
4.2.2 Wildlife

4.2.2.1 Caribou

Labrador's caribou (*Rangifer tarandus*) can be classified into two main groups, the migratory and sedentary (also known as woodland) ecotypes, which are distinguished by their use of calving grounds or fidelity to specific calving sites. Migratory caribou travel large distances, occupy large home ranges, and aggregate during calving periods. Conversely, sedentary caribou display limited movements, occupy smaller home ranges, and tend to disperse during the calving period (Schaefer et al. 2000; Bergerud et al. 2008).

The Project occupies a portion of Western Labrador which overlaps with the range of the George River (GR) Herd. Straddling the Québec-Labrador peninsula, the GR Herd is one of the world's largest *Rangifer* populations, with population estimates peaking at almost 800,000 individuals in the 1980's (Couturier et al. 1996; Russell et al. 1996, Rivest et al. 1998). This area of western Labrador overlaps the GR Herd as a portion of their winter range (Jacobs 1996).

In addition to the GR Herd, there is another migratory ecotype that is recognized on the Ungava Peninsula and known as the Rivière-aux-Feuilles ('Leaf River') (RAF) Herd. Existing and recognized sedentary populations include the Lac Joseph (LJ) Herd located south of the Assessment Area, and the Red Wine Mountains (RWM), the Joir River (JR), and the Mealy Mountains (MM) Herds all much further to the east. The Mealy Mountains act as a geographic barrier separating this herd from the other herds of Labrador, but the lack of a geographic barrier between the other three sedentary herds results in an overlap of herd ranges (Schmelzer et al. 2004; Bergerud et al. 2008). Schmelzer et al. (2004) indicates that during the winter months, the George River Caribou Herd encounters the outer limits of their ranges providing the opportunity for the intermingling of animals. The proposed site of the Project occurs entirely within the range of the GR Herd.

Although there is no evidence of sedentary caribou herds existing within the Assessment Area at present, they were reported historically (e.g., Caniapiscau or McPhayden Herds) (LWCRT 2005, Bergerud et al. 2008). The sedentary herds of this region have declined or disappeared since the 1960s with the advent of the snowmobile and expanded transportation network allowing greater access. The migratory and sedentary caribou inhabiting the Ungava peninsula (i.e., Labrador and northeastern Québec) are, and historically have been, an integral component of the way of life for aboriginal and non-aboriginal people for many centuries (Schmelzer and Otto 2003; Loring 2008).

As part of the baseline and monitoring research associated with this Project, LIM co-sponsored an intensive aerial survey of approximately 50 km radius of the Project (plus a similar distance around the NML project) during May 2009 (LIM and NML 2009). Completed in co-operation with the Provincial Governments of Newfoundland and Labrador and of Québec, this intensive survey of a 12,900 km² area located only 7 caribou [one group of four (one adult female that was captured and equipped with satellite collar, an adult female with a male calf, and a yearling male), a group of two (one adult male and one yearling male) and a dead female (estimated at 10+ years that was killed by a single wolf)], (Figure 4.19). These sightings and that of another group of caribou tracks were at least 22 km west and southwest of the Project. Measurements of two animals suggest these animals belong to the migratory ecotype, although tissue samples from these animals and a satellite collar deployed on an adult female may provide additional insight as to the herd affiliation.

Assessment Boundaries

Spatial and Temporal

Temporal boundaries for the George River and possible woodland caribou herd effects assessment comprise four timeframes: existing environment, construction phase (approximately six months), operation phase (approximately 5 years), and decommissioning phase (post-operation phase).

The range of the GR Herd occupies over 800,000 km² in Labrador and Northern Québec. Caribou from this herd travel large distances over the Québec-Labrador peninsula and aggregate on traditional calving grounds each June demonstrating strong site fidelity (i.e., returning to similar locations annually) (Schmelzer and Otto 2003). The GR Herd has been known to rut and overwinter in this area, but there is no evidence supporting any calving activities in the Assessment Area.

The nearest sedentary herd known to exist in the Schefferville area is the Caniapiscau Herd, located approximately 100 km west. The recognized range of this herd and of the Lac Joseph Herd (Bergerud et al. 2008), located southeast of the Project Area (200 km), are not believed to interact with the Project. RRCS (1989) indicated that the McPhadyen River Herd was known to have overlapped the Schefferville Area. Whether caribou from this woodland herd (or other woodland herd) still exist is unknown. Prior to the May 2009 survey (LIM and NML 2009), the most recent documented search effort was from the mid-1980s (Phillips 1982, St. Martin 1987). At the time of writing, the results from the May 2009 survey suggest that the caribou observed during that period are affiliated with the migratory ecotype (based on physical measurements of two animals), although additional information is being collected (i.e., through the satellite telemetry collar and pending genetics analyses). Despite this information and as a conservative measure in compliance with direction from the resource management agency, it is assumed that woodland caribou remain in the vicinity of Schefferville and as such, a woodland caribou strategy will be implemented during construction and Year 1 of operation, at which time it will be reviewed for appropriateness.

Administrative and Technical

The regulatory requirements and jurisdictional or planning programs that apply to the management of different species are referred to as administrative boundaries. This includes the listing of species by federal or provincial legislation and designations by COSEWIC, the Committee on the Status of Endangered Wildlife in Canada who listed the sedentary caribou populations of Labrador as "Threatened" (COSEWIC 2008, SARA 2008). Hunting of sedentary herds is illegal; however, the hunting of the migratory GR Herd is legal within the seasons (August 10-April 30) and quotas for George River are defined by the provincial government (NLDEC 2008).

Given the available information from the literature and from the results of the May 2009 aerial survey, there is sufficient information available on the migratory and sedentary caribou populations of the area to assess the potential interactions and environmental effects of the Project in light of the proposed mitigation (ongoing) and monitoring efforts associated with this Project.

Assessment Area

The caribou Assessment Area is delineated by a 100 km² grid block represented in Figure 4.17. This area includes an approximately 50 km area around the LIM claim areas of James North and James South, as well as the Redmond Mine Area where the initial mining will take place.

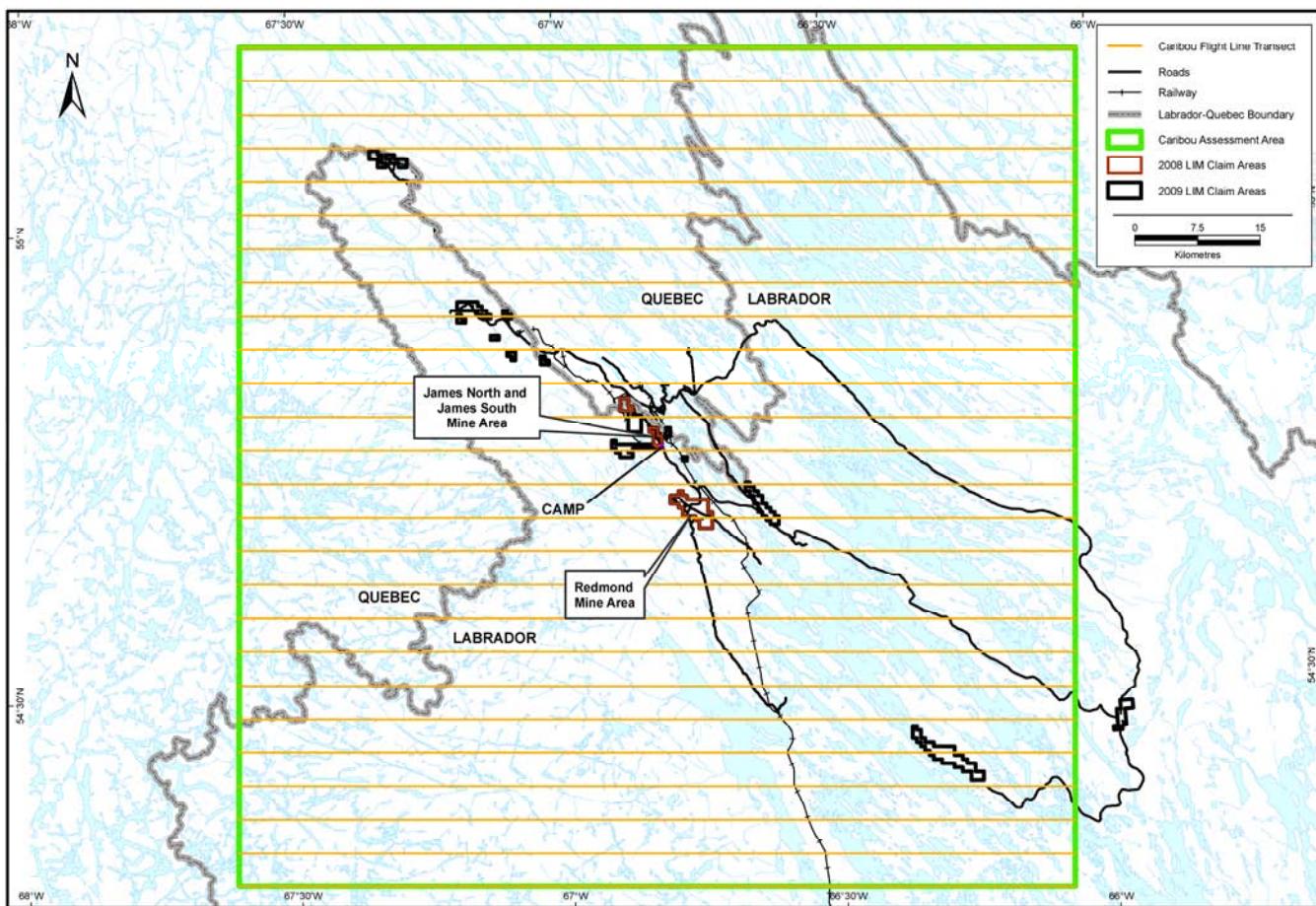


Figure 4.17 Caribou Assessment Area

Sources of Information

Government documents, peer-reviewed literature, and technical reports were examined for relevant information on caribou in Labrador and north-eastern Québec, focusing on the Assessment Area. The Study Team consulted Provincial Wildlife Division personnel in Labrador City, Happy Valley-Goose Bay, and Corner Brook, and representatives attended the 12th North American Caribou Workshop held in Happy Valley-Goose Bay. Local Aboriginal and non-Aboriginal groups were consulted and observations of wildlife and caribou were tracked during field studies. Caribou-related activities and information within the Project area have been monitored by a LIM representative. In addition, LIM has conducted public meetings with the Québec Innu (Montagnais) and traditional knowledge meetings with representatives of the Kawawachikamach Naskapi Nation to acquire traditional knowledge and presented caribou and other wildlife presence on drawings (August 2008 and March 2009). The recent aerial survey of most of the caribou Assessment Area in May 2009 (LIM and NML 2009), provided additional insight regarding distribution and abundance, as well as possible ecotype affiliation of caribou that were observed at this time.

Existing Environment

The caribou herds within Labrador and northeastern Québec occur within three large vegetation biomes. The taiga, in the southernmost portion of caribou range, is characterized by black spruce (*Picea mariana*), jack pine (*Pinus divaricata*), larch (*Larix laricina*) and terrestrial lichens, grading

northward to become forest tundra, which is sparsely populated by stunted black spruce and larch (Courtier et al. 1990). The tree line, which stretches from east to west along 58°N latitude in Québec and north of 56°N latitude in the elevated Labrador plateau (Hearn et al. 1990), delineates the transition from forest tundra to arctic tundra. The absence of trees and the presence of a lichen carpet with sparse thickets of stunted ericaceous plants are common to the arctic tundra (Couturier et al. 1990).

LIM operations will occur at the southern edge of the forest tundra, yet reflect extensive surface disturbance from previous mining operations. The baseline report prepared by AECOM (2008) for LIM describes the area as ranging from exposed tundra/exposed bedrock with lichen and sparsely populated trees and low-lying shrubs to low wetlands and boggy areas. Intermediate land classes consist of varied forest types, dominated by spruce-lichen and spruce-moss. The James North and James South properties have been approximately 50 percent disturbed as a result of previous mining activities on the landscape. The James property runs along both sides of an existing road which connects Schefferville to the Redmond property. Sparsely forested parallel ridges and valleys oriented northwest to southeast are typical of the local landscape (AECOM 2008).

Herd Ranges

Migratory Caribou

Schmelzer and Otto (2003) studied the winter range of the GR Herd and noted that the location of their winter range is unpredictable regarding site fidelity; however, after travelling large distances through the winter over the Québec-Labrador peninsula, they aggregate on traditional calving grounds (located several hundred kilometres north of the Assessment Area) each June. The annual range of the GR Herd includes tundra, forest-tundra, and boreal forest habitat and encompasses most of Northern Québec and Labrador between 55°N and 60°N latitude, from the Labrador Sea to Hudson Bay (Messier et al. 1988). There is a 47,000 km² tundra area used for calving by the GR Herd, considered smaller than that of any other large Canadian herds (Bergerud and Lutich 2003).

The Rivière-aux-Feuilles Caribou Herd occupies Northern Québec only, but their fall and winter range has often overlapped with that of the GR Herd (Créte et al. 1990). The recognized range of the RAF Herd does not include the Assessment Area (CRA 2004). While the GR Herd has declined in recent years, the RAF Herd has shown an increase, almost doubling in numbers since a census in 1991 at 260,000 and in 2001 at 628,000 individuals (Government of Québec 2005). Créte et al. 1990 state that telemetry data indicates that RAF Caribou calve and spend the summer north of the tree line and partially move south of the tree line in the winter, west of Kuujjuaq (1990). Recent research has suggested that the GR and RAF Herds overlap in their fall rutting range, resulting in genetic overlap, and may be functioning as a metapopulation (Boulet et al. 2007).

Although the ranges for these migratory herds are known, the specific movements of individuals are unpredictable from year to year (Bergerud and Lutich 2003; Schmelzer and Otto 2003). Within their range, caribou may be present in one location for a given year, but absent the next. This pattern was documented for the GR Herd by Schmelzer and Otto (2003) who attributed seasonal variation in winter habitat use to an avoidance strategy by the herd.

Woodland Caribou

In a recent review of sedentary woodland caribou on the Ungava Peninsula, Bergerud et al. (2008) describe the historical and current existence of such herds in this region of northeastern Québec and

western Labrador, including the Caniapiscau herd, the McPhadyen River herd, the Lac Joseph herd, and the Red Wine herd.

The eastern edge of the range of the Caniapiscau is described by RRCS (1989) as occurring approximately 100 km to the west of Schefferville. In a review of early aerial surveys (e.g., Banfield and Tener 1958, Des Meules and Brassard 1964, Pichette and Beauchemin 1973), Bergerud et al. (2008) indicate that animals 'were seen just west of Schefferville' in the 1950s and 1960s.

The McPhadyen River Herd is indicated by RRCS (1989) as overlapping the area of the Project, but they also do not provide any further detail. Bergerud et al. (2008) describe the efforts of Phillips (1982) and St. Martin (1987) and the confusion from the telemetry data of the latter investigation. Bergerud et al. (2008) suggest that the lack of philopatry observed in these collared animals in the mid-1980s shed doubt as to whether these animals should be 'called a herd and managed as a unit'.

The Lac Joseph Herd comprises a range of up to 59,000 km², that in the 1980s extended to as far north as 50 km southeast of Schefferville, but now has a seasonal range that is south of Churchill Falls (i.e., approximately 200 km southeast of Schefferville). Located over 200 km to the east is the Red Wine Mountains herd with a range of 46,000km² (Schmelzer et al. 2004).

The potential overlap of these herds (Figure 4.18) and the Project is adapted from the Labrador recovery strategy for woodland caribou (Schmelzer et al. 2004). Whether woodland caribou in the vicinity of the Project (i.e., within 50 km) remain, is unknown. The Lac Joseph Caribou Herd is the closest recognized sedentary herd to the Assessment Area, approximately 200 km southeast.

Population Sizes and Trends

Many studies have documented the history of the migratory GR Herd throughout the Ungava Peninsula and its annual migrations. In the 1950s, the GR Herd was estimated at 10,000 individuals and experienced a rapid increase to over 600,000 by the mid-1980s (Harrington 1996). This growth occurred despite the fact that accessibility to the herd resulted in increasing hunting pressure. Also, road development made travel to the herd easier, opening up more country to hunting (Harrington 1996). The most recent estimate of this herd is 296,000 individuals, based on a post-calving estimate (Couturier et al. 2004). The cause of the increase and decrease is a matter of much debate. However, the increase in survival and recruitment through decreased density-dependent natural mortality from wolf predation, and legal and illegal hunting, must have been involved (Hearn et al. 1990). Emigration to the increasing Rivière-aux-Feuilles population has also been suggested as a potential cause of the GR Herd's apparent decline (Boulet et al. 2007).

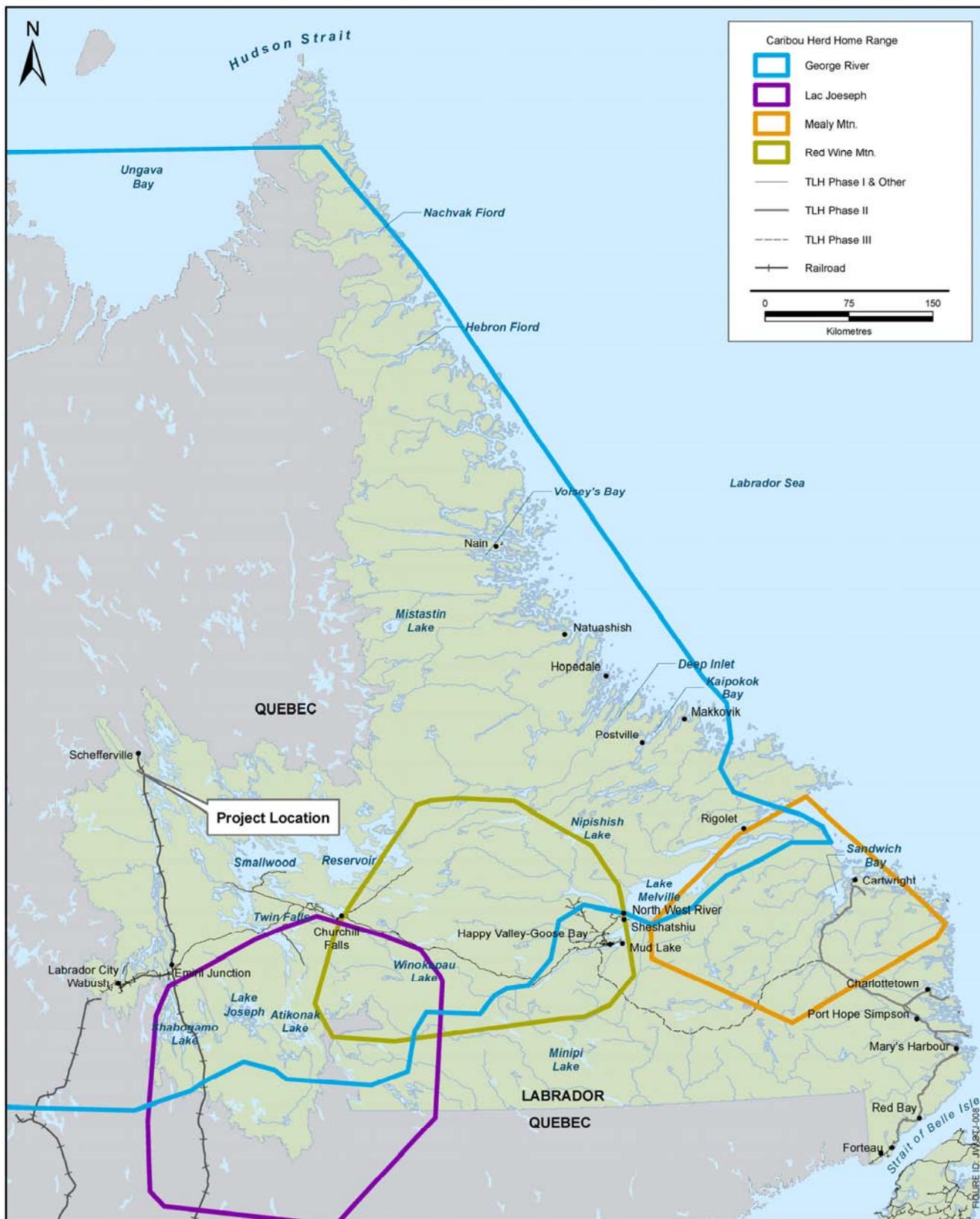


Figure 4.18 Selected Caribou Herd Ranges, Labrador and Northeast Québec (Source: Schmelzer et al. 2004)

The sedentary woodland populations in Labrador have been listed as "Threatened" by the Committee on the Status of Endangered Wildlife in Canada since May 2002 (COSEWIC 2008; SARA 2008). Population trends among the herds are mixed as the Red Wine Mountains Herd is showing a decline in number of individuals, while the Lac Joseph and Mealy Mountain Herds are indicating stabilization or an increase in number of individuals (Newfoundland and Labrador Inland Fish and Wildlife Division 2005). The most recent available estimate of the Caniapiscau herd is described in Bergerud et al. (2008) as 2,700 animals by Brown et al. (1986) and Paré and Huot (1985). There is no known estimate of the McPhadyen River herd and it may be questionable as to whether these caribou still exist. The George River Caribou Herd and Rivière-aux-Feuilles Herd are not listed as populations of conservation concern provincially or federally.

