avoid, minimize or eliminate the negative, and enhance the positive environmental effects, shall be described and discussed with emphasis on pollution prevention, avoidance of environmental effect and best management practices. Mitigation includes the elimination, reduction or control of the adverse effects or the significant environmental effects of the highway and may include restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

The policies and any specific commitments on the part of the proponent for environmental protection shall be identified.

In addition to any preferred mitigation measures identified, the EIS shall indicate what other mitigation measures were considered and explain why they were not adopted. Trade-offs between cost savings and effectiveness of the mitigation measures shall be evaluated. The EIS shall identify who is responsible for the implementation of these measures and the system of accountability, including the obligations of all contractors and subcontractors.

Mitigative measures specific to the following must be addressed in particular:

- air quality: through dust control during highway construction, operation and maintenance;
- noise effects: mitigation of increased noise levels during highway construction and operation;
- surface water quality and quantity: outline siltation, erosion and run-off control features, storm drainage management procedures and measures, including specific reference to seasonal variation, that will be used in the following situations: (a) clearing and grubbing of the corridor; (b) installation of watercourse structures; (c) subgrade work; (d) construction of service roads; and, (e) highway maintenance;
- contaminated soils: if they are to be disturbed, discuss methods to minimize adverse effects;
- road salt and dust control chemicals: if proposed to be used, a management strategy must be described;
- flora species: discuss measures to be taken to minimize effects of road construction, operation and maintenance. Include any plans for landscaping and preservation of existing vegetation. Demonstrate how priority will be placed on the use of native species for revegetation efforts. Describe steps to prevent the introduction of invasive species;
- fauna species: describe measures to be taken to minimize effects of road construction and operation on terrestrial and aquatic fauna (including avifauna). Include any plans for preservation of existing habitat and compensation for loss or degradation of aquatic and terrestrial habitat (i.e., habitat rehabilitation or replacement);
- wetland resources: discuss avoidance of wetland de-watering and mitigation measures to maintain ecological and hydrological integrity of wetlands. Identify plans for preservation of existing wetlands and compensation for loss or degradation of the functional values of wetlands affected by the highway. Include plans to monitor the success of mitigative action. Demonstrate how an emphasis will be placed on avoidance of potential losses of wetland function; and,
- use of land and resources by Innu and other resource users in the study area: discuss measures which can be taken to mitigate adverse impacts of the project on Innu land use and to avoid conflict between Aboriginal and non-aboriginal resource users in the study area.

Proposed mitigative strategies integral to the phases of the project (construction, operation, modification and decommissioning) shall be clearly identified and addressed. The effectiveness of the proposed mitigative measures shall be discussed and evaluated. Where possible and appropriate, compensation for losses that cannot be mitigated by

any other means shall be examined. Mitigation failure shall be discussed with respect to risk and severity of consequence.

There must be full consideration for the precautionary principle which states, "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The best available technology and best management practices must be considered. Consideration must be given for impact avoidance through implementation of scheduling and siting constraints and pollution prevention opportunities. The EIS shall assess how the highway conforms to the precautionary principle, including but not limited to consideration of the following in relation to each VEC:

- policies, plans or strategies which avoid creating adverse environmental effects;
- policies, plans or strategies to mitigate adverse environmental effects of the highway;
- contingency plans to address worst-case scenarios, including risk assessments and evaluations of any uncertainty;
- monitoring programs which are designed to ensure rapid response in the event adverse effects are detected; and,
- provisions for liability in the event of adverse effects and associated damage.

Where data is not available, the EIS shall describe the means by which the proponent intends to implement a precautionary approach to avoid or prevent adverse environmental effects, and any proposed follow-up studies to address data gaps and monitor the effectiveness of mitigation.

6.2 Emergency Response/Contingency Plan

An emergency response plan shall be outlined that details measures to be taken to effectively respond to any foreseeable mishap that may occur as a result of the undertaking. The following items should be considered when developing such a plan:

- proper first-aid kits,
- numbers of workers trained in first aid, to the appropriate level,
- backboards/stretchers,
- communication devices suitable for the work sites,
- emergency names and numbers,
- arrangements for medivac of injured to Happy Valley-Goose Bay, and
- action plan (roles and responsibilities of work crews).

