



*A Component of  
British Columbia's  
Land Use Strategy*

# Morice Land and Resource Management Plan



**Ministry of Agriculture and Lands  
Integrated Land Management Bureau  
February 2007**



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Integrated Land Management Bureau  
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The Best Place on Earth

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Minister of Forests and Range

Honourable Barry Penner  
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Honourable Richard Neufeld  
Minister of Energy, Mines and  
Petroleum Resources

Honourable Michael de Jong  
Minister of Aboriginal Relations and  
Reconciliation

Honourable Kevin Krueger  
Minister of State for Mining

Honourable Stan Hagen  
Minister of Tourism, Sport and the Arts

Dear Colleagues:

On behalf of Cabinet, I am pleased to confirm the approval of the Morice Land and Resource Management Plan (LRMP), and convey it to all participating ministries for implementation. The Skeena Region Managers Committee is responsible for co-ordinating implementation activities.

This document will assist government agencies by providing policy direction on the management of important land and resources in the Morice LRMP area, and provide direction for the establishment of landscape level legal objectives. The Ministry of Agriculture and Lands, Integrated Land Management Bureau – Skeena Region, is now responsible for ensuring that the Morice LRMP is monitored and reviewed on a regular basis.

I wish to thank members of the Morice LRMP planning table and provincial agency representatives for their considerable dedication and effort in developing this plan for the management of land and resources in the Morice LRMP area. The ability of participants to work together to achieve consensus on land and resource management is a significant achievement. We encourage planning table members to continue to participate in plan monitoring and implementation processes, as identified in the plan.

Government-to-government discussions with the Office of the Wet'suwet'en, Lake Babine Nation/Nedo'ats Hereditary Chiefs, and Yekooche First Nation have enriched the Morice LRMP through the inclusion of traditional and cultural information and perspectives in the Morice LRMP area. I would like to commend the achievement of these partnerships in creating a new relationship between First Nations and the Province which will form the basis for implementing the Morice LRMP.

Yours truly,

Pat Bell  
Minister of Agriculture and Lands



## Executive Summary

The Morice Land and Resource Management Plan (LRMP) encompasses approximately 1.5 million hectares in central northwestern British Columbia. The plan reflects the outcomes of two important processes:

- ◆ a two-year sector-based negotiation process that involved representation by 15 public and provincial government sectors and two First Nations. This process resulted in consensus agreement on a set of recommendations for the sustainable management of Crown land and resources for the plan area; and
- ◆ the Office of the Wet'suwet'en abstained from the consensus agreement, choosing to further their discussions through subsequent government-to-government negotiations with the Province. Lake Babine Nation/Nedo'ats Hereditary Chiefs and Yekooche First Nation also participated in government-to-government negotiations.

The Morice LRMP is consistent with provincial government policy for land use planning and the New Relationship between the Province of BC and First Nations. There are four main sections to the plan: General Management Direction, Area Specific Management Direction, Protected Areas, and Implementation, Monitoring and Amendment.

## General Management Direction

The General Management Direction applies to all values and resources on provincial Crown land and is a baseline for management. Objectives, measures and targets in the General Management Direction (GMD) apply throughout the LRMP area.

The following resources and resource values are addressed in the GMD:

- ◆ **Consultation**
- ◆ **Community Values**
  - Community Resilience
  - Cultural Heritage
  - Hunting and Fishing
  - Settlement
  - Visual Resources
  - Recreation
- ◆ **Ecosystem Values**
  - Biodiversity
  - Fish, Fish Habitat and Aquatic Ecosystems
  - Water
  - Wildlife and Wildlife Habitat
  - Air Quality
  - Invasive Organisms
  - Point Source Pollution
  - Use of Fertilizers and Pesticides
- ◆ **Economic Values**
  - Tourism
  - Access
  - Agriculture and Range
  - Botanical Forest Products
  - Guide Outfitting
  - Minerals and Energy
  - Timber
  - Trapping

## Area Specific Management

The LRMP includes twenty geographic resource management zones (RMZ) which are distinct with respect to biophysical characteristics and resource issues:

- ◆ Morice Ranges – Nanika Lake
- ◆ Herd Dome
- ◆ Starr Creek
- ◆ Swan Lake – China Nose
- ◆ Tahtsa-Troitsa
- ◆ Nankia River
- ◆ Nadina/Owen
- ◆ Friday Lake-Nakinilerak Lake-Hautête Lake
- ◆ Morrison Lake
- ◆ Babine Lake East Arm
- ◆ Grease Trail
- ◆ Matzehtzel Mountain-Nex Lake
- ◆ Morice River
- ◆ Bulkley River
- ◆ Community Recreation Forests
- ◆ Morice Mountain
- ◆ Twinkle-Horsechain Lake Chain
- ◆ Nadina River
- ◆ Thautil-Gosnell
- ◆ Le Talh Giz (Old Fort Mountain)

GMD applies in these zones. However, additional objectives, measures and targets were developed for certain resources or activities to reflect the specific values in each zone. There are two types of Area Specific RMZ: (a) no timber harvesting areas; and (b) areas where timber harvesting is permitted but other area-specific direction applies.

## Protected Areas

These are areas that have been identified for their natural, cultural heritage and/or recreational values in accordance with the Provincial Protected Areas Strategy. Logging, mining and hydroelectric development are prohibited in all protected areas. A set of general objectives, measures and targets, separate from the GMD, has been developed to guide management within new protected areas.

In total there are seven new protected areas, in addition to previously existing Provincial Parks and Ecological Reserves:

- ◆ Kidprice Lake Chain
- ◆ Tazdii Wiyez Bin (Burnie-Shea Lakes)
- ◆ Nadina Mountain
- ◆ Old Man Lake
- ◆ Babine Lake Marine Parks
- ◆ Morice Lake
- ◆ Atna River

## Implementation, Monitoring and Amendment

Implementation of the Morice LRMP is the responsibility of provincial government agencies. An LRMP Plan Implementation and Monitoring Committee, as well as First Nations, will be involved in reviewing plan implementation to ensure that the plan direction is reflected in more detailed plans and operational resource management activities.

The progress of LRMP implementation will be monitored and made available for First Nations and public review. Plan amendments will be considered in accordance with processes described in the LRMP and current provincial government policy.



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# **1. Introduction**

## **1.1 Purpose and Scope**

The Morice LRMP process was undertaken in order to provide greater certainty for local economic development and the long-term sustainability of ecological values. This plan was prepared with the aim of balancing the economic, environmental and social interests within the planning area in consideration of the wider regional and provincial setting.

As a component of BC's Land Use Strategy, the LRMP is a sub-regional plan that provides strategic direction for the management and use of all provincially administered lands and resources. This direction is also intended to guide operational plans such as Forest Stewardship Plans and management plans developed by commercial recreation tenures.

The LRMP applies only to land and resources administered by the Crown in right of the province and does not apply to federally administered lands and resources, Indian reserves, private land or areas managed by municipal or regional governments.

## **1.2 The Planning Process**

In September 2001, the Government of British Columbia made a public commitment to initiate a land use planning process in the Morice in accordance with a long-standing desire of communities in the area to have a strategic land use plan. The planning process commenced in October 2002. Over the next 17 months, representatives at the planning table met monthly to discuss issues related to the management of land and resources in the plan area and to develop a recommendations package containing land use designations and associated management direction. Members of the public were kept informed of LRMP progress through a regular newsletter and occasional articles in the local newspaper.

A draft LRMP recommendations package was completed and released for public review in March 2004. Open houses were held in Granisle and Houston to present the draft package to the public. As well, notices were provided in the local newspaper and the LRMP document was made available on the Morice LRMP website. Input from public and stakeholder review was incorporated into the final land use recommendation. The planning table achieved consensus agreement on the final recommendations package at the end of March 2004. The Office of the Wet'suwet'en abstained from the planning table consensus. A statement with respect to their abstention is shown in Appendix 1.

Since 2004, the provincial government has been working at a government-to-government level with First Nations in the plan area to identify and reconcile outstanding issues related to the LRMP (see First Nations Participation below). The outcomes of government-to-government discussions have been incorporated into the final LRMP document, which was approved by the Province in 2007. A detailed description of the Morice LRMP planning process is provided in Appendix 2.

### **1.2.1 Public and First Nations Participation**

The planning process used a sectoral model to structure stakeholder participation. Under this framework, individuals and organizations with similar resource interests were grouped into sectors. Sectors, rather than individuals or organizations were represented at the planning table.

Sectors selected a representative and an alternate to participate at the planning table. Sector representatives were responsible for reporting the progress of the LRMP to their members and for bringing feedback from their sector membership back to the planning table. The planning table was comprised of the following First Nations and sectors. A full list of sector representatives and alternates is provided in Appendix 2.

**First Nations:**

- ◆ Office of the Wet'suwet'en
- ◆ Lake Babine Nation<sup>1</sup>

**Sectors:**

- ◆ Conservation and Environment
- ◆ Fish and Fish Habitat
- ◆ Forest Licensees
- ◆ Guide Outfitters and Trappers
- ◆ Labour
- ◆ Local Government
- ◆ Local Sustainability
- ◆ Mining and Exploration
- ◆ Motorized Recreation
- ◆ Non-motorized/Wilderness Recreation
- ◆ Provincial Government
- ◆ Agriculture
- ◆ Small Business, Woodlot Licensees and Contractors
- ◆ Tourism
- ◆ Wildlife and Wildlife Habitat

The planning table also featured an open seat to provide non-members of the planning table an opportunity to give input to the planning table. Those in the open seat did not contribute to discussions of plan recommendations.

**Local Government**

There are three local governments — Regional District of Bulkley Nechako, District of Houston and Village of Granisle — in the plan area. Local government was represented by one seat at the planning table and actively participated throughout the planning process.

**First Nations Participation**

There are five First Nations with traditional territories located within the Morice plan area: Office of the Wet'suwet'en, Carrier Sekani (Wet'suwet'en First Nation), Lake Babine Nation, Cheslatta First Nation and Yekooche First Nation.

Formal agreements were established for the involvement of the Office of the Wet'suwet'en, the Lake Babine Nation and the Yekooche First Nation. Under those agreements, the Office of the Wet'suwet'en and Lake Babine Nation were to participate in the LRMP process in the following three capacities:

- ◆ As members of the Morice LRMP Government Technical Team to provide technical input into the development of plan products;

<sup>1</sup> The Lake Babine Nation withdrew from the process in June 2003.

- ◆ As members of the planning table to develop land use planning recommendations in an inclusive planning forum; and
- ◆ As members of a Government to Government Forum with the Province to define principles, anticipated scope and outcomes of the Morice land use planning process.

The Office of the Wet'suwet'en participated for the duration of the LRMP. The Lake Babine Nation was involved until June 2003, when a change in their leadership interrupted its participation in the LRMP process.

Due to human resource issues, the Yekooche First Nation were unable to participate during the public planning process. However in December 2005, Yekooche interests were brought into the LRMP through their participation in a formal government-to-government forum with the province. Those interests are now reflected in the final LRMP document.

The Cheslatta First Nation chose to act as an observer to the process because it has such a small area of interest within the plan area. The Carrier Sekani declined a number of requests to discuss the LRMP. These groups were kept informed of the proceedings of the process through newsletters, LRMP meeting summaries and other relevant information that was forwarded to representatives of the First Nations groups in the Morice plan area on a regular basis.

Government-to-government discussions were held with the Office of the Wet'suwet'en, the Lake Babine Nation, the Nedo'ats Hereditary Chiefs and the Yekooche First Nation subsequent to the LRMP consensus in March 2004. Changes were incorporated into the final plan document that reflect those discussions.

## **1.2.2 Information and Analysis**

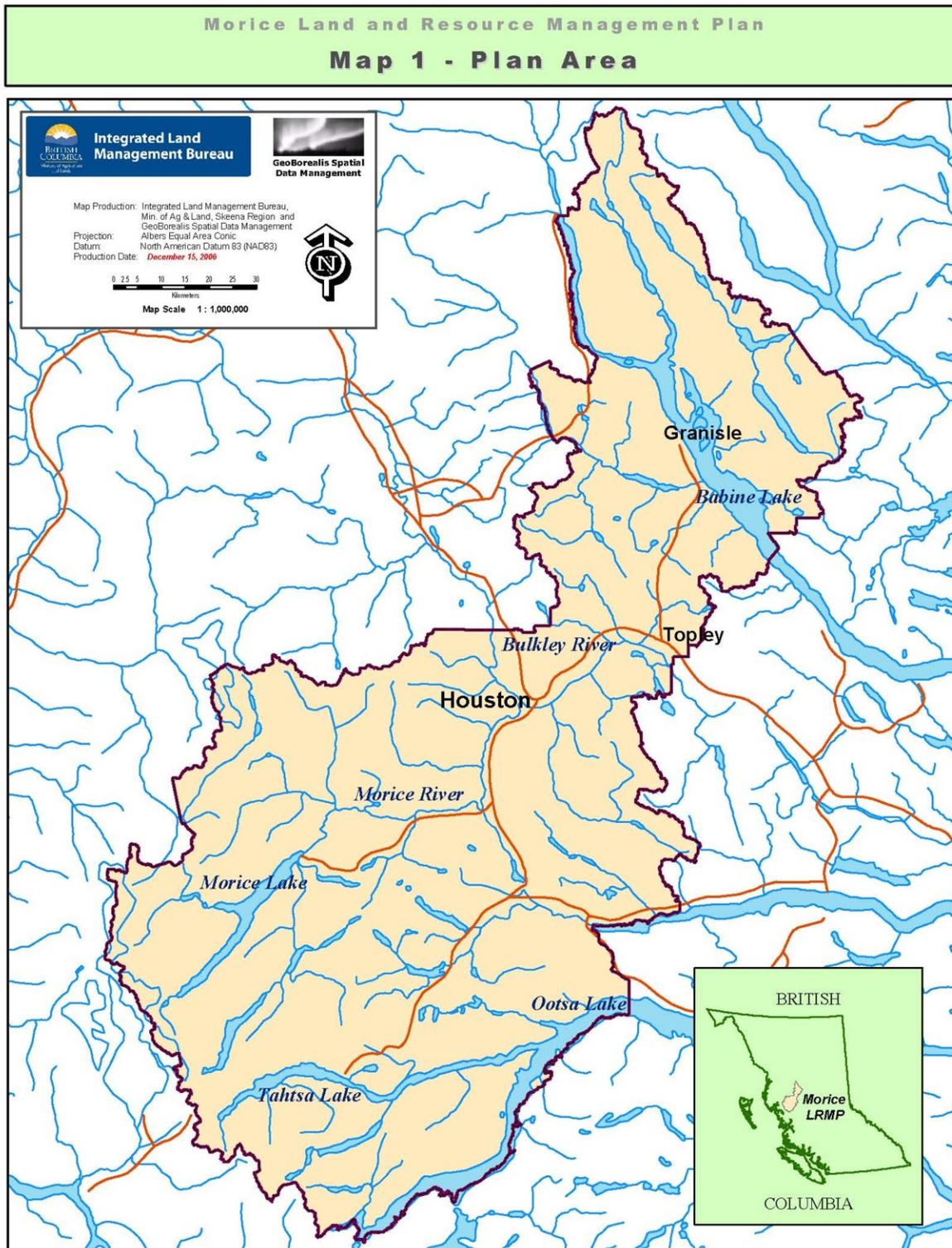
Members of the planning table were provided with up-to-date information and analyses about the state of resources in the plan area in order to allow informed decision making. Technical experts presented information to the planning table early in the planning process and analyses were undertaken on an ongoing basis to assess the implications of proposed management scenarios.

At the inception of the Morice LRMP, the major forest licence holders in the Morice were part of an Innovative Forest Practices Agreement through which they jointly undertook the development of sustainable forest management plans (SFMPs) for the Morice and Lakes Timber Supply Areas (TSA). A partnership agreement was established between the then, Ministry of Sustainable Resource Management and the Morice-Lakes IFPA to jointly collect and manage data to reduce the time and cost of the LRMP. The partnership was developed to capitalize upon the numerous opportunities for collaborative work to support both the LRMP and SFMPs for the Morice and Lakes TSAs.

## **1.3 Plan Area**

The Morice plan area (Map 1: Plan Area) is situated on the edge of British Columbia's Interior Plateau. The area is bounded by the eastern slopes of the Coast Mountains to the west, Tweedsmuir Park and the head waters of the Nechako Reservoir to the south and a large portion of Babine Lake to the northwest. The Bulkley River valley winds its way through the centre of the plan area, providing an access corridor linking Prince George to the northwest coast. The plan area is approximately 1.5 million hectares, the majority of which is Crown land. Its boundaries are consistent with the Morice TSA, which forms the western part of the Nadina Forest District.

Map 1. Plan Area





The plan area supported an estimated population of 5,200 residents in 2001.<sup>2</sup> The focal point for much of the economic activity in the Morice is the largest community of Houston (population 3600 in 2001). Other communities include the Village of Granisle (population 353 in 2001), and the rural settlements of Topley, Buck Flats, Perow, and Tachet Reserve. Farms and ranches are dispersed across the plan area, especially along Highway 16 and from Owen Lake to Francois Lake.

### **1.3.1 Bio-physical Description**

The topography of plan area is rolling and gentle in the north and east, becoming more mountainous in the southwest. The climate reflects the geography and is transitional between the coast (southwest) and the interior (north and east). Summers are cool and winters are cold; the average July temperature in Houston is 21.4° Celsius, and the average January temperature is -7.4° Celsius. The average annual rainfall is 305 millimetres and total annual snowfall is 1640 millimetres.

Six major watersheds drain the plan area and contribute to both the Skeena and Fraser river systems. Major rivers include the Bulkley, Morice and Nadina. Numerous lakes of varying sizes are scattered across the plan area. Babine Lake, which bisects the northern part of the plan area, is the longest natural freshwater lake in British Columbia. The Ootsa Lake complex in the south, formed as part of the Nechako reservoir, is the second largest fresh water body in the plan area.

There is a diversity of ecosystem types across the plan area as a result of the range of geographic and climatic conditions, ranging from rolling hills to mountains and coastal to interior conditions. Five biogeoclimatic zones and nine variants have been described and mapped within the Morice. Vegetation communities range from lower elevation deciduous and mixed forests through to conifer dominated pine, spruce and balsam forests at mid to upper elevations. Lodgepole-pine-leading forests cover more than half of the forested landbase with spruce stands on richer, moister sites at lower and mid-elevations. Shrub and forb dominated wetland complexes are characteristic of the interior plateau terrain. Non-forested alpine tundra is found in high elevation areas, particularly in the southwestern corner of the plan area. Forest ecosystems are particularly productive in the coastal southwest due to a warmer and moister climate relative to other parts of the plan area.