Population declines in the sedentary herds have been examined in relation to moose densities, predation by wolves, hunting and other factors, such as emigration (Coutois et al. 2003). Emigration of Red Wine caribou to the GR Herd may represent the second greatest contributor to loss of radio collared females during the period of decline, although it could not logically be quantified (Schaefer et al 1999). The most recent population estimates of these herds are presented in Table 4.8.

Table 4.8 Population Estimates for Five Herds in Southern Labrador

Caribou Herd ¹	Population Estimate	Year	Population Trend	References
George River	296,000	2001	Declining	Couturier et al. (2004)
Rivière-aux-Feuilles	628,000	2001	Increasing	Couturier et al. (2004)
Caniapiscau	926 600	1977 1977	Unknown	Le Henaff and Martineau (1981) and Brown et al. (1986) respectively in Bergerud et al. (2008)
McPhadyen River²	Unknown	Not completed	Unknown	Bergerud et al. (2008)
Lac Joseph	1,101	2000	Increasing	Chubbs et al. (2001), Schmelzer et al. (2004)
Red Wine Mountains	87	2003	Declining	Schmelzer et al. (2004)
Mealy Mountains	2,585	2002	Increasing	Otto 2002, Schmelzer et al. (2004)

¹ Sedentary populations also exist at Joir River and Torngat Mountains in Labrador.

² The May 2009 survey completed by LIM and NML observed 7 caribou (including one killed by a wolf) of unknown herd affiliation, over a large portion of the former range of these animals.

Habitat Use and Preference

For the migratory GR Herd, habitat can be described as tundra, forest-tundra and boreal forest habitat characteristic of the Boreal and Taiga Shield Ecozones. Habitat use is affected seasonally as the ranges change from winter to summer. Following an increase in herd population, summer habitat is considered spatially limited and alternative summer range is not available (Messier et al. 1988). Animals tend to avoid areas grazed during the previous winter and select alternate sites with more abundant lichen cover (Schmelzer and Otto 2003) having a preference for *Cladina* spp. (Cote 1998). Woodland caribou do not make migratory movements but there is a seasonal shift during calving and post-calving period to such forest types as black spruce forest, scrub or bog (Nalcor Energy 2009).

Caribou distribution and seasonal movements are a reflection of food availability in all seasons, insect relief during summer, and calving areas that have a low predator density that improves reproduction

and survival of herd members. Disturbances that alter or destroy habitat, or change in habitat effectiveness, may displace caribou to less favourable habitats.

Western Labrador experiences a high amount of snowfall annually, with a precipitation frequency of 67 percent recorded in western Labrador (i.e., Wabush (Environment Canada 2008)). Caribou in central Labrador, however, are able to tolerate greater snow depths than most other North American herds (Brown and Theberge 1990). Snow depth affects the ability of caribou to detect (through smell) forage on the ground. In consideration of the extreme snowfall conditions in Labrador, caribou display adaptive feeding strategies. As an example, there is evidence that caribou are capable of distinguishing features to locate forage on the ground despite snow coverage (Brown and Theberge 1990). For sedentary herds, snow cover is a major influence on caribou winter habitat use with animals making greater use of forested areas during years of less snowfall.

Migration Patterns

Winter movements and distribution of the GR Herd can be attributed to many factors including predation risk and snow cover. Bergerud and Luttich (2003) have observed a pattern that may be driven by predation noting that in years of shallow snow cover, the majority of this Herd moved south of the tree line, but in years of deep snow cover, a large portion of the Herd remained above the tree line (2003). Predation by wolves may be more prevalent during heavy snow years as caribou may be more susceptible. In an attempt to decrease predation risk, caribou move into wind-swept tundra habitats whereas the opposite can occur in years of lower snow cover (Bergerud and Luttich 2003) when caribou move into forested habitats.

Bergerud and Luttich (2003), in their study of the GR Herd from 1958 to 1993, also noted that the GR Herd generally localized and reduced travel rates in late November or early December as snow cover increased, moving into the more restricted winter ranges, which can typically be considered from December to mid-March. They also noted the spring migration to calving grounds occurred from mid-March to April with a mean date of April 8 (Bergerud and Luttich 2003). For at least two decades, the females of this herd have used the plateaus of the George River for calving, occurring around mid-June (Toupin et al. 1996). The post-calving or summer range is thought to be regulated by forage limitations (Cote 1998). Typical of sedentary herds, calving locations are dispersed and there is not much consistency or fidelity in year to year site selection.

The GR Herd may be found in and around the Assessment Area during their spring and fall migrations, fall rut, and through the winter, with their range including most of northern Québec and Labrador (Boulet et al. 2007). The GR Herd has gradually shifted its winter range over the years to maximize the availability of forage (Schmelzer and Otto 2003).

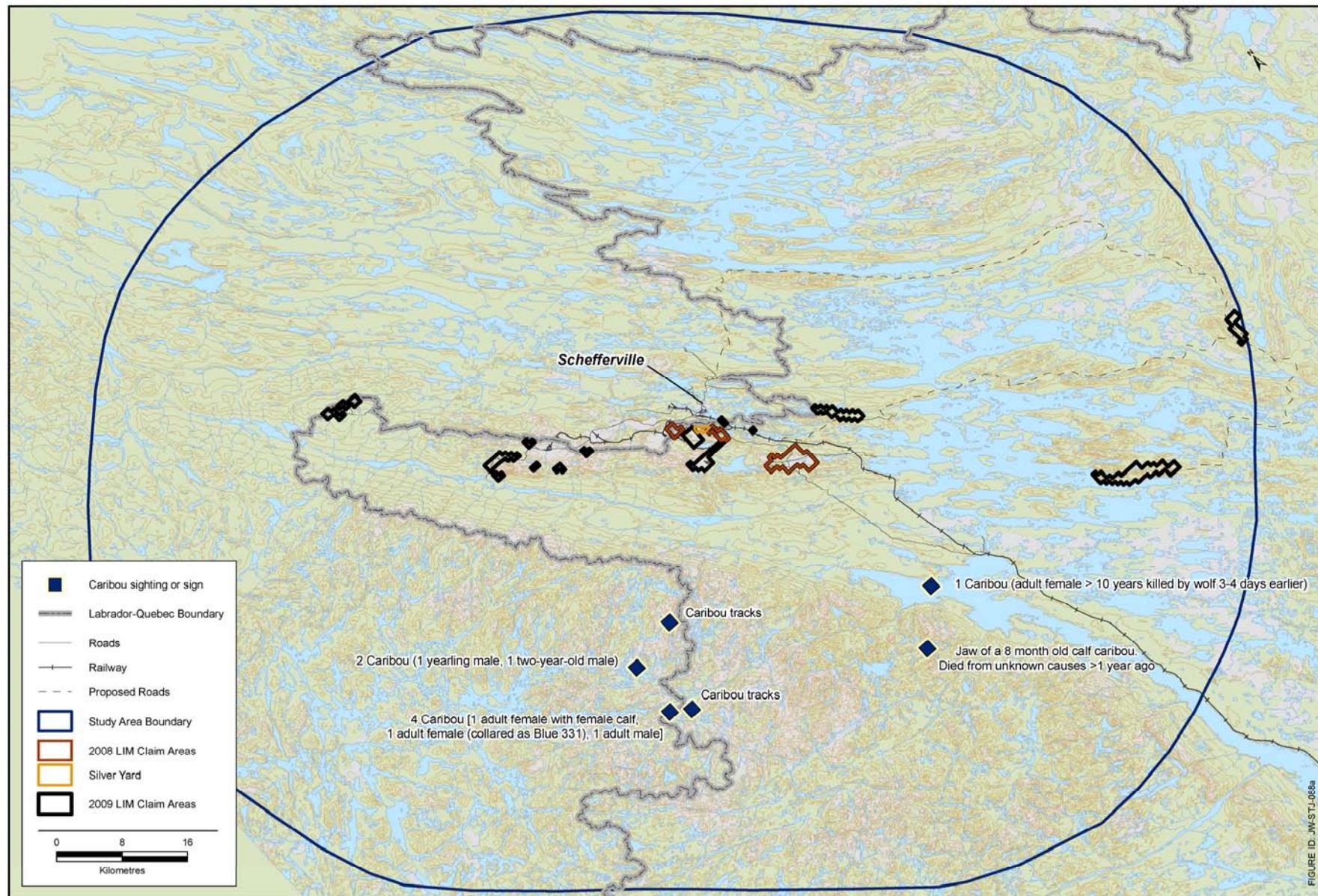


Figure 4.19 Observations of Caribou and Sign during May 2009 Survey

Local Hunting and Outfitting

Harvest quotas for the GR Herd are defined by the NLDEC (2008).

The presence of the GR Herd in Western Labrador and the Schefferville area during fall and winter (Jacobs 1996; Boulet et al. 2007) has created a regionally important outfitting industry. Because winter presence and size of the herd is unpredictable from year to year (Schmelzer and Otto 2003), hunting outfitters in the Schefferville area have had to adapt to their inconsistent movement patterns and seasonal distribution. One Schefferville outfitter states that caribou in the area are constantly changing their migration patterns, meaning that the success of traditional hunting sites varies annually (and within the season) according to the movements of the animals (Larocco 2008). Changes in the migration pattern of the Québec-Labrador caribou have also resulted in outfitters moving their hunting sites or having multiple camps in order to provide an efficient hunt for their clients (Bowhunting Canada 2008). Despite somewhat consistent movements annually, Schefferville residents report variability and during the winter of 2008-2009 did not report any caribou in this area so there was no opportunity for local hunting (R. MacKenzie, pers. comm.). Hunting of sedentary herds is illegal; however, the hunting of the migratory GR Herd is permitted from early August to late April (NLDEC 2008).

4.2.2.2 Other species

In addition to the recent aerial survey in May 2009, information sources on other wildlife species within the vicinity of the Project include a variety of sources. Interviews with wildlife research and conservation staff with the Wildlife Division, other consultants in the Province, McGill University, the Institute of Environmental Monitoring and Research (IEMR), local trappers, and available literature was supplemented with insight provided by LIM staff and contractors who have been active at this location in recent years. In general, there are few larger wildlife species found in these areas, as the Project is situated on the edge of the tundra and comprises thinning forest communities mixed with open barren habitats.

Black Bear (*Ursus americanus*)

During the early May 2009 survey, black bears or their sign (usually tracks) were common in the LIM Project area and surrounding area, with four sightings of live animals and at least ten sightings of tracks throughout the Study Area (LIM and NML 2009). Bear presence was also confirmed northwest of Slimy Lake and southeast of the James Property of the Project area during a meeting with local trappers held 13 August, 2008 in Schefferville. Black Bear are a forest-dwelling animal but were observed to also use barren and ice habitats during the May 2009 (LIM and NML 2009). Forest, barrens and river habitats are important during the summer and fall seasons. Bears have been reported occupying open areas, but tend to avoid recent burns (Jacques Whitford 1997). Seasonal habitat selection is usually related to foraging. Although they are the largest predator in the area, their diet mainly consists of plants, fruits, berries, green leaves, and tubers. They are known for their diversity within their diet, ranging from insects and plants to small mammals, dead animals and leftovers from human presence at local landfills or camping sites (<http://dnr.wi.gov/org/land/wildlife/PUBL/wlnotebook/bear.htm>).

Bears are frequently found in areas of domestic waste disposal where odours attract them and they become nuisance animals and a cause for concern to human safety. Informants indicate that bears have been observed at the Schefferville landfill, approximately 4 km from the LIM Project area and bear tracks have been noted in the vicinity of the deposits by LIM staff and contractors, but there have been no encounters to date. Nuisance bears have not been reported by workers at the LIM site itself.

Moose (*Alces alces*)

Moose are a relatively new species to Labrador that were first reported in western Labrador in 1949 (Folinsbee 1974). The population expanded to an estimated 5,000 individuals in Labrador by 1990 (Karns 1997). Due to the relatively low numbers of moose in the Schefferville area, there are only five hunting licenses for all of western Labrador designated annually (Parr, T. and Porter, C. 27 November, 2008).

Moose tend to be associated with mid-successional forests, favouring areas of highest forest productivity preferring stands where trees reach heights of 3 m and therefore are available above snow (Newbury et al. 2008; Bergerud and Manuel 1968). They also favour lakeshores and swamps (Banfield 1973). Likely due to habitat constraints, moose are not common in the Project area and sightings or tracks were observed on approximately five occasions during the May 2009 survey. As the Project area is situated on the edge of tundra and thinning forest communities, there are few hardwood species in this part of Labrador thus habitat requirements for this species are limited. Moose and signs were concentrated in the southeast portion of the study area during the May 2009 survey, where one adult male and four other separate locations of tracks were observed (LIM and NML 2009).

Furbearers

There are several furbearers in the vicinity of the Project. The species below, with the exception of wolverine and fisher, are trapped in western Labrador from fall to early spring (exact dates differ depending on species). There are no registered trap lines in Western Labrador and therefore trappers use their own discretion when choosing suitable sites and proximity to others (Porter, C. 27 November, 2008).

*Beaver (*Castor canadensis*)*

The beaver population in western Labrador is healthy and actively trapped with good returns (Porter, C. 27 November, 2008). There is a history of beaver in the Slimy Lake area as identified at a meeting held with local trappers on 13 August, 2008 in Schefferville. However, there are no individuals noted in this area at present [nor was any sign observed during the May 2009 survey (LIM and NML 2009)], which may be attributed to the absence of deciduous trees (particularly aspen) in this region, and thus a lack of food source. An old beaver lodge is present but is currently occupied by otter.

Beavers are herbivores, subsisting solely on woody and aquatic vegetation. They will eat fresh leaves, twigs, stems, and bark. Beavers will chew on any species of tree, but preferred species include alder, aspen, birch, maple, poplar and willow. Aquatic foods include cattails, water lilies, sedges and rushes.

*Otter (*Lutra canadensis*)*

This amphibious mammal has a healthy population in western Labrador. Typically otter are found no more than a few hundred meters from water and indeed they may be found in almost any water source with the presence of fish in western Labrador (Porter, C. 27 November, 2008) as they are entirely dependent on aquatic habitats for food. They are actively sought by trappers for their thick pelage. An otter has been observed occupying an old beaver lodge on Slimy Lake in the Project area, as noted at a meeting held with local trappers on 13 August, 2008 in Schefferville. A single animal was observed southeast of Schefferville during the May 2009 survey (LIM and NML 2009).

Mink (Mustela vison)

Mink are found throughout western Labrador in small brooks and ponds as they are proficient swimmers. Trappers in western Labrador are having great success with returns this year and it is believed the population is quite healthy (Porter, C. 27 November, 2008), although no presence of mink (i.e., tracks) has been noted at the Project area during summer or winter.

Muskrat (Ondatra zibethicus)

Muskrat numbers in western Labrador are currently at a high level and may be found throughout the region in a variety of aquatic habitats with cattail being an important food source (Feldhamer and Thompson 2003). Trappers in this region are currently experiencing good success (Porter, C. 27 November, 2008). Despite relatively high numbers of this species in the Labrador City area, no evidence of muskrat has been found in the Project area. Lack of suitable vegetation for forage may be a factor.

Coyote (Canis latrans)

Coyote are not prevalent in western Labrador and they have not been observed in the Project area. It is rare to see or hear reports of this species in the western Labrador region (Porter, C. 27 November, 2008) although the presence of large ungulates and snowshoe hare may indicate suitable habitat for coyote.

Ermine (weasel) (Mustela erminea)

Weasel maintains a healthy population in western Labrador where they feed on primarily snowshoe hare, small mammals and birds. They can be found in a variety of habitats including wooded and brushy areas, wetlands and tundra. Ermine have not been reported in the Project area, although it is suspected they are in this area due to suitable habitat and prey availability. Hunting and predation are limiting factors for ermine populations although weasels are not actively sought by trappers, but are reported as incidental catches (Porter, C. 27 November, 2008). Predators may include snowy owls, arctic fox, lynx and large raptors.

Red Fox (Vulpes vulpes)

Red fox has been in decline the past two years in western Labrador. They are relatively common around areas of human presence such as mining and construction sites (Porter, C. 27 November, 2008). There have been few observations of red fox at the mine facilities; one individual and tracks of others were recorded during the May 2009 survey (LIM and NML 2009). Habitat requirements include forests with safe denning sites. The omnivorous red fox preys on small mammals, birds and berries, while predators include wolves and coyotes.

Arctic Fox (Alopex lagopus)

Arctic fox are found throughout the northern part of western Labrador. In this region, their range extends south to approximately 100 km north of Labrador City/Wabush (Porter, C. 27 November, 2008). Arctic fox are occasionally observed in the Project Area (McKenzie, R. 7 May 2009). Wolves, Golden Eagle and bears are common predators of this species.

Lynx (Lynx lynx)

The lynx population is considered healthy, but not dense (Porter, C. 27 November, 2008). There are occasional sightings of lynx in western Labrador. Although some of the most commonly observed

tracks in the Project area were of snowshoe hare of which lynx populations are closely linked, the absence of large tracts of forest in this region likely preclude lynx from inhabiting this area. Young lynx rely heavily on dense cover for protection and as a result, regenerating stands and/ or stands with thick understory are important to this species (Mowat and Slough 2003). No lynx have been observed in the Project area (Parks, D. 3 December, 2008) and were not recorded during the May 2009 survey (LIM and NML 2009).

Marten (Martes Americana)

The marten population of western Labrador is considered healthy; however, its presence in the Project area has not been noted. Marten are typically forest dwellers and require a variety of features provided in forest stands and landscapes, therefore habitat requirements may not be met due to lack of forest structure in this area.

Currently, marten are the most important furbearer in Labrador due to the high number of individuals and the high pelt price (Porter, C. 27 November, 2008). Trapping and habitat availability are limiting factors for marten.

Squirrel (Tamiasciurus hudsonicus)

Squirrel are plentiful throughout western Labrador; however, their presence in the Project area is not known. They are typically found in a wide variety of habitats, but may be limited to south of the tree-line as they use coniferous trees for both food and shelter. Since the Project area is on the edge of forest communities, it is thought red squirrel populations may be less dense here than further south. They are not sought by trappers, but are incidentally trapped (Porter, C. 27 November, 2008).

Wolverine (Gulo gulo)

Wolverine, listed both federally and provincially as endangered are typically found wherever there is prey available and has not been linked to specific habitats, occurring throughout its' range in a wide variety of habitats. Although both migratory caribou and wolf are known in this area and are associated with wolverine diet, wolverine presence is currently not known in western Labrador (Porter, C. 27 November, 2008). No observations of wolverine or wolverine sign have been made in the Project area.

Wolf (Canis lupus)

The wolf population is considered stable in the area with little fluctuation based on the availability of small mammal prey. The availability of primary prey, largely ungulates, is thought to be more important to wolf than specific habitat requirements. Wolf is common in western Labrador and individuals have been observed along the southern ridge in an area of open barrens adjacent to the Project site. Wolf tracks were observed only twice during the May 2009 survey [in association with the recently killed caribou located at Menihek Lake (Section 3.1)] and in the southeastern portion of the Study Area (LIM and NML 2009).

Fisher (Martes pennanti)

Overhead cover, denning sites, and foraging habitat, all of which are often provided by deciduous forests, are necessary habitat requirements for this species. As well, coarse woody debris provides necessary structure, which is a factor in defining foraging habitat as well as providing shelter in cold climates. As the Project area is situated on the edge of tundra and thinning forest communities, these requirements are likely not met here thus reducing the likelihood of fisher presence in this area. There has been no evidence of fisher observed in the Project area.

*Porcupine (*Erethizon dorsatum*)*

Although not a furbearer, porcupine has been included here due to their importance to local people. The porcupine can be found in a variety of habitats including coniferous, deciduous and mixed forests and can also be found in scrubby areas. Porcupine presence was noted southeast of Wishart Lake (meeting with trappers held 13 August, 2008 in Schefferville) and at other locations during the May 2009 survey (LIM and NML 2009).