A contingency plan shall be outlined that details measures to be taken to effectively respond to a spill event in a timely manner. The plan should reflect a consideration of the risk of spills associated with construction, operation and maintenance of the road and the environmental sensitivities to such a spill. The contingency plan must specifically address contamination or drainage to surface water and/or groundwater resources and protection of water quality, contingency and remediation plans for drainage to aquatic and terrestrial habitat as a result of accidental events.

6.3 *Environmental Monitoring and Follow-up Programs*

Environmental compliance and effects monitoring programs for construction, operation, maintenance, modification and decommissioning phases of the highway shall be described. Programs must allow for testing of the accuracy of impact predictions and effectiveness of mitigation measures. Programs must support an adaptive management approach and demonstrate preparedness for a range of potential outcomes to be confirmed through follow-up.

Important ingredients of monitoring programs include:

- elements of the environment (i.e., air emissions, erosion, habitat use, etc.) that are to be monitored;
- where monitoring will occur;
- frequency and duration of monitoring;
- identification of resource agencies that will review program design and results;
- consultation with, and appropriate involvement of, aboriginal groups;
- submission of results; and,
- protocols for the interpretation of results and subsequent actions to be taken based on findings.

Discussion shall be presented on the feasibility of establishing sample plots, established at various points along the alignment and at various distances from the right-of-way across the full range of representative eco-types to determine any long-term changes in plant communities related to effects of increased access.

Monitoring of employment on the construction positions shall be detailed and specific numbers by occupation, gender and period of employment during each year of construction shall be provided at the conclusion of each construction season.

Known or planned follow-up programs specifically related to detecting and monitoring cumulative environmental effects are to be described. Objectives, methodology, duration and reporting covered by the program evaluating effectiveness of avoidance and mitigation measures on long-term effects from the project, and subsequent induced development, are to be described. Programs may be proposed specifically for wildlife (including migratory birds) and their habitats, species-at-risk and their habitat, wetlands, air quality, water quality and increased use of all-terrain vehicle (ATV) traffic along the highway corridor and surrounding area.

The EIS shall include an assessment of the present capacity of resource agencies to mitigate and monitor cumulative environment effects resulting from increased access to the study area.

6.4 Rehabilitation

A plan of proposed rehabilitation measures for the construction activities associated with the highway shall be given with an explanation of how the measures will reduce

or eliminate various negative effects during construction, operation and decommissioning**.**

7. RESIDUAL EFFECTS AND SELECTION CRITERIA FOR PREFERRED OPTION

7.1 *Residual Effects*

Residual effects are those adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technologies, best management practices or other acceptable means.

The EIS shall list and contain a detailed discussion and evaluation of residual effects, which shall be defined in terms of nature, spatial extent, frequency, duration, magnitude (qualitative and quantitative), significance (including the criteria for determining significance) and level of certainty. Those effects that cannot be mitigated or avoided shall be clearly distinguished from those effects that will not be mitigated or avoided. Positive residual effects shall also be discussed and evaluated.

Particular attention shall be paid to residual effects of increased access on potential for forest fires and unauthorized use of resources such as illegal harvesting of fish, wildlife and forest resources.

The EIS shall contain a concise statement and rationale for the overall conclusion relating to the significance of the residual adverse environmental effects. The EIS shall, for ease of review, include a matrix of the environmental effects, proposed mitigation and residual positive and adverse effects.

7.2 *Effects Evaluation and Selection of Preferred Alternative*

This section (as compared to Section 3.3 - Alternatives) is intended to provide a detailed discussion and comparison of the residual effects relative to the preferred option and viable alternatives (as applicable).

All selection criteria, including environmental, economic, social, and technical, shall be presented and discussed in sufficient detail to allow a comparative analysis with regard to costs, benefits and environmental risks associated with both the preferred and alternative options.