### **1.3.2 First Nations People**

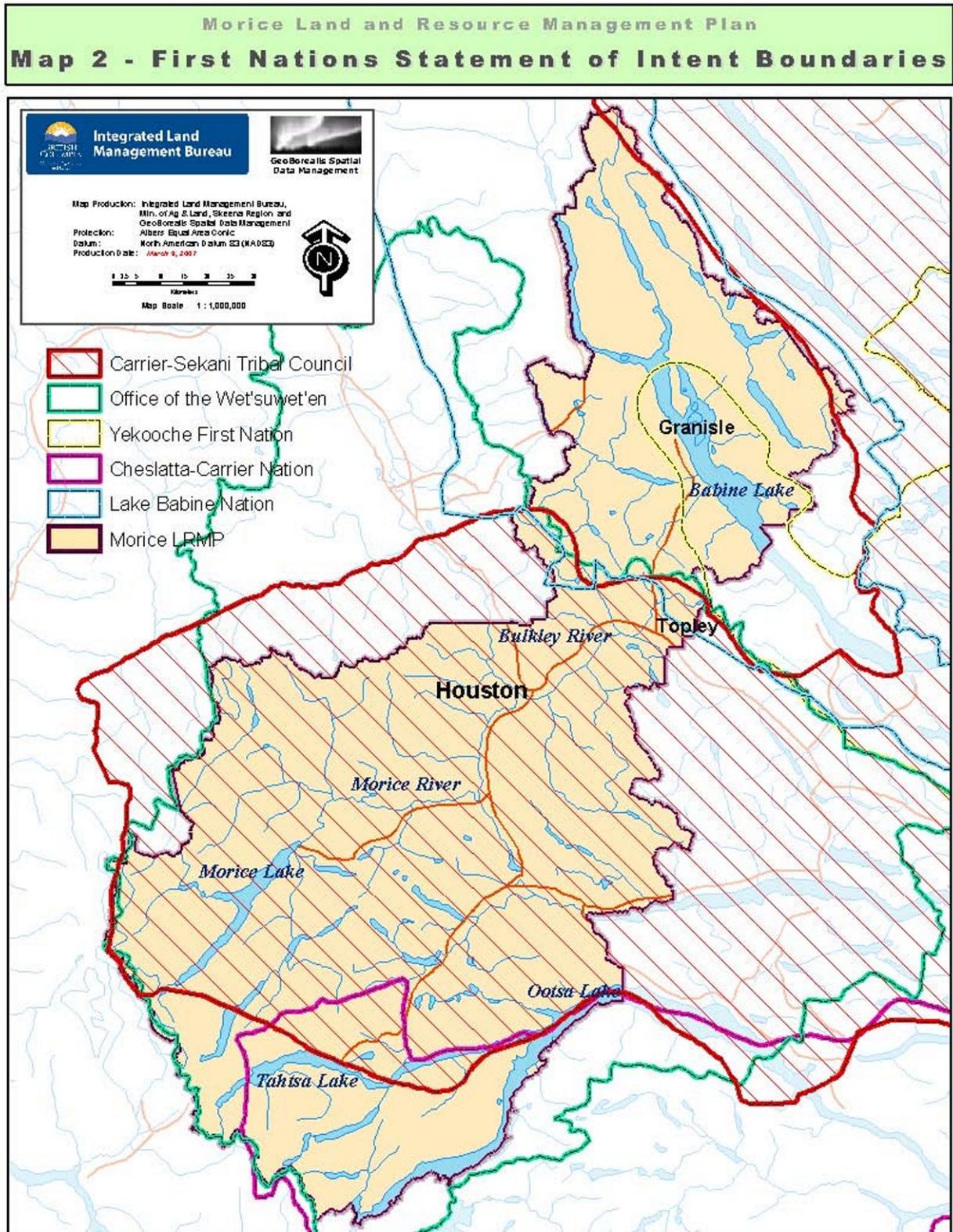
There are five First Nations with traditional territories in the Morice plan area: the Lake Babine Nation, the Yekooche First Nation, the Carrier Sekani (Wet'suwet'en First Nation), the Cheslatta Carrier Nation and the Office of the Wet'suwet'en. In addition to the residential concentration at Tachet Reserve, other reserves and historical settlement areas are dispersed across the plan area. Traditional territory descriptions below are derived from each First Nations' Statement of Intent boundary, as shown on Map 2.

#### ***Carrier Sekani Tribal Council***

The Carrier Sekani Tribal Council traditional territory within the plan area is located in the southern portion of the plan area, including Topley, Houston and south to Tahtsa Lake. The main community is on Palling Indian Reserve #1, outside of the plan area near Burns Lake.

<sup>2</sup> Based on 2001 Census data.

Map 2. First Nations Statement of Intent Boundaries



### ***Cheslatta Carrier Nation***

The portion of the Cheslatta Carrier Nation traditional territory within the plan area is located between the Nanika-Kidprice lake chain and Ootsa and Whitesail Lakes. Their name comes from the Carrier word meaning either “top of a small mountain” or “small rock mountain at the east side.” Their traditional territory extends eastward from the plan area through Tweedsmuir Park and toward Knewstubb Lake. The Cheslatta Carrier Nation consists of eleven reserves on 1,403 hectares. In 1952, the Cheslatta exchanged 10 reserves for separate parcels of land, now called Cheslatta I.R. No. 1, to make way for the Nechako Reservoir system. Band members total around 270 people.

### ***Lake Babine Nation***

The portion of the Lake Babine Nation traditional territory within the plan area is located around Babine Lake, north of Topley and McQuarrie Creek. The Lake Babine Nation is an amalgamation of the Old Fort Babine and Fort Babine Bands which merged in 1957. The Lake Babine Nation has over 2,000 members, with 100 Elders over the age of 60.

The majority of the population lives outside of the plan area. The Lake Babine people reside in the three year-round communities of Woyenne, Tachet, and Fort Babine. The main community of the Lake Babine Nation is Woyenne, adjacent to the village of Burns Lake, which is outside the plan area. The community of Tachet and the settlement of Old Fort, both on Babine Lake, are within the plan area. The Nedo’ats Hereditary Chiefs, one of several groups within the Lake Babine Nation, have an office in Granisle and occupy the village of Old Fort on a seasonal basis.

The Lake Babine people speak the Carrier language of the Athapaskan language family and most members speak fluent Carrier as their first language. The traditional form of government is the Bahlats (potlatch), which is governed by four clans: Bear, Beaver, Caribou and Frog.

### ***Office of the Wet’suwet’en***

Wet’suwet’en territory encompasses 22,000 square kilometres in north central British Columbia, from Hagwilget Canyon in the west to the Endako River in the east. A total of 73.8 percent of the LRMP area is within Wet’suwet’en territory. Archaeological evidence verifies at least six thousand years of human habitation in the Morice LRMP area. Oral traditions present an even longer timeline, up to 10,000 years prior to British sovereignty.

The Wet’suwet’en People are governed by a traditional feast system known as Bat’lats (potlatch). The Wet’suwet’en are a matrilineal society and have five clans: the Tsayu (Beaver), Liksilyu (Little Frog) Gil\_seyhu (Big frog), Gitdumden (Bear), and Laksamshu (Fireweed). Each clan has house territories associated with the Clans. There are thirty-seven house territories in the whole Wet’suwet’en territory and sixteen traditional house territories in the Morice LRMP area. The Office of the Wet’suwet’en was incorporated in 1994 for the purpose of the British Columbia treaty process and represents 5,000 Wet’suwet’en living at and away from home. The Office has five departments: Fisheries, Lands and Resources, Human and Social Services, Economic Development and Treaty.

Prior to the Wet’suwet’en participating in the Morice LRMP, a number of agreements were negotiated seeking economic development and/or co-management of the resources within their territory. These are:

- 1994** Accord of Recognition and Respect (Treaty Process)
- 1995** Agreement regarding significant progress in the Wet’suwet’en-British Columbia negotiations pursuant to the Accord of recognition and respect.

- 1999** Main Criteria for Success at the Wet'suwet'en-Crown treaty table
- 2000** Political Accord concerning Lands and Resources between Office of the Wet'suwet'en and British Columbia and Canada.
- 2000** Protocol Agreement between Wet'suwet'en Hereditary Chiefs, Province of British Columbia, Canada and the 5 major Licensees within the Wet'suwet'en Traditional Territories, which are Pacific Inland Resources (PIR), Houston Forest Products (HFP) Canadian Forest Products (Canfor), Babine Forest Products (BFP) and Decker Lake Forest Products (DLFP).

Further to the agreements mentioned above, the Office of the Wet'suwet'en participated in the Provincial Landscape Unit Planning Process from 1996 through to its completion in the spring of 2003. The Wet'suwet'en are also in the midst of finishing their own database, known as the Wet'suwet'en Territorial Stewardship Plan (WTSP), which is based on the vision and needs of the Wet'suwet'en people. Both processes entailed several field trips to the House territories, with government and industry, to identify areas of importance for the Wet'suwet'en for forestry, tourism, botanical forest products and other economic opportunities. Also discussed were other land uses such as mining, agriculture, protection (i.e. from fire, insects) and other issues that may impact the Wet'suwet'en way of life on the Traditional territories.

In conjunction with these agreements and planning processes, the Wet'suwet'en have completed numerous studies to ready themselves for economic development, including:

- ◆ Wet'suwet'en Forest Sector Action Plan.
- ◆ Wet'suwet'en Tenure Project.
- ◆ Wet'suwet'en Tourism Strategy.
- ◆ Wet'suwet'en Trail Strategy.
- ◆ Wet'suwet'en Tourism Services.
- ◆ Wet'suwet'en Economic Strategy.
- ◆ Wet'suwet'en Cultural Heritage/Archaeology Initiative.
- ◆ Wet'suwet'en Capacity Projects on G.I.S., Tourism, Silviculture, Cultural Heritage/Archaeology.
- ◆ Wet'suwet'en Burning for Berries (Botanicals).

### ***Yekooche First Nation***

The Yekooche First Nation have prepared the following description of their Nation:

**General Ethnography and Social Structure:** The Yekooche are speakers of a northern Athapaskan language and occupy a broad territory at the north-west end of Stuart Lake and the associated Trembleur Lake area in the north-central interior of British Columbia. They are often labelled "Carrier" in reference to a larger cultural and linguistic group of which they are part.

Ethnographers speculate that before contact with Europeans, Yekooche culture was structured loosely around seasonal villages. Hunting territories were shared between extended families and there was little social stratification. With contact, after Alexander MacKenzie's travels through the region in 1793 and the start of Yekooche participation in the land-based trade in furs, Yekooche culture developed some features of coastal cultures including social ranking and matrilineality. Likewise, increased contact with coastal groups and, in particular, the trade and transport of salmon, encouraged an extensive potlatching system to take hold in the area. Within this system, individual and family ranks were established and affirmed and wealth was distributed. Some families were wealthier than others and some individuals and families held more rights or different rights than others.

**Economic System, Material Culture, and Land Use:** The primary traditional economic activities of Yekooche people were hunting, fishing, and plant gathering. In many ways, these activities remain the focus of life today. Yekooche people hunt moose, caribou, mountain sheep, mountain goat, hoary marmot, ground-hog, and hare for food. Porcupine is hunted for its quills, and beaver, muskrat, black bear, marten, fisher, wolverine, lynx, fox, wolf, coyote, ermine, and mink are hunted primarily for their fur. Traps, snares, and rifles are all tools of the hunt. Along with meat, salmon and freshwater fish make up a substantial part of the diet and are a central component of the exchanges within the potlatch system. Fish are caught with a variety of snares, nets, and hooks; they are preserved by drying. Plants and plant materials, including berries, roots, bulbs, wood, and bark, are used to supplement the diet, for trade, and for the production of baskets, ceremonial objects, and other utensils. Yekooche families have the exclusive right to hunt and fish in certain areas of the territory.

The Yekooche had an extensive and complicated material culture. Beyond the tools used to procure food, like traps or knives, and the technology used to travel, like sleds and canoes, Yekooche people sewed their clothes from animals hides, produced leather bags, and often beaded the clothes and bags with intricate decorations. Producing leather from moose hide required tanning tools like scrapers and fleshers as well as awls and needles. Weapons of war and of the hunt were made from local and imported materials like obsidian, bone, and the teeth of animals. Today, hunting and sewing continue with older materials and newer technologies.

In order to obtain the requisite resources, the Yekooche followed a seasonal round of movements that promoted the maximum efficiency in the use of their territory's resources. In general, salmon were caught in large numbers late in the summer. Moose were hunted in the fall. Plants were gathered when ripe from spring through early fall. Mountain goats and bear were hunted in the spring and early summer. The logistics of moving from one resource gathering area to another required attention to the location of villages, food caches, and the best hunting and fishing sites. As such, Yekooche people have been described as semi-nomadic; yet, these movements were never random and always done intentionally along a set route and within a definable territory. The centrality of these activities in Yekooche culture made them inseparable from the non-material facets of their culture like spirituality, concepts of correct behaviour, ritual observances, and taboos.

**Potlatch System:** The potlatch system conferred rank on individuals and families, validated social positions, and often distributed wealth from wealthy families to other people. Rank was strictly hereditary and an individual's rank was undoubtedly known to everyone in a given locality. Still, certain behaviours and badges of office were employed to signal and reinforce the fact of a person's status.

The potlatch was a ceremony in which a person of title or wealth invited people to a feast and a gift-giving ceremony. The potlatch might include the performance of dances and songs and a display of the host's totems and ritual objects. A potlatch served to confirm the place of the host in society, first by means of his ability to give away abundant wealth and, second, by recounting the names, songs and dances of his title, which he alone had the right to use. These were, in effect, the history of the title that established his rights. The potlatch, then, both affirmed the host's place of rank and acknowledged the status of guests by assigning the guests honourable seats at the feast in order of their importance.

Potlatches were given to commemorate significant life events. Mortuary potlatches, for example, were held in memory of a person of importance and in the transfer of his or her title to the successor. The naming of the child of high-ranking parents was also an occasion for a potlatch. Potlatches also served as public opportunities to settle feuds and offer forgiveness. Finally, potlatches are a way of redistributing someone's wealth upon their death.

**Religion and Spirituality:** Yekooche religious beliefs and worldviews are founded on a close relationship between the spiritual beings and the material expressions of these forms. Through dreams and hunting rituals, for example, people could communicate with the supernatural world and animal helpers there. Through such communication, hunters were given guidance in their hunts. The connection encouraged everyone to treat food animals respectfully, lest the food animals decide not to make themselves available to hungry people. These relationships are detailed in Yekooche mythology.

Shamans had a role in Yekooche culture. These were medicine men adept at accessing animal-given spirit power. By acting as intermediaries between humans and animal spirits, shamans were called upon to ward off misfortune and to create the abundance of food for the group. Likewise, shamans were employed to help cure sick people suffering from the presence of malevolent spirits.

**Recent Events:** In recent years, the lives of Yekooche people have revolved around village life on Yekooche IR #3, on the shore of Stuart Lake at the strategic portage between Stuart and Babine Lakes. Hunting and fishing remain central to people's lives although people earn a living in wage work in stores, construction, and in other service industries. Most members of the community are Christians, and, as a result, traditional shamanism has somewhat declined in use. Likewise, with the imposition of the British Columbia school system, the Yekooche dialect of the Carrier language is spoken less commonly than in the past. Still, the community works actively to promote its culture along with traditional hunting and healing practices.

### 1.3.3 Historical Land Use

The Morice LRMP plan area has a diverse and rich cultural history. Related to this rich aboriginal and non-aboriginal heritage is a wide range of historical land uses.

First Nations have maintained a presence in the area for thousands of years. Prior to European contact, First Nations used their traditional territories for sustenance for their people and families and, more so, for the Potlatch system through hunting and the gathering of food, medicinal and ceremonial plants. First Nations people spent the majority of their time in the House territories looking after the land and gathering foods for Potlatches and general survival. After European contact, many First Nations practiced farming and agriculture. The fur trade provided additional opportunities for First Nations people, with trapping being an important cultural and economic activity.

The traditional trails played an integral part in the lives of First Nations providing travel routes between traditional territories and hunting and fishing grounds. On a larger scale, the trails were economic and trade routes prior to European contact, used for trade with other Nations from the Pacific coast to distant places on the North American continent. After European contact, the trails were used for the fur trade, gold rush migration and, in some cases, as travel routes for missionaries.

The construction of the Overland Telegraph Line in the 1860s initiated non-native development in the Bulkley Valley. During the early 1900s, the construction of the Grand Trunk Pacific Railway led to further settlement of the area. Farming and the production of hand-cut railway ties (tie hacking) provided economic opportunities for early settlers. With a booming fur trade, many settlers also began trapping, both as a way of life and as a seasonal source of income.

During the 1940s and 1950s, the number of family-owned sawmills grew as the demand for quality manufactured wood products increased. In the late 1960s, the first large-scale sawmill began production in the area. A second large mill began operating in 1978.

The first mineral prospectors in the region were Chinese immigrants seeking gold. Since then, mineral activity has continued in the plan area due to the very high potential for mineral development. Over the past decades, several key mines have been developed to extract copper, silver, gold as well as other minerals in smaller quantities. While prospects continue to be strong, only one major mine was in operation at the time of plan approval.

The wilderness setting and abundant fish and wildlife in the Morice area have supported a broad diversity of recreational and tourism opportunities over the years, including guided hunting and fishing.

#### **1.3.4 Economic Profile**

The Morice is an area that has traditionally derived much of its economic strength from natural resources. Forestry, mining, agriculture, tourism and recreation currently generate much of the revenue in the area.

**Forestry** has remained one of the cornerstones of the local economy. Direct employment in the plan area results from woodlands (e.g. harvesting, silviculture) and processing while additional employment occurs as a result of forest sector purchases of services and products to carry out business. The majority of the volume harvested within the TSA is processed locally at the two large sawmills and several remanufacturing facilities and small sawmills. The smaller facilities generally rely on dry and waste wood purchased from the large mills or acquired through BC Timber Sales, community salvage or woodlot harvest. Forestry activities within the plan area support employment throughout northern British Columbia. Wood chips and sawdust, produced as a by-product of the lumber manufacturing process and from timber unsuitable for lumber, are used for pulp, paper and panelboard production in several facilities outside the plan area. The majority of those employed by the forest sector reside within the plan area.

**Mining** has a long history in the plan area. There have been a dozen mines in the Morice since the 1920s. Earlier mines were smaller and underground. Three large open pit mines operated in the Granisle and Goosly Lake areas from the 1960s to the 1980s and 1990s. Currently there is a single active, large-scale mine, Huckleberry Mine, which began operations in 1997. Approximately two-thirds of the plan area is identified as having high or extreme metallic mineral potential and mining has the potential to play a larger economic role in the area in the future. Extensive mineral exploration has occurred, providing a seasonal boost to the local economy. Mineral prospecting continues to provide supplemental income to local residents. A small number of jobs and seasonal contracts are maintained to support post closure activities for the older, discontinued mines. Aggregate operations (e.g. sand and gravel pits) within the plan area also account for a few seasonal jobs.

**Agricultural activity** contributes to the economy of the plan area and is primarily related to forage and beef production. Other activities include food production of lamb, pork, dairy and eggs, and crop production of hay, haylage, grain, vegetables, small fruits and bedding plants. Several local producers process a portion of their poultry and livestock for sale locally, supplementing this with wild game processing for local residents and visiting hunters.

**Tourism** is playing an increasing role in the economic well-being of the plan area. Efforts to promote tourism have included the marketing of Houston as the “Steelhead Capital,” as well as support for infrastructure development and tourism-related businesses. With an increasing number of visitors being drawn to the area’s fishing and outdoor recreation opportunities, numerous new businesses have emerged within the retail trade and hospitality industries.