Small Mammals

Small mammal populations reached peak levels in western Labrador (from Labrador City to Churchill Falls) in 2007 (Porter, C. 27 November, 2008). The small mammals believed to be present in Western Labrador include: Bog lemming (*Synaptomys borealis*), Ungava lemming (*Dicrostonyx hudsonius*), Red-backed vole (*Clethrionomys gapperi*), Heather vole (*Phenacomys intermedius*), Meadow vole (*Microtus pennsylvanicus*), and Masked shrew (*Sorex cinereus*). Jumping mice (unknown species) were trapped in the Schefferville area in 2007 and 2008 at two sites: near water and an open area (Millien, V. 2 Dec 2008).

4.2.3 Avifauna

AECOM conducted a forest avifauna survey at the Project site in 2008.

4.2.3.1 Methods

To aid in the field investigations and recorded observations, the following reports and websites were reviewed to gain a better understanding of the Project area:

- 2008. New Millennium Capital Group, Paul F. Wilkinson and Associates Inc. – Project Registration, Direct Shipping Ore Project. 2008;
- Wild Species Canada- webpage;
- Ministry of Natural Resources, 2000. Significant Wildlife Habitat: Technical Guide; and
- NatureServe Global Conservation Status Ranks – webpage;
- Atlas of the Breeding Birds of Ontario 2001-2005 (Cadman et al. 2007)

LIM undertook a complete and comprehensive literature review. There are no known publicly available data relevant to this issue that have been published from the LabMag project. Data for the LabMag DSO project was collected from different habitat types than those found in the LIM Project area. LIM did not have access to the LabMag information.

Field investigations followed the point-count method advocated by the Canadian Wildlife Service (CWS). For all of the point-counts, the highest level of breeding for each species was recorded. This enabled identification of site specific locations of breeding birds, within the point-count radius.

In order to complete this study, variable proximity locations were chosen. Point-counts were five minutes in duration and consisted of unlimited radius, except where adjacent count circles overlapped. All point-counts were conducted in conditions considered acceptable for proper data gathering (i.e., no rain, light winds, and good visibility). The spacing and frequency of point-counts within the study area were determined by the following factors: size of the study site; topography and line of sight; habitat type and frequency of distinctive habitats; and overall importance of a site to the objectives of the study.

At the Redmond and James Properties, point-counts were spaced at approximately 0.8 km intervals. The number of point-counts for both the large and small sites increased in areas of distinctive habitats. Bird monitoring locations are identified in Figure 4.20.

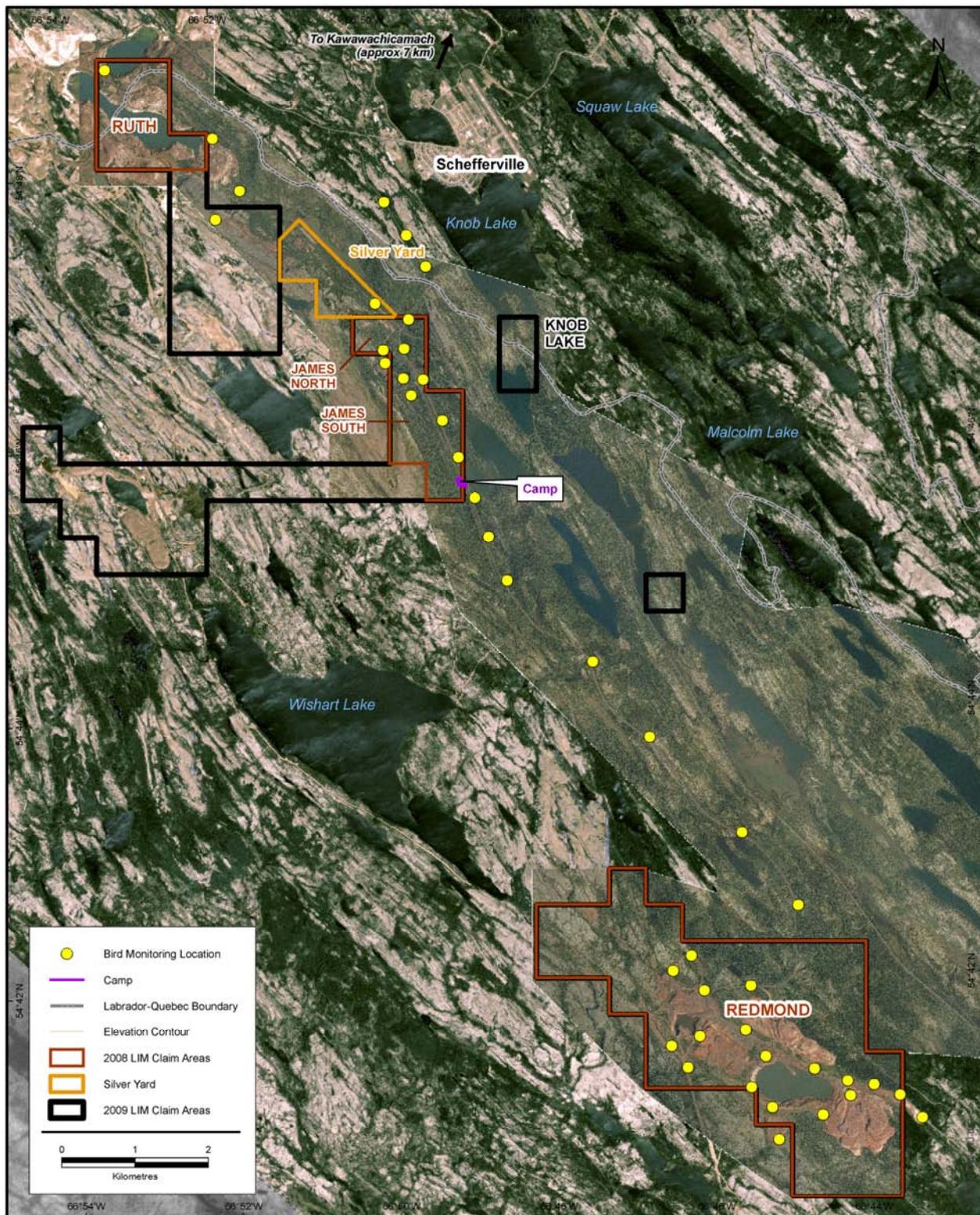


Figure 4.20 Bird Monitoring Locations

4.2.3.2 Results

The following presents the findings from the field investigations completed from July 8-14, 2008. Species observed as possible breeders are listed for each site along with their provincial and global ranks. A complete list of bird species noted can be found in Appendix L. An additional literature review was completed with respect to birds that may be expected to use or migrate through the Schefferville area. The following is a summarized table (Table 4.9) of Breeding and Migratory Birds of Labrador Iron Mines Study Area. For the entire table, refer to Appendix M.

Table 4.9 Breeding and Migratory Birds of Labrador Iron Mines Study Area

Common Name	Scientific Name
Common Loon	<i>Gavia immer</i>
Red-throated loon	<i>Gavia stellata</i>
Canada Goose	<i>Branta Canadensis</i>
Green-winged Teal	<i>Anas crecca</i>
Ring-necked Duck	<i>Aythya collaris</i>
American Black Duck	<i>Anas rubripes</i>
Greater Scaup	<i>Aythya marila</i>
White-winged Scoter	<i>Melanitta fusca</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Spruce Grouse	<i>Falcipennis Canadensis</i>
Willow Ptarmigan	<i>Lagopus lagopus</i>
Semipalmated Plover	<i>Charadrius semiplamatus</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Least Sandpiper	<i>Calidris minutilla</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Herring Gull	<i>Larus argentatus</i>
Three-toed Woodpecker	<i>Picoides tridactylus</i>
Northern Flicker	<i>Colaptes auratus</i>
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Horned Lark	<i>Eremophila alpestris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Gray Jay	<i>Perisoreus Canadensis</i>
Common Raven	<i>Corvus corax</i>
Boreal Chickadee	<i>Poecile hudsonica</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Gray-cheeked Thrush	<i>Catharus minimus</i>

Common Name	Scientific Name
Swainson's Thrush	<i>Catharus ustulatus</i>
Hermit Thrush	<i>Catharus guttatus</i>
American Robin	<i>Turdus migratorius</i>
American Pipit	<i>Anthus rubescens</i>
Tennessee Warbler	<i>Vermivora peregrine</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Yellow Warbler	<i>Dendroica petechia</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Blackpoll Warbler	<i>Dendroica striata</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
American Tree Sparrow	<i>Spizella arborea</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Fox Sparrow	<i>Passerella iliaca</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Rusty Blackbird	<i>Euphagus carolinus</i>
Common Redpoll	<i>Carduelis flammea</i>
Pine Grosbeak	<i>Pinicola enucleator</i>
Pine Siskin	<i>Carduelis pinus</i>
White-winged Crossbill	<i>Loxia leucoptera</i>

James Property

The James site was surveyed primarily from the edge of the service road. The uniform habitat composition consisted of black spruce (*Picea mariana*), lichen woodland, and also included alder (*Alnus* sp.) thickets along the recently cleared roadsides and power line right-of-ways. The area also contained wet areas near the roads. The western part of this site has steep slopes, with the forest thinning towards the summit.

A total of 31 bird species were observed at 13 separate point-counts, all displaying some indication of breeding. Six of the 31 species were confirmed breeders, with another six species considered as probable breeders. Appendix L provides a description of preferred habitat for each confirmed breeding species. A complete list of observed species is also provided in Appendix L.

The eight most frequently recorded species within the James site, consisted of those associated with spruce forest. The wet and dense nature of vegetation at the James site resulted in a different avifauna community. Of these species, White-throated Sparrow is usually found in moist or bog-like situations and Northern Waterthrush is usually associated with alder thickets adjacent to a wetland.

Silver Yard Property

The Silver Yard is similar to the Redmond site, with numerous service roads encircling the flooded pits of the Ruth and James sites. The service roads, along the north and south orientation, were extensively bordered with alder and willow regeneration. The pit perimeter had minimal to no vegetation cover,

while the open water component of the pits provided loafing areas for Herring Gull, however no obvious waterfowl nesting habitat was present.

The south end of this site had more extensive vegetation cover, with some areas consisting of dense spruce, and extensive thicket habitat along the roadsides. The Silver Yard as a whole, is part of a large valley bordered on the east by a talus slope forested at the base, and to the west by another slope covered with spruce at the base, thinning to essentially no forest cover or vegetation near the summit.

A total of 26 species were observed at seven separate point-counts, 25 of them displaying some indication of breeding. The most frequently recorded species at the Silver Yard site, were spruce forest specialists such as Fox Sparrow, Ruby-Crowned Kinglet, and Swainson's Thrush. Also observed in moderate numbers were species favouring regenerative/open habitats, such as White-crowned Sparrow, and Common Redpoll. The widespread occurrence of Common Raven and Herring Gull was directly attributed to the proximity of the Schefferville landfill.

The spruce forest specialists observed east and west of the main service roads, with the forested slopes. Whereas the roadside areas attracted the regenerative specialists, due to the extensive areas of alder and willow present wherever the land had been cleared or disturbed.

Redmond Property

The Redmond site had a wide range of habitat types, largely due to the presence of a former mine and pit operation. The habitats ranged from completely bare ore piles and service roads, to heavily blanketed areas with alder and willow thickets. This area also had a large, flooded pit in the southwest corner of the site.

The undisturbed areas were occupied with mature black spruce at lower elevations, and stunted spruce – lichen along the ridge summits. This site also contained several wetland areas, most notably a large sedge fen enclosed by the former railway turning circle, as well as a lake / fen complex present where the main service road enters the Redmond site. (Note: these wetlands were part of the avifauna survey area but are not within the Project footprint)

A total of 40 species were recorded on 24 separate point-counts, with 39 of the observed species displaying some indication of breeding. Appendix L provides a description of each species preferred habitat along with the level of breeding observed.

The disturbed nature of the Redmond site and variety of vegetative species appeared to have influenced avifaunal diversity compared to more homogeneous sites. It is likely that the regenerative nature of disturbed areas account for some of the increase in diversity.

White-crowned Sparrow, which is often associated with disturbed sites and more open habitats, was the most frequently recorded species. Of the other more frequently recorded species, most are spruce forest specialists, except the Lincoln's Sparrow found occupying the wetter components of the site.

During the May 2009 survey (LIM and NML 2009), Canada Goose (*Branta Canadensis*) were migrating through the area in large numbers. Flocks of 10 to 100 were often observed flying north or loafing on ice or ashkui (an Innu term that refers to areas of permanent or seasonal open water during winter). Over the course of the survey, other migratory avifauna [e.g., American Robin (*Turdus migratorius*), Common Snipe (*Capella gallinago*)] began to appear in Schefferville and increased in abundance in the subsequent days.

National / Provincial Species at Risk

The following bird species of special conservation status were observed.

Rusty Blackbird – one bird was observed on one point, Redmond Site. This species is designated as a COSEWIC Special Concern species, listed ‘vulnerable’ (Schedule C) in Newfoundland and Labrador. Rusty Blackbird usually nests in coniferous forest along the edge of a wetland. There are numerous areas of habitat suitable for this species within the Project area. Displacement of this species is, therefore, not considered to be limiting as any birds of this species would easily relocate to adjacent alternative habitat. This species occurs throughout most forested areas of Labrador (Godfrey 1986; Nature Serve 2007). Rusty Blackbird has undergone a widespread and substantial decline across its range.

Gray-cheeked Thrush is listed as Vulnerable on Schedule C of the *Newfoundland and Labrador Endangered Species Act*. It is associated with coniferous forest that has a dense understory (Lowther et al. 2001, Dalley et al. 2005). In Labrador, this species usually breeds in mature black spruce, white spruce, white spruce, balsam fir, and tamarack (Lowther et al. 2001). Gray-cheeked Thrush was generally found in the Project area, in areas of small spruce, thinly distributed, with an abundance of shrubby groundcovers, often heaths or alder thickets. The species was often found in higher elevations than other thrush species, avoiding the more densely wooded areas in the lowlands. They were most common along the margins of the open habitats, especially where the site transitions from open taiga to spruce, towards the north end. Outside of Labrador, the decline of these species relates more to alteration of habitat and risk of mortality during migration.

Note that the Short-eared Owl, the Common Nighthawk, and the Olive-sided Flycatcher are three other species of conservation status that may occur in the Project area. The Short-eared Owl is listed as a Species of Special Concern on Schedule 3 of the federal *Species at Risk Act* and Vulnerable on Schedule C of the provincial *Endangered Species Act*. Both Common Nighthawk and Olive-sided Flycatcher are designated as threatened by COSEWIC (but have not been listed on SARA). Both of the latter species are at, or near, the northeastern extent of their range in North America (Poulin et al. 1996, Altman and Sallabanks 2000), and have not been observed in the Project area. Consideration of these species will be included in bird monitoring programs to be conducted.

To address potential interaction with nest sites of these and other bird species, an Avifauna Environmental Management Plan (EMP) to address incidental take (the inadvertent disturbance of a nest site) will be completed consistent with the *Migratory Birds Convention Act*. This Avifauna EMP will be prepared and implemented prior to the start of construction. Further mitigation measures to protect nest sites are described in the EPP (Section 8.5), including CWS advice for vegetation clearing.

4.2.3.3 Raptors

Ospreys (*Pandion haliaetus*) were noted throughout the Project area. There are no nest sites noted directly on the James, Silver Yard, or Redmond sites. However, one Osprey nest was noted on the existing transmission line corridor to Menihek less than 150 m from the active roadway connecting the James and Redmond Properties. This nest has been active for the past several years, with young being fledged successfully, as noted by LIM employees working in the area. Two adults were noted during the counts on the James Property. At Silver Yard, one adult was noted on one point-count. Standard mitigation measures regarding construction and operation related activities for active Osprey nests are to avoid such areas by at least 200 m.

A Bald Eagle (*Haliaeetus leucocephalus*) has been noted within the Project area during field work. This species has been observed flying over Bean Lake and has only been noted in the vicinity of the James Property. No nest locations have been identified for this species in the general vicinity of the Project area. One 3rd-year immature was also observed along Bean Lake. An adult Bald Eagle was observed during the May 2009 survey (LIM and NML 2009), feeding on the carcass of a caribou killed by a wolf on Menihek Lake. This species is locally uncommon but increasing (Brown, pers. comm., June 2005).

4.2.3.4 Migratory Species

A review of various birding guides (Sibley, 2003 and Peterson, 1980) and the Ontario Breeding Bird Atlas (Cadman et al. 2007) was conducted to identify potential migratory bird species that could be expected to be found or migrate through the Schefferville area. Based on this review, a total of nine species were identified. The Peregrine Falcon was the only identified migratory species that has a federal designation of Special Concern under Schedule 3 of the *Species at Risk Act* and Vulnerable under the provincial *Endangered Species Act*.

There will be non-significant effects to the potential migration of the Peregrine Falcon during the operation of the Schefferville Area Iron Ore Mine based on several factors:

- operations will occur within valley bottoms and thus there will be no interactions with ridges that could be used by migratory falcons;
- the mine will not operate during the winter. Spring migration should be 80% complete prior to the annual start up of operations;
- fall migration will take place during operational activities and thus there is potential for avoidance behaviour (e.g., migrating birds would avoid the area); and,
- habitat for successful migration is not limiting in the Schefferville area, as there are various ridgelines outside the Project area that can provide for successful migration, if migration does occur in this area (i.e., resting and feeding areas).

4.2.4 Fish and Fish Habitat

AECOM conducted fish surveys at the Project site in 2007 and 2008.

4.2.4.1 Methods

Surveys were conducted to characterize fish habitat and fish species present in the study area (i.e., the lakes and streams in the Project area as shown in Figure 4.21). Habitat is described using the methods and terms outlined by Sooley et al. (1998) and McCarthy et al. (2007 Draft) and fish sampling was conducted using methods detailed in Sooley et al. (1998).

Qualitative measures undertaken include rod and reel angling and visual observations for fish in lakes, visual determinations for fish species in streams, along with general fish habitat characterization for areas adjacent to the proposed works.

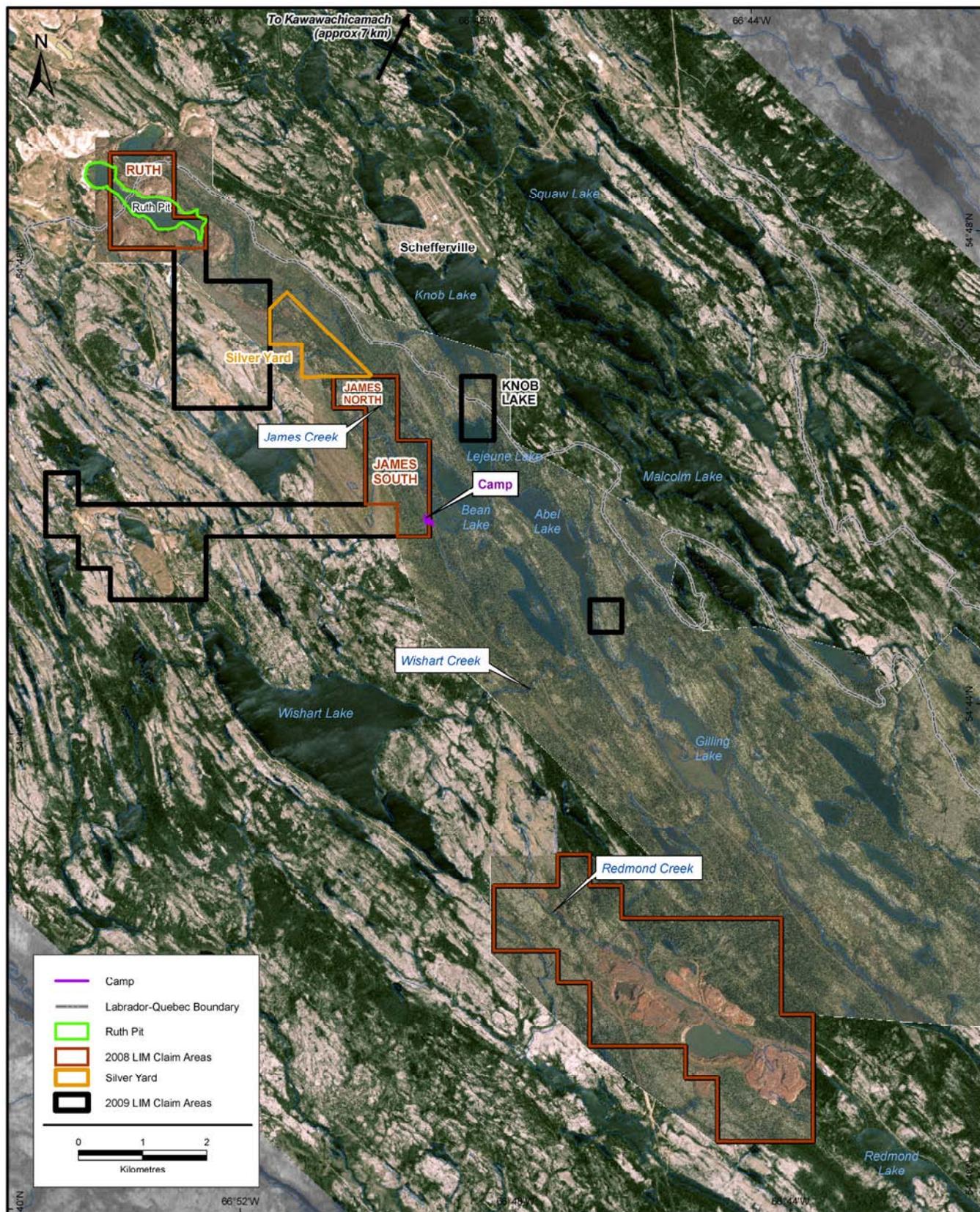


Figure 4.21 Lakes and Streams in the Project Area

4.2.4.2 Assessment Area Boundaries

Spatial and Temporal

The Project boundary includes surface water bodies in the subwatersheds that contain the Project. Temporal Project boundaries are seasonal for construction and operation, as there will be a winter shutdown of mining activities.