8. PUBLIC PARTICIPATION

A proposed program of public information shall be outlined. Open House Public Information Sessions shall be held to present the proposal and to record public concerns. The proponent shall hold public information sessions in the communities of

Port Hope-Simpson, Cartwright, North West River/Sheshatshiu and Happy Valley-Goose Bay. Public concerns shall be addressed in a separate section of the EIS. Protocol for these sessions will comply with Section 10 of the Newfoundland and Labrador Environmental Assessment Regulations, 2000. Public notification specifications are outlined in Appendix A.

9. ENVIRONMENTAL PROTECTION PLAN

A site specific Environmental Protection Plan (EPP) for the proposed undertaking shall be submitted and approved by the Minister of Environment *before* any construction on the project begins. Consultation with the Innu Nation shall also be required prior to submission of the EPP. For the purposes of the EIS an outline of the EPP shall be included. The EPP shall be a "stand alone" document with all relevant maps and diagrams. Statements regarding the commitment to and philosophy of environmental protection planning and self-regulatory and compliance monitoring shall be restricted to the EIS. The target audience for the EPP will be the resident engineer, site foreman/supervisor, proponent compliance staff and any environmental surveillance officer. Therefore the EPP shall concentrate on addressing such issues as construction/operation mitigation, permit application and approval planning, monitoring activities, contingency planning for accidental and unplanned events and contact lists. In addition, the EPP shall contain a tabular breakdown of major construction and operational activities into sub-components, followed by permits required, field mitigation and contingency planning where appropriate. The objective is to present concise, comprehensive and easily accessed environmental protection information for field use by the target audience.

The EPP should not include any analysis of impact prediction or mitigation. The EPP is intended to summarize all of the environmental protection commitments outlined in an acceptable EIS, in a concise, formatted document for primary use in the field.

10. REFERENCES CITED

Provide a bibliography of all citations in the EIS. Provide a bibliography of all project-related documents already generated by or for the undertaking.

11. PERSONNEL

Brief descriptions of the expertise and qualifications of personnel involved in the completion of the EIS shall be provided.

12. COPIES OF REPORTS

Copies of reports produced for any studies undertaken specifically in connection with this Environmental Impact Statement shall be submitted.

APPENDIX A

Public Notices

Under the provisions of the Environmental Assessment Regulations 2000, Section 10, and where the approved Guidelines require public information session(s), the following specified public notification requirements must be met by the proponent prior to each meeting:

Minimum information content of public advertisement - (Proponent to substitute appropriate information for italicized items):

PUBLIC NOTICE

Public Information Meeting on the Proposed

NAME OF PROPOSED UNDERTAKING

LOCATION OF PROPOSED UNDERTAKING

Will be held at

DATE AND TIME

LOCATION

This meeting will be conducted by the proponent

PROPONENT NAME AND CONTACT PHONE NUMBER

as part of the required environmental assessment process for this project. The purpose of this meeting is to describe all aspects of the proposed project, the activities associated with it, and to provide an opportunity for all interested persons to request information or state their concerns.

ALL ARE WELCOME

Minimum newspaper ad size: 2 column widths.

Minimum posted ad size: 7" x 5"

Minimum newspaper ad coverage: Weekend preceding meeting and 3 consecutive days prior to meeting date; to be run in newspaper locally distributed within meeting area or newspaper with closest local distribution area.

Minimum posted ad coverage: Local Town or City Hall or Office, and local Post Office, within town or city where meeting is held, to be posted continually for 1 full week prior to meeting date.

Any deviation from these requirements for any reason must receive prior written approval of the Minister of Environment.