A number of the **First Nations** in the plan area have economic development strategies targeted toward increasing the economic and employment base of their communities. These strategies are generally associated with the increased participation and economic benefit from the activities of the various

resource sectors on traditional lands (forestry, mining, agriculture and tourism). They also may include opportunities associated with the cultural heritage of the Nation, such as culturally-based tourism and harvest of wild botanicals.

## 1.4 Plan Structure and Content

The Morice LRMP includes three categories of management direction, as represented in the resource management zones shown in Map 3. These categories of management are:

- ◆ General Management Direction;
- ◆ Area Specific Management Direction; and
- ◆ Protected Areas.

**General Management Direction (GMD)** applies over the entire plan area. The GMD applies to all values and resources on provincial Crown land and is a baseline for management. The GMD for 23 resources and resource values is described in Section 3.0.

**Area Specific Management Direction** (Section 4.0; Map 3) provides objectives that are unique to a given Area Specific Resource Management Zone (RMZ). There are two types of Area Specific RMZ: (a) no timber harvesting areas; and (b) areas where timber harvesting is permitted but other area-specific direction applies (noted as “Area Specific RMZ - Other” in the document and on maps).

There are 20 Area Specific RMZ in the Morice plan area in total (five no timber harvesting areas; 15 other area specific RMZs (Map 3). Unless otherwise stated through an area specific management direction, general management direction applies in these areas as a default.

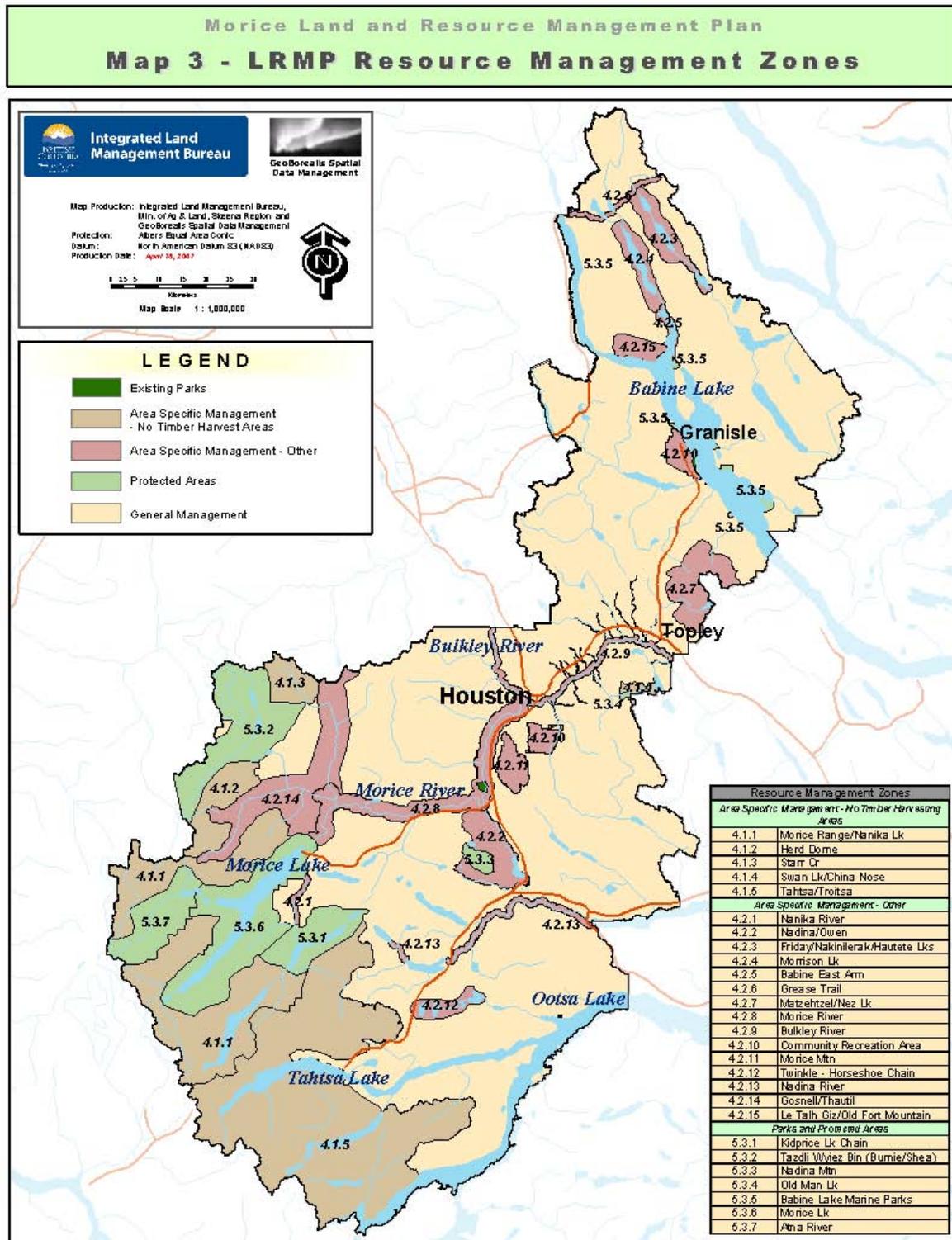
**Protected Areas Management Direction** (Section 5.0; Map 3) includes both broad direction, which applies to all protected areas, and spatially explicit direction unique to each of the six protected areas identified in the LRMP. Commercial logging and mineral and energy exploration and development are not permitted in protected areas, however many other existing activities can continue, subject to the management plan for each protected area.

Each of the sections on management direction is presented using the same general format:

- ◆ **Introduction:** describes the resource value or land use in its local context.
- ◆ **Issues:** are problems or concerns that were identified during the planning process and are addressed by the management direction.
- ◆ **Goals:** provide a broad description of the desired long-term future condition for the resource or resource use.
- ◆ **Management intent** (Area Specific RMZs and Protected Areas only): describes the general intention behind the objectives and implementation direction.
- ◆ **Objectives:** describe a desired future condition for individual aspects of the resource or resource use. Objectives are measurable, time bound, and describe outcomes that will achieve the broader goals.
- ◆ **Measures/Indicators:** are the variables used to track the achievement of an objective.
- ◆ **Targets:** provide the measurable standard to which resource managers will be accountable.
- ◆ **Implementation Direction:** provides additional information to help guide the translation of the strategic recommendations into operational activities and provide greater clarity for the implementation of objectives.



Map 3. Resource Management Zones



In addition to the tables of management direction, maps are provided to show where features of interest are located or where management objectives apply. In some cases, this may also be described in attribute tables. Where necessary, intent statements have been included with the GMD, to provide additional clarity about an objective or management direction and associated rationale.

## 2. Vision, Goals and Principles

Early in the planning process, the Morice LRMP planning table agreed to the following vision, broad goals and principles of sustainability to provide a context for the development of zones and management direction for the plan area.

### 2.1 Vision

The Morice LRMP planning table envisions a future with a plan area that will continue to have outstanding natural features, including spectacular mountain ranges, large river and lake systems, extensive forest lands, grasslands and wilderness areas. The management of this environment will help to sustain healthy communities and a diverse and prosperous economy. The people of the Morice will continue to regard the land with a sense of pride that embraces a healthy balance between First Nations, environmental, economic, and social values.

### 2.2 Goals

The vision for the Morice will be realized through the attainment of the following goals:

- ◆ diverse cultural values are respected and shared values are recognized;
- ◆ issues relating to First Nations processes pertaining to rights and title are respected;
- ◆ healthy air, water and soil;
- ◆ a full range of ecosystems with natural processes, function and pattern;
- ◆ native species and ecosystems within the range of natural variation (including old growth dependent species);
- ◆ stable access to a sustainable supply of natural resources;
- ◆ profitable investment opportunities;
- ◆ a diverse economy supporting an increase in value-added processing;
- ◆ resource management and manufacturing that maximizes local benefits;
- ◆ opportunities for diverse jobs and lifestyles;
- ◆ development that honours and respects the land, ecosystems and communities;
- ◆ safe communities where citizens can live, work and recreate;
- ◆ harmonious and integrated use of the landscape among different users;
- ◆ optimal social and economic value from utilization of natural resources;
- ◆ opportunities for future generations to learn from living on the land;
- ◆ local public participation in resource management decisions; and
- ◆ continual improvement through monitoring and adaptive management.

### 2.3 Principles

The following principles of sustainability will guide resource managers and stakeholders in achieving the vision for the Morice:

- ◆ environmental health;
- ◆ social equity;
- ◆ economic benefit;

- ◆ cultural integrity;
- ◆ decision-making based on scientific, local and traditional ecological knowledge;
- ◆ development and utilization of best management practices;
- ◆ precaution applied in situations of high risk and uncertainty;
- ◆ sustainable and ethical business practices; and
- ◆ the land base managed with respect for the intrinsic value of nature.

### 3. General Management Direction

The General Management Direction (GMD) section addresses issues and interests that were identified as being common across a multitude of resource themes and across the plan area. GMD applies to the entire plan area, unless otherwise specified.

#### 3.1 Consultation

Consultation is an important part of the Morice LRMP. Several sections of the plan make reference to consultation in the management direction statements. Consultation is regarded as a key mechanism to support the ongoing development of best management practices, and as a means of providing advice with respect to operational decisions that are affected by the management direction in the LRMP.

The goal of the consultation processes described below is to address the interests of members of the public, First Nations and stakeholders during implementation of LRMP direction. Affected parties should be provided with the opportunity to offer advice at all stages of the implementation process. Typically public comment is invited only after implementation results have been evaluated and reported.

In addition to these consultation requirements, the province is required to consult with First Nations and stakeholders at a higher level on a broader range of administrative and land use decisions. The Province's duty to consult with First Nations and accommodate in a pre-treaty context is much deeper than the processes described below. This duty is also continually redefined through the legal system. *The duty arises from knowledge (real or constructive) of the potential existence of Aboriginal right or title and contemplates conduct that may adversely affect it.* Third parties do not have this obligation.

##### 3.1.1 Morice LRMP Consultation Framework

A Consultation Framework will serve as an important part of the implementation process for the LRMP. The framework is intended to ensure that the principles of public accountability and transparency are adhered to. Much of this will be achieved through the establishment of a plan implementation and monitoring process that includes regular and ongoing review by a plan implementation and monitoring committee that is representative of a wide range of community, First Nation and stakeholder interests. The implementation and monitoring process will also provide opportunities for First Nations and stakeholder groups to provide advice on the implementation of the LRMP. Consultation with First Nations will occur consistent with case law and requirements resulting from treaty settlement. Examples of implementation or operational decisions where consultation with communities and stakeholders will be important include:

- ◆ access plans in areas with a high concentration of resource values and uses or in areas where there is an opportunity to integrate a variety of access needs;
- ◆ resource development plans in areas with conflicting values (e.g. high ecological, wildlife, fish, tourism, recreational, botanical forest products or cultural heritage values);
- ◆ development of forest health strategies (e.g. mountain pine beetle strategies);
- ◆ competing uses and carrying capacity issues relating to tourism and recreation;
- ◆ resource management decisions affecting aquatic and riparian ecosystems; and
- ◆ development of management plans and management direction statements for protected areas.

The Consultation Framework should meet the test of being relevant, timely, accountable and transparent. This means that:

- ◆ consultation activities should be directly related to land and resource decisions made in relation to the LRMP;
- ◆ consultation opportunities should be provided to all those whose interests may be affected by the implementation of the LRMP;
- ◆ consultation should occur regularly on an ongoing basis; and
- ◆ opportunities should be provided to resolve conflicts arising through the consultation process.

Further clarification on how consultation can be achieved within the implementation and monitoring process is provided in Section 6.0 (Implementation and Monitoring).

**Issues:**

- ◆ Lack of integration and coordination in decisions that affect multiple resource values.
- ◆ Lack of public involvement in land and resource use decisions.
- ◆ Unequal standing amongst stakeholders in decision making.
- ◆ Lack of timely and critical information.

**Goals:**

- ◆ Inclusive and informed decision-making.
- ◆ Consistency between management direction in the Morice LRMP and subsequent implementation and operational decisions.
- ◆ Accountability to the public, and from the public, for all Crown land use decisions related to management direction in the Morice LRMP.

Consultation Objectives	Measures/Indicators	Targets
<i>1. Establish and maintain ongoing opportunities for the general public to become informed and provide advice on issues relating to implementation and monitoring of the Morice LRMP.</i>	1.1 Information on implementation and monitoring of the LRMP provided through a web site.	Ongoing
	1.2 Public reporting on key LRMP implementation decisions and overall implementation progress	Annually
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• LRMP website should provide an overview of the LRMP management direction in a format that is easily understood by a wide public audience and should include periodic updates to report on implementation highlights and progress.</li> <li>• Public communication tools (websites, newspaper notices, public meetings) should provide background on key implementation decisions that may affect public and/or First Nations interests along with a response tool that allows interested viewers to provide input.</li> </ul>		

Consultation Objectives	Measures/Indicators	Targets
	<ul style="list-style-type: none"> <li>Public communication tools should include a periodic summary of key implementation decisions and a summary of how public comments have been incorporated.</li> <li>Consultation with First Nations will occur consistent with case law and requirements resulting from treaty settlement.</li> </ul>	
<p>2. <i>Establish and maintain an accountable and transparent consultation process linked to the LRMP Monitoring Committee.</i></p>	<p>2.1 Development of a Consultation Framework and principles for the Plan Implementation and Monitoring Committee (PIMC).</p> <p>2.2 Review by the Morice PIMC of resource management issues, recommendations and decisions generated through stakeholder consultation processes.</p> <p>2.3 Review of implementation and effectiveness results.</p>	<p>September 2007</p> <p>Annual review</p> <p>Annual implementation monitoring report</p> <p>5-year implementation and effectiveness monitoring report.</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Consultation procedures are written down, known about, understood and accepted as fair and reasonable by all interests.</li> <li>Establish a mechanism to resolve conflicts and incompatibilities between sectors, groups and communities.</li> </ul>	
<p>3. <i>Ensure consistency between community planning processes and LRMP direction.</i></p>	<p>3.1 Review of community planning processes.</p>	<p>Annual review</p>
<p>4. <i>Establish and maintain an effective framework for review and consultation on access management.</i></p>	<p>4.1 Review of access issues and recommendations.</p>	<p>Annual review</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Establish an access management planning committee.</li> </ul>	

Consultation Objectives	Measures/Indicators	Targets
<p>5. <i>Ensure appropriate review and consultation on resource management decisions affecting the following resource uses and activities:</i></p> <ul style="list-style-type: none"> <li>• <i>Tourism and recreation</i></li> <li>• <i>Guide outfitter tenures</i></li> <li>• <i>Registered traplines</i></li> <li>• <i>Agriculture and range</i></li> <li>• <i>Collection and use of botanical forest products</i></li> </ul>	<p>5.1 Review of the following in relation to tourism and recreation:</p> <ul style="list-style-type: none"> <li>• Implementation of visual quality objectives.</li> <li>• Impacts from other resource use on facilities and features.</li> <li>• Competing use issues and recommendations between tourism and recreation</li> <li>• Carrying capacity concerns and limits of acceptable change.</li> <li>• Opportunities for expansion of tourism</li> </ul>	Annual review
	<p>5.2 Review of the following in relation to guide outfitter tenures:</p> <ul style="list-style-type: none"> <li>• Issues/ recommendations relating to approval of commercial recreation tenures</li> <li>• Issues / recommendations regarding appropriate access to guide territories</li> </ul>	Annual review
	<p>5.3 Review of the following in relation to registered traplines:</p> <ul style="list-style-type: none"> <li>• Issues/ recommendations regarding appropriate access to trap lines.</li> <li>• Impacts of resource management activities on the integrity of trap lines and access trails used to maintain trap lines.</li> </ul>	Annual review
	<p>5.4 Review of the following in relation to agriculture and range resources:</p> <ul style="list-style-type: none"> <li>• Results of consultation between agriculture/range, timber and wildlife sectors regarding silviculture plans and treatments.</li> <li>• Issues and recommendations relating to livestock and wildlife management.</li> <li>• Issues and recommendations relating to livestock and water/ riparian area management.</li> </ul>	Annual review
	<p>5.5 Review of the following in relation to collection and use of botanical forest products:</p> <ul style="list-style-type: none"> <li>• Issues and recommendations regarding botanical forest products.</li> <li>• Impacts of resource management activities on the use and collection of botanical forest products.</li> </ul>	Annual review



Consultation Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <p><i>Tourism and recreation:</i></p> <ul style="list-style-type: none"> <li>Establish a sustainable tourism/recreation committee to consult with the province and other sectors on resource decisions that affect strategic resource management direction for tourism and recreation.</li> </ul> <p><i>Guide outfitting tenures:</i></p> <ul style="list-style-type: none"> <li>Establish best management practices, to be negotiated between resource tenure-holders and the guide outfitters association.</li> </ul> <p><i>Registered traplines:</i></p> <ul style="list-style-type: none"> <li>Establish effective consultation between forest tenure holders and trappers.</li> <li>Trappers to be supplied with a forest cover map of tenure area on a seasonal basis; the intent is to enable tenure holders to shift traps to follow habitat.</li> <li>Holdings of registered trap lines to supply trap line location maps to forest licencees for development plan purposes. Information provided is confidential.</li> </ul> <p><i>Agriculture and range resources:</i></p> <ul style="list-style-type: none"> <li>Seed cut blocks with appropriate forage mixture as determined through consultation between licencees, BCTS and range users.</li> <li>Use a mixture of native species where cost effective and consistent with goals for the site. Refer to Section 3.4.6 for direction on noxious weed management.</li> <li>Develop harvesting schedules that maintain a continuous supply of cutblock openings within tenure areas.</li> </ul> <p><i>Use and collection of botanical forest products:</i></p> <ul style="list-style-type: none"> <li>Ecosystem mapping should be used to identify areas having potentially large impacts to botanical forest products. Refer to Section 3.3.4 (Botanical Forest Products) for further direction.</li> </ul>	
<p>6. Apply management principles during energy and minerals exploration and development that respect other perspectives and minimize environmental impacts.</p>	<p>6.1 Review issues and recommendations relating to exploration and development.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Apply current management principles to mitigate impacts to other resource values (e.g. acid rock drainage treatment to prevent water quality degradation).</li> </ul>	<p>Annual review</p>

Consultation Objectives	Measures/Indicators	Targets
<p>7. <i>Apply forest management principles that respect other perspectives and minimize environmental impacts.</i></p>	<p>7.1 Review issues and recommendations relating to forest health strategies.</p> <p>7.2 Review issues and recommendations relating to forest development activities.</p>	<p>Annual review</p> <p>Annual review</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use best management practices (BMPs) for beetle management within the context of other resource values. Development of BMPs should include consultation.</li> <li>• Consultation is needed regarding harvesting for forest health.</li> </ul>	
<p>8. <i>Ensure appropriate review and consultation related to resource management decisions affecting the following:</i></p> <ul style="list-style-type: none"> <li>• <i>Functional integrity of riparian ecosystems and the hydrological integrity of all watersheds</i></li> <li>• <i>Biodiversity and the functional integrity of ecosystems.</i></li> <li>• <i>Functional integrity of wildlife key habitats and focal wildlife species.</i></li> <li>• <i>Cultural heritage values.</i></li> </ul>	<p>8.1 Review issues and recommendations relating to:</p> <ul style="list-style-type: none"> <li>• The integrity of riparian ecosystems</li> <li>• Hydrological integrity of all watersheds</li> <li>• The integrity of ecosystems</li> <li>• Biodiversity</li> <li>• The integrity of key wildlife habitats</li> <li>• Focal wildlife species</li> </ul> <p>8.2 Review of:</p> <ul style="list-style-type: none"> <li>• Issues and recommendations regarding cultural heritage values.</li> <li>• Impacts of resource management activities on cultural heritage values.</li> </ul>	<p>Annual review</p> <p>Annual review</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Establish a Watershed Advisory Committee.<sup>3</sup></li> <li>• The Watershed Advisory Committee will audit performance and review the efficacy of best management practices.</li> </ul>	

## 3.2 Community Values

### 3.2.1 Community Resiliency

In resilient communities, citizens have a sense of purpose and responsibility for the future well-being of the community. There is an explicit recognition of the connection between healthy, well-functioning ecosystems and economic and community well-being. People feel a sense of pride in their community and demonstrate this through participation in local planning and governance processes and community events and projects. They have a sense that the future of their community is bright and that there is great

<sup>3</sup> Refer to Section 3.4.3 Water, Objective 1.

potential to develop and change. Community members generally value diversity, both cultural and economic, and specifically recognize and respect the value of First Nation cultures.