The ecological boundaries for the freshwater fish and fish habitat will align closely to the watershed boundaries. The Project lies within a set of subwatersheds that flow to a chain of narrow lakes stretching from the Project area southeast to Astray Lake in the upper Churchill complex of lakes and reservoirs.

Further north, the area of the Ruth Pit drains to James Creek, which in turn flows to Slimy Lake and then Bean Lake, east of the James Deposits (Figure 4.21). The outlet from Ruth Pit is a submerged culvert that is located in the southwest portion of the pit. Historical pit wall rock debris has partially blocked the pit-side end of this culvert, and the pit water level is approximately 2 metres above the top of the culvert. Water still flows through the culvert but more by infiltration rather than surface level flow due to the blockage. The discharge end of the culvert is perched approximately 1 m above the James Creek inlet. Water discharging from Ruth Pit is the origin of James Creek, however fish cannot enter Ruth Pit from James Creek because the culvert is perched and is blocked by the coarse rock.

There is also a small unnamed tributary that originates on the James Property that flows into Bean Lake. The flow from Bean Lake continues through Abel Lake, Gilling Lake, to Astray Lake, which are all to the south of the James deposit.

Drainage on the Redmond Property is via Redmond Creek, which flows southeast into Redmond Lake and then on to Astray Lake. Generally, the spatial boundary of the fish and fish habitat study area will be limited to the active mine sites, with limited or no downstream effects.

Administrative and Technical

The regulatory boundaries of the Project fall under provincial and federal jurisdictions. As in other areas of Newfoundland and Labrador, freshwater aquatic resources are regulated by several provincial and federal departments. The *Fisheries Act* is the primary federal legislation governing protection and management of fish and fish habitat in freshwater environments. The Department of Fisheries and Oceans (DFO) holds jurisdiction for fisheries and fish habitat protection in the Province. Similarly, DFO recreational and commercial regulations are in effect for the Project site. Environment Canada has responsibility for Section 36 of the *Fisheries Act*, which regulates the release of deleterious substances whereas DFO is responsible for sedimentation issues.

For the watersheds of the Project site, the Water Resources Division of Environment and Conservation oversee water quality and water quantity pursuant to the *Waters Resources Act* (2002). This Act regulates development within 15 m of a waterbody and provides regulations regarding development within wetlands and flood plains. This guidance under the *Water Resources Act* includes the Environment Control (Water and Sewage) Regulations that regulate discharges to a body of water.

Fish habitat on the Project site was assessed using the DFO fish habitat assessment guidelines for assessing lacustrine and riverine habitats. Detailed habitat mapping of the unnamed tributary on the James Property was completed to quantify fish habitat. In other areas of fish and fish habitat not

expected to be directly impacted by the proposed mining operations, fish were assessed by qualitative measures that included rod and reel angling and trap netting.

Assessment Area

The Assessment Area for determining Fish and Fish Habitat are those waterbodies that may interact with the Project (Ruth Pit, James Creek, Slimy Lake, Bean Lake, Unnamed Tributary, Redmond Creek, Redmond Lake).

4.2.4.3 Results

Ruth Pit

Gillnetting surveys verified that the Ruth Pit has no sustained fish community, so fish habitat has not been characterized for the flooded pit. These survey results were submitted to DFO, which subsequently confirmed that it does not consider the existing flooded open pits to be fish habitat (Yetman 2008, email communication).

James Creek

James Creek is a small stream that originates from the Ruth Pit, as a result of water seepage from the flooded pit (Figure 4.7). Drainage occurs via a perched culvert, which is collapsed at the inlet end and fish are therefore prevented from entering the flooded pit. The stream section between Ruth Pit and Slimy Lake has an average wetted width of approximately 2.0 m and depths ranging between 0.2 m (riffles) and 0.8 m (pools). The stream section between Slimy Lake and Bean Lake increases to a wetted width of approximately 3.0 m with depths similar to the upstream section. Substrates of the stream consist largely of gravel and cobble, with minimal sediment deposition within main channel. All stream banks were observed as stable, with no erosion evident. Stream gradient was estimated at 2%.

Field surveys confirmed that James Creek contains brook trout (*Salvelinus fontinalis*) and sculpin sp. (*Cottus* spp.). Fish species within Slimy and Bean Lakes include longnose sucker (*Catostomus catostomus*), brook trout, lake whitefish (*Coregonus clupeaformis*), pearl dace (*Margariscus margarita*), white sucker (*Catostomus commersoni*), lake trout (*Salvelinus namaycush*), burbot (*Lota lota*), sculpin, and spottail shiner (*Notropis hudsonius*). These species have access to James Creek, but only the presence of brook trout and sculpin were confirmed in the sampling program.

Slimy Lake

Slimy Lake has a surface area of approximately 13.8 ha, with a maximum depth of 8 m. Riparian vegetation consisted of alder thicket to the south and west, and sparse black spruce forest to the north and east. Sediments are predominantly fine particulates.

A quantitative fyke netting program (48 hours total) was conducted on Slimy Lake during 2008. This netting effort indicated that the fish community was dominated by longnose sucker ($n = 99$). Other species captured include: brook trout (20), lake whitefish (4), pearl dace (2), white sucker (1), and lake trout (1). Angling efforts resulted in the capture of six lake trout (1.5 – 2.5 kg) in 2 hours.

Bean Lake

Bean Lake has a surface area of approximately 54.7 ha, with an estimated maximum depth of 15 m. The riparian vegetation consists of black spruce forest along most of the shoreline, with the exception of alder thickets along the north eastern shore along the railway spur bed and also along the James to

Redmond Road, immediately adjacent to Bean Lake on the south western shore. The littoral sediment was dominated by gravel and sand along most of the lake, with the exception of fine sediments being identified at the inlets of James Creek and at the small bay immediately adjacent to the Redmond and James Road. Within the sediments identified near the James Creek inlet, aquatic macrophytes (*Potamogeton* spp.) were evident.

A fyke netting program (72 hours total) completed on Bean Lake during 2008 identified that the fish community is dominated by longnose sucker ($n = 302$). Other species captured include: lake whitefish (90), white sucker (87) pearl dace (39), brook trout (31), burbot (17), sculpin (3) and spottail shiner (1), and lake trout (1). Angling efforts captured six lake trout (1.5 – 2.5 kg) in 2 hours.

Unnamed Tributary - James Property

Within the James Property, a small first order tributary originates from two artesian sources (James North Spring and James South Spring) (Figure 4.7). James North Spring is located between James North and James South pits. This tributary is approximately 1000 m in length and flows in a south easterly direction and discharges into Bean Lake. Another small spring (James South Spring) originates from the southern end of the James South ore body and flows north easterly to the unnamed tributary, approximately half way between the tributary's origin and Bean Lake

Details of habitat characterization of the unnamed tributary are in a report that is included in Appendix N. The unnamed tributary consisted predominantly of flats and runs. Riffles and glides are also present but true pools were limited in number. The substrate in the riffles and runs is typically cobbles and gravels and in the flats, sand, silt and detritus dominated. In many flat sections however, gravels occurred under the fines, and during the fall 2007 survey, redds that had been excavated down to the gravel were observed in some of these flat sections. Cover for fish in flat sections was dominated by undercut banks and overhanging grasses. In the runs, the dominant cover was typically overhanging alders and willows.

The smaller tributary that flows into the unnamed creek has a mean wetted width of 1.0 m, which has margins choked with watercress, reducing the functional width to 0.5 m.

The approximate areas of available spawning, rearing, migration and adult resident habitat types are 351 m², 1227 m², 0 m² and 5716 m², respectively (See Table 1 in Appendix N).

There appeared to be a pronounced decrease in the volumes of water flowing from the springs during the winter months. Sampling for the James North Spring indicated that flows were markedly reduced, as it took over one minute to fill a 1 L bottle. Attempts to winter sample pool locations along the tributary found the pools were frozen solid to the substrate.

Visual surveys of the unnamed tributary identified brook trout and sculpin. The discharge of this creek into Bean Lake contains a perched culvert with 0.5 m drop, preventing access, by most species in Bean Lake, to this tributary. However, during the spring 2008 sampling program, it was noted the brook trout were swimming upstream from Bean Lake into the tributary; fish were observed jumping into the culvert and successfully moving upstream from the road crossing.

Wishart Creek

Wishart Creek flows east from Wishart Lake for approximately 4.5 km to Gilling Lake. The stream has an average wetted width of 5 to 6 m and depths ranging between 0.2 m (riffles) and 1.5 m (pools) within the vicinity of the existing road crossing. Substrates of the creek consist largely of gravel and cobble,

with minimal sediment deposition within main channel. The stream banks were observed as stable, with no erosion evident. Stream gradient ranged between 1.5 to 3%.

Visual surveys of Wishart Creek identified the presence of brook trout and sculpin. Other resident fish species within the Wishart watershed also have access to the creek, but only these two species were confirmed as present.

Redmond Creek

Redmond Creek is a small stream that originates within the Redmond Property, as a result of surface and groundwater flows (Figure 4.13). For example, one source is a large spring located immediately adjacent to the Redmond 1 Pit. The creek also receives a diffuse flow from the area of the road and historic mine works. Observations indicated the channel has an average wetted width of approximately 1.5 m and depths ranging between 0.15 m (riffles) and 0.4 m (pools). The substrates of the creek consist largely of gravel and cobble, with minimal sediment deposition within the main channel. During electrofishing, disturbance of sediments resulted in the resuspension of reddish sediments. Riparian vegetation included a small section lined with alder, but the majority of the creek is adjacent to historic mining waste rock piles within the property boundaries. Stream banks were stable at low flows, but active erosion was noted along some channel sections, as represented by the presence of bare soils.

Electrofishing and qualitative visual surveys of Redmond Creek confirmed the presence of brook trout in the lower section of the creek situated on the Redmond Property. During the spring freshet, longnose sucker and white sucker were reported by a local contact to enter the creek to complete spawning. Other resident fish species within Redmond Lake (~ 2 km downstream from the property) also have access to the creek.

4.2.4.4 Current and Future Fisheries

This region of Labrador and adjacent region in Québec are known for abundant fish resources and the fisheries include recreational fisheries, commercial outfitter operations and a subsistence fishery by aboriginal peoples.

People fish anywhere they can obtain access to good locations. Access is provided by existing roads to old mine areas, exploration areas, and the Menihek hydroelectric facility. Adjacent to the Project site, locals angle brook trout in James Creek near the Silver Yard. Locations on James Creek are accessible by road. Less fishing is conducted on Slimy Lake as there is the perception, and evidence, that this lake was impacted by the past mining activities. All of the other Project areas are more distant from favoured angling streams and lakes.

There are several outfitter operations in the area. The closest outfitting camps are on Astray Lake to the south and Wishart Lake to the west. Most other camps are located in Québec, which are different watersheds. Access to many of the camps is restricted to floatplane and helicopter as the road network is limited.

The subsistence fishery is pursued on both sides of the border with seasonal gillnet fisheries. These focus on the larger lakes as they usually produce larger fish (i.e., lake trout).

4.3 Socio-economic

This section provides information on the existing socio-economic conditions, including demography, community infrastructure and services, and employment and business. The geographic extent of the discussion varies by subject. Most aspects of the socio-economic environment will be examined for the Assessment Area, which includes both western and central Labrador, defined geographically as the Hyron (Labrador West) and Central Labrador (Upper Lake Melville) Economic Zones (Figure 4.22). While all Project activity will occur in Labrador West, the baseline conditions in central Labrador and parts of Québec are included because Project labour, goods and services are also going to be drawn from these areas. The communities of Schefferville, Kawawachikamach and Matimekush are located in Québec in close proximity to the Québec-Labrador border and the Project. All three can be reached by air, through the Schefferville Airport, or by train from Sept-Îles. The Project will make use of accommodation camps, some municipal facilities and the airport, and will employ some workers and services located in these communities.

Baseline information is presented at the provincial, Labrador, and Assessment Area levels as appropriate, with further detail for communities within the Assessment Area provided where necessary. Selected data are also presented for Schefferville and other Québec communities adjacent to the Project site.

4.3.1 Methodology

The baseline data presented in this section were drawn from a wide range of secondary sources including:

- Statistics Canada and other agencies and departments of the Government of Canada;
- Newfoundland and Labrador Statistics Agency and other agencies and departments of the Government of Newfoundland and Labrador; and
- Municipal governments and local and regional authorities and boards.

Not all information is available for the same geographic areas. For instance, census data are available for some communities in the Upper Lake Melville Area (for example, Happy Valley-Goose Bay and North West River, which are located in Census Division 10, Subdivision C), but data for Sheshatshiu and Mud Lake are aggregated and classified as Census Division 10, Subdivision C, SUN. Other data are only available by Economic Zone and not for individual communities. The communities in Labrador West fall under Economic Zone 2 – Hyron Regional Economic Development Corporation and the communities of the Upper Lake Melville Area comprise Economic Zone 3 – Central Labrador Economic Development Board.

In addition to data from the above secondary sources, primary information was collected through personal and telephone interviews with key informants with groups and agencies at the community, regional and provincial levels.

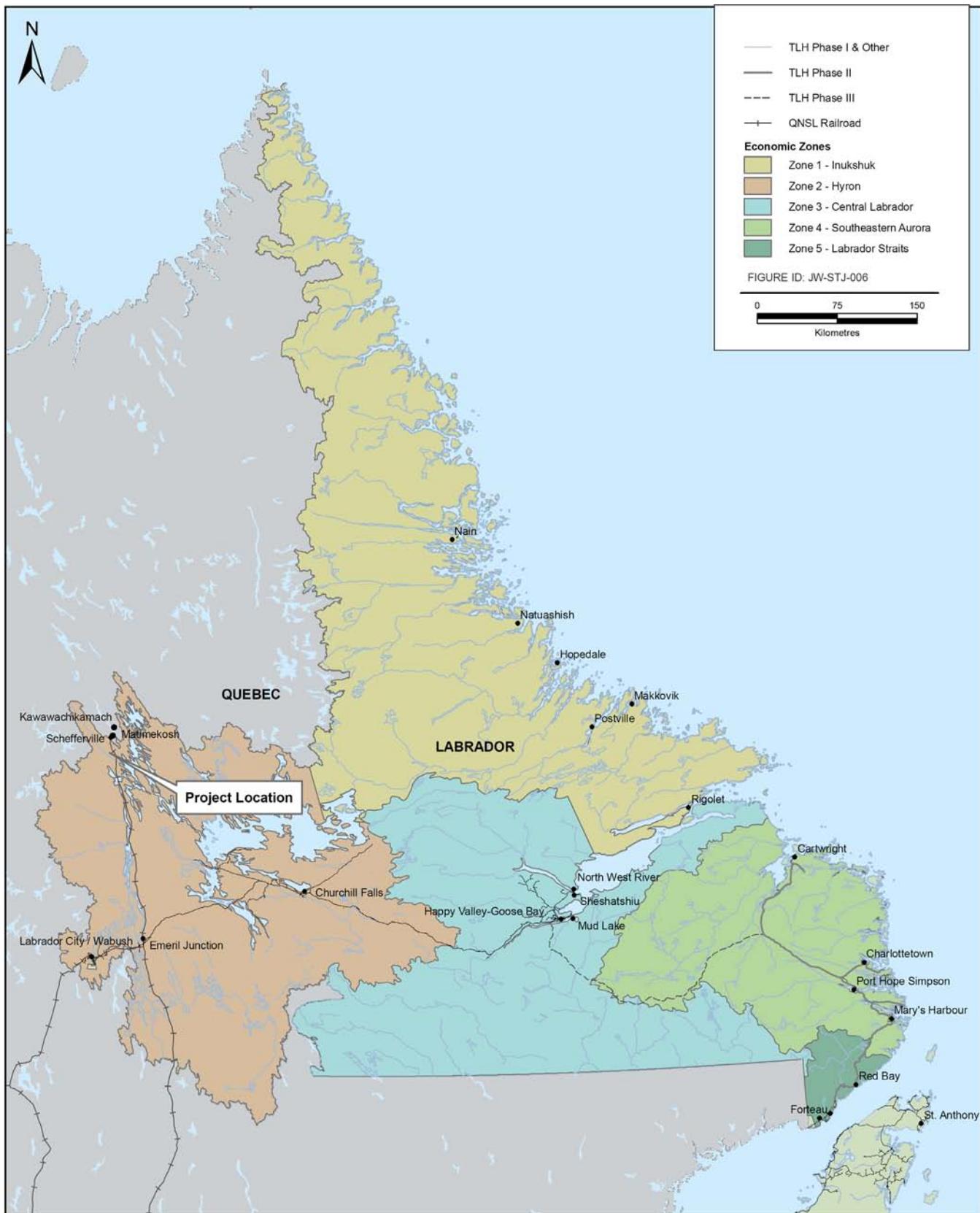


Figure 4.22 Study Area and Economic Zones of Labrador

4.3.2 Demography

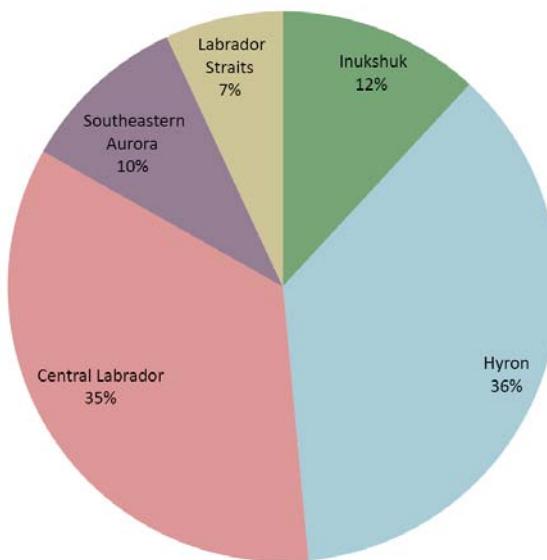
An understanding of the demographic structure and its potential for change without the Project provides a basis for determining Project-related changes. The following discussion focuses on the demography of western and central Labrador and, where relevant, that of Labrador and the Province. There is also an overview of the Québec communities in close proximity to the Project site.

4.3.2.1 Labrador

The 2006 Census reports that there are 26,364 people residing in 32 communities across Labrador, of which 50.7 percent are male and 49.3 percent are female. In 2006, Labrador's population made up 5.2 percent of the provincial total (Statistics Canada 2006). In Labrador and the Province in 2006, the majority of the population was between the ages of 35 and 64 (44.4 and 46.2 percent, respectively). Those aged 15 to 34 represented the smallest portion of the Province's population (6.1 percent), while the 65 plus age group represented the smallest portion of Labrador's population (6.3 percent) (Statistics Canada 2006). Thirty-five percent of the people living in Labrador have Aboriginal ancestry, self-identifying as Innu, Inuit or Métis (Newfoundland and Labrador Department of Labrador and Aboriginal Affairs [NLDLAA] 2006).

Between 1991 and 2006 Labrador's population fell by 13.1 percent, from 30,375 to 26,364. This was slightly greater than the overall provincial decline of 11.1 percent (Statistics Canada 2006).

For the purposes of economic analysis and planning, Newfoundland and Labrador is divided into 20 economic zones, five of which are in Labrador (Figure 4.23). In 2006, the economic zones in Labrador with the largest populations were those that are the focus of concern in this assessment: Hyron, comprised of Labrador City and Wabush, and Central Labrador, which comprises Upper Lake Melville with populations of 9,660 and 9,175, respectively (Figure 4.23). The zone with the smallest population was Zone 5 ('Labrador Straits') with 1,825 people (Newfoundland and Labrador Statistics Agency 2006).