APPENDIX B

Tourism and Recreation Information for the Communities in Labrador Economic Zones 3 and 4

Tourism and Recreation Information for the Communities in Labrador Economic Zone

Community	Pop.	Land Area (km)	Major Economic Activities	Transportation	Telecommunications	Accommodations	Tours	Recreational Activities	Cultural Facilities/Festivals & Events
Zone 3									
Happy Valley-Goose Bay	8,655	306.42	Military airport	Air, boat, road, snowmobile		3 Hotel and Inn, 3 Bed and Breakfast	4 Tours services for rentals, outfitters, sport fishing, etc;	Scouting, swimming, skating, skiing, canoeing, soccer, softball, hockey, gymnastics, broomball, darts, music, etc.	Museum, book displays, art gallery, craftshops, carnival, living day festival, soccer tournament, trade exhibition, arts and music events, etc.
Mud Lake	73			By boat in the summer and fall, by snowmobile in the winter and spring	Aliant Telecom, Internet: Sympatico	Private hospitality		Outdoor rink, softball, gymnastics, etc.	Spring fair, featuring crafts, food, games, and entertainment, etc.
Sheshatshiu	1,108	72,427.28	Hunting, trapping, fishing	Paved road access to Happy Valley-Goose Bay	Aliant Telecom, Internet: Sympatico				Sheshatshiu Innu Etium Festival
Northwest River	567	2.64	Hunting, trapping, fishing	Paved road access to Happy Valley-Goose Bay (40 miles)	Aliant Telecom, Internet: Sympatico	1 Bed and Breakfast			Interpretation Centre Beach Festival, etc.
Zone 4, 2.5									
Cartwright	628	1.5	Fishery, crab plant	Air, ferry, snowmobile, TLH - Phase II	Aliant Telecom, Internet: Sympatico	1 Hotel		Darts, TV bingo, snowmobile treks, etc.	Festivals, etc.
Paradise River	21		Sawmills, guides to fishing and hunting camps on Eagle River	Air or snowmobile in the winter, TLH - Phase II					
Black Tickle	229		Fishery	Air, ferry in the summer and snowmobile in the winter	Aliant Telecom, Internet: Sympatico				Canada Day Celebration - family games and snacks, etc.
Norman Bay	52			Air, ferry in the summer and snowmobile in the winter					

Community	Pop.	Land Area (km)	Major Economic Activities	Transportation	Telecommunications	Accommodations	Tours	Recreational Activities	Cultural Facilities/Festivals & Events
Charlottetown	330	21.75	Shrimp processing	Air, ferry in the summer and snowmobile in the winter - TLH - Phase II	Aliant Telecom, Internet: Sympatico	1 Inn			State-of-the-art recreation centre, Shrimp Festival, etc.
Pinsent's Arm	59			Air, ferry in the summer and snowmobile in the winter	Aliant Telecom, Internet: Sympatico				Whelk Festival, etc.
William's Harbour	50			Air, ferry in the summer					Golden Cod Festival, etc.
Port Hope Simpson	577	32.5	Forest harvesting and processing, fish harvesting, craft construction, adventure tourism	Air, ferry in the summer and snowmobile in the winter	Aliant Telecom, Internet: Sympatico	1 Hotel, 2 Bed and Breakfast		Hiking, camping, biking, whale watching, ice fishing, angling, Nordic skiing, snowshoeing, dog sledding, snowmobile treks, etc.	Canada Day celebrations, Festival of Friends, Port Hope Simpson in the 30s, etc.
Mary's Harbour	474	8.12	Fishery, crab processing plant	Air, ferry in the summer and snowmobile in the winter, TLH - Phase II		1 Hotel			State-of-the-art recreation centre, Crab Festival, etc.
St. Lewis	312	8.8	Fishery, crab processing plant	Air, ferry in the summer and snowmobile in the winter, TLH - Phase II	Aliant Telecom, Internet: Sympatico	1 B ed and Breakfast			Festivals
Lodge Bay	88		Fishery	Air, ferry in the summer	Aliant Telecom, Internet: Sympatico				

Source: 1. Community Profiles: Zone 3 "Central Labrador Economic Development Board Inc. n.d..
2. "Community Profiles: Zone 4 "Southeastern Aurora Development Corporation n.d.
3. Central Labrador Economic Development Board Inc. n.d.
4. Happy Valley-Goose Bay n.d.
5. Communities in Regional Economic Development Board Zone 4 n.d.
6. Community Initiatives Schedule n.d.