The following are key features of resilient communities:

- ◆ Resilient communities recognize the risk of relying on a single industry or a single large employer.
- ◆ They emphasize economic diversification by supporting employment in smaller companies and actively promoting local ownership, while continuing to support existing businesses and corporations.
- ◆ They are open to alternative development approaches and are aware of their competitive position in the broader economy.
- ◆ Local resources and skills are balanced with external information and resources to address local gaps and achieve local goals.
- ◆ These communities typically have a strategic plan, with a vision for the future and goals and objectives that maximize the allocation of resources to gain the greatest community benefit.
- ◆ Local political leadership strives to represent the interests of the community, balancing the needs and aspirations of all citizens.
- ◆ Local governments take a long term, comprehensive approach to building active public participation in the development and implementation of community plans.
- ◆ The connection between education, unemployment, poverty and economic stability is understood and integrated into strengthening the economic and social well-being of all aspects of the community.

Corporate social responsibility and partnership and support from the corporate sector and local organizations are also an important feature of resilient communities. Collaborative relationships result in efficient use of limited resources and more effective and creative efforts toward achieving common goals. Community resilience is an important feature of the vision and goals for the Morice LRMP. It is expected that implementation of the LRMP will lead to a continuing strengthening of community resilience. The achievement of this goal will be determined through the ongoing effectiveness monitoring process for the LRMP.

It is recognized that the achievement of community resilience will require the resolve and commitment of citizens, government agencies, First Nations, corporations and community organizations working on a variety of local initiatives in addition to the LRMP. Appendix 3 provides a detailed description of features and indicators that may be used in setting goals and measuring performance in the pursuit of community resilience.

**Issues:**

- ◆ High level of economic dependence on the forest industry.
- ◆ Need to recognize the inherent link between environmental, social and economic well-being.
- ◆ Need for greater local participation in community sustainability initiatives.
- ◆ Lack of a shared vision for community sustainability.

**Goals:**

- ◆ Increased economic diversification.
- ◆ Local planning and decision-making guided by a vision of community sustainability.
- ◆ Increased public participation in local planning and decision-making processes.
- ◆ Increased level of corporate social responsibility.

Community Resiliency Objectives	Measures/Indicators	Targets
1. Support a diversity of economic activities.	1.1 Change in type, number and size of various industries.	Increase
	1.2 Product profiles (i.e. resources being used from the land base).	Monitor trend
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Development of product profiles</li> <li>• Development of product profiles</li> </ul>	
2. Support local employment, including the number, diversity and quality of jobs.	2.1 Direct and indirect employment by sector per unit of natural resource capital.	Maintain or increase
	2.2 Job diversity, duration, growth, movement, job market.	Maintain or increase
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Consider promotion of amenity migration as an economic diversification strategy.</li> </ul>	
3. Optimize long term local investment through land use certainty.	3.1 Amount of investment.	Maintain or increase
	3.2 Direct and indirect contribution of industries to local, provincial and federal tax base.	Maintain or increase tax base
	3.3 Number of new ventures or expansion versus number of closures.	No net loss
4. Provide for local economic benefits.	4.1 Investment into local economies.	Increase
	4.2 The variety and value of goods and services produced locally.	Increase
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Consider equitable investment.</li> <li>• Examples of investment include: services, donations, purchases of product, in-kind financial assistance and public/private partnerships.</li> </ul>	
5. Preserve and enhance the quality of life and social values of communities (e.g. noise, views/capes).	5.1 Consistency of land use and activities with community plans.	Monitor trend
	5.2 Stakeholder, local government and First Nations participation in LRMP implementation and lower level resource planning, where possible.	Monitor trend
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Refer to Appendix 3. Key Characteristics of Community Resilience.</li> <li>• Maintain links to other planning processes (e.g. IFPA).</li> </ul>	

### 3.2.2 Cultural Heritage

Cultural heritage resources (CHRs) include features such as culturally modified trees (CMTs), trails, cache pits, house pits, cabins, hunting areas, gathering areas, camping areas, fishing areas, petroglyphs, pictographs and archaeology sites. In addition to tangible features, CHRs can be living things, non-consumptive use areas (e.g. spiritual sites, quest sites) and activities. All CHRs are important in some way to First Nations; archaeological sites are of particular importance.

Many First Nations are taking an active role in assessing and providing management direction for their own archaeology sites and sites which do not predate 1846. Some cultural heritage resources, particularly those that can be dated to pre-1846, are important in establishing use and occupancy. Some, like petroglyphs, are fixed, immovable and irreplaceable, while others are flexible in nature and management. Many of these CHRs occur in clusters or clumps and are especially numerous around village and settlement areas. Concentrations of CHRs are treated in the aggregate rather than individually. Often, even if an individual CHR is not of critical importance to First Nations, the pattern of CHRs across the landscape is of importance, as is the cultural context of First Nation landscapes.

Traditional ecological knowledge and wisdom (TEKW) can add important depth to land use planning. TEKW is grounded in the ecological system of the land and represents First Nations' holistic world view that all nature is interdependent. Examples of TEKW include, but are not limited to, knowledge of changes to local populations of plant or animal species, location of critical features (e.g. salt licks, migration route bottlenecks) and knowledge of the medicinal or sustenance value of botanical species. Traditional use studies (TUS) tend to identify places on maps without reference to the greater context of their use. They do not always consider how one place relates to another. In many TUS, dots, polygons, and lines on maps mark the specific places in which First Nations people exploit the resources within their traditional territories. These maps convey a sense of action occurring at neatly delineated spots or along trails. They also offer the impression that the spaces between the places in which traditional uses occur are empty, devoid of use, and thus meaningless to native people. The emptiness or non-use of spaces between places on TUS maps can be misleading from a First Nation perspective as it perpetuates a focus on 'sites on maps.' Further information on TEKW and the concept of "space between place" is provided in Appendix 4.

The key to effectively managing for cultural heritage resources is developing a good working relationship with local First Nations.

#### Issues:

- ◆ Loss of, or impacts to, CHRs, including traditional use areas.
- ◆ Lack of recording or reporting of CHRs when encountered in field based operations.
- ◆ Lack of knowledge on identification, interpretation or management of CHRs and clusters of CHRs.
- ◆ Increased risk to CHRs resulting from public disclosure of their locations.
- ◆ Loss of First Nations' access to traditional use areas or sites.
- ◆ Impacts to CHRs resulting from management of catastrophic forest health events, such as logging beetle areas.
- ◆ Impacts to First Nations' abilities to provide for social, ceremonial or sustenance needs of their communities.
- ◆ Lack of use or recognition of TEKW, such as knowledge of changes to local wildlife populations or knowledge of unstable slopes, which may be of utility in management plans.

**Goals:**

- ◆ Conservation of cultural heritage resources.
- ◆ Proper recording and reporting of CHRs encountered in the field to First Nations.
- ◆ Proper identification and management of both individual and clustered CHRs.
- ◆ Maintenance of confidentiality of critical CHRs.
- ◆ Maintenance or restoration of First Nations’ access to CHRs.
- ◆ Management for catastrophic forest health events, or events of similar magnitude, includes management for CHRs.
- ◆ Replacement of impacted CHRs (where possible) with areas of similar or equal composition, structure and function.
- ◆ Utilization of traditional ecological knowledge and wisdom in management planning, where available and appropriate.
- ◆ Maintenance of a good working relationship with First Nations.<sup>4</sup>

Cultural Heritage Objectives	Measures/Indicators	Targets
<p><i>1. Identify, record and report First Nations cultural heritage resources when encountered, particularly those that provide evidence or demonstration of use and occupancy, or which are archaeological sites.</i></p>	<p>1.1 Percent of areas or sites identified, recorded and reported to First Nations.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Field or forest workers who work in areas where there is high probability of encountering First Nations’ CHRs (as identified in archaeological overview assessments and inventories) are trained to properly identify, record and report areas and sites to First Nations. This is best achieved by the development of working relationships with First Nations to obtain a better understanding of CHRs and the importance of these sites and areas to First Nation culture, land use and identity.</li> <li>• Pre-1846 features, such as petroglyphs, are not publicly identified, but are reported to First Nations.</li> </ul>	
<p><i>2. Conserve First Nations cultural heritage resources.</i></p>	<p>2.1 Percent of proposed developments where consultation occurs, when the developments are within the vicinity of:</p> <ul style="list-style-type: none"> <li>• known First Nations CHRs, including areas identified on Map 4: Wet’suwet’en Cultural Heritage; and</li> <li>• cultural heritage resources encountered in any field operations.</li> </ul>	<p>100</p>
	<p>2.2 Percent of First Nations CHRs not impacted by development or human activities.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• CHRs are such things as CMTs, trails, cache pits, house pits, cabins, camping and hunting sites, artefacts and traditional use areas, such as camping, berry picking, and hunting areas.</li> </ul>	

<sup>4</sup> The Yekooche First Nation have developed a consultation protocol outlining how they wish to be communicated and consulted with, this may be obtained directly from the Yekooche First Nation.

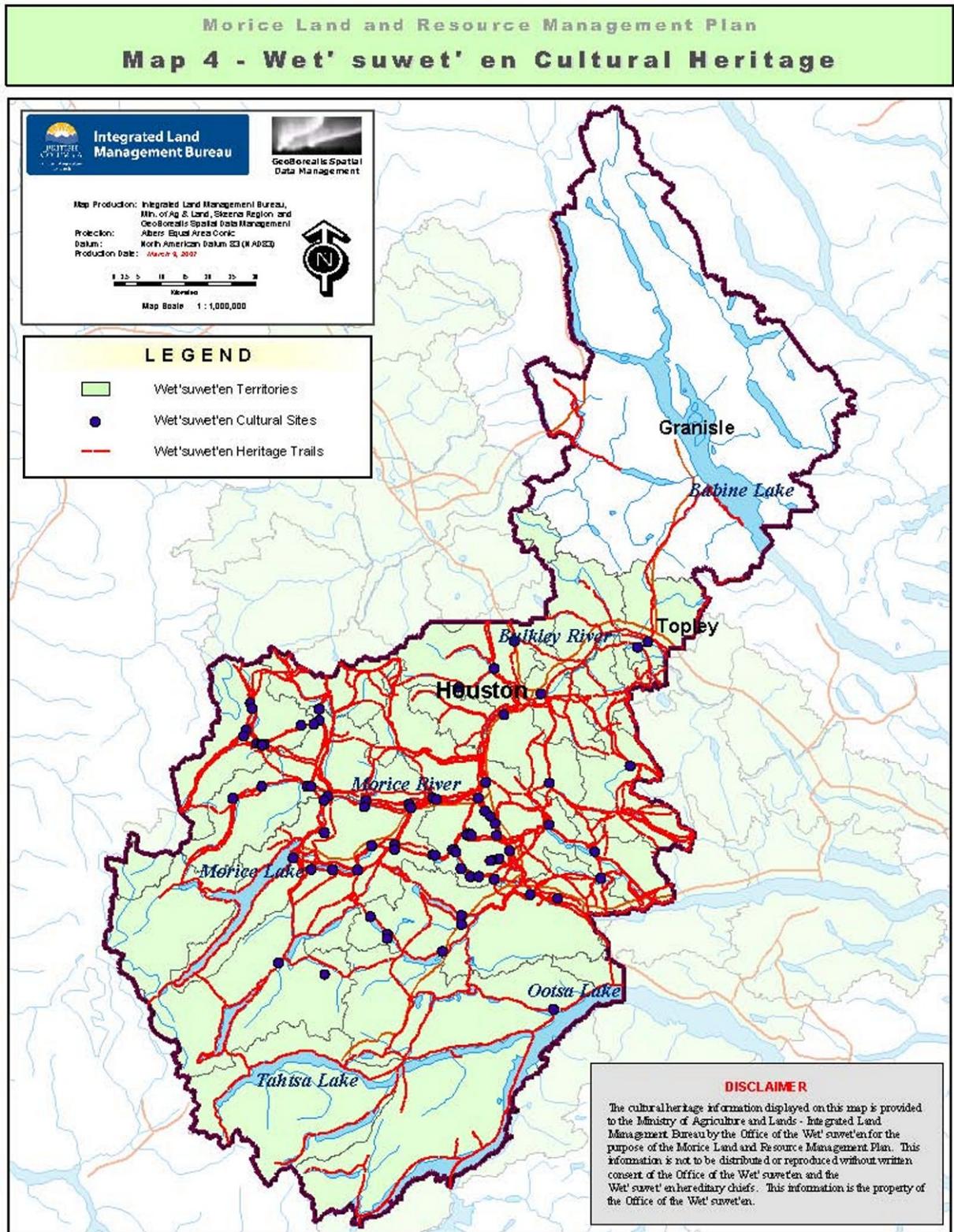
Cultural Heritage Objectives	Measures/Indicators	Targets
<p>3. <i>Preserve,<sup>5</sup> in an untouched state, archaeological sites and sites indicating traditional use and occupancy.</i></p>	<p>3.1 Percent of proposed developments where consultation occurs, when the developments are within the vicinity of:</p> <ul style="list-style-type: none"> <li>• known First Nations archaeological sites and sites indicating traditional use and occupancy, including those identified on Map 4: Wet'suwet'en Cultural Heritage; or</li> <li>• sites encountered in field operations.</li> </ul>	100
	<p>3.2 Percent of First Nations archaeological sites and sites indicating traditional use and occupancy not impacted by development or human activity.</p>	100
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Pre-1846 features, such as petroglyphs and CMTs, are not publicly identified but are reported to First Nations.</li> <li>• Buffer areas may be employed to conserve sites.</li> </ul>	
<p>4. <i>Conserve the composition, structure and function of areas where traditional use sites, traditional use areas or trails are concentrated or numerous.</i></p>	<p>4.1 Percent of proposed developments where consultation occurs, where the developments are within 500 metres of :</p> <ul style="list-style-type: none"> <li>• First Nations archaeological sites and sites indicating traditional use and occupancy, including those identified on Map 4: Wet'suwet'en Cultural Heritage; or</li> <li>• sites encountered during field operations.</li> </ul>	100
	<p>4.2 Percent of First Nations archaeological sites and sites indicating traditional use and occupancy not impacted by development or human activity.</p>	100
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Areas where there is a concentration of sites, areas or trails commonly indicate areas where there are further archaeology sites.</li> </ul>	
<p>5. <i>Maintain or restore traditional First Nations access to cultural heritage resources and traditional use areas.</i></p>	<p>5.1 Percent of known sites where traditional First Nations access is maintained or restored, including:</p> <ul style="list-style-type: none"> <li>• sites shown on Map 4: Wet'suwet'en Cultural Heritage; and</li> <li>• sites encountered during field operations.</li> </ul>	100

<sup>5</sup> It is recognized that some level of deterioration will occur due to natural processes.

Cultural Heritage Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Where there is a high probability of encountering First Nations traditional access (usually trails, as identified in archaeological overview assessments and inventories), consult with First Nations to resolve access and access control needs.</li> <li>• First Nations cultural and traditional activities are to continue in ecological reserves.</li> </ul>	
<p>6. Minimize impacts to First Nations cultural heritage resources and traditional use areas when managing forest health or catastrophic events.</p>	<p>6.1 Incidence of impacts on CHRs and traditional use areas, including those identified on Map 4: Wet'suwet'en Cultural Heritage or those encountered in any field operations, when managing forest health or catastrophic events.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Ensure, through field checks, that on the ground mitigation or prevention measures were employed throughout the management regime.</li> </ul>	
<p>7. Recognize and respect First Nations traditional use areas and traditional use activities.</p>	<p>7.1 Percent of known traditional use areas and traditional use activities where damage or interference has been avoided.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Management practices are employed to offset or replace use areas with areas of equal composition, structure or function. Replacement areas are to consider traditional stewardship systems and First Nations interests.</li> </ul>	
<p>8. Recognize and respect First Nations traditional ecological knowledge and wisdom.</p>	<p>8.1 Percent of plans integrating and utilizing TEKW, where available.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• TEKW remains the intellectual property of the First Nations. (Appendix 4).</li> </ul>	



Map 4. Wet'suwet'en Cultural Heritage



### 3.2.3 Hunting and Fishing

It is outside of the mandate of the LRMP to provide direction on the allocation of quotas for hunting and fishing. Ministry of Environment manage fish and wildlife harvests to maintain viable, sustainable populations with conservation as the first priority. After conservation needs have been met, the harvestable surplus is made available to aboriginal hunters and fishers (pursuant to aboriginal rights), BC residents, and non-resident hunters and fishers. Non-residents must be guided to hunt big game species. The Province exercises delegated authority, under the federal *Fisheries Act*, for the management of non-salmon freshwater fisheries. It is acknowledged that First Nation food fishery takes precedence over the recreational fishery in allocation of quotas.

#### **Hunting**

Hunting is an integral part of the lifestyle of many local residents. It is an important sustenance, cultural and traditional activity for First Nations and is a sustenance and recreational activity for many non-First Nations. Hunting provides local household benefits through country food harvest. Hunters are attracted to the plan area from throughout the province. Hunting trips by people from outside the area provide a seasonal boost to the local economy, in the form of accommodation, fuel sales, the purchase of camping and hunting equipment and grocery sales.

Wildlife species hunted within the plan area include moose, deer, black bear, mountain goat, grizzly bear, waterfowl and grouse. Hunting opportunities rely on the availability of healthy wildlife populations which, in turn, are dependant upon suitable habitat. All recreational hunting of wild game species is governed by provincial hunting regulations. These regulations are complex and vary depending on species populations in different geographic areas.

#### **Fishing**

Fishing is a popular local summer recreation activity and is practiced by area residents and visitors of all ages and abilities. It is an important source of food for local residents and First Nations. The importance of fishing to the region is signified by the world's largest fly rod, a local landmark in downtown Houston. Fishing is an important contributor to the local economy, through accommodation, fuel sales, purchases of boats, camping and fishing equipment and grocery sales.