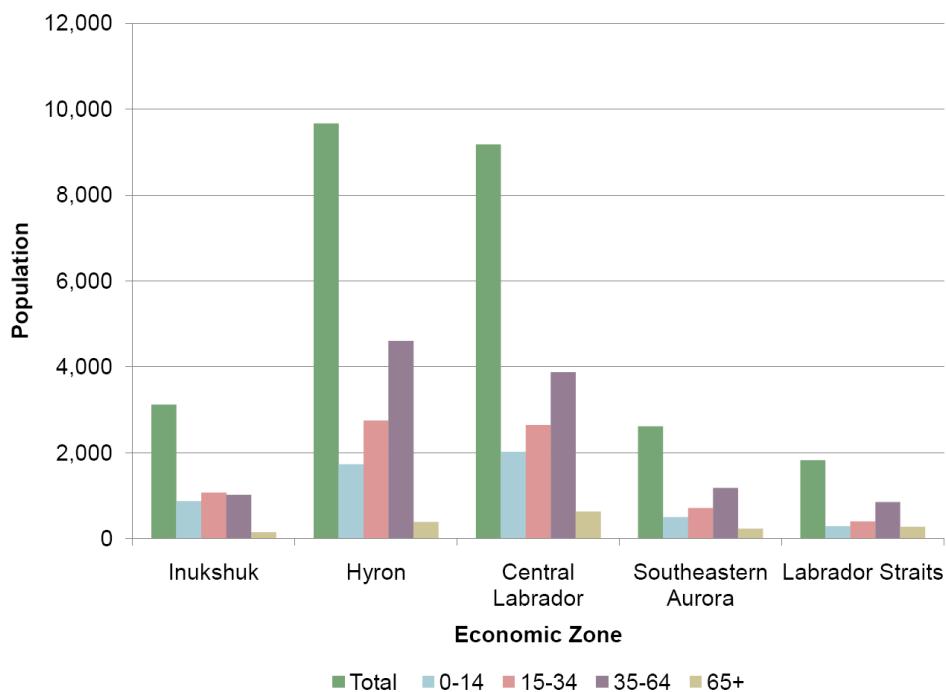


Source: Newfoundland and Labrador Statistics Agency 2006

Figure 4.23 Population by Economic Zone, as a Percentage of Labrador's Population, 2006

The populations of all but one of the economic zones in Labrador decreased between 1991 and 2006 (Newfoundland and Labrador Statistics Agency 2006). The greatest declines occurred in Hyron (Labrador West and Churchill Falls) and Labrador Straits. The population of Hyron fell by 20.8 percent, from 12,200 to 9,660, and Labrador Straits decreased from 2,185 to 1,825 (16.5 percent). Inukshuk (the North Coast of Labrador), however, increased by 4.5 percent from 2,985 to 3,120, but it too has declined between 2001 and 2006.

The age-structure of the populations of the economic zones is illustrated in Figure 4.24. Inukshuk is unique insofar as the proportion of younger people in the 0 to 14 and 15 to 34 categories is much higher than for the other zones (Newfoundland and Labrador Statistics Agency 2006).



Source: Newfoundland and Labrador Statistics Agency 2006

Figure 4.24 Population of Labrador Economic Zones by Age Group, 2006

4.3.2.2 Labrador West

In 2006, the population of Labrador West was 8,979, with the majority living in Labrador City (Table 4.10). The area represents 34.1 percent of Labrador's population with slightly more men (51.6 percent) than women (48.4 percent) (Statistics Canada 2006).

Table 4.10 Population of Labrador West, Upper Lake Melville, Labrador and Province, 2006

	Total Population	Male	Female
Labrador City	7,240	3,740	3,505
Wabush	1,739	895	845
Labrador West Total	8,979	4,635	4,350
Happy Valley-Goose Bay	7,572	3,740	3,835
North West River	492	240	250
Sheshatshiu and Mud Lake (Census Division 10, Subdivision C)	1,112	560	555
Upper Lake Melville Total	9,176	4,540	4,640
Labrador	26,364	13,380	12,985
Province	505,469	245,735	259,735

Source: Statistics Canada 2006

Compared to other parts of Labrador, a relatively small proportion of the population of Labrador West is identified as Aboriginal. In 1996, Aboriginal people represented only 1.5 percent of the population. However, by 2006, this had increased to 6.6 percent (Statistics Canada 1991; 1996; 2001; 2006). Visible minorities (persons who are identified according to the *Employment Equity Act* as being non-Caucasian in race or non-white in colour, with the exception of Aboriginal people) made up only 1.2 percent of Labrador West population.

4.3.2.3 Upper Lake Melville

With a population of 9,176, Upper Lake Melville has 34.8 percent of the total population of Labrador (Table 4.10) (Statistics Canada 2006). In 2006, there were slightly more women (50.6 percent) than men (49.4 percent) living in the area and 82.5 percent of residents lived in Happy Valley-Goose Bay, the area's largest community.

As in Labrador West, the population of Upper Lake Melville has been in decline. It fell from 10,050 in 1991 to 9,654 in 2001, a decline of 3.9 percent. By 2006, the population had decreased a further 5.0 percent to 9,176, with Happy Valley-Goose Bay and North West River experiencing declines of 12.0 percent and 6.8 percent respectively. However, Census Division 10, Subdivision C (Sheshatshiu and Mud Lake) experienced a population increase of 21.9 percent. It should be noted that Statistics Canada data combine information for Sheshatshiu (approximately 1,050 people) with that for the much smaller community of Mud Lake (approximately 60 people), and few disaggregated data are available.

Sheshatshiu is an Innu community, and many Innu, Inuit and Métis live in Happy Valley-Goose Bay, North West River and Mud Lake. The Aboriginal population of the Upper Lake Melville Area increased from 2,035 to 4,130 between 1991 and 2001 and then decreased to 4,095 in 2006. Most (66.4 percent) Aboriginal people in that area reside in Happy Valley-Goose Bay. Of the 1,112 people in Sheshatshiu and Mud Lake in 2006, 1,035 (93 percent) were Aboriginal. In North West River, 340 (68.7 percent) of the population were Aboriginal, as were 2,720 (35.9 percent) of those in Happy Valley-Goose Bay.

Visible minorities comprised only 0.4 percent of the 2006 population in Upper Lake Melville, all of them living in Happy Valley-Goose Bay (Statistics Canada 2006).

4.3.2.4 Québec Communities

In 2006, there were 1,315 people residing in the four communities near the Project that are located in Eastern Québec (Statistics Canada 2006) (Table 4.11). In contrast with most of Labrador, the

population rose in these communities between 2001 and 2006 by 5.8 percent from 1252 in 2001 to 1315 in 2006 (Statistics Canada 2006).

Table 4.11 Population, Eastern Québec Communities, 2001 and 2006

	Kawawachikamach	Matimekush	Lac-John	Schefferville	Total
Population in 2006	569 ¹	528	16	202	1315
Population in 2001	540	449	23	240	1252
2001 to 2006 population change (%)	5.37	17.59	-30.43	-15.83	5.03
Source: Statistics Canada 2001, 2006					
¹ The total population of Kawawachikamach in March 2008 was 849 (NNK 2008)					

The Naskapi Nation of Kawawachikamach is comprised of the Village of Kawawachikamach, approximately 16 kilometres northeast of Schefferville, and a larger uninhabited area to the northeast of the Village. Kawawachikamack is largest community in the area. With a population of 560 people, it contains 43.2 percent of the total population of the Québec communities (Statistics Canada 2006) (Figure 4.25).

In 2006, there were slightly more women (50.88 percent) than men (49.12 percent) living in the area. Of the 570 people in Kawawachikamach, 565 (99 percent) were Aboriginal. The population increased by 5.37 percent from 540 people in 2001 to 569 people in 2006 (Statistics Canada 2006).

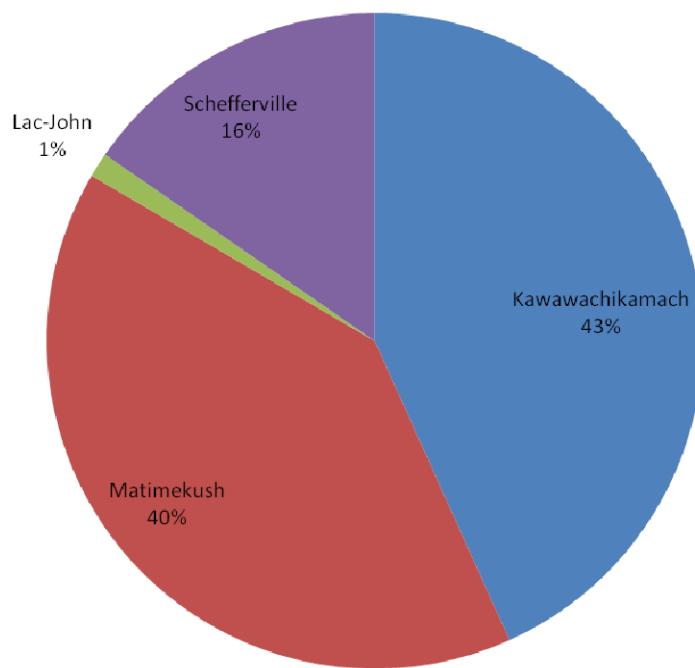


Figure 4.25 Percentage Population of Eastern Québec Communities, 2006

Matimekush Innu community has approximately 544 people (Statistics Canada 2006). It is divided into two territories: the reserve of Matimekush (528 people), on the edge of Pearce Lake adjacent to the Schefferville Municipality; and the reserve of Lac-John (16 people), which is 3.5 kilometres from Matimekosh and the centre of Schefferville. With a population of 528 people, Matimekush contains approximately 40 percent of the total population of the Québec communities (Statistics Canada 2006)

(Figure 4.25). In 2006 there were more women (52.83 percent) than men (47.17 percent) living in the area. Of the 528 people in Matimekosh, 495 (93 percent) were Aboriginal. Between 2001 and 2006, its population saw the largest increase in the Québec communities, growing by approximately 18 percent from 449 people in 2001 to 528 people in 2006 (Statistics Canada 2006).

Lac-John, which is located 3.5 kilometres from Matimekush, will be considered a part of the analysis for Matimekush due to information being suppressed due to confidentiality issues. Where disaggregated data exist, Lac-John will be presented separately. It is the smallest of the four Québec communities with 16 people (Statistics Canada 2006). The population has decreased by 30 percent from 23 people in 2001 to 16 people in 2006.

Schefferville is approximately 2 kilometres from Labrador on the north shore of Knob Lake. It was established by IOC in 1954 to support mining operations in the area. The Municipality and Matimekush Reserve are adjacent and closely linked to it. With a population of 202, Schefferville contains approximately 16 percent of the total population of the Québec communities (Statistics Canada 2006) (Figure 4.25). In 2006, there were more men (55 percent) than women (45 percent) living in the area. Of the 202 people in Schefferville, 90 (44.5 percent) were Aboriginal. Between 2001 and 2006, its population decreased by approximately 15 percent from 240 people in 2001 to 202 people in 2006 (Statistics Canada 2006).

4.3.3 Employment and Business

4.3.3.1 The Mining Industry

Mining has provided a valuable foundation and cornerstone for economic development and growth in Labrador West, with a primary focus on iron ore. Large scale mining development projects are generally long term and capital intensive and often result in major economic and employment benefits similar to operations already existing in Labrador West (NLDLAA 2008).

Production mining is the main activity in Labrador West. IOC operates its Carol Lake Mine out of Labrador City, and Wabush Mines operates its Scully Mines from Wabush. The situation has not changed substantially since 1993 in terms of both mines being dependent on the fluctuations in the international market for steel and subsequently iron ore.

The Iron Ore Company of Canada (IOC) began production from the Carol Lake Mine in 1962. IOC is Canada's largest iron ore pellet producer and operates a mine, concentrator, and pellet plant at Carol Lake, port facilities in Sept-Îles, Québec and a 420-km rail line that links the mine and the port. Total resources at Carol Lake are estimated to be 5.5 billion tonnes. Proven and probable reserves are 1.4 billion tonnes; indicated and referred reserves are 4.1 billion tonnes. Annual mine production at the open pit operation is in the 35 to 38 million tonne range at an average grade of approximately 40 percent total iron. Annual production capacity is 18 million tonnes of concentrate of which 12.5 million tonnes can be pelletized. In 2005 and 2006, IOC shipped a total of 15 million tonnes of iron ore, up 30 percent from 2004 (AMEC Earth and Environmental Ltd and Gardner Pinfold 2008).

IOC announced a \$500 million expansion in March 2008, and a further \$300 million expansion in September 2008. However these plans, which would have increased production to 25 million tons per year by 2011, were postponed in December 2008.

Wabush Mines began mining iron ore from the Scully Mine in Labrador in 1965 and now operates a mine and concentrating plant at Wabush and a pellet plant and shipping facilities in Pointe Noire, Québec. All ore is mined by open pit and sent through the Scully Mine concentrator. The final concentrate is transported 443 kilometres by rail to the port at Pointe Noire for pelletizing and shipment. The majority of ore is loaded onto ships bound for the Canadian and US Great Lakes region while the remainder is loaded for the US East Coast, Europe and more recently China. In 2005, Wabush Mines shipped five million tonnes of concentrate, up almost 29 percent from 2004. In 2006 it shipped 4.2 million tonnes, a drop of 17.9 percent from the previous year. In 2006 it spent more than \$18 million on capital projects (AMEC Earth and Environmental Ltd and Gardner Pinfold 2008). However, in December 2008, Wabush Mines cut its production target for 2009 in half, and announced it was eliminating 160 jobs in February 2009. Other materials of interest in Labrador West are aggregate, nickel, gold and graphite (AMEC Earth and Environmental Ltd and Gardner Pinfold 2008).

4.3.3.2 Employment and Labour Force

Labrador

In general, the employment situation in Labrador, prior to the current economic downturn, was better than in the rest of the Province, and the situation in Labrador West is better than Upper Lake Melville. Participation rates were higher, unemployment rates were lower, and the average annual income was higher in Labrador West in 2006 (Table 4.12).

Table 4.12 Labour Force Characteristics, Labrador, 2006

	Labrador City	Wabush	Total Labrador West	Upper Lake Melville	Labrador	Province
Total Population, 15 years and older	5,935	1,460	7,395	7,045	20,815	422,385
Labour Force	4,325	1,045	5,370	5,105	14,340	248,685
Participation Rate (%)	72.9	71.6	72.3	64.3	63.2	58.9
Unemployment Rate (%)	8.9	8.1	8.5	20.4	24.5	18.6
Median Income, 2005	\$30,884	\$36,091	\$33,488	\$24,196	\$21,845	\$19,573

Source: Statistics Canada 2006

In 2006, the labour force (i.e., individuals who have, or are seeking employment) of Labrador West consisted of 5,370 individuals (Table 4.12), an increase from 4,395 in 2001. The participation rate, which is the percentage of the work-age population that is working or actively looking for employment, is much higher in Labrador West (72.3 percent in 2006, up from 67.5 percent in 2001) than in the Province (58.9 percent) or Upper Lake Melville (64.3 percent). Between 2001 and 2006, the unemployment rate in Labrador West fell from 9.1 to 8.5 percent.

Wages in Labrador West are higher on average than in the rest of the Province. In 2005, the median income from employment for residents of Labrador West averaged \$33,488, substantially higher than the provincial figure of \$19,573, and the Upper Lake Melville average of \$24,196 (Table 4.12) (Statistics Canada 2001; 2006).

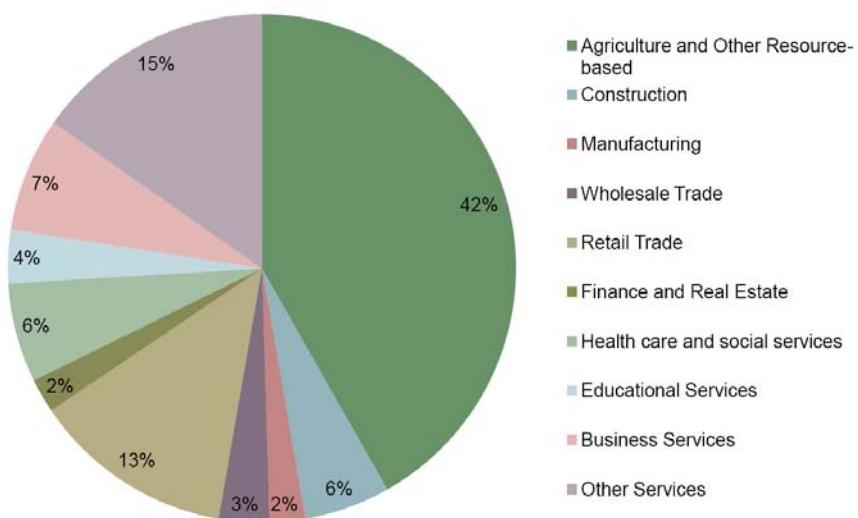
The number of individuals in Labrador West receiving employment insurance (EI) benefits decreased by 6.3 percent between 1996 and 2006. During the same period, the number of EI beneficiaries in the Upper Lake Melville decreased by 10.9 percent and the provincial beneficiaries decreased by only 4.7 percent (Table 4.13).

Table 4.13 Beneficiaries of Employment Insurance, Labrador City and Wabush, 2002 to 2006

	1996			2006			% Change		
	Labrador West	Upper Lake Melville	Province	Labrador West	Upper Lake Melville	Province	Labrador West	Upper Lake Melville	Province
EI Beneficiaries (Individuals)	1,370	1,605	102,825	1,155	1,430	98,025	-15.7%	-10.9%	-4.7%
EI Incidence (% of labour force)	21.4%	28.8%	39.9%	18.0%	25.5%	35.5%	-15.9%	-11.5%	-11.0%

Source: Newfoundland and Labrador Statistics Agency 2008

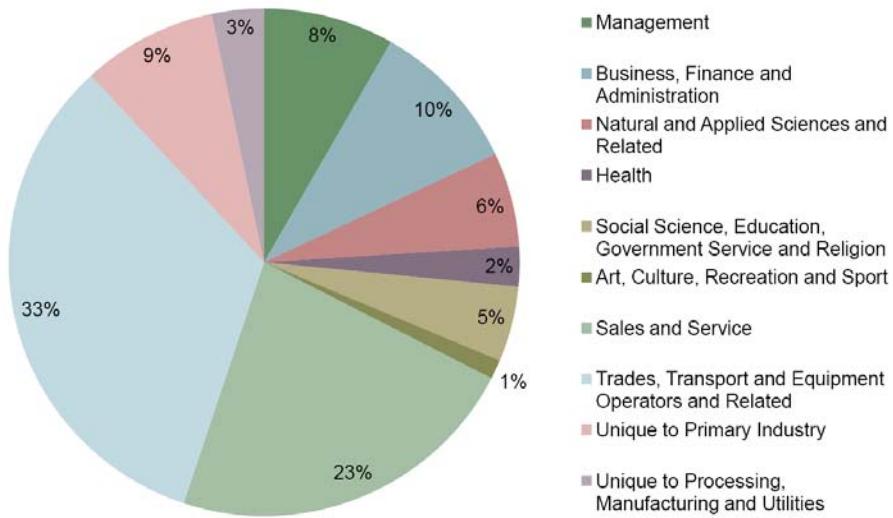
The occupational structure of Labrador is weighted toward goods-producing and seasonal industries. The main source of employment by industrial sector in 2006 was agriculture and other resource-based industries (including mining) which employed 42 percent of the area's population (Figure 4.26). Other services and retail trade employed 15 percent and 13 percent of the population, respectively, while health care and construction each employed 6 percent of the area's residents. Few Labrador West residents worked in wholesale trade (three percent), manufacturing (two percent) or finance and real estate (two percent) (Statistics Canada 2006).



Source: Statistics 2006

Figure 4.26 Labour Force by Industry, Labrador West, 2006

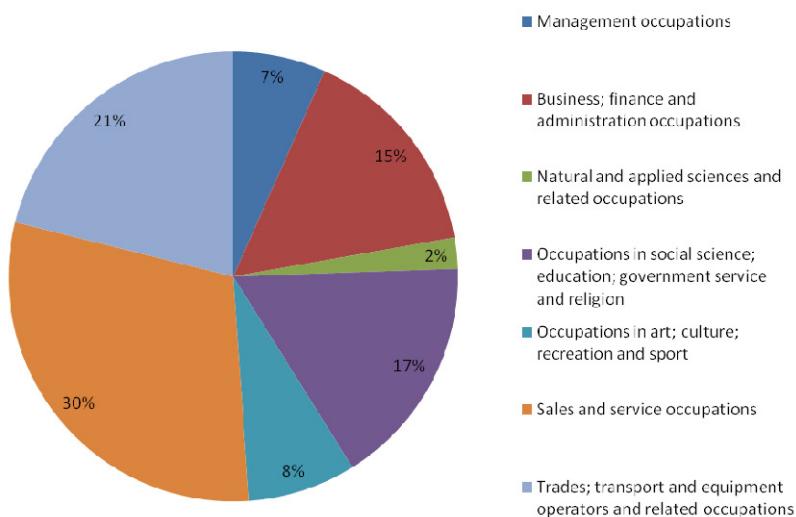
The main occupations of residents of Labrador City and Wabush are trades, transport and equipment operation (33 percent) and sales and service (23 percent) (Figure 4.27). Occupations unique to primary industry and positions in business, finance and administration are held by nine percent of the area's population (Statistics Canada 2006).



Source: Statistics 2006

Figure 4.27 Labour Force by Occupation, Labrador West, 2006

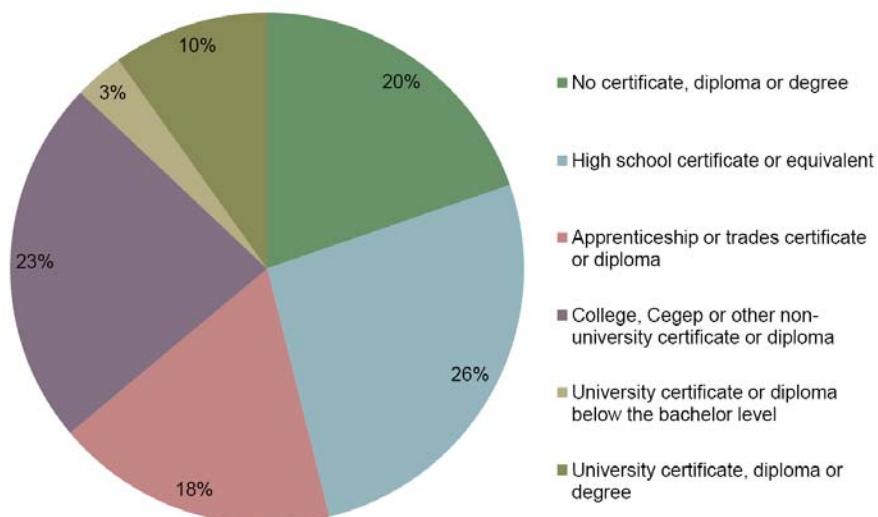
The main occupations of residents of Kawawachikush, Matimekush and Schefferville are sales and services (30 percent), and trades, transport and equipment operation (21 percent) (Figure 4.28). (Statistics Canada 2006).



Source Statistics Canada 2006

Figure 4.28 Employment by Industry Residents of Kawawachikush, Matimekush and Schefferville

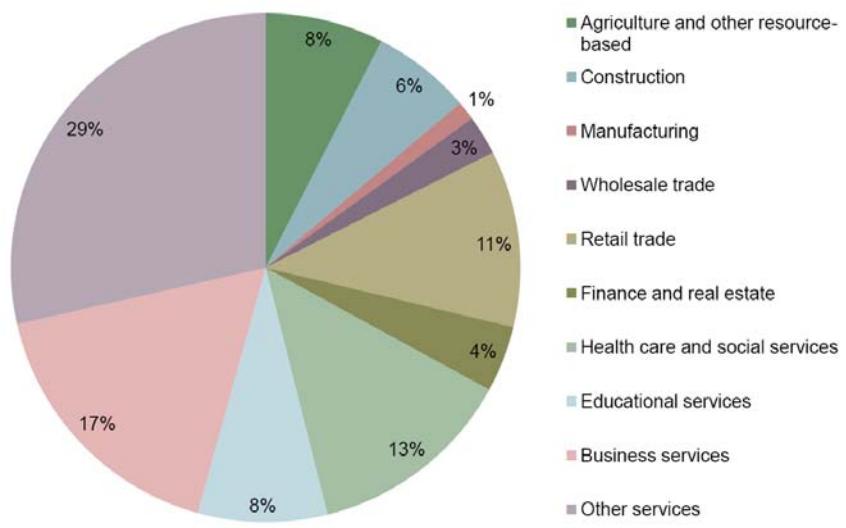
In Labrador West, approximately half of the population (54 percent) has some form of post-secondary training, while only 20 percent have less than a high school education (Figure 4.28). Thirteen percent of Labrador West residents have a university degree, and an additional 23 percent hold a post-secondary certificate or diploma. In Upper Lake Melville ten percent of the population holds a university degree, and 33 percent have not completed a high school education (Figure 4.28; Statistics Canada 2006).



Source: Statistics 2006

Figure 4.29 Education Level, Labrador West, 2006

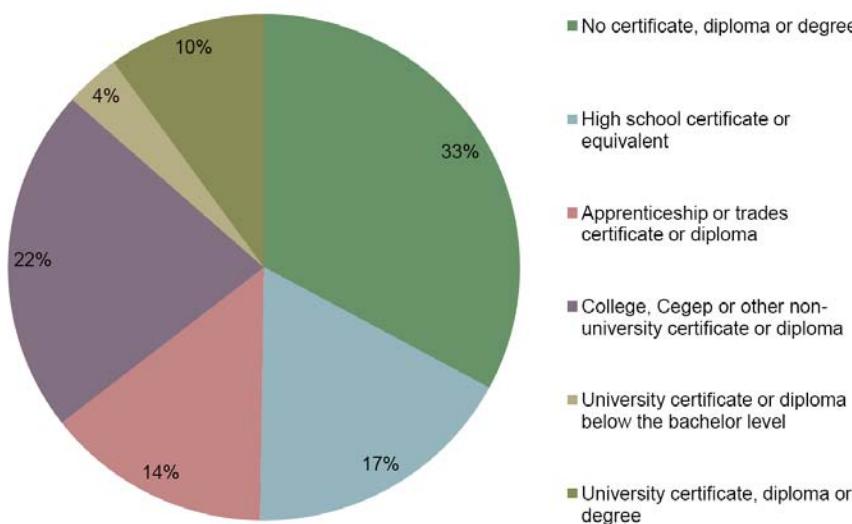
In 2006, 5,035 people aged 15 and over were employed in Upper Lake Melville. The main sources of employment, by industry (Figure 4.29), were Business Services, which employed 860 people, Health Care and Social Services (660), Retail Trade (565) and Other Services (1,435). There were few people employed in Finance and Real Estate (280), Wholesale Trade (125) or Manufacturing (60). The main occupations of Upper Lake Melville Area residents were Sales and Service (1,420), Trade, Transport, and Equipment Operation (970), and Business, Finance and Administration (875) (Statistics Canada 2006).



Source: Statistics 2006

Figure 4.30 Employment by Industry, Upper Lake Melville, 2006

In Upper Lake Melville ten percent of the population holds a university degree, and 33 percent have not completed a high school education (Figure 4.30).



Source: Statistics 2006

Figure 4.31 Education Level, Upper Lake Melville, 2006

Eastern Quebec

In the Eastern Québec communities (Kawawachikamach, Matimekush, and Schefferville), the 2006 labour force consisted of 855 people (Table 4.14). The participation rate is lower for the Eastern Québec towns (35.6 percent) when compared to Labrador West (72.3 percent) (Table 4.14). The unemployment rate for Eastern Québec is also higher at 19.4 percent compared to Labrador West, which is approximately nine percent (Table 4.14). Wages in Eastern Québec (\$10,648) were also lower on average when compared to Labrador West (\$33,488) (Table 4.14).

Table 4.14 Labour Force Characteristics, Eastern Québec and Comparison to Labrador West, 2006

	Kawawachikamach	Matimekush	Schefferville	Québec Total	Labrador West Total
Total Population, 15 years and Older	360 ¹	335	160	855	7,395
Labour Force	170	200	120	490	5,370
Participation Rate (%)	47.2	59.7	75	35.6	72.3
Unemployment Rate (%)	20.6	37.5	12.5	19.4	8.5
Median Income, 2005	\$12,768	\$8,528	\$0.00 ²	\$10,648	\$33,488

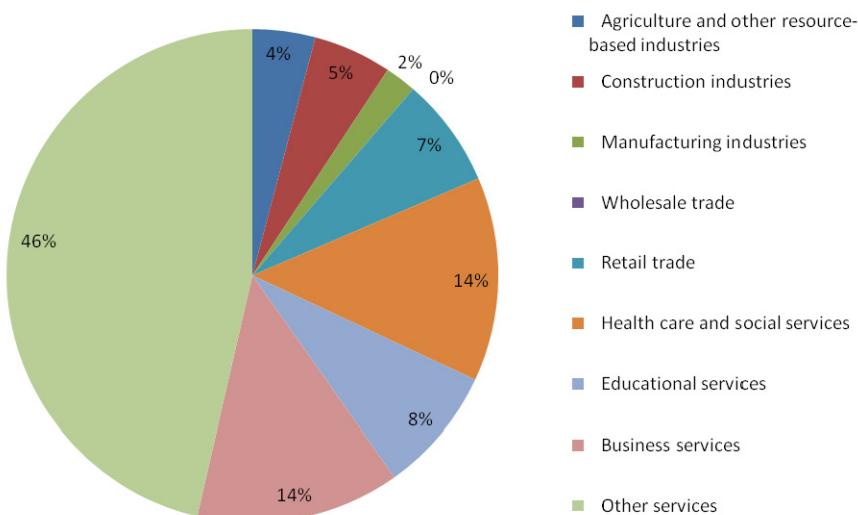
Source: Statistics Canada 2006

¹Kawawachikamach workforce was 512 in 2008 (NNK 2008)

²Data is suppressed. Statistics Canada suppresses income data in census areas with populations less than 250 persons, or where the number of private households is less than 40. All suppressed data and associated averages, medians and standard errors of average income are replaced with zeros, but are included in the appropriate higher-level aggregate subtotals and totals. This practice has been adopted to protect the confidentiality of individual respondents' personal information.

The occupational structure of Eastern Québec is weighted to other services. The main source of employment by industrial sector in 2006 was other services which employed 46 percent of the area's population (Figure 4.31). Health care and social services and business services employed 14 percent of the population, each, while education, retail trade and construction each employed eight, seven and

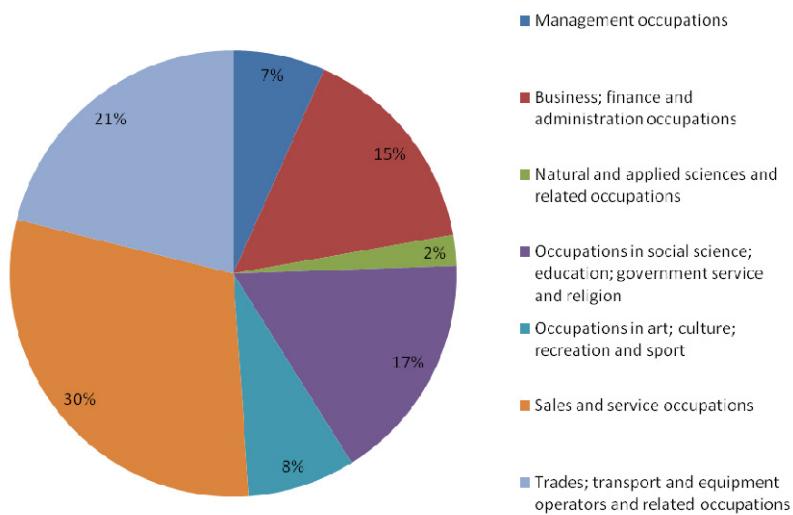
five percent of the area's residents respectively. Few Eastern Québec residents worked in agriculture and other resource based industries (four percent), or manufacturing (two percent).



Source Statistics Canada 2006

Figure 4.32 Labour Force by Industry, Eastern Québec, 2006

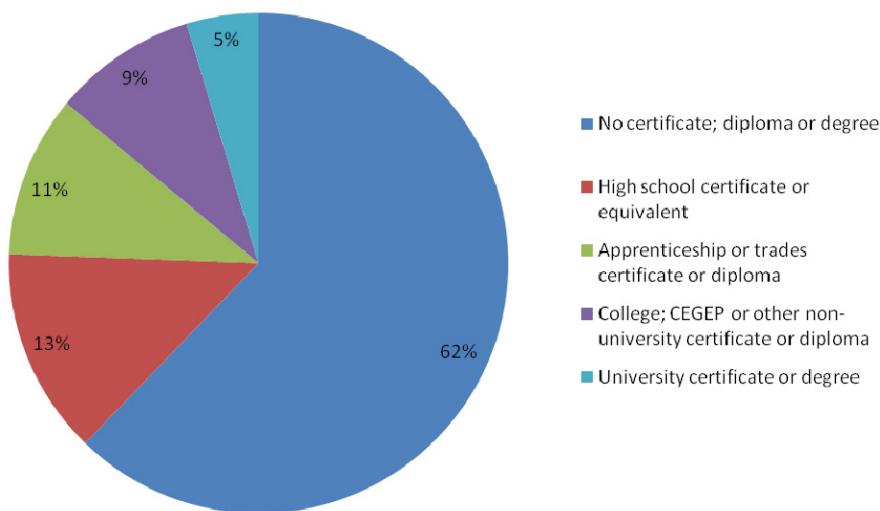
The main occupations of residents of Kawawachikush, Matimekush and Schefferville are sales and services (30 percent), and trades, transport and equipment operation (21 percent) (Figure 4.32) (Statistics Canada 2006).



Source Statistics Canada 2006

Figure 4.33 Labour Force by Occupation, Eastern Québec, 2006

In the Québec communities, over half of the population (62 percent) has less than a high school education, while approximately 30 percent has some form of post secondary education (Figure 4.33). Five percent of the Eastern Québec residents have a university degree, and an additional 20 percent hold a post-secondary certificate or diploma (Figure 4.33).



Source Statistics Canada 2006

Figure 4.34 Education Level, Eastern Québec, 2006

4.3.3.3 Business

Western Labrador

The business community of Labrador West includes 311 companies, approximately two percent of all businesses in the Province (Statistics Canada Business Register). Most of them have one to four employees (Table 4.15). These businesses, categorized by North American Industrial Classification System (NAICS) Industry Code, are presented in Table 4.16.

Table 4.15 Number of Businesses by Employment Size, Hyron Region, 2006

Number of Employees	Number of Businesses
1-4	139
5-19	121
20-99	43
Total	311

Source: Statistics Canada Business Register

Table 4.16 Number of Businesses by Industry, Hyron Region, 2006

Industry Code	Number of Businesses
Agriculture, Forestry, Fishing and Hunting	X
Mining and Oil and Gas Extraction	6
Utilities	X
Construction	21
Manufacturing	7
Wholesale Trade	25
Retail Trade	64
Transportation and Warehousing	17
Information and Cultural Industries	5
Finance and Insurance	7
Real Estate and Rental Leasing	16
Professional, Scientific and Technical Services	10

Industry Code	Number of Businesses
Management of Companies and Enterprises	X
Administrative and Support, Waste Mgmt, and Remediation Services	16
Educational Services	X
Health Care and Social Assistance	26
Arts, Entertainment and Recreation	8
Accommodation and Food Services	27
Other Services (Except Public Admin.)	45
Public Admin	4
Total	311

Note: x = data not available
 Source: Economics and Statistics Branch (Newfoundland and Labrador Statistics Agency)
http://www.stats.gov.nl.ca/Statistics/Trade/PDF/BR_Zone_NAICS_2006.pdf

The major employers in Labrador West include IOC, which employs more than 2,000 individuals in Labrador City and Sept-Îles, Wabush Mines, with 300 to 400 employees, and the provincial government, including healthcare workers, education employees, and other government employees (B. Jerrett pers. comm.).

Upper Lake Melville

Upper Lake Melville is the government service centre for Labrador. Offices of many provincial and federal government departments are located and staffed in Happy Valley-Goose Bay. Regional governments and Aboriginal groups also provide opportunities for employment in the area. The main employers and number of employees for each are listed in Table 4.17.

Table 4.17 Major Employers and Number of Employees, Upper Lake Melville

Employer	Number of Employees
Regional Agencies	
Labrador-Grenfell Regional Integrated Health Authority	370
Labrador School Board and six public schools	192
College of the North Atlantic	125
Regional Governments and Aboriginal Groups	
Sheshatshiu Innu First Nation and Social Services	214
Town of Happy Valley-Goose Bay	51 permanent and 30 seasonal
Nunatsiavut Government	53
Labrador Métis Nation	12 permanent and 4 seasonal
Private Employers	
SERCO	350-400 full-time and seasonal
Vale Inco	250
Woodward's Group of Companies	200 full-time and seasonal
NorthMart and affiliated businesses	130
Terrington Consumers Co-operative	47
Labrador Friendship Centre	32 permanent and 40 seasonal

Source: CLEDB 2006.

Historically, the main employer and most important driver of the economy in Upper Lake Melville has been 5 Wing Goose Bay, the military base. Currently, it employs approximately 400 civilians and 100 military personnel and in 2006-07, total wages and salaries were estimated at \$14.9 million (AMEC Earth and Environmental Ltd. and Gardner Pinfold 2008). The largest employer associated with the

base is SERCO, providing base operation services, including maintenance and catering. SERCO employs approximately 350 of the 400 civilians. Spending by those employed in base-related activities has also had beneficial employment multiplier effects on the local retail sector (CLEDDB 2006).

As of 2006, there were 329 businesses in Upper Lake Melville (Table 4.18), representing 35.8 percent of businesses in Labrador. The majority of businesses in the Upper Lake Melville Area (145) were small, with one to four employees. There were 42 businesses with 20 to 99 employees (Newfoundland and Labrador Statistics Agency 2007a).

Table 4.18 Number of Businesses, Upper Lake Melville, 2006

Industry	Number of Businesses
Agriculture, Forestry, Fishing and Hunting	x
Mining and Oil and Gas Extraction	-
Utilities	-
Construction	40
Manufacturing	9
Wholesale Trade	10
Retail Trade	77
Transportation and Warehousing	14
Information and Cultural Industries	x
Finance and Insurance	6
Real Estate, Rental and Leasing	15
Professional, Scientific and Technical	16
Management of Companies and Enterprises	x
Administrative and Support, Waste Management and Remediation	9
Educational Services	6
Health Care and Social Assistance	50
Arts, Entertainment and Recreation	10
Accommodation and Food Services	34
Other Services	28
Public Administration	5

Source: Newfoundland and Labrador Statistics Agency 2007a
Note: x = data not available

The majority of businesses in the area fall into the same five sectors as for the Province and Labrador as a whole, with construction firms ranking third by number (Table 4.18). At least a quarter of all local firms are self-described as tourism businesses (CLEDDB 2007).

Québec Communities

Retail businesses in Schefferville include the Northern Store, which employs 16 people on a part-time and full-time basis providing food, alcohol and general merchandise, as well as Duberco, Inc and Radio which both provide fuel services including aircraft and diesel. Both Duberco, Inc. and Radio employ one person full-time and hire up to an additional two seasonal workers. National Automobile Rentals are also located in Schefferville, employing a single person. There is also a hardware store and a convenience store, each with two employees, in Schefferville.

Within Kawawachikamach, the majority of businesses are owned, either wholly or through joint-ventures, by members of the Naskapi Nation or the Naskapi Band. These businesses include Naskapi Imuun Inc., a wholly-owned Naskapi company responsible for internet services and cellular telephone services, Garage Naskapi Inc. which operates a gas bar, and Kawawachikamach Energy Services Inc.,

which operates the Menihek Generating Station, manages utility billing to Schefferville region, and maintains the associated transmission lines (NNK 2008).

4.3.3.4 Communities and Services

This section describes the current situation and recent trends with respect to housing, health care, education, recreation, transportation, utilities and security services in Labrador West, Upper Lake Melville and the Eastern Québec communities.

4.3.3.5 Housing

Labrador West

In Labrador City, the number of occupied dwellings increased by 3.2 percent between 1991 and 2006, from 2,695 to 2,780. In 2006, 78.8 percent of these were owned and 21.4 percent were rented. The average value of a home in Labrador City in 2006 was \$107,604 and the average monthly rent was \$521 (Statistics Canada 2006).

Between 1991 and 2006, the number of occupied private dwellings in Wabush increased from 680 to 690 (1.5 percent). The majority (84.1 percent) was owned and 15.2 percent was rented in 2006. The average value of a home in Wabush was \$86,216 in 2006 and average monthly rent was \$401 (Statistics Canada 2006).

Upper Lake Melville

The number of occupied private dwellings in the Upper Lake Melville increased from 2,820 in 1991 to 3,130 in 1996, and rose again to 3,180 in 2001. In 2006, the number decreased to 3,130, of which 1,870 (59.7 percent) were owned and 1,145 (36.6 percent) were rented. Most occupied dwellings were in Happy Valley-Goose Bay and most of those were single detached homes (Statistics Canada 2006).