Species available to anglers include steelhead, lake, cutthroat, rainbow and brook trout, Dolly Varden, burbot and several varieties of salmon. Additional species of cultural importance include lamprey and mountain whitefish. Numerous and varied angling opportunities exist within the plan area. These opportunities range from world class steelhead fishing in the Morice and Bulkley Rivers to a variety of lake fisheries. Numerous lakes of every size provide opportunities for a range of experiences, including peaceful fly fishing, ice fishing and fishing deep lakes for trophy rainbow and lake trout. Small lakes with abundant smaller trout provide family fun where children learn the thrill of fishing. Recreational fishing opportunities rely on an abundant supply of clean fresh water, free flowing waterways, quality fish habitat and access to fishing sites.

#### **Issues:**

- ◆ Loss of opportunities for hunting and fishing for local residents.
- ◆ Proportion of hunting opportunities allocated to local residents.
- ◆ Loss of access to the landbase for hunting and fishing.
- ◆ Availability of a range of fishing opportunities.
- ◆ Availability and spatial distribution of suitable habitat, including mature timber cover, over time, in order to retain a distribution of key species.

**Goals:**

- ◆ Recognition and maintenance of hunting as a viable component of wildlife management.
- ◆ Sufficient suitable habitat to maintain fish and wildlife populations.
- ◆ Recognition and maintenance of fishing as a viable component of water and fisheries management.
- ◆ A broad range of fishing and hunting experiences.

Hunting and Fishing Objectives	Measures/Indicators	Targets
<i>1 Maintain access opportunities to fulfill a range of activities associated with recreational hunting and fishing.</i>	Refer to Section 3.3.2 (Access).	
<i>2 Maintain or increase the range of opportunities to hunt across the plan area by maintaining sustainable wildlife populations.</i>	Refer to Section 3.4.1 (Biodiversity) and Section 3.4.4 (Wildlife and Wildlife Habitat).	
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Apply timely hunting and/or access restrictions when there is substantiated evidence that game populations are at risk or are declining (this includes verifiable local information and scientific/ biological studies).</li> </ul>	
<i>3. Maintain or increase the range of opportunities to fish across the plan area by maintaining sustainable fish populations.</i>	Refer to Section 3.4.2 (Fish, Fish Habitat, and Aquatic Ecosystems).	
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Apply timely fishing and/or access restrictions when there is substantiated evidence that game populations are at risk or are declining (this includes verifiable local information and scientific/ biological studies).</li> </ul>	

**3.2.4 Settlement**

Settlement areas are those areas within existing municipal boundaries (the Village of Granisle and the District of Houston) and within rural Official Community Plan (OCP) boundaries (Topley, Topley Landing, Perow, Buck Flats, Owen Lake, and other properties within the OCP boundaries). OCPs are planned and managed by local governments under the *Local Government Act* and *Community Charter*. Land tenures for facilities such as trapping cabins, guide outfitter cabins, lodges and industrial camps are also included in the settlement theme and are managed by the provincial government.

Local governments use OCPs as a policy tool to regulate land use planning. Currently there are four OCPs established within the plan area:

- ◆ District of Houston OCP (prepared by the District of Houston);
- ◆ Village of Granisle OCP (prepared by the Village of Granisle);
- ◆ Houston / Topley / Granisle Rural OCP (prepared by the Regional District of Bulkley-Nechako); and,
- ◆ Smithers / Telkwa Rural OCP (prepared by the Regional District of Bulkley-Nechako).

These plans provide land use policies to guide future development and growth, and also include broad statements regarding social, economic and environmental objectives. Within municipal and OCP

boundaries, the LRMP only applies to public lands managed by the Province and not to those administered by the municipality or region.

The five First Nations (Lake Babine Nation, Office of the Wet’suwet’en, Carrier-Sekani (Wet’suwet’en First Nation), Cheslatta Carrier and Yekooche First Nation) historically had permanent settlements and seasonal settlements scattered across the plan area. Presently there is only one permanent First Nation community within the plan area: Tachet on Babine Lake. First Nations in the plan area have an interest in resettlement of some of the traditional settlement areas.

**Issues:**

- ◆ Impacts to the quality of life due to land use decisions on areas adjacent to settlement.
- ◆ Concern that future growth for settlement areas is constrained by existing land uses and designations.
- ◆ Sustainability of concentrated settlements around single resource developments.
- ◆ Consideration of OCP and other local plans in land use decisions.

**Goals:**

- ◆ Well planned expansion of settlement.
- ◆ Opportunities for recreational, commercial and industrial cabins and camps outside of settlement expansion areas.
- ◆ Maintenance of the existing quality of life.

Settlement Objectives	Measures/Indicators	Targets
<i><b>Intent:</b> To prevent urban sprawl and unplanned expansion across the plan area while providing direction for future planned expansion in suitable areas.</i>		
<i>1. Concentrate settlement expansion in areas meeting the following settlement expansion criteria:</i> <ul style="list-style-type: none"> <li>• <i>consistent with existing or planned main road<sup>6</sup> access and existing or planned electrical service, or</i></li> <li>• <i>where allowed in OCPs.</i></li> </ul>	1.1 Percent of <i>Land Act</i> dispositions meeting settlement expansion criteria each year.	Aim for 70-90%
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• <i>Land Act</i> dispositions should be consistent with community plans, including OCPs and zoning bylaws.</li> <li>• Use community planning processes (e.g. OCPs) and the current referral processes used by provincial government agencies to refine future development.</li> <li>• Community planning and referral processes must consider and address LRMP-directed general and area specific management direction on lands under provincial jurisdiction.</li> <li>• Maintain access to recreational features, including lakes, for existing users and First Nations when developing recreational settlement areas.</li> </ul>	

<sup>6</sup> Main road = permanent road that is fully maintained year round.

Settlement Objectives	Measures/Indicators	Targets
<i><b>Intent:</b> To optimize potential economic opportunities. Land use opportunities for tenured areas are defined by current government policy.</i>		
2. Provide opportunities for isolated, single parcel settlement across the plan area.	2.1 Percent of <i>Land Act</i> dispositions meeting isolated single parcel settlement criteria over a 10 year period.  <b>Implementation Direction</b> <ul style="list-style-type: none"><li>• <i>Land Act</i> dispositions should be consistent with community plans, including OCPs and zoning bylaws.</li><li>• Use community planning processes (e.g. OCPs) and the current referral processes to refine future tenure placement.</li><li>• Community planning and referral processes must consider and address general and area specific management direction on lands under provincial jurisdiction.</li></ul>	Aim for 10-30%
3. Recognize and protect known historical settlement areas, including those identified on Map 4: <i>Wet'suwet'en Cultural Heritage, from adverse development</i> <sup>7</sup> activities.	3.1 Percent of historical settlements not adversely affected by development.  <b>Implementation Direction</b> <ul style="list-style-type: none"><li>• Where there is potential for adverse impacts to historic settlement areas, engage in consultation with First Nations.<sup>8</sup></li></ul>	100
<i><b>Intent:</b> To manage the use of lands adjacent to settlement areas so as to avoid non-complementary activities and to avoid impacts to safety, health and the quality of life. At the same time, as settlement areas expand, established uses of adjacent areas must be recognized.</i>		
4. Manage areas adjacent to settlement areas to avoid adverse impacts to safety, health and the quality of life within the settlement area.	4.1 Incidence of adverse impacts to settlement areas.	Zero

### 3.2.5 Visual Resources

The quality of the visual landscape within the Morice LRMP area is important to the people that live, work and recreate in the plan area. Visually sensitive or scenic areas are the landscapes that are visible from communities, public use areas, and land and water-based travel corridors. Scenic areas of significance in the plan area include Morice Lake, the Kidprice lake chain and surrounding area, the

<sup>7</sup> Adverse Development — In the context of Objective 3, this term refers to development that disturbs the features directly associated with the historical settlement area and/or takes away the ability to carry out the historical use associated with the area. Development refers to those activities related to all types of settlement, including commercial, residential and industrial. Industrial and commercial settlement may occur across a range of activities, such as agriculture, mining, forestry, guide outfitting, trapping, and tourism.

<sup>8</sup> The Yekooche First Nation have developed a consultation protocol, this may be obtained directly from the Yekooche First Nation.

Morice River, Babine Lake, major travel corridors and alpine areas. The varied terrain of the plan area requires careful management, as it contributes to the visual resource and provides a variety of viewpoints. Scenic areas are managed by setting visual quality objectives (VQOs) that indicate the desired visual condition based on social concerns and the physical characteristics of the landscape. Some activities, such as timber harvesting and road construction, have the capacity to alter the visual quality of the forested landscape. Management within scenic areas focuses on integrating these activities into the landscape pattern in an economically feasible way, such that the objectives can be achieved. The amount of activity that can occur within a visible landscape is dependent on its visual sensitivity and the degree of alteration (e.g. partial cut versus clearcut). Visual design principles can be used to mitigate the impact of development activities and are encouraged throughout the plan area.

Objectives for visual management may be formally established as visual quality objectives by the Ministry of Forests and Range. VQOs identify standards for visual design, perspective alteration limits, and visually effective green-up that apply to forest harvesting. Other types of resource development (e.g. mining, utility corridors, tourism) are not required by law to be consistent with VQOs. However, identified scenic areas will serve to inform non-forestry related development and be considered in permitting and development planning.

**Issues:**

- ◆ Impacts to the quality of the visual landscape in highly sensitive areas.
- ◆ Impacts to the quality of the visual landscape from a variety of viewing perspectives.
- ◆ Potential for loss of visual landscape quality as result of management of forest health and major catastrophic events (e.g. beetle management, windthrow).
- ◆ Visual impact of facilities on the landscape.

**Goals:**

- ◆ A natural landscape that is aesthetically appealing to residents, tourists and recreationists.
- ◆ Preservation of visual quality compatible with other resource development activities.

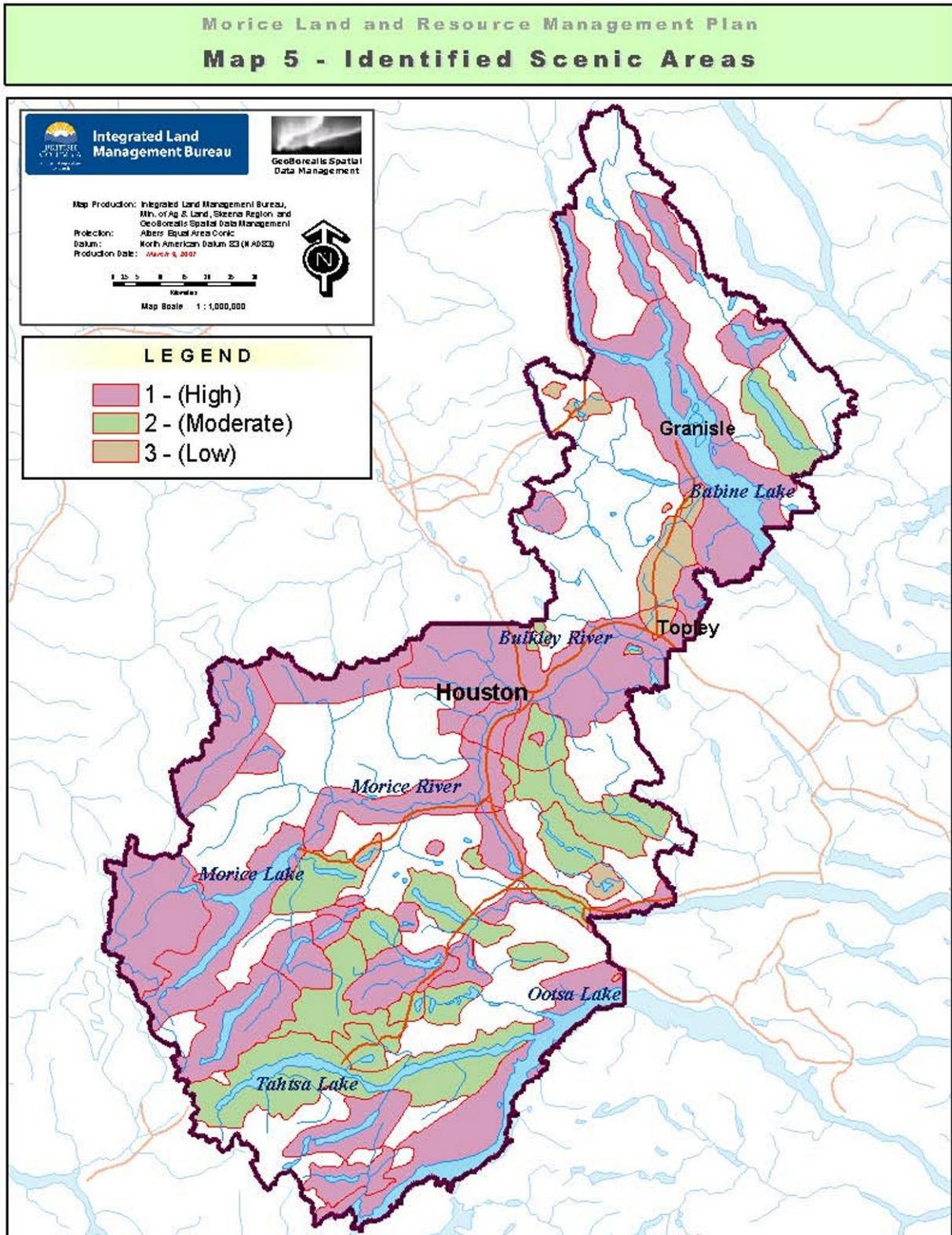
Visual Resources Objectives	Measures/Indicators	Targets
<b>Intent:</b> <i>To provide direction to the provincial government regarding the designation of scenic areas (as shown on Map 5: Identified Scenic Areas) and the establishment of visual quality objectives.</i>		
<i>1. Complete a visual landscape inventory within scenic areas, identified on Map 5: Identified Scenic Areas.</i>	1.1 Percent of scenic areas having a visual landscape inventory.	100% of all scenic areas by December 2009

Visual Resources Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Each scenic area has been assigned an allowable visual impact classification by the LRMP (Table 1). Scenic areas are to be managed to these standards, both in the interim (pending formal designation) and upon completion of formal designation.</li> <li>• The establishment of visual quality objectives for designated scenic areas is the responsibility of the Ministry of Forests and Range and requires the completion of Visual Landscape Inventories (VLIs) for each area. Existing VLIs will be reviewed and revised where necessary, to ensure that the social values associated with each scenic area have been addressed.</li> <li>• Use most up-to-date Ministry of Forests and Range standards for VLIs.</li> </ul>	
<p>2. <i>Avoid impacts to visual resources in the interim prior to establishment of visual quality objectives.</i></p>	<p>2.1 Percent of scenic areas where visual resources are managed in accordance with Table 1.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Consider visual quality with respect to road layout, block design/ configuration and rate of disturbance.</li> <li>• Visual design assessments are to be completed for all proposed development in scenic areas with an “a” Allowable Visual Impact class (refer to Tables 1 and 4).</li> <li>• Industrial and non-industrial facilities are to be constructed in such a way as to minimize the visual impact on the surrounding landscape.</li> <li>• Timing windows for industrial activity may be established in consultation with stakeholders to minimize impacts caused by noise, smoke, artificial light, dust from industrial roads and altered access.</li> </ul>	<p>100</p>
<p>3. <i>Establish visual quality objectives for scenic areas.</i></p>	<p>3.1 Establishment of VQOs across all scenic areas.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Tourism facilities are to be considered as a viewpoint in the establishment of VQOs.</li> </ul>	<p>Completed by 2010</p>
<p>4. <i>Manage the visual resource in scenic areas in accordance with established visual quality objectives.</i></p>	<p>4.1 Percent of scenic areas in compliance with the established VQOs.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Catastrophic events in scenic areas are considered natural alterations of the land.</li> </ul>	<p>100</p>

Visual Resources Objectives	Measures/Indicators	Targets
<p><b>Intent:</b> <i>To manage the visual resource outside of scenic areas across the entire plan area. This will generally be achieved through natural disturbance pattern forest management (refer to Section 3.4.1. Biodiversity).</i></p>		
<p>5. <i>Apply forest practices that maintain visual quality at the landscape level across the plan area.</i></p>	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use natural disturbance patterns to manage the visual resource across the landscape.</li> </ul>	



Map 5. Identified Scenic Areas



**Table 1. Management Considerations for Identified Scenic Areas**

Scenic Area	Map Poly#	Existing Scenic Area <sup>9</sup>	Recom. Scenic Area <sup>10</sup>	Tourism / Rec. Sensitivity Class (Table 2)	Visual Mgmt Area (Table 3)	Specific Management Area	Allowable Visual Impact (Table 4)	Priority Rating (Table 5)
Anzac Lake	45	High	1	A	VMA1		a	l
Atna Lk & River	35		1	A	VMA1		a	l
Babine Lake	3	High	1	A	VMA1		c	h
Buck Flats	23 27	Moderate	2	C	VMA3		c	m
Burnie Lk	21		1	A	VMA1		a	l
Coles Lake	67	High	1	A	VMA2		a	l
Collins Lake	34	Moderate	3	C	VMA2		c	l
Dome Mtn	10		1	C	VMA1		c	m
Doris Lake	8	Moderate	3	C	VMA2		c	l
Eastern Lake	58	Moderate	3	C	VMA2		c	l
Francois Lake	41 50		1	A	VMA1		a	h
Friday Lk / Nakinilerak Lk	2		1	A	VMA1		a	h
Goosly Lake	28	Low	2	C	VMA2		c	l
Granisle Hwy	9 13 15	Moderate	3	B	VMA3	Maintain viewscape from pullout on Granisle and Highway corridor	b	m
Helen Lake	18	Moderate	2	B	VMA2		b	m
Hidden Lake	17	Low	2	C	VMA3	Maintain viewscape on shoulder of Grouse Mountain	b	l

<sup>9</sup> Ranking from original Ministry of Forests inventory.

<sup>10</sup> LRMP ranking. The LRMP table decided to use a new classification for Recommended Scenic Areas (1 – High; 2 – Medium; 3 – Low) to distinguish between what is being proposed by the LRMP and what currently exists (Existing Scenic Areas) from the Ministry of Forests VLI.

Scenic Area	Map Poly#	Existing Scenic Area <sup>9</sup>	Recom. Scenic Area <sup>10</sup>	Tourism / Rec. Sensitivity Class (Table 2)	Visual Mgmt Area (Table 3)	Specific Management Area	Allowable Visual Impact (Table 4)	Priority Rating (Table 5)
Horseshoe Chain	59		2	C	VMA2		b	l
Houston Comfor	73		1	A	VMA3		b	h
Hwy 16	16	High	1	B	VMA1		b	l
Kidprice Lake	51	High	1	A	VMA2		a	l
Lamprey Lake	43	High	1	A	VMA2	Includes portage trail	a	l
Matzehtzel Mtn	14		1	B	VMA1		b	m
McBride Lake	38	Moderate	2	B	VMA2		b	l
McCloud / Gordeau Lakes	44	High	1	B	VMA2		b	m
Morice Lake	33	High	1	A	VMA1		a	l
Morice River	22 25 29 36	High	1	A	VMA4	Maintain visual quality from a 360 degree perspective from the river.	a	l
Morrison Lake	4	Moderate	1	A	VMA2		a	h
Nadina Lake	55	High	1	B	VMA3	Higher level of visual management on north side of lake	b <sup>11</sup>	h
Nadina River 1	53		1	A	VMA4	Maintain visual quality to 100-year flood plain level	a	l
Nadina River 2	42		1	A	VMA4	Maintain visual quality to 100-year flood plain level	a	l
Nanika Lake	56	High	1	A	VMA1		a	l
Natowite Lake	5	Low	1	C	VMA2		c	l
Newcombe Lake	46	High	2	C	VMA2		b	m
Ootsa Lake	57	High	1	C	VMA2		c	l

<sup>11</sup> Specific to Nadina Lake: No more than 4% of the visible landscape from the viewpoint (i.e. the lake) will be altered by harvesting

Scenic Area	Map Poly#	Existing Scenic Area <sup>9</sup>	Recom. Scenic Area <sup>10</sup>	Tourism / Rec. Sensitivity Class (Table 2)	Visual Mgmt Area (Table 3)	Specific Management Area	Allowable Visual Impact (Table 4)	Priority Rating (Table 5)
Owen Francois Corridor	37 40 54	High	2	C	VMA1		c	l
Owen Lake	31	High	1	B	VMA3	Maintain viewscape on Nadina Mtn. and aspen / grassland slopes	b	h
Parrott Lakes	30	Moderate	2	C	VMA2		b	h
Paul Lake	12	Moderate	3	A	VMA2		a	l
Pine Tree Lake	7	Moderate	3	C	VMA2		b	l
Poplar Lake	74	High	2	B	VMA2		b	l
Shea Lk	24		1	A	VMA1		a	h
Sibolas	52		2	C	VMA4		c	l
South End Morice Mtn	26		2	B	VMA1		c	l
Stepp Lake	49	High	1	A	VMA2		a	h
Sunset Lake	20	Moderate	2	B	VMA2		c	l
Sweeney Lake	62	Moderate	2	B	VMA2		b	m
Tahtsa Reach	61	Moderate	2	B	VMA2		c	l
Telkwa Mtns	19		1	A	VMA1		b	h
Timber Lake	11	Moderate	2	B	VMA2		b	m
Tochcha Lake	6	Low	2	C	VMA2		c	l
Troitsa Lake	65	High	1	A	VMA2		a	h
Tsichgass Lake	39	Low	3	C	VMA2		c	l
Twinkle Lake	60	Moderate	2	B	VMA2		b	m
Whitesail Lake	72	High	1	C	VMA2		c	l

**Table 2. Tourism / Recreation Sensitivity Classes**

<b>Sensitivity Class</b>	<b>Description</b>
A	It is highly likely that the public will be concerned if the landscape is visually altered.
B	It is probable that the public will be concerned if the landscape is visually altered.
C	There is a moderate risk of public concern if the landscape is visually altered.

**Table 3. Visual Management Areas Description**

<b>GMD Class</b>	<b>Management Area</b>
VMA1	<ul style="list-style-type: none"> <li>• Visual quality is to be maintained to the height of land.</li> <li>• Potential visual impacts are to be assessed from the point of area of concern (this may include multiple view points).</li> </ul>
VMA2	<ul style="list-style-type: none"> <li>• Visual quality is to be maintained immediately surrounding the area of interest.</li> <li>• Potential visual impacts are to be assessed from the point of area of concern (this may include multiple view points).</li> </ul>
VMA3	<ul style="list-style-type: none"> <li>• Visual quality is primarily concerned with the area immediately surrounding the area of interest but there are portions on the viewscape that are impacted to the height of land.</li> <li>• Specific areas outside of the immediate surrounding area of concern will be identified and managed for visual quality.</li> <li>• Potential visual impacts are to be assessed from the point of area of concern (this may include multiple view points).</li> </ul>
VMA4	<ul style="list-style-type: none"> <li>• Visual quality to be maintained for a specific area not contained in classes VMA1–VMA3.</li> <li>• Specific areas of concern will be identified and managed for visual quality.</li> </ul>

**Table 4. Allowable Visual Impact**

<b>Visual Impact Class</b>	<b>Allowable Visual Impact</b>
a	<ul style="list-style-type: none"> <li>• No apparent visual change in the natural viewscape</li> </ul>
b	<ul style="list-style-type: none"> <li>• Visual modification to remain subordinate.</li> </ul>
c	<ul style="list-style-type: none"> <li>• Visual change is allowed. Emphasis placed on minimizing visual impacts from development</li> </ul>

**Table 5. Priority Rating for Completion of VLI**

Priority Rating	
h	<ul style="list-style-type: none"> <li>• First priority for VLI completion (VLI to be completed by June 2009)</li> </ul>
m	<ul style="list-style-type: none"> <li>• Moderate priority for VLI completion (VLI to be completed by December 2009)</li> </ul>
l	<ul style="list-style-type: none"> <li>• Low priority for VLI completion (VLI to be completed by December 2009)</li> </ul>

### **3.2.6 Recreation**

The Morice LRMP area possesses a diverse array of high value recreational features that are enjoyed by local and visiting recreationists (Map 6). These features play an important role in the high quality of life enjoyed by residents of the area.

Existing recreation is primarily nature-based with opportunities for year-round recreational activities. Recreational activities across the plan area are supported by:

- ◆ A variety of terrain types;
- ◆ Exceptional snow quality for skiing and snowmobiling;
- ◆ Existing support infrastructure;
- ◆ Easy access to remote wilderness areas; and
- ◆ Features and facilities to support a diverse range of activities, including hiking, mountaineering, snowmobiling, cross-country skiing, photography, canoeing, boating, fishing and hunting, among others.

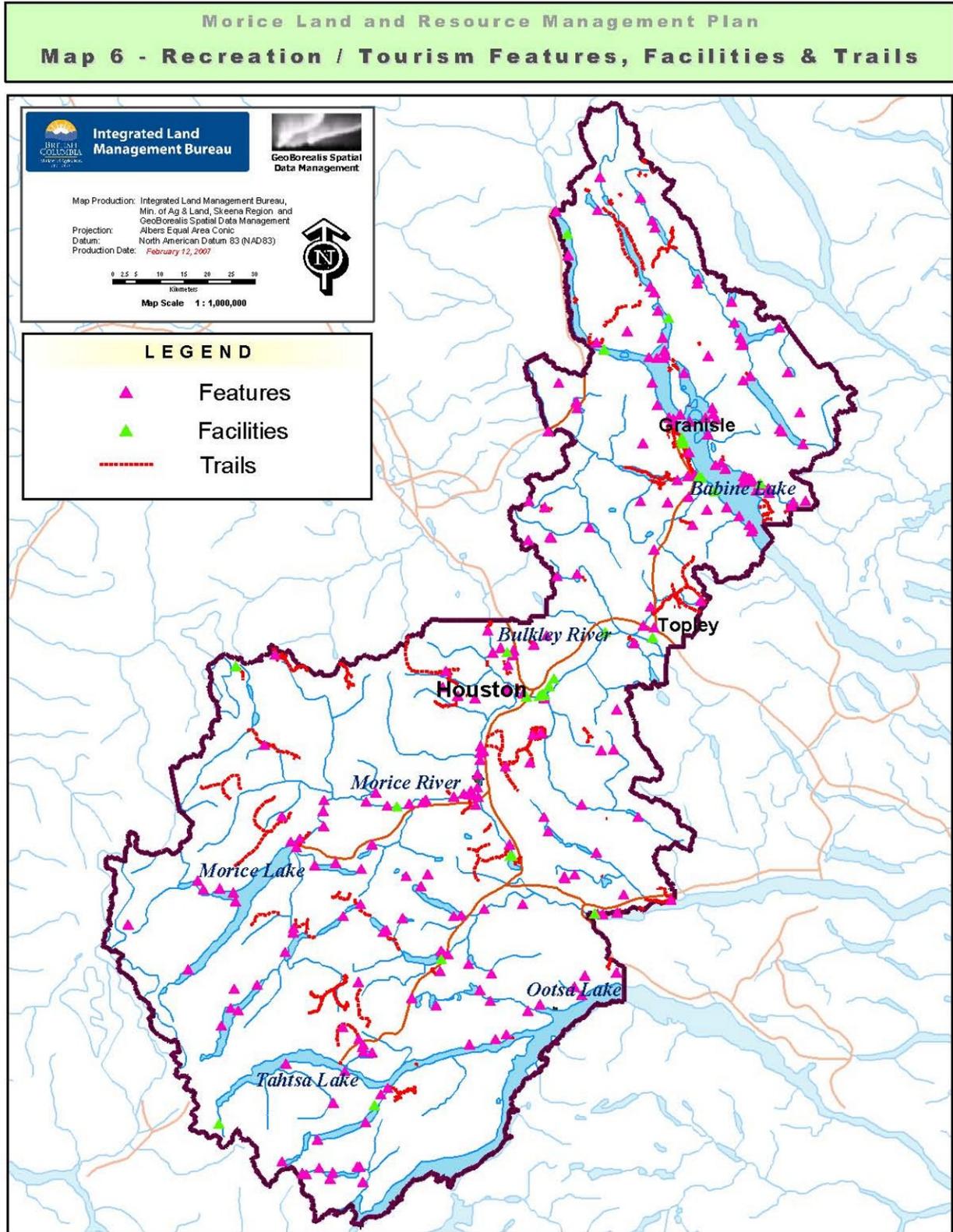
#### **Issues:**

- ◆ Impacts to the quality of the natural features and scenic beauty of the area.
- ◆ Impacts to visual quality, including views from higher elevations.
- ◆ Impacts to the quality of the wilderness experience.
- ◆ Impacts to cultural resource values.
- ◆ Potential conflicts between recreational users.

#### **Goals:**

- ◆ A range of recreational opportunities and quality recreation experiences maintained and enhanced across the land base.
- ◆ Respect and integration between recreation, First Nations and other resource users.
- ◆ Access management to support recreational opportunities.
- ◆ Wilderness values protected from adverse impacts related to recreational activities.
- ◆ Management of visual resources to support recreational experiences.

Map 6. Recreation / Tourism Features, Facilities and Trails

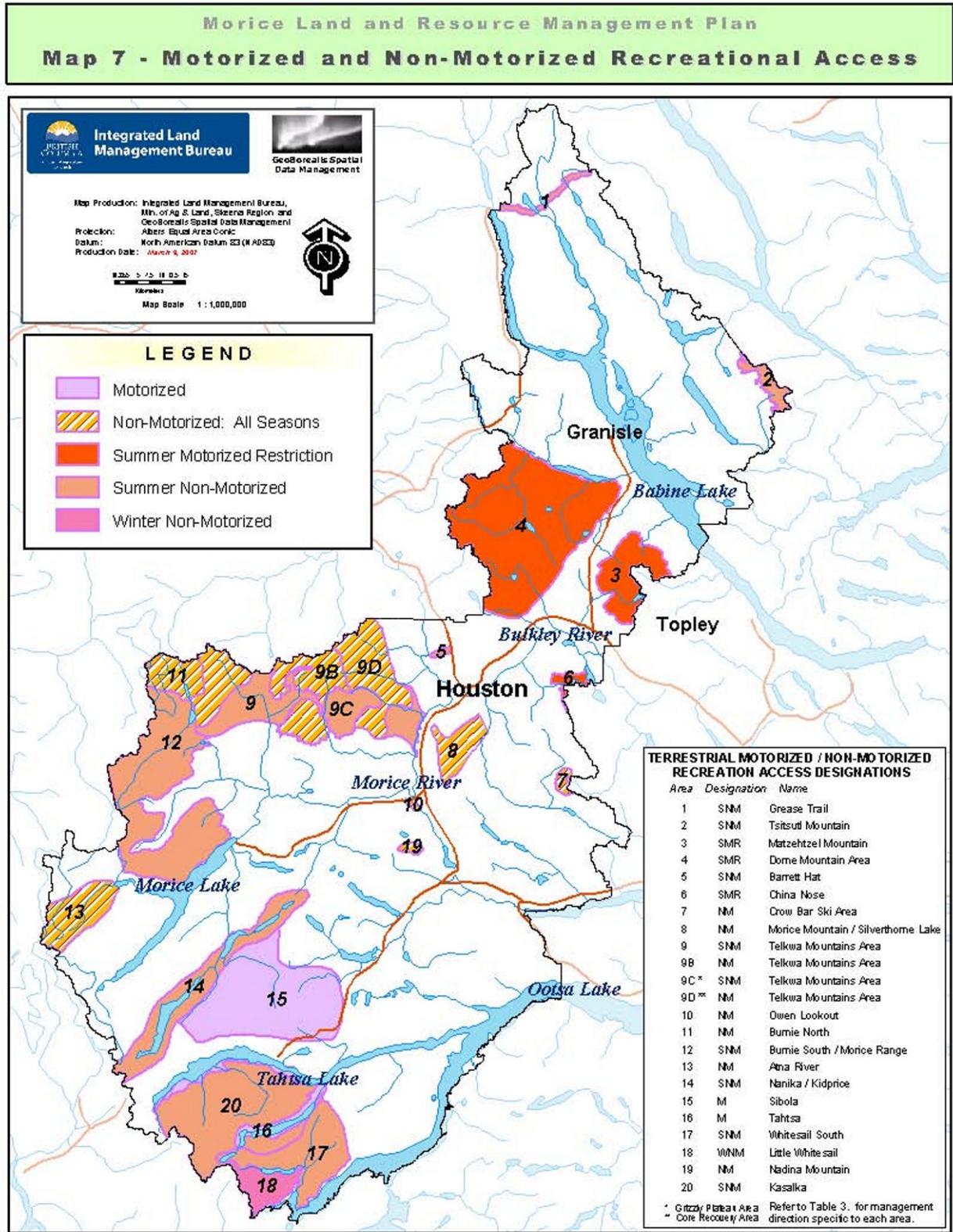


Recreation Objectives	Measures/Indicators	Targets
1. <i>Maintain or improve the integrity and functionality of recreation features as per guidelines identified in Table 6.</i>	1.1 Loss of integrity and functionality within 200m of recreation features (Map 6).	No loss
	1.2 Percent of consultations occurring related to development activities within 500 metres of recreation features.	100
2. <i>Maintain or improve the integrity and functionality of recreation facilities as per guidelines identified in Table 6.</i>	2.1 Loss of integrity, functionality of facilities within the 500 metre management zone.	No loss
	2.2 Percent of consultations occurring related to development activities within 500 metres of mapped facilities.	100
3. <i>Maintain the integrity and functionality of trails as per guidelines identified in Table 6, respecting traditional First Nations trail networks.</i>	3.1 Loss of integrity and functionality of trails within the 200 metre (each side of trail) management zone.	No loss
	3.2 Percent of consultations occurring related to development activities within 500 metres to either side of mapped trails.	100
<p><b>Implementation Direction for Objectives 1 – 3</b></p> <ul style="list-style-type: none"> <li>• Notification and consultation is to occur prior to industrial development adjacent to features, facilities and trails identified on Map 6: Recreation / Tourism Features, Facilities and Trails.</li> <li>• Development proponents to prepare BMPs for operations within the vicinity of recreation and tourism features and facilities, as described in the Guidelines for the Management of Recreation/ Tourism Features, Facilities and Trails (Table 6 below). Considerations to include in BMPs are: <ul style="list-style-type: none"> <li>- Protocols between tourism operators and development proponents related to communications and the maintenance of the functional integrity of each operator’s interests (Section 3.3.1, Tourism);</li> <li>- Integrated pest management strategies (Section 3.3.7, Timber);</li> <li>- Visual quality (Section 3.2.5);</li> <li>- Environmental considerations (refer to Sections 3.4.1, Biodiversity, 3.4.2, Fish, Fish Habitat and Aquatic Ecosystems, and 3.4.4, Wildlife and Wildlife Habitat); and</li> <li>- Cultural heritage values (Section 3.2.2).</li> </ul> </li> <li>• Other considerations for operations within the vicinity of the recreation and tourism features and facilities listed in Table 6, are: <ul style="list-style-type: none"> <li>- Physical and temporal management techniques are to be used to mitigate impacts on features, facilities and trails;</li> <li>- Trail relocation is an option that may be used in specific locations;</li> <li>- Trails impacted from industrial use are to be restored to their original condition;</li> <li>- Notification and consultation is to occur between the industrial operator proposing development and the facility owner on the method(s) and extent of management in the vicinity of the facility; and</li> <li>- The integrity and functionality of facilities and trails will have priority when management decisions are being made.</li> </ul> </li> <li>• Priority will be given to the recreational interests of First Nations and the local public to ensure the integrity and functionality of features is maintained.</li> </ul>		



Recreation Objectives	Measures/Indicators	Targets
<ul style="list-style-type: none"> <li>• Priority will be given to the facility operators' concerns to ensure the integrity and functionality of the facility. The parties agree to act reasonably considering each others interests.</li> <li>• Use public education / information (including posted signs at sensitive areas) to inform users of proper use of a feature.</li> <li>• Map 6: Recreation / Tourism Features, Facilities and Trails will be updated annually in consultation with the LRMP Monitoring Committee, tourism operators and recreation groups.</li> </ul>		
<p><i>4. Maintain opportunities for motorized and non-motorized terrestrial recreation in areas identified in Table 7 and on Map 7: Motorized and Non-Motorized Recreational Access.</i></p>	<p>4.1 Percent compliance by recreational users with zoning for motorized and non-motorized recreation (summer and winter).</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Motorized access is maintained for First Nation users undertaking traditional and sustenance activities.</li> <li>• Promote public education and awareness, including posted signs at sensitive areas.</li> <li>• Recognize the quality of the experience for recreationists.</li> <li>• Where any alleged conflicts involving wildlife or environmental impacts occur between recreation users (both motorized and non-motorized), First Nations, local clubs or representatives must be involved in any process leading to the resolution to the issue, and issues must be supported by documented evidence and/or verifiable science before any proposed restrictions be applied.</li> <li>• Identify suitable areas for intensive motor sport use (e.g. mud bogging).</li> <li>• Provide future opportunities for non-motorized designation in the vicinity of Granisle for cross country skiing.</li> <li>• Retain over time, all existing and future access routes and methods of transportation (e.g. pickups, snowmobiles, horses, boats, aircraft, ATVs, dogsleds) across all land use designations for the purpose of tenure holders access to trapline areas and guide territories.</li> </ul>	<p>100</p>
<p><i>5. Maintain opportunities for a non-motorized recreation experience on lakes identified in Table 8.</i></p>	<p>5.1 Incidence of motorized use on designated non-motorized lakes.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Motorized access is maintained for First Nation users undertaking traditional and sustenance activities.</li> <li>• Applies to gas powered boats only.</li> <li>• Promote public education and awareness, including posted signs at sensitive areas.</li> <li>• Recognize the quality of the experience for recreationists.</li> <li>• Retain over time, all existing and future access routes and methods of transportation, including boats, across all land use designations for the purpose of tenure holders access to trapline areas and guide territories.</li> </ul>	<p>Zero</p>

Map 7. Motorized and Non-Motorized Recreational Access



**Table 6. Guidelines for the Management of Recreation/ Tourism Features, Facilities and Trails**

<b>A. Recreation/ Tourism Features</b>		
The following management direction applies to all Recreation/ Tourism Features:		
Elements of integrity and functionality	<ul style="list-style-type: none"> <li>• Maintenance of visual experience.</li> <li>• No adverse impacts from development, including:               <ul style="list-style-type: none"> <li>- noise</li> <li>- dust</li> <li>- light</li> <li>- altered access patterns.</li> </ul> </li> </ul>	
Parties to consult prior to development	<ul style="list-style-type: none"> <li>• First Nations</li> <li>• Morice Outdoor Recreation</li> <li>• Houston Snowmobile Club</li> <li>• Backpackers Club</li> <li>• Tenure Holders (includes industry)</li> <li>• Tourism operator with identified interest or the Sustainable Tourism Committee</li> <li>• Other directly affected parties</li> </ul>	
Consultation requirements	<ul style="list-style-type: none"> <li>• Consultation is triggered at 500 m surrounding all features identified on Map 6 (Recreation / Tourism Features, Facilities and Trails). Consultation shall occur within 2 months following notification of intent to develop.</li> <li>• Development proponents to demonstrate that they are not compromising the integrity and/or functionality of the feature and a 200 m buffer surrounding the feature.</li> <li>• The recreation/ tourism features and facilities inventory (as shown on Map 6) will be updated annually through consultation with the LRMP Monitoring Committee, tourism operators and recreation groups.</li> </ul>	
Impact considerations	<ul style="list-style-type: none"> <li>• Functional integrity (natural tourism/ recreational values) of the feature considering visual quality.</li> </ul>	
Mitigating options for management	<ul style="list-style-type: none"> <li>• Consider physical (type of harvesting) and temporal (seasonal variations in harvesting practices) aspects for management of areas surrounding the feature.</li> </ul>	
The following management direction applies to each type of Recreation / Tourism Feature listed:		
<b>Shoreline Features, Access to Water Features, and Popular Angling Sites</b>	Description	Spits, beaches, coves, bays, inlets, small islands, popular fishing sites and water body features.
	Feature-specific considerations	No signs of development debris in and around shoreline features (e.g. logs, oil drums).
<b>Fossils and Volcanic Features</b>	Description	Fossil Beds. Volcanic feature.
	Feature-specific considerations	No visible change from the feature. No physical impact on the fossil bed or volcanic feature from resource use and development.