Happy Valley-Goose Bay had 2,725 occupied private dwellings, 59.4 percent of which were owned and 40.1 percent rented. Of the total occupied dwellings, 61.8 percent were single detached homes, 18.2 percent were semi-detached and 5.7 percent were apartments. In 2006 the average value of owned dwellings in Happy Valley-Goose Bay was \$133,504 and median monthly rent was \$611 (Statistics Canada 2006).

Québec Communities

In total, the Québec communities near the Project site contained 370 occupied dwellings in 2006 (Statistics Canada 2006). Of these, approximately seven percent were owned and 21 percent rented, with the remaining 72 percent being band housing (Statistics Canada 2006).

There is a shortage of housing in Kawawachikamach. The housing stock comprises approximately 154 single-family dwellings, duplexes, apartments, maisonettes, and cottages, including five units constructed in 2007-2008. All of these units are owned by the Naskapi Nation of Kawawachikamach (NNK) and maintained with funds from its operations and maintenance budget. They are allocated on a first-come-first-served basis. The NNK maintains a chronological list of housing requests, and at the close of the 2007-08 fiscal year, there were 96 names on this list, the oldest from January 1997 (NNK 2008).

In 2006, there were 197 private dwellings in Schefferville; however, only 95 were occupied, down from 110 in 2001, a decrease of approximately 14 percent. Of these occupied dwellings, 15 are privately

owned with an approximate average value of \$54,700, and 60 are rented (Statistics Canada 2001; 2006). Almost half (47 percent) of the dwellings in Schefferville are single-detached houses. The remaining housing consists of semi-detached houses (approximately 32 percent) and small apartment buildings (approximately 21 percent) (Statistics Canada 2006).

In 2006-2007, there were 172 residential units in Matimekosh and 12 in Lac-John (INAC Matimekush/Lac John First Nation 2008).

There are also three hotels with a total of 42 rooms in the Schefferville region (Table 4.19). The Hôtel Royale also offers a 200-person conference hall and 20-person meeting room (S. Fortier pers. comm.).

Table 4.19 Temporary Accommodations in Schefferville, 2008

Hotel	Number of Rooms
Hôtel Auberge	12
Hôtel-Motel Royale	24
Hotel-Bla-Bla	6

4.3.3.6 Healthcare

Labrador West

Facilities and Services

The Captain William Jackman (CWJ) Memorial Hospital, located in Labrador City, is a fully accredited health facility which serves Labrador West. It has 20 beds, six of which are designated long-term care beds for levels three and four nursing care. Fourteen beds are for acute care. Inpatient units provide care to medical, surgical, obstetrical, pediatric, respite, palliative and intensive care patients. Maternity care is provided by family physicians and nurses.

The hospital is served by six family physicians, a general surgeon, and an anaesthesiologist. There are also a number of visiting specialists who come to the hospital on a regular basis (Labrador-Grenfell Health 2007). There are two dentists in the area with one other who visits for two weeks each month (O. Simpson, pers. comm.).

The 2008 provincial budget includes plans to spend \$59 million on construction of a new Labrador West Health Centre to replace the CWJ. This is expected to be complete in 2011 (NLDF 2008).

Wabush Medical Clinic

There is a Medical Clinic in Wabush which is staffed by one doctor, who is also the physician for Wabush Mines.

Community Service Programs

Labrador-Grenfell Health has a Child, Youth and Family Services office in Labrador West. It has the mandate to provide child protective intervention services, youth services, adoption services, family and rehabilitative services, community corrections, child care services and residential services (Labrador Grenfell Health 2007).

Mental Health Services are provided at the CWJ. It has two addictions counsellors, one addictions coordinator/officer, 4.5 mental health counsellors as well as the regional mental health and addictions clinical manager. Churchill Falls employs one part time mental health nurse. Wait times for mental

health counselling in Labrador City are up to four to six weeks, as position vacancies are a challenge to the department (Aura Environmental Research and Consulting Ltd., 2008).

Shelters

Hope Haven, a shelter and resource facility for women and children escaping domestic abuse, opened in 2004. The building can accommodate up to 225 women and children each year. It was expected to expand with the addition of ten new affordable housing units during the summer of 2008, but plans were put on hold due to construction delays (CBC 2008).

Ambulance Service

Labrador-Grenfell Health operates a provincial air ambulance service out of St. Anthony. In addition, it operates road ambulances, has specialized equipment to facilitate medical evacuation by snowmobile and provides physician/nursing escorts and paramedic services (Labrador-Grenfell Health 2007).

IOC also services Labrador City and surrounding area with an industrial ambulance that serves as a back up to the town's ambulance (A. Johnson, pers. comm.).

Upper Lake Melville

Facilities and Services

There is one hospital in Upper Lake Melville, the Labrador Health Centre in Happy Valley-Goose Bay. The Labrador Health Centre offers full diagnostic and rehabilitative services and it is the referral centre for the community clinics in North West River, Mud Lake and Sheshatshiu. It is equipped with 26 beds and has a 24-hour Emergency Department, as well as out-patient clinics. When fully staffed, the Labrador Health Centre has 12 full-time physicians.

Specialists at the hospital include a general surgeon, an anaesthetist, and an obstetrician and gynecologist. Special clinics offered by the hospital include a well-woman clinic and several clinics offered by visiting specialists (D. Rashleigh, pers. comm.).

There is one long-term care facility in Upper Lake Melville. The Harry L. Paddon Memorial Home in Happy Valley-Goose Bay offers Level 2, 3, and 4 nursing care to residents (T. Dyson, pers. comm.). The Paddon Home has 29 rooms, including seven single-occupancy, 20 double-occupancy, one respite and one special care. A senior citizens' home located on the grounds of the Paddon Home is staffed by registered nurses, licensed practical nurses and personal care attendants on a 24-hour basis. Seniors' care is supplemented by visiting doctors and other services are available from various visiting professionals (Healthy Newfoundland and Labrador ND). The Paddon Home is more than 30 years old and not designed for patients with high care needs. In 2003 a need was identified to construct a new long-term care facility in Happy Valley-Goose Bay (NLDLAA 2006) which is under construction and should be completed in 2009.

Mental health and addictions services are located in the Labrador Health Centre and are staffed by a regional director, an addictions counsellor, an addictions coordinator, four mental health counsellors, an adolescent services coordinator and a community youth network coordinator. The Happy Valley-Goose Bay office is primarily responsible for services in other communities in Labrador, with the exception of Labrador City and Wabush.

Shelters

Libra House, located in Happy Valley-Goose Bay, has 10 beds and provides support programs and safe shelter for women and children in Upper Lake Melville and those from North Coast communities. In Sheshatshiu, the Nukum Munik Shelter provides 24-hour service and is funded by Indian and Northern Affairs Canada, the CMHC, and is sponsored by the Sheshatshiu Innu Band Council. Both shelters are sufficient to meet current demand, but are frequently at capacity.

Public Health

The Public Health Unit in the Labrador Health Centre is responsible for providing health clinics to the public including childbirth education, postnatal, child health and school health. It employs three public health nurses. It also employs a discharge planner and community supports coordinator, a regional home nursing coordinator, and a full-time communicable disease control nurse. A full-time medical officer of health, a regional cervical screening coordinator, a regional health promotion coordinator and a regional director are also on staff. The Public Health Unit is presently recruiting another continuing care nurse due to increasing demands related to acute care services (T. Dyson, pers. comm.). Labrador-Grenfell Health, under the direction of the medical officer of health, also offers a variety of programs that are aimed at health protection. Programs include Environmental Health, Communicable Disease Control, and Health Emergency Management (Labrador-Grenfell Health 2007).

Emergency Services

The Labrador Health Centre in Happy Valley-Goose Bay has an Emergency Department that is open 24 hours a day, seven days a week. On average, the Emergency Room sees 60 clients in a 24-hour period and approximately one-third of these are seen during the day (S. Jesseau, pers. comm.). Labrador-Grenfell Health operates a provincial air ambulance service out of St. Anthony on the Northern Peninsula and the Labrador Health Centre has its own plane in Happy Valley-Goose Bay to move patients to and from the Labrador coast. Labrador-Grenfell Health also operates road ambulances, has specialized equipment to facilitate medical evacuation by snowmobile and provides physician and nursing escorts and paramedic services (Labrador-Grenfell Health 2007).

The Labrador Ambulance Service in Happy Valley-Goose Bay is privately owned and operates two vehicles that service Happy Valley-Goose Bay and Mud Lake (albeit, in the latter case, only once patients have been transported across the river). The Labrador Ambulance Service is staffed by nine emergency response technicians, two of whom are full-time. The Service responded to 743 calls in 2007, up from 685 calls in 2004. Labrador Ambulance Service personnel believe that they could support additional demands (J. Squire, pers. comm.; J. Stacey, pers. comm.).

North West River has one ambulance, which is operated by the Labrador Health Centre, to serve people in North West River and Sheshatshiu. 5-Wing Goose Bay also has an ambulance that responds only to airfield emergencies.

Québec Communities

Since 2001, healthcare and social services in Kawawachikamach have been provided by the Naskapi Local Community Service Centre (CLSC) (Naskapi Nation 2008 – Naskapi Corporate Organizations List; M-S Lapointe, pers. comm.). The CLSC is administered by a board of directors composed mainly of Naskapis, overseen by the Council of the Nation, and jointly funded by Health Canada and the Government of Québec (Naskapi Nation 2008 – Naskapi Corporate Organizations List).

The CLSC employs 18 staff, including six nurses, three part-time physicians and one part-time dentist (Table 4.20). It offers minor emergency services, sampling and diagnostic services, nurse/physician consultation, home care, childhood prevention and promotion services, pharmacological services, pre- and post-natal services, psycho-social services, immunization, medical transportation of patients, and specialist services for dentistry, ophthalmology, otorhinolaryngology, nutrition, psychology, ergotherapy, and occupational therapy.

Table 4.20 Staff Employed by the Naskapi Local Community Service Centre, 2008

Position	Number of Employees
Nurses, full-time	2 nurses
Nurses, part-time	4 nurses
Physicians, full-time	1
Physicians, part-time	3
Dentists, part-time	1
Social Workers	2
Other, full-time	1 physio-therapist,
Other, part-time	2 Secretarial, 3 Support staff

Source: Marcel Lortie, pers. comm.

CLSC medical services are provided exclusively to the Naskapi. However, emergency services are provided to people outside of the community, with the cost for such services billed to the Québec provincial government (L.M. Lortie, pers. comm.). The CLSC's medical centre and social services currently operate at capacity, and the CLSC has incurred a deficit each year since 2007. Current staffing levels cannot accommodate the growth of Kawawachikamach, which is expected to see a doubling of population within 15 years (L.M. Lortie, pers. comm.).

Schefferville Aboriginal healthcare and social services have been provided by the Innu Local Community Service Centre (CLSC) (M-S Lapointe, pers. comm.). The CLSC is an incorporated body administered by a board of directors composed mainly of and jointly funded by Health Canada and the Québec provincial government. The Innu CLSC employs 16 staff (Table 4.21). The dispensary provides the following services for the Innu community: minor emergency services; pharmacological services; sampling and diagnostic services; pre- and post-natal services; nurse/physician consultation; psycho-social services; home care; immunization; childhood prevention and promotion services; medical transportation of patients; specialization in diabetes treatment and prevention; and specialist services for dentistry, ophthalmology, otorhinolaryngology, nutrition, psychology, ergotherapy, and occupational therapy.

Table 4.21 Staff Employed by the Innu Local Community Service Centre, 2008

Position	Number of Employees
Nurses, full-time	2
Nurses, part-time	2
Physicians, full-time	3
Physicians, part-time	1
Dentists, part-time	1 (up for 2 weeks at a time)
Social Workers	2 child protection services
Other, full-time	2 psychologists come up for 2 weeks per month
Other, part-time	3 support staff

Source: Marie-Sylvie Lapointe, pers. comm.

The Dispensarie de Schefferville provides the non-Aboriginal community with the following health care services: minor emergency services; pharmacological services; sampling and diagnostic services; pre- and post-natal services; nurse/physician consultation; medical transportation of patients; and immunization. The Schefferville CLSC has six staff, including four nurses, one full-time physician and one part-time dentist, but no psychologists or child care workers (Table 4.22).

Table 4.22 Staff Employed by the Schefferville Local Community Service Centre, 2008

Position	Number of Employees
Nurses, full-time	3
Nurses, part-time	1
Physicians, full-time	1 (1 to 2 month full time rotation)
Dentists, part-time	1 (up for 2 weeks at a time)
Social Workers	None listed

Source: Helen Littlejohn, pers. comm.

4.3.3.7 Education

Labrador West

Childcare and Early Childhood Education

The one early child care facility in Labrador West is located in Labrador City. Wee College Childcare Centre accepts children aged 2 to 6 years and can accommodate 32 children on a part-time basis (NLDHCS 2004).

Primary, Elementary and High School

There are four schools in Labrador City and Wabush (Table 4.23). Three are managed by the Labrador School Board and one is managed through the Conseil Scolaire Francophone Provincial de Terre-Neuve-et-Labrador. Between the 2000-01 and 2007-08 school years, the total student enrolment in Labrador West increased by 8.9 percent, from 1,387 to 1,510. During that time, the number of full-time teacher equivalents increased by only 0.3 percent (Newfoundland and Labrador Statistics Agency 2008). The Labrador School Board has had problems with the recruitment and retention of teachers (The Aurora, 2007a).

Table 4.23 Schools, Enrolment and Number of Teachers, Labrador City and Wabush, 2007/08

School	Location	Grades	Enrolment 2007/08 ^A	Full-Time Equivalent Teachers 2007/08	Pupil-Teacher Ratio	School Capacity
A.P. Low Primary	Labrador City	K-3	402	24.0	14.7	600 ^B
Menihik High	Labrador City	8-12	594	35.5	17.1	800 ^C
Centre Educatif L'ENVOL	Labrador City	K-8, 10, 12	31	4.0	7.8	
J. R. Smallwood Middle	Wabush	4-7	485	30.8	15.3	1000 ^D

^A T. Pye pers. comm.
^B S. Kennedy pers. comm.
^C L. Simmons pers. comm.
^D H. Costa pers. comm.

Post-Secondary

Post-secondary education is available in Labrador West through the College of the North Atlantic, which has a campus in Labrador City. Approximately 200 full-time and part-time students are registered there each semester (Table 4.24). An additional 200 students participate in continuing education evening courses (College of the North Atlantic 2008). The Labrador West CNA campus is the only campus in the Province to offer a two-year Mining Technician program and has been designated CNA's Mining Centre of Excellence. In 2007, a millwright and an electrical program began to be offered. In 2008, a welder program was added to the campus' trades offerings.

Table 4.24 Enrolment by Program, College of the North Atlantic, Labrador City Campus, 2008/2009

Trade Program	Number of Seats	Capacity
Welder	15	15
Construction/Industrial Electrician	16	16
Industrial Mechanic (Millwright)	16	16
Mining Technician (1st-year)	33	60
Mining Technician (2nd year)	66	75
Adult Basic Education	18	18
CAS Transfer: College- University	20	60
Engineering Technology (First Year)	5	30
Total Number of Students	189	290

Source: R. Sawyer pers. comm.

The Government of Newfoundland and Labrador has allotted \$18.1 million to build a new facility for the College of the North Atlantic in Labrador City (Government of Newfoundland and Labrador 2008). The building of the new facility will begin in late spring or early summer 2009 and will be finished in September 2010.

There is one private training institution, RSM Safety Institute, Inc., in Labrador City. It is a subsidiary of RSM Mining Services and offers 40 to 50 occupational health and safety training services for the mining and construction industries. These include Accident Investigation, Forklift Operation and Safety, Excavation and Trenching Safety and Safety for Supervisors. Class sizes at the Institute range from one to 40 participants, depending on the type of course and time of year. Courses are offered on a monthly schedule but are also available on an as-needed basis and typically are no longer than two days. Courses are generally offered in English, and some are offered in French (K. McCarthy, pers. comm.; K. Lee, pers. comm.).

Upper Lake Melville

Primary, Elementary and High School

There are six primary and secondary schools in Upper Lake Melville, including one francophone school (Table 4.25). Four are in Happy Valley-Goose Bay, while North West River, Sheshatshiu and Mud Lake each have one. Kindergarten through Grade 12 is offered in all of the communities except Mud Lake, which provides only Kindergarten through Grade 9 (Our Labrador 2004). The schools in the area have a total enrolment of 1,901 and the physical capacity to accommodate 2,340 students (Table 4.25).

Table 4.25 Student Populations, Primary and Secondary Schools, 2006/2007

School	Location	Grades	Service Areas	Number of Registered Students	Physical Capacity of School	Number of Full-time Equivalent Teachers
Peacock Primary	Happy Valley-Goose Bay	K-3	Happy Valley-Goose Bay	394	500	25
Queen of Peace Middle School	Happy Valley-Goose Bay	4-7	Happy Valley-Goose Bay	425	525	29
Mealy Mountain Collegiate	Happy Valley-Goose Bay	8-12	Upper Lake Melville Area	594	700	36
Lake Melville School	North West River	K-12	North West River and Sheshatshiu	118	200	11
Mud Lake School	Mud Lake	K-9	Mud Lake	4	15 ^A	1
Peenamin Mackenzie School	Sheshatshiu	K-12	Sheshatshiu	351	400	34.5
École Boréale de Goose Bay	Happy Valley-Goose Bay	K-12	Happy Valley-Goose Bay and Sheshatshiu	15	N/A	3
Total				1,901	2,340	139.5

Note:
^A The capacity of the school is 15 students, depending on the number of grades being taught in a given academic year.

Source: Newfoundland and Labrador Statistics Agency 2008.

The 2007 provincial budget includes \$4 million to construct a new school in Sheshatshiu and \$1.3 million to replace the francophone school in Happy Valley-Goose Bay (NLDF 2007).

Post-Secondary

Each year, the Happy Valley-Goose Bay campus of the CNA admits approximately 300 full-time students in a variety of programs, including Adult Basic Education, Automotive Service Technician and Office Administration (Table 4.26).

The CNA has recently expanded its Happy Valley-Goose Bay campus by adding six classrooms and a new library. The Labrador Institute is also co-located on the CNA campus. These changes will allow CNA to accommodate 200 additional students and will add to its overall service capacity to the Upper Lake Melville area (W. Montague, pers. comm.).

Table 4.26 College of the North Atlantic, Enrolment by Program, Happy Valley-Goose Bay Campus, 2005/2006

Program	Number of Students
Adult Basic Education	51
Office Administration	12
Office Administration (Executive)	10
Computer Support Specialist	5
Early Childhood Education	10
Millwright/Industrial Mechanic	16
Welding	15

Program	Number of Students
Automotive Service Technician	16
Heavy Duty Equipment Technician	17
Carpentry	10
Construction/Industrial Electrical	14
Integrated Nursing Access	17
Comprehensive Arts and Sciences: Transition ^A	31
Comprehensive Arts and Sciences: College University Transfer	32
Orientation to Trades and Technology	15
Total ^B	271

Source: S. Cochrane, pers. comm.

Notes:

^A This program is for students that graduate from high school but may not have the requirements to get into a program

^B These do not include figures for Adult Basic Education for the coastal Learning Centres, other contract programs, or advanced trades training.

Québec Communities

The Sachidun Childcare Centre in Kawawachikamach has Naskapi as its operational language and delivers the Aboriginal Head Start program. Funded by Health Canada, it prepares Aboriginal children for school by meeting their emotional, social, nutritional, and psychological needs (NNK 2008). The Centre is administered by a Board of Directors and employed more than 15 individuals, including six permanent educators, during 2007-08 (NNK 2008). It is presently operating at its capacity of 26 children, including two spaces reserved for emergency cases referred by Social Services (NNK 2008; M. Mameanskum pers. comm.).

The Garderie Matimekush daycare is located in Schefferville within the reserve of the Matimekush/Lac John Nation and currently provides places for 26 Innu children, which is its legal capacity. The Garderie employs five early childhood educators and two support staff.

Two schools, both managed by the Central Québec School Board, serve the Québec communities (Table 4.27).

Table 4.27 Schools, Enrolment and Number of Teachers, Eastern Québec, 2007/08

School	Location	Grades	Enrolment 2007/08	Full-Time Equivalent Teachers 2007/08	Pupil-Teacher Ratio
Jimmy Sandy Memorial School	Kawawachikamach	K-11	238	23.0	10.34
École Kanatamat Tahitipetetamunu	Schefferville	K-11	130	23	5.7

Table 4.28 Staff Employed by Jimmy Sandy Memorial School, Kawawachikamach, 2008

Position	Number of Employees
Teachers	23
Guidance Counsellor	1
Librarian	1
Liaison Officer	2
School Administration	6
Bus Transportation	2
Janitorial	2
Total	37

There are 238 students attending the school, providing an average of 10.34 students per teacher. The school also employs a special education teacher (NNK 2007: 92-93). The Government of Québec has approved further funding for the Adult Education Programme, which will facilitate the addition of more adult education resources (NNK 2007: 92).

Matimekush/Lac-John is served by a single K-11 school, École Kanatamat Tahitipetetamunu, in Schefferville (Table 4.29). During the 2007/08 academic year its enrollment was 130, an increase from 115 students in 2006/07 (C. Basque pers. comm.; INAC 2008 – Matimekush/Lac John First Nation). The school has 23 teachers, with a student-teacher ratio of 5.7:1 (Table 4.28). There is also a resource specialist, an administrator serving as Principal and Vice-Principal, a secretary, and two psychologists. The Principal has stated that the school structure could accommodate up to an additional 50 students (C. Basque pers. comm.).

Almost all of the École Kanatamat Tahitipetetamunu students are Innu; only two are non-Aboriginal. The languages of instruction are French and Innu, in keeping with the mandates of the provincial education authority (C. Basque, pers. comm.). The school currently has 30 adolescents who have dropped out without achieving Secondary 3 (M. Beaudoin, pers. comm.).

Table 4.29 Staff Employed by École Kanatamat Tahitipetetamunu, Schefferville, 2008

Position	Number of Employees
Teachers	23
Resource Specialist	1
Psychologists	2
Secretary	1
Principal/Vice-Principal	1
Bus Transportation	1
Janitorial	1
Total	30

4.3.3.8 Recreation

Labrador West

There are a number of indoor recreational facilities in Labrador City and Wabush. The Labrador City Arena is a gathering point for recreation in Labrador City. The building can accommodate 1,800 people and it has one rink which hosts large tournaments, games and activities. It has five dressing rooms, a meeting room and is also home of the Polaris Figure Skating Club and Labrador West Minor Hockey Association. Wabush also has an arena that is used by the Wabush Figure Skating Club, Labrador West Minor Hockey, Recreational and Olympic Hockey (Labrador West 2008). Other indoor recreational facilities in Labrador City and Wabush include the Carol Lake Curling Club and the Mike Adam Recreation Complex.

Outdoor activities are also popular in Labrador West as it has a number of walking trails, softball fields, soccer pitches and Labrador's only 18-hole golf course. The Jean Lake recreational area in Wabush is used extensively by local organizations for their outings. Outdoor sport clubs in the area include the Menihek Nordic Ski club and the White Wolf Snowmobile Club (Labrador West 2008).

Upper Lake Melville

Happy Valley-Goose Bay has indoor and outdoor recreation facilities. NLDTCR operates the Labrador Training Centre in the town which houses the only swimming pool in Eastern Labrador, a gymnasium

which is used for numerous community activities, a fitness room, and a judo room. Other sport facilities in Happy Valley-Goose Bay include a 1,000 seat arena, soccer and softball fields operated by the Town Council and four school gymnasiums (DND 2008). The Amaruk Golf and Sports Club operates a nine-hole golf course in the Summer.

5 Wing Goose Bay also has recreational facilities, including a full-scale gymnasium, an exercise room, two squash courts, a fully equipped weight room and two sauna baths. Other recreation facilities administered by the Base include a 10-bay auto hobby shop, a wood hobby shop and a softball field. Cultural recreation opportunities have also been increased with the development of a new theatre located adjacent to the new high school.

Québec Communities

The Kawawachikmach Recreation Facility provides an indoor pool (supervised), supervised indoor gym, and a snack bar. It provides employment to 13 staff including one recreation and sports coordinator, one manager, two lifeguards (two trainees), four games room attendants, and two janitors.

The community centre (NNK 2007) provides space for clubs to meet, community feasts and gatherings, family reunions, dances and fundraising activities. The centre has a multi-purpose room, a community library, a youth centre with couches, pool table, ping-pong table, big-screen television, a stereo and board and electronic games and three public-use computers with Internet access. It provides employment to 14 staff.

Other recreation facilities in the Kawawachikmach area include an open area hockey rink, basketball court and softball field.

The only recreation facility in Schefferville is an arena that is paid for by the Town and the Nation Innu Matimekush-Lac John. It provides ice hockey and skating on the indoor rink, with a snack bar and change rooms, and employs a recreation director and a support/maintenance person.

4.3.3.9 Transportation

Labrador West

Roads

The Trans Labrador Highway (TLH) is the primary public road in Labrador. Phase I of the TLH (Route 500) runs between Labrador West and Happy Valley-Goose Bay. In Labrador West it connects with Québec Route 389, which runs 570 kilometres north from Baie-Comeau to the Québec-Labrador border. This section of the TLH is a two-lane gravel highway between Labrador City and Happy Valley-Goose Bay. It has a service level of "A" (free-flowing traffic), with a capacity to carry 1,000 vehicles per hour. Currently, the highway carries 200 vehicles per day (D. Tee, pers. comm.).

The 2007-08 provincial budget allocated \$15 million to commence hard-surfacing of Phase I of the TLH. In June 2007, tenders were issued to widen three sections of road in preparation for hard-surfacing, including a section in Labrador West and a section from Churchill Falls to the Churchill Falls Airport. Crews managed to widen 37 kilometres of road and complete 1.8 kilometres of hard-surfacing by March 31, 2008 (NLDTW 2008).

Airport

Labrador City and Wabush are serviced by the Wabush Airport, which is located within 5 kilometres of each town's centre. A number of air carriers operate scheduled flights, including Air Labrador, Air Canada Jazz and Provincial Airlines Ltd. (Labrador West 2008). The paved runway strip is 1948 m in length.

In 2006, Wabush Airport reported the highest percentage gain in airport passenger movements (16 percent) mainly due to a rise in mining activity. Between 2006 and 2007, the number of passenger movements at the airport in Labrador West increased by 6.2 percent, from 67,180 to 71,344 (NLDTCR 2007).

Railway

IOC operates the 420-km Québec North Shore and Labrador Railway (QNS&L), which IOC built to move iron ore to Sept-Îles. It also provides regularly scheduled, year-round, passenger service (NLDTW 2006). In 2005, Tshiuetin Rail Transportation Inc. (TRH) acquired the northern section of the QNS&L Railway line (the Menihek Subdivision), which runs between Emeril Junction, situated on the Trans Labrador Highway, 63 kilometres from Labrador West, and Schefferville, Québec. TRH now operates this portion of the rail line for passenger and freight rail services (Labrador West 2008).

Upper Lake Melville

Roads

The local road system in Upper Lake Melville links Happy Valley-Goose Bay with North West River and Sheshatshiu. Mud Lake is not accessible by road but can be reached by boat in summer and by snowmobile in winter. The roads in Happy Valley-Goose Bay are paved, as are some in North West River, but those in Sheshatshiu are not.

Construction on Phase III of the TLH, a 280-km section connecting Cartwright Junction and Happy Valley-Goose Bay, is scheduled to be completed in 2009. As a result of these road improvements, established trucking companies may face increased competition from other companies moving into the area (AMEC Earth and Environmental Ltd. and Gardner Pinfole 2008).

Ports

The Port of Goose Bay is on the western end of Lake Melville in an area known as Terrington Basin and has two industrial docks. Infrastructure includes storage sheds, asphalt and fuel tanks and a transshipment warehouse. There is also a substantial area of laydown space. There is a large area of land within easy access of these docks that could be converted to suit a variety of industrial needs.

Terrington Basin cannot handle large freight or passenger vessels and would require significant dredging for expansion of services (CLEDB 2006). The dock receives three to four oil tankers each year and one freighter every two weeks between mid-June and mid-November, which is the current operating season (D. Tee, pers. comm.).

Airports

Both civilian and military aircraft use the Goose Bay Airport, at 5 Wing Goose Bay. Operated by the Goose Bay Airport Corporation, it is one of the largest airports in eastern Canada. A number of air carriers operate scheduled flights, including Air Labrador, Air Canada Jazz and Provincial Airlines Ltd.

(which operates Innu Mikun Airlines), as well as Universal Helicopters and Canadian Helicopters (NLDTW 2006).

The airport has two runways, 3,367 m and 2,920 m in length, both capable of handling large aircraft. DND spent approximately \$20 million on resurfacing and concrete replacement during the summer of 2006. The airport terminal was constructed in 1972 and has a design capacity of 32,000 people per year, but it is now handling more than three times this capacity. The number of passengers flying into the Goose Bay Airport in 2003 was 83,430 and in 2005, the number increased to 104,612, an increase of 15.1 percent. However, in 2006, only 94,422 passenger movements were recorded for the Goose Bay Airport, a decrease of 9.7 percent from 2005. They increased again in 2007 by 1.6 percent to 95,921 (NLDTCR 2007).

The Goose Bay Airport Corporation has hired a design and engineering firm to complete the plans for an improved and expanded terminal facility at its current location. Construction of the new terminal will begin in April 2009 and should be completed by the fall of 2010. The new facility will be able to accommodate an annual flow of 100,000 passengers, with further expansion capabilities incorporated into the design (G. Price, pers. comm.).

Québec Communities

Schefferville has an 8 km municipal road network, including access roads to such transport infrastructure as the airport and railway station. A municipal road also connects to the provincial highway, giving access to the community of Kawawachikmag. The municipal limits also contain approximately 200 kilometres of former mining roads constructed by IOC. These are on government land and give access to resources mostly in Labrador. They also lead to the resort area of Squaw Lake, Chatal Lake and Maryjo Lake. The municipality has no obligation to maintain these access roads (M. Beaudion, pers. comm.).

Several companies fly into Schefferville Airport, including Air Saguenay, Aviation Québec, Air Labrador and Air Inuit. The airport has a 1500 m runway, and employs four people. It is owned by Transport Canada and managed by the Societe aeroportuaire de Schefferville, representing the Naskapi Nation of Kawawachikmag, the Municipality of Schefferville and the Innu Nation of Matimekosh Lac-John (M. Beaudion, pers. comm.).

Schefferville is also served by the Menihek subdivision of the Québec North Shore and Labrador Railway, which delivers most of the freight that comes into the community, because there are no roads linking it to external communities.

4.3.3.10 Water, Sewer, Solid Waste, Power and Communications

Labrador West

Water

Beverly Lake, which is located northeast of Labrador City, is the Town's only municipal water supply.

The municipal water supply in Wabush comes from Ouananiche Lake, which is located south of the town. The Town of Wabush has a grid distribution network which services approximately 700 households and businesses (Labrador West 2008).

Sewer

The Town of Labrador City maintains two separate primary Sewage Treatment Plants and three sewage lift stations (Labrador West 2008).

The Town of Wabush maintains one primary Sewage Treatment Plant. The town is in the process of upgrading the plant to better serve the residents of Wabush.

Solid Waste

The garbage from both towns is currently sent to an incinerator, however, in accordance with the Province's waste management plan it is scheduled to close by December 21, 2008. A study was commissioned in early 2008 to determine whether Labrador should develop one super-site to accommodate all of the garbage from Labrador West and Labrador East. In the meantime, the Labrador West regional waste management committee is considering setting up a temporary landfill at an old dump site (Morrissey 2008).

Power and Communications

Power is provided to Labrador West by Newfoundland and Labrador Hydro. Labrador City and Wabush are equipped with technological and telecommunications infrastructure with advanced fibre optic cables throughout communities and industrial sites. Internet service is provided to the communities by Sympatico and CRRS (Labrador West 2008).

Upper Lake Melville**Water**

Happy Valley-Goose Bay, North West River and Sheshatshiu have piped water systems, while Mud Lake has ground wells that are fed by seepage from the Churchill River. Happy Valley-Goose Bay receives its water from two sources: the Water Treatment Plant and Spring Gulch, each of which provide 50 percent of the water to the town (Town of Happy Valley-Goose Bay 2001). The water system can support a population of about 12,000 people, but is currently serving only approximately 9,150 (S. Normore, pers. comm.).

Sewer

Happy Valley-Goose Bay and North West River have piped sewage systems that serve all dwellings. Most houses in Sheshatshiu and Mud Lake have septic systems. (S. Normore, pers. comm.)

Solid Waste

The landfill in Happy Valley-Goose Bay (3 kilometres north of Goose Bay Airport) has the capacity to last another 12 to 15 years at current use levels. Sheshatshiu and North West River have their own garbage collection services, but use the landfill in Happy Valley-Goose Bay. This may change in the future as the provincial government is in the process of setting up regional landfill sites (S. Normore, pers. comm.).

Power and Communications

Newfoundland and Labrador Hydro provides electricity to all communities in Upper Lake Melville with power generated at Churchill Falls. The communities of Mud Lake, North West River and Sheshatshiu are all part of the Happy Valley-Goose Bay interconnected service area. Aliant Telecom (Aliant) provides telephone service to Labrador through a microwave radio network.

Québec Communities

Waste Disposal

The present landfill opened in 1997 and services the three communities of Kawawachikamach, Lac-John and Schefferville. The lifespan of the landfill was originally 21 years although due to an absence of a waste management plan for discarded electrical appliances and other scrap metals, the life span has been reduced to approximately 15 years. Under Québec legislation, waste materials generated outside Québec cannot be disposed of in a landfill in Québec. Consequently, mining companies operating in Labrador have to have their own management plan for the disposal of all waste material including vehicles, tires of all size and scrap metals (M. Beaudoin. pers. comm.).

Water Supply and Sewage

In Schefferville, drinking water is taken from Lac Knob which lies within the municipal boundary. The chlorination and pumping station is gravity fed, with water being distributed to the community at large via waterlines that serve both Schefferville and the Matimekosh reserve. The sewer and water systems were both originally installed in 1955. A physico-chemical wastewater treatment system was installed in 1999.

In Kawawachikamach, water is supplied to households from two community wells with a pump station, while sewage is pumped to a community septic tank and lagoon.

4.3.3.11 Police and Emergency Response Services

Labrador West

Police services are provided to Labrador City and Wabush by the Royal Newfoundland Constabulary (RNC). In 2007, there were 22 police officers in Labrador West, 18 of whom were male and four of whom were female (Statistics Canada 2007).

The Labrador City Fire Department provides fire protection services to that community and answers an average of 60 calls each year (Labrador West 2008). The Town of Wabush operates a volunteer fire department consisting of 28 firefighters. They protect the residents of Wabush and offer backup to the Town of Labrador City. This department also provides services to Wabush Mines and the Wabush Airport.

Upper Lake Melville

The Royal Canadian Mounted Police (RCMP) is responsible for policing Upper Lake Melville and other parts of Labrador, with the exception of Labrador West. The Labrador District RCMP Headquarters in Happy Valley-Goose Bay has a staff of three. The Happy Valley-Goose Bay detachment is staffed by a Sergeant, two Corporals, 11 General Duty Constables, a District Support Services member, two General Investigation Section (GIS) Investigators and a Community Constable. Sheshatshiu is policed by the RCMP with consultation with and input from the community (RCMP 2008).

There are three fire departments in Upper Lake Melville. There is a municipal department in Happy Valley-Goose Bay with 34 firefighters, 30 of whom are volunteers and four of whom are full-time firefighters (D. Webber, pers. comm.).

5-Wing Goose Bay also has a fire department operated by DND and staffed by 39 paid firefighters. It provides 24-hour crash and emergency rescue services and general fire protection services for the Base.

Québec Communities

As for other remote areas of Québec, police services are ensured by the Surete du Québec through an outpost station. Of the four positions allocated for Schefferville, there are usually only two full-time police officers at the station considering assignments, training and vacation benefits. Upon request, they provide support to the native police forces of NIMLJ and Kawawachikamach (M. Beaudoin, pers. comm.).

For Schefferville and Matimekush-Lac John, policing is provided by the Surete du Québec, with an agreement to co-ordinate with the Naskapi police of Kawawachikamach when necessary. There are five employees including one support worker, three officers on patrol with one exchange person. At least two of the officers are available specifically to provide police services for the Innu reserve. For Kawawachikamach, policing is provided by the Naskapi Police Force. It has nine employees, including a director, an assistant director, five full-time officers, and a secretary/janitor.

For Schefferville and the Nation Innu Matimekush-Lac John, fire services are administered by the Town of Schefferville (Boudreau, pers. comm. and Securite Publique Québec website). There is a part-time fire chief as well as 15 volunteer firefighters. In Kawawachikamach, the Fire Department provides fire suppression and rescue, fire prevention and public fire safety education. It employs a full-time fire chief, one deputy fire chief, three team captains and 11 volunteer firefighters.

All ambulance services for Schefferville, Innu Matimekush-Lac John reserve and Kawawachikamach are handled by Ambulance Porlier, which provides continual coverage via dispatch for ambulance services throughout Eastern Québec. It employs three dispatchers and on-call drivers using two ambulances on rotation.

4.3.3.12 Local Government

Labrador West

Both Labrador City and Wabush are municipalities, each with a mayor and a town council.

Upper Lake Melville

Happy Valley-Goose Bay is an incorporated municipality administered by a mayor, town council and town manager. Mud Lake, 5 kilometres east of Happy Valley-Goose Bay, is a small unincorporated community of around 60 residents administered by a volunteer Local Improvement Committee.

North West River is 33 kilometres northeast of Happy Valley-Goose Bay. It is an incorporated municipality administered by a mayor, town council and town manager or clerk.

Sheshatshiu is approximately 25 kilometres northeast of Happy Valley-Goose Bay and adjacent to the settlement of North West River. It is an Innu community which acquired Federal Reserve status in 2006 and is administered by a Band Council.

Québec Communities

The Innu Nation community of Matimekush-Lac John is governed by an elected Band Council consisting of a Chief and Councillors. The community of Kawawachikamach is administered by the

Band Council, consisting of an elected Chief and Councillors. Schefferville is part of the regional county municipality of Caniapiscau; the regional county municipality seat is Fermont.

4.4 Data Availability and Gaps

The data and information used to describe the existing environmental conditions in the Project area and to inform the environmental effects assessment were obtained by a combination of literature searches and reviews of previous studies, on-site data collection and fieldwork by the Project team, and interviews with experts and local contacts. In general, the information gathered for this assessment is adequate for the purpose of assessing environmental effects and their significance according to the EIS Guidelines as set out by the Government of Newfoundland and Labrador. Environmental issues and controls associated with the proposed Project are well understood due to the knowledge accumulated from the previous mining operations at the site as well as the proposed use of proven mine technology and design. Residual environmental effects can therefore be predicted with a generally high degree of confidence. Additional information gathered during the aerial survey completed in May 2009 (LIM and NML 2009), and subsequent information to be collected (e.g., monitoring of telemetered caribou, genetics analyses) will assist LIM in refining mitigative measures and management plans.

4.5 Future Environment

The following describes the likely future environmental conditions in the proposed Project area if the Project did not proceed. This information is provided to help distinguish Project-related environmental effects from environmental change due to natural and/or other anthropogenic processes and trends in the Project area.

No substantial changes are expected to occur in the Project area with respect to the existing biophysical environment as a result of natural processes. The Project area has been heavily disturbed by past mining operations (up to 50 percent of the landscape on the James North and James South sites, and up to 90 percent of the landscape disturbed on the Redmond site). Without the Project, this landscape would continue to be a heavily disturbed site with flooded abandoned mine pits, a former rail bed, turning yards and stockpiles of mine waste and uneconomical ore materials. The area has remained heavily disturbed since mining on the site halted in 1982, and it is expected that landscape conditions would remain heavily disturbed in the absence of the Project. Given the reclamation plans (revegetation of the site, grading, removal of infrastructure, etc.), the future environment without the Project could actually contain a more heavily-disturbed landscape than if the Project were to go forward through and including land reclamation.

Some wildlife species in the Project area are subject to natural cycles and will likely undergo some natural changes over the designated time period in the absence of the Project. In the absence of the Project, it is expected that present caribou population trends will continue. Air quality in the area is generally good, and in the absence of the Project, air quality could be expected to remain generally the same, perhaps with some marginal improvements resulting from improved air quality regulations and controls in other parts of Canada and the United States that provide some long-range transport of airborne contaminants to the Project area. The effects of climate change on the Project area (as described in Section 7.7.1) will likely result in changes to the existing environment whether or not the Project goes forward.

Without the Project, current trends in the region's socio-economic environment will continue. The populations of the local area communities will continue to decrease (in the absence of other influences or projects), as has been the trend in recent years.

The construction and expansion of other projects in the region are expected to continue with or without the Project. The environmental effects analyses presented in Chapter 7 of this EIS include consideration of the likely future condition of the environment as a result of these other activities in assessing and evaluating cumulative environmental effects.