<b>A. Recreation/ Tourism Features</b>		
<b>Waterfalls</b>	Description	Greater than 1 m wide and/or a drop of more than 2 m. Geological formation (not man made) with a constant volume of flowing water.
	Feature-specific considerations	Refer to Table 17 in Section 3.4.1 (Biodiversity) for a list of regionally significant features. No physical impact on the waterfall from resource use and development.
<b>Cliffs, Canyons, and Caves</b>	Description	Rock formations with steep relief. Formations having significant spiritual or recreational value. Caves large enough to provide a human exploration experience. Caves used for wildlife denning purposes are not included in this category.
	Feature-specific considerations	No physical impact on the feature from resource use and development e.g., geological formation not compromised. Refer to Table 17, in Section 3.4.1 (Biodiversity) for a list of regionally significant features.
<b>Viewpoints and Modern Cultural Features</b>	Description	Lookouts, bridges.
	Feature-specific considerations	No physical impact on the feature from resource use and development.
<b>First Nations Features</b>	Refer to Section 3.2.2 (Cultural Heritage).	
<b>Historic Features</b>	Description	Morrison Hatchery, Telegraph cabins, homesteads, Port Arthur. Features having cultural heritage value.
	Feature-specific considerations	No physical impact on the historic feature from resource use and development.
<b>Harbour Features and Anchorages</b>	Description	Protected moorages, boat launches. Recreational use areas on water bodies, used for mooring and/or launching a boat.
	Feature-specific considerations	

<b>B. Recreation/ Tourism Facilities</b>		
The following management direction applies to all Recreation/ Tourism Facilities:		
Elements of integrity and functionality	<ul style="list-style-type: none"> <li>• Maintenance of visual experience.</li> <li>• No adverse impacts from development, including: <ul style="list-style-type: none"> <li>- noise</li> <li>- dust</li> <li>- light</li> <li>- altered access patterns.</li> </ul> </li> <li>• No adverse impacts from development on the commercial viability of lodges.</li> <li>• No adverse impacts to the serenity or primary use of a cabin site due to development activities.</li> </ul>	
Parties to consult prior to development	<ul style="list-style-type: none"> <li>• Facility owner or manager.</li> <li>• Tenure Holders (includes industry).</li> <li>• Other directly affected parties.</li> </ul>	
Consultation requirements	<ul style="list-style-type: none"> <li>• Consultation is directed at reaching accommodation.</li> <li>• Consultation is triggered for activities within 1000 m management of lodges or within 500m of cabins or picnic / camping facilities (Map 6: Recreation / Tourism Features, Facilities and Trails). Consultation shall occur within 2 months following notification of intent to develop.</li> <li>• The recreation/ tourism features and facilities inventory (as shown on Map 6) will be updated annually through consultation with the LRMP Monitoring Committee, tourism operators and recreation groups.</li> <li>• Development proponents to demonstrate that they are not compromising the integrity and/or functionality of the facility and a surrounding buffer area (1000m for lodges, 500m for cabins, 200m for picnic/ camping facilities).</li> </ul>	
The following management direction applies to each type of Recreation/Tourism Facility listed:		
<b>Lodges</b>	Description	Fishing lodges, hunting lodges/cabins, tourism/ecotourism lodges. Occupied structure/seasonally used. Commercial use structures.
	Impact considerations	Functional integrity (natural tourism / recreational values) of the lodge/cabin considering noise, dust, artificial light, visual quality, altered access and facility owner's needs.  Resource use and development activities that compromise the functional integrity of the facility will not occur within a 1000 m management zone surrounding the facility.

<b>B. Recreation/ Tourism Facilities</b>		
	Mitigating options for management	<p>In areas of concern, management needs of operator will have priority.</p> <p>Consider physical (type of harvesting) and temporal (seasonal variations in harvesting practices) aspects for management in tourism areas of concern.</p> <p>Utilize best management practices for tourism.</p> <p>Development activities that compromise the functional integrity of the facility will not occur.</p> <p>Tree removal for forest health reasons is only performed on attacked trees; removal of susceptible trees is to occur only to facilitate the removal of attacked trees.</p>
<b>Cabins</b>	Description	<p>Cabins (including ski cabins, snowmobile cabins, fishing cabins, trappers cabins).</p> <p>Seasonally used.</p> <p>Occupied structure.</p>
	Impact considerations	<p>Functional integrity (natural tourism / recreational values) of the cabin considering noise, dust, artificial light, visual quality, altered access and cabin operator's needs.</p> <p>Resource use and development activities that compromise the functional integrity of the feature will not occur within a 500 m management zone surrounding the feature.</p>
	Mitigating options for management	<p>Consider physical (type of harvesting) and temporal (seasonal variations in harvesting practices) aspects for management of areas surrounding the feature.</p>
<b>Picnic Areas, Developed and Undeveloped Campsites</b>	Description	<p>Forest Service Rec. Sites.</p> <p>Future designated and registered campsites.</p>
	Impact considerations	<p>Functional integrity (natural tourism / recreational values) of the campsite considering shelter and visual quality.</p> <p>No physical impact on campsites from resource use and development.</p>
	Mitigating options for management	<p>Consider physical (type of harvesting) and temporal (seasonal variations in harvesting practices) aspects for management of areas surrounding the feature.</p>

<b>C. Trails and Trail Heads</b>	
The following management direction applies to all trails and trailheads:	
Description	<ul style="list-style-type: none"> <li>• Built or used by humans (caveat to look at trails in Section 3.4.4, Wildlife and Wildlife Habitat).</li> <li>• Recognized by any of the following: <ul style="list-style-type: none"> <li>- Blazes</li> <li>- Bridges</li> <li>- Grading</li> <li>- Cutting</li> <li>- Signs of maintenance and current use.</li> </ul> </li> </ul>
Elements of integrity and functionality	<ul style="list-style-type: none"> <li>• Passable by ATV, snowmobile or foot traffic.</li> <li>• No adverse impacts to trail system resulting from development related changes to the hydrological regime.</li> <li>• Maintenance of visual experience.</li> <li>• No adverse impacts from development, including: <ul style="list-style-type: none"> <li>- noise</li> <li>- dust</li> <li>- light</li> <li>- altered access patterns.</li> </ul> </li> <li>• Maintenance of forest canopy to prevent brushing in of trail.</li> <li>• Minimal number of road crossings.</li> </ul>
Parties to consult prior to development	<ul style="list-style-type: none"> <li>• First Nations.<sup>12</sup></li> <li>• Morice Outdoor Recreation.</li> <li>• Houston Snowmobile Club.</li> <li>• Backpackers Club.</li> <li>• Tenure Holders (includes industry).</li> <li>• Tourism operator with identified interest or the Sustainable Tourism Committee.</li> <li>• Other directly affected parties.</li> </ul>
Consultation requirements	<ul style="list-style-type: none"> <li>• Consultation is triggered at 500 m surrounding trails and trail heads identified on Map 6 (Recreation / Tourism Features, Facilities and Trails). Consultation shall occur within 2 months following notification of intent to develop.</li> <li>• Development proponents to demonstrate that they are not compromising the integrity and/or functionality of the trail and within a 200 m buffer to either side.</li> <li>• Recreation features and facilities inventory (as shown on Map 6) will be updated on an annual basis in consultation with the LRMP Monitoring Committee, tourism operators and recreation groups.</li> </ul>

<sup>12</sup> The Yekooche First Nation have developed a consultation protocol that provides mitigative strategies, this may be obtained directly from the Yekooche First Nation.

<b>C. Trails and Trail Heads</b>	
Impact considerations	<ul style="list-style-type: none"> <li>• Functional integrity (natural tourism / recreational values) of the trail system.</li> <li>• Visual impact of industrial activity on the trail system to remain subordinate to recreational values.</li> <li>• Through consultation specific trails (i.e. beetle infested) may have visual impacts that are dominant.</li> <li>• Trails are often associated with trapping areas. Mitigative strategies must address maintenance of this activity.</li> </ul>
Mitigating options for management	<ul style="list-style-type: none"> <li>• Relocation of trails to a condition matching the original trail in specific areas.</li> <li>• Restoration of trails at road crossings.</li> <li>• Restore trails if harvesting occurs over them.</li> <li>• Consult First Nations<sup>13</sup> to identify and avoid archaeological sites in any relocation.</li> <li>• Historical trails are to remain free of impact.</li> <li>• Consider physical (type of harvesting) and temporal (seasonal variations in harvesting practices) aspects for management of areas surrounding the feature.</li> </ul>

**Table 7. Terrestrial Motorized/Non Motorized Recreation Access Designations<sup>14</sup>**

Table 7 sets out area-specific direction concerning zoning for terrestrial motorized and non-motorized recreational access. Abbreviations shown in Table 7 are:

- SNM Summer non-motorized,
- SMR Summer motorized restrictions
- WNM Winter non-motorized
- NM Non-motorized (all seasons)
- M Motorized

<b>Area</b>	<b>Name</b>	<b>Designation</b>	<b>Implementation Direction</b>
1	Grease Trail	SNM	
2	Tsitsutl Mountain	SNM	
3	Matzehtzel Mountain	SMR	Summer motorized use is restricted to hard surface trails.
4	Dome Mountain area	SMR	Summer motorized use is restricted to hard surface trails to conserve sensitive wetlands and meadows.
5	Barrett Hat	SNM	The access route to Barrett Hat is designated summer non-motorized.

<sup>13</sup> Refer to Appendix 4 for a discussion on the concept of “place between space”

<sup>14</sup> Access restrictions apply to recreational users.



Area	Name	Designation	Implementation Direction
6	Swan Lake and China Nose	SMR	Summer motorized use is restricted to hard surface trails to conserve the grass land and wetland ecosystems, First Nations historical sites and other sensitive sites.
7	Crow Bar Ski area	NM	
8	Morice Mountain-Silverthorne Lake	NM	Summer motorized access is allowed on the “mainline trail” from Buck Flats road to Swaryk’s landing from May 15 to November 15. Motorized use on the cross-country ski trails is allowed for maintenance.
9	Telkwa Mountains Area	SNM	This area is generally designated summer non-motorized. Sub unit areas within have higher levels of access restrictions. (Refer to 9B, 9C and 9D)
9B	Telkwa Mountains Area	NM	Some winter motorized recreation access opportunities are available through the Smithers and Houston snowmobile clubs. Refer to the “Letter of Understanding, March 2003” as agreed to by the Voluntary Access Management Group which details the conditions of recreational use.
9C (Grizzly Plateau area)	Telkwa Mountains Area	SNM	No summer motorized access is allowed past the “Gas Stop” (May 1–September 15).
9D (Core recovery area)	Telkwa Mountains Area	NM	Non-motorized access is acceptable between July 15 and September 15.
10	Owen Lookout	NM	Motorized access restrictions apply to the Owen Lookout trail.
11	Burnie North	NM	
12	Burnie South-Morice Range	SNM	
13	Atna River	NM	
14	Nanika-Kidprice	SNM	Refer to Table 8 for vessel restrictions on lakes.
15	Sibola	M	
16	Tahtsa	M	
17	Whitesail South	SNM	
18	Little Whitesail	WNM	
19	Nadina Mountain	NM	
20	Kasalka	SNM	Summer non-motorized above 1000m elevation.

**Table 8. Non-Motorized Lakes in the Morice LRMP**

The lakes shown in Table 8 have been designated for use by non-motorized watercraft. This designation only restricts the use of fuel-powered boats.

Lake Name
Anzac
Bittern
Burnie (North)
Burnie (South)
Silverthorne (a.k.a. Erickson)
Helen
Johnson (a.k.a. Vallee)
Kidprice
Klinger (a.k.a. Fulljames)
Lamprey
Seel
Shea
Stepp
Twinkle–Horseshoe lake chain

### 3.3 Economic Values

#### 3.3.1 Tourism

Tourism is an important resource industry in the Morice plan area. Most of the existing tourism businesses — which are for the most part locally owned and operated — offer nature-based experiences, often integrated with hunting and fishing. With appropriate management, the Morice could benefit economically from a growing provincial and global tourism industry.

A diverse range of tourism experiences are currently offered in the plan area. These include water-based activities such as boating and fishing and land-based activities such as hiking, climbing, cross-country skiing, backcountry skiing and snowmobiling. Larger operations, such as heli-skiing, are currently proposed for the area. There is also the potential to develop guided snowmobiling.

The Morice plan area provides a high quality land and resource base for tourism activities year round. The functional integrity of tourism features, facilities and trails is an essential component of managing land and resources. Features that make the area attractive for tourism include high value wilderness areas, abundant fish and wildlife, suitable locations for water and mountain-based activities, variable terrain and ecology, rich First Nations culture and history, an existing tourism infrastructure and the ability to access a variety of land types and features. Existing uses such as trapping, guide outfitting, fish guiding, and country food harvest are also part of the attraction of the area.

Tourism activities occur across the land base, yet many are linked to specific lakes, rivers, and alpine locations. Trails as well as paved and unpaved roads provide access to high quality natural and cultural

features. While Babine Lake currently supports significant tourism activity, other geographic regions, such as the Kidprice lake chain and Morice Lake, are becoming increasingly popular destinations for adventure experiences. Studies have indicated that the plan area could support a variety of air, water and land-based tourism opportunities. Overall, viability of the tourism industry in the Morice plan area depends on a secure landbase with careful consideration for ecological sustainability, visual quality and access management.

**Issues:**

- ◆ Lack of recognition of tourism’s resource needs in resource management planning.
- ◆ Lack of a secure land base to support tourism operations.
- ◆ Need to integrate other resource development activities with tourism.
- ◆ Need for appropriate access to maintain tourism values and opportunities.
- ◆ Lack of capital for tourism development.

**Goals:**

- ◆ A diverse and thriving tourism industry with a high level of local ownership.
- ◆ Proactive access management that respects the needs of all users and allocates opportunities fairly.
- ◆ A variety of high quality tourism attributes, including features and facilities as well as areas that have high ecological value for existing and potential activities.
- ◆ Opportunities for a range of sustainable tourism activities, with consideration for sensitive habitats, cultural sites and natural features.
- ◆ Tourism use areas managed to maintain the quality of tourism experience and minimize conflicts with other resource users.
- ◆ A secure land base for tourism operators, incorporating visual and access management considerations.
- ◆ Maximum economic benefits from tourism throughout the plan area.
- ◆ Positive relationships with First Nations in the development of the tourism resource, including observation of sensitive sites.

Areas used for public recreation are often also used for commercial recreation and the interests of public and commercial recreational users are very similar. To avoid duplication in the LRMP management direction, a single set of combined recreation / tourism guidelines has been prepared (Guidelines for the Management of Recreation / Tourism Features, Facilities and Trails), which is located in Table 6 in the Recreation section (3.2.6). A combined map of recreation and tourism features, facilities and trails (Map 6) has also been prepared that applies to both the Recreation and Tourism sections of the plan.

Tourism Objectives	Measures/Indicators	Targets
1. <i>Maintain or improve the integrity and functionality of features as per the guidelines in Table 6.</i>	1.1 Loss of integrity and functionality of features within the 200 metre management zone. 1.2 Percent of consultations occurring within 500 metres of tourism features (see Map 6).	No loss  100

Tourism Objectives	Measures/Indicators	Targets
<p>2. <i>Maintain or improve the integrity and functionality of tourism facilities as per guidelines in Table 6.</i></p>	<p>2.1 Loss of integrity and/or functionality of facilities within the 1000 metre management zone for tourism lodges and the 500 metre management zone for cabins associated with tourism operations.</p> <p>2.2 Percent of accommodations (to achieve a mutually satisfactory outcome) occurring at 1000 metres surrounding facilities.</p> <p>2.3 Development of BMPs</p>	<p>No loss</p> <p>100</p>
<p>3. <i>Maintain the integrity and functionality of trails as per the guidelines in Table 6.</i></p>	<p>3.1 Loss of integrity and functionality of trails within the 200 metre (each side of trail) management zone.</p> <p>3.2 Percent of consultations occurring within 500 metres to either side of trails (see Map 6).</p>	<p>No loss</p> <p>100</p>
<p><b>Implementation Direction for Objectives 1 - 3</b></p>		
<ul style="list-style-type: none"> <li>• Notification and consultation of tourism operators is to occur prior to industrial development adjacent to features, facilities and trails identified on Map 6: Recreation / Tourism Features, Facilities and Trails.</li> <li>• Development proponents to prepare BMPs for operations within the vicinity of recreation and tourism features and facilities, as described in the Guidelines for the Management of Recreational Features, Facilities and Trails (Table 6 in Section 3.2.6 Recreation). Considerations to include in BMPs are: <ul style="list-style-type: none"> <li>- Protocols between tourism operators and development proponents related to communications and the maintenance of the functional integrity of each operator's interests;</li> <li>- Integrated pest management strategies (Section 3.3.7, Timber);</li> <li>- Visual quality (Section 3.2.5);</li> <li>- Environmental considerations (refer to Sections 3.4.1, Biodiversity, 3.4.2, Fish, Fish Habitat and Aquatic Ecosystems, and 3.4.4, Wildlife and Wildlife Habitat);</li> <li>- Cultural heritage values (Section 3.2.2); and</li> <li>- A broad range of tourism interests is to be represented in development of BMPs.</li> </ul> </li> <li>• Other considerations for operations within the vicinity of the recreation and tourism features and facilities listed in Table 6 in Section 3.2.6: <ul style="list-style-type: none"> <li>- The maintenance of the visual experience does not preclude alterations as long as these are compatible with established visual quality objectives;</li> <li>- Trail relocation is an option that may be used in specific locations;</li> <li>- Trails impacted from industrial use are to be restored to their original condition;</li> <li>- The owner of any affected tourism facility must be notified by the industrial operator proposing development and consulted on the method(s) and extent of management in the vicinity of the facility; and</li> <li>- Physical and temporal management techniques are to be used to mitigate impacts on facilities and features.</li> </ul> </li> <li>• The inventory of known recreation / tourism features, facilities and trails, as represented on Map 6, will be updated annually in consultation with tourism operators, recreation groups and the LRMP Monitoring Committee.</li> <li>• Priority will be given to First Nations, local public, facility operators, recreational/tourism and ecological integrity interests to ensure the integrity and functionality of feature.</li> </ul>		

Tourism Objectives	Measures/Indicators	Targets
<ul style="list-style-type: none"> <li>• Priority will be given to the facility operator’s concerns to ensure the integrity and functionality of their facility(s).</li> <li>• Tourism visuals to be managed in accordance with the Visual Resource GMD (Section 3.2.5).<sup>15</sup></li> <li>• The integrity and functionality of tourism facilities will have priority when management decisions are being made.</li> <li>• Development activities that compromise the functional integrity of a tourism facility will not occur.</li> <li>• Consultation, directed at reaching accommodation, is triggered at 1000 metres surrounding lodges, and 500 metres surrounding cabins associated with tourism operations, as identified on Map 6: Recreation / Tourism Features, Facilities and Trails (see Table 6, Recreation (Section 3.2.6).</li> </ul>		
<p>4. <i>Encourage growth in the tourism industry.</i></p>	<p>4.1 Number of front country commercial recreation tenures.</p> <p>4.2 Number of back country commercial recreation tenures.</p>	<p>Increase</p> <p>Increase</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Plan tourism activities to avoid conflicts between various commercial users and between commercial users and the public, including assessment of carrying capacity.</li> <li>• Plan tourism activities to avoid conflicts between commercial users and First Nations.</li> <li>• Where there is apparent conflict, a Morice tourism committee may be formed to provide a forum where conflicts will be discussed in an effort to reach solutions.</li> <li>• Encourage tourism ventures, including joint ventures, with First Nations.</li> </ul>	

### 3.3.2 Access

Access refers to the means by which people and materials are transported throughout the plan area, and includes roads, trails, waterways, air, and utility corridors. Access routes provide a means for the exchange of goods and services between communities as well as opportunities for resource exploration, management and extraction. Access routes also enable tourist operators, guide outfitters and trappers to reach their areas of operation. They provide plan area residents with opportunities for recreation and for country food harvest of resources such as fish, game, and botanical forest products. First Nations rely on access routes, including historic trails, for cultural and sustenance activities.

Highway 16, generally running east-west, provides a vital link to and from the plan area. In addition to Highway 16, the Granisle Highway and Buck Flats road are the main routes connecting communities within the plan area. Resource roads currently provide broad access to the majority of the area, with the exception of the mountainous areas in the south and west which can only be accessed by air or water. Numerous lakes and rivers provide ample opportunity for water-based access, including float planes.

<sup>15</sup> Tourism facilities to be considered as key viewpoints in the establishment of VQOs.

**Issues:**

- ◆ Conflict over access between resource users, including First Nations.
- ◆ Spatial and temporal impacts of access on the environment, particularly on sensitive fish and wildlife populations.
- ◆ Lack of consultation and coordination with respect to access management.

**Goals:**

- ◆ Access management that is integrated among all interests (First Nations, resource users and local residents).
- ◆ Access development and maintenance that is respectful of the economic and social needs of the community and First Nations.
- ◆ Access management that minimizes the risk to environmental values and fish and wildlife populations.
- ◆ Meaningful consultation with affected users prior to access development, restriction, and deactivation.

Access Objectives	Measures/Indicators	Targets
1. Minimize and, where necessary, mitigate both immediate and cumulative access-related impacts to environmental values, as described in Table 9.	1.1 Incidence of impacts or lack of mitigation where impacts occur.	Zero
2. Encourage access development to support social and economic values and address associated issues, as described in Table 10.	2.1 Number of incidents where social and economic values are not sufficiently addressed.	Zero
<b>Implementation Direction of Objectives 1 and 2</b>		
<ul style="list-style-type: none"> <li>• Tools for access development, maintenance and deactivation activities are provided in and .</li> <li>• Develop an accessible database for access issues and locations (where issues are geographically explicit).</li> <li>• Develop a strategic access management plan for the plan area.</li> <li>• Complete spatial access management plans, with public involvement, for areas of significant concern in order to determine:               <ul style="list-style-type: none"> <li>- Designated access routes;</li> <li>- Specific spatial and temporal access restrictions;</li> <li>- Access to present and future Crown land lot development (e.g. lakeshore, residential, recreation); and</li> <li>- Deactivation schedule and/or plan.</li> </ul> </li> </ul>		

**Table 9. Environmental Values and Issues Associated with Access**

<b>Value</b>	<b>Issue</b>	<b>Tools<sup>16</sup></b>
<b>Wildlife</b>	Wildlife mortality and disturbance, particularly grizzly bear.	<ul style="list-style-type: none"> <li>• Road closures (seasonal or long term)</li> <li>• Motorized access restrictions</li> <li>• Core security areas</li> <li>• Public education and outreach</li> <li>• Road location considerations</li> </ul>
	Poaching of big game species	<ul style="list-style-type: none"> <li>• Avoidance and/or management of circle routes<sup>17</sup></li> <li>• Road closures (seasonal or long term)</li> <li>• Public education and outreach</li> </ul>
	Impacts to important wildlife habitats	<ul style="list-style-type: none"> <li>• Road closures (seasonal or long term)</li> <li>• Motorized access restrictions</li> <li>• Public education and outreach</li> <li>• Road location and design considerations</li> </ul>
<b>Fish &amp; Water</b>	Poaching and over fishing of sensitive fish populations, particularly bull trout	<ul style="list-style-type: none"> <li>• Road closures (seasonal or long term)</li> <li>• Motorized access restrictions</li> <li>• Public education and outreach</li> <li>• Road location considerations</li> </ul>
	Impacts to fish and aquatic riparian habitat	<ul style="list-style-type: none"> <li>• Deactivation</li> <li>• Road closures (seasonal or long term)</li> <li>• Motorized access restrictions</li> <li>• Road location and design considerations</li> <li>• Public education and outreach</li> </ul>
	Potential spawning habitat impacts from jet boats	<ul style="list-style-type: none"> <li>• Public education and outreach</li> <li>• Motorized access restrictions</li> </ul>
	Water quality and hydrology	<ul style="list-style-type: none"> <li>• Deactivation</li> <li>• Road density restrictions</li> <li>• Road closures (seasonal or long term)</li> <li>• Road location and design considerations</li> </ul>
<b>Environmentally Sensitive Areas</b>	Maintenance of terrain stability	<ul style="list-style-type: none"> <li>• Road location and design considerations</li> <li>• Deactivation</li> </ul>

<sup>16</sup> Access management activities will retain, over time, all existing and future access routes & methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holders access to trap line areas and guide territories.

<sup>17</sup> Circle routes are road networks that connect landscapes in such a way that there are two or more points of access/exit to a main transportation corridor. It is recognized that these transportation routes at the TSA and regional scale are important economic necessities.

Value	Issue	Tools <sup>16</sup>
<b>Biodiversity</b>	Impacts to the ecological and functional integrity of: <ul style="list-style-type: none"> <li>Regionally significant ecosystems</li> <li>Culturally significant ecosystems</li> <li>Sensitive Ecosystems</li> <li>Red and blue-listed ecosystems</li> <li>Terrestrial riparian ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>Use of designated trails</li> <li>Seasonal (e.g. winter only) motorized access restrictions</li> <li>Road closures (seasonal or long term)</li> <li>Road location and design considerations</li> <li>Public education and outreach</li> </ul>

**Table 10. Social and Economic Values and Issues to be Addressed by Access**

Value	Issue	Tools <sup>18</sup>
<b>Industrial Operations</b>	Opportunities for access to resource values	<ul style="list-style-type: none"> <li>Effective consultation between the proponent of the proposed access and other resource users.</li> <li>Construction of roads and trails</li> </ul>
	Maintenance of access for post-extraction activities	<ul style="list-style-type: none"> <li>Effective consultation with other resource users</li> <li>Motorized access restrictions</li> </ul>
	Minimized financial and civil liability	<ul style="list-style-type: none"> <li>Deactivation</li> <li>Road design considerations</li> <li>Road closures (seasonal or long term)</li> </ul>
<b>Range &amp; Agriculture</b>	Rustling of livestock	<ul style="list-style-type: none"> <li>Avoidance and/or management of circle routes<sup>19</sup></li> </ul>
	Maintenance of a range of access options	<ul style="list-style-type: none"> <li>Effective consultation with range users</li> </ul>
	Degradation of range improvements (i.e. fencing, seeded range)	<ul style="list-style-type: none"> <li>Seasonal restrictions</li> <li>Signage</li> <li>Public education and outreach</li> </ul>
<b>Country Food, Traditional and Sustenance Harvest</b>	Maintenance of a range of access options	<ul style="list-style-type: none"> <li>Consultation with First Nations and local residents</li> </ul>

<sup>18</sup> Access management activities will retain, over time, all existing and future access routes and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holders access to trap line areas and guide territories.

<sup>19</sup> Circle routes are road networks that connect landscapes in such a way that there are two or more points of access/exit to a main transportation corridor. It is recognized that these transportation routes at the TSA and regional scale are important economic necessities.



<b>Value</b>	<b>Issue</b>	<b>Tools<sup>18</sup></b>
<b>Trapping and Guide Outfitting</b>	Maintenance of a range of access to tenured areas and house territories	<ul style="list-style-type: none"> <li>• Effective consultation with First Nations and trapline holders and guide outfitters</li> </ul>
	Opportunities for a range of future access into tenured areas and house territories	<ul style="list-style-type: none"> <li>• Effective consultation with First Nations and trapline holders and guide outfitters</li> <li>• Construction of roads and trails</li> </ul>
<b>Tourism</b>	Maintenance of access to high value recreation and tourism features and facilities	<ul style="list-style-type: none"> <li>• Effective consultation with tourism operators</li> </ul>
	Enhancement of tourism opportunities	<ul style="list-style-type: none"> <li>• Construction of roads &amp; trails</li> <li>• Access upgrades</li> </ul>
	Adverse impacts to the functional integrity of tourism features, facilities and trails	<ul style="list-style-type: none"> <li>• Effective consultation with tourism operators</li> <li>• Motorized access restrictions</li> <li>• Road location and design considerations</li> </ul>
	Maintenance of the quality of experience	<ul style="list-style-type: none"> <li>• Road density limits</li> <li>• Road closures (seasonal or long term)</li> <li>• Motorized access restrictions</li> </ul>
<b>Recreation</b>	Maintenance and enhancement of access to high value areas	<ul style="list-style-type: none"> <li>• Effective consultation with recreational users</li> <li>• Construction of roads &amp; trails</li> <li>• Access upgrades</li> <li>• Fencing considerations (drift fences, gates)</li> </ul>
	Maintenance and enhancement of motorized recreation opportunities and quality of experience	<ul style="list-style-type: none"> <li>• Motorized access restrictions</li> <li>• Effective consultation with recreational users</li> <li>• Provision of motorized access</li> <li>• Carrying capacity management</li> <li>• Mapping</li> </ul>
	Maintenance and enhancement of non-motorized recreation opportunities and quality of experience	<ul style="list-style-type: none"> <li>• Effective consultation with recreational users</li> <li>• Motorized access restrictions</li> <li>• Carrying capacity management</li> <li>• Road density limits</li> <li>• Signage informing users of road status</li> </ul>

Value	Issue	Tools <sup>18</sup>
	Adverse impacts to the functional integrity of recreation features, facilities and trails	<ul style="list-style-type: none"> <li>• Effective consultation with recreational users</li> <li>• Motorized access restrictions</li> <li>• Road location and design considerations</li> </ul>
<b>Settlement</b>	Maintenance of a range of access types within settlement areas	<ul style="list-style-type: none"> <li>• Effective consultation with local governments and residents</li> </ul>
	Opportunities for a range of future access types within settlement areas	<ul style="list-style-type: none"> <li>• Effective consultation with local governments and residents</li> <li>• Construction of roads and trails</li> </ul>

**3.3.3 Agriculture and Range**

Agricultural activities in the plan area include food production of beef, lamb, pork, dairy and eggs, and crop production of hay, haylage, grain, vegetables, small fruits, and bedding plants. The expanding sectors of agro-forestry and agro-tourism include silvopasture, sleigh rides, farm tours, cattle drives and horseback rides. Forage and beef production are the primary agricultural activities taking advantage of the areas’ suitable climate and soil resources. The area has good potential for naturally raised and/or organic beef, given the abundance of natural ecosystems suitable for range. Continued strong growth is projected for this sector.

Crop production requires arable land. Arable lands within the plan area are predominantly Canada Land Inventory Classes 3 to 5. The Agricultural Land Reserve (ALR) within the plan area does not capture all arable land; considerable arable land exists outside the ALR, and some land within the ALR is not arable. The supply of arable land is static — non-arable land cannot be made into arable land.

Range includes those agriculture activities associated with grazing domestic livestock on Crown land. The beef industry is the key user of Crown range in the plan area. Range is a critical component of the viability of a beef ranch. The most productive range sites tend to occur at lower elevations in deciduous and mixed wood forest types, meadows and grasslands. Forested areas, including new cutblock and seeded roadsides, are also used. The demand for Crown range has increased over past years and is projected to continue increasing.

Use and development of the Crown range resources for individual range tenure holders are managed by the Ministry of Forests and Range. Range tenures are tied to ranch properties because base properties must be capable of producing enough hay/feed for the non-range use period to support the number of animals authorized to graze under range tenure. This concept is known as “commensurability” and it is important to ensure that local ranges are managed by local people. Forms of grazing tenures vary from twenty-one year grazing leases to ten year grazing licenses and shorter terms for grazing permits. Existing grazing leases are renewable but no new grazing leases are being issued. A small number of haycutting areas exist and are managed by the Ministry of Forests and Range as ten year licences. Water quality and quantity are vital to all successful agriculture operations. Most agriculture operations hold water licenses for domestic purposes, including household and livestock use. Water licenses for irrigation use are essential for crop establishment and production during dry periods.

**Issues:**

- ◆ Loss of grasslands due to forest encroachment.
- ◆ Availability of Crown land for agricultural expansion.
- ◆ Availability of Crown range for livestock grazing.

**Goals:**

- ◆ A sustainable and expanding agriculture industry with access to water, land and range resources.
- ◆ Integration of timber and range management planning to optimize values.

<b>Agriculture and Range Objectives</b>	<b>Measures/Indicators</b>	<b>Targets</b>
<p><i>1. Maintain or expand agriculture activities on arable land within the agricultural expansion area shown on Map 8 (Agriculture Expansion Areas).</i></p>	<p>1.1 Area of arable land available for agricultural activities by agriculture unit, as shown on Map 8 (Agriculture Expansion Areas).</p> <p>1.2 Area of arable land under agriculture lease by agriculture unit.</p> <p>1.3 Total area of arable land alienated for agriculture purposes over time.</p> <p>1.4 Amount of non-arable land in the ALR.</p> <p>1.5 Arable area within the agriculture expansion area converted to uses not compatible with agriculture, with the exception of major projects.</p>	<p>Fulton Lake: 2,500 ha            Bulkley: 10,000 ha            Parrott: 6,000 ha            Poplar Lake: 1,500 ha            Ootsa Lake: 500 ha</p> <p>Maximum area by unit at any one point in time:            Fulton Lake: 250 ha            Bulkley: 600 ha            Parrott: 400 ha            Poplar Lake: 200 ha            Ootsa: 200 ha</p> <p>Increase over time to target maximum set in 1.1 above</p> <p>Aim for zero</p> <p>Zero</p>

Agriculture and Range Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• As part of plan implementation, parcels of land for agriculture expansion should be further delineated to capture high value arable land while minimizing inclusion of areas of high value for other resources. Other resources of particular concern include First Nation cultural resources, wildlife habitat, fish habitat, water quality and quantity and rare and endangered ecosystems. Arable land outside the timber harvesting landbase (THLB) should be the highest priority for agriculture expansion.</li> <li>• Do not alienate arable land within the THLB for agriculture unless agricultural use is demonstrated to be the most appropriate commercial use of the land. Where silviculture investments have been made on arable land, conversion to agriculture should be deferred until the timber is harvested.</li> <li>• The recommended size for lease parcels is less than or equal to 64 ha per lease, with allocation of only one lease per holder at any one time.</li> <li>• Agriculture lease holders are encouraged to employ environmentally sound best management practices.</li> <li>• The following area-specific direction will apply to agricultural expansion: <ul style="list-style-type: none"> <li>- Fulton Lake sub-area: set back from the lake to minimize impacts to water quality and develop first near the west end of the sub-area. Note that the Nedo'at Hereditary Chiefs raised cattle here historically and have a continuing interest in agriculture.</li> <li>- Bulkley and Parrot sub-areas: develop deciduous leading areas first, with the exception of riparian floodplain cottonwood sites.</li> <li>- Poplar sub-area: develop on existing grazing lease areas first.</li> <li>- Ootsa Lake sub-area: set back from the lake to minimize impacts to water quality.</li> </ul> </li> <li>• As agriculture leases are converted to fee simple they will be added to the ALR.</li> <li>• Where soil/site surveys indicate parcels of land are not arable they may be removed from the ALR and placed in the THLB.</li> <li>• Where applicable, encourage industry diversification/ integration opportunities that do not preclude future agricultural use (e.g. agri-tourism, woodlot program, forestry).</li> <li>• Discourage permanent changes to high value arable land that will preclude future agricultural use (e.g. subdivisions, industrial parks).</li> </ul>	

Agriculture and Range Objectives	Measures/Indicators	Targets
2. <i>Maintain or expand Crown domestic livestock</i> <sup>20</sup> range.	2.1 Forage Productive Area available for range use.	No net loss
	2.2 Percent of approved drift fencing projects constructed with consideration for First Nations, wildlife and recreation activities.	100
3. <i>Manage for long-term range productivity on Crown rangeland.</i>	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Refer to the Wildlife and Wildlife Habitat GMD (Section 3.4.4) for exception areas for specific species (e.g. caribou, grizzly, goat and sheep concerns).</li> <li>• Range expansion should continue to be tied to commensurability of the ranch base property (e.g. forage/feed for over-wintering).</li> <li>• Fence type, access point and location to consider other known resource activities.</li> </ul>	
	3.1 Range carrying capacity <sup>21</sup> measured in potential AUMs (completed every 5 years).	Maintain or increase
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Use best management practices, such as rotational grazing, brushing treatments on grasslands to prevent encroachment, prescribed burning and use of appropriate seed mixes.</li> <li>• Coordinate timber harvesting schedules and grass seeding prescriptions to maintain a continuous supply of forage. Seed cut blocks with appropriate forage mixture as determined through consultation between forest licencees, BC Timber Sales and range users.</li> <li>• Use a mixture of native species where cost effective and consistent with goals for the site.</li> </ul>	

<sup>20</sup> Domestic livestock is as described in the *Range Act* (i.e. horses, cattle and sheep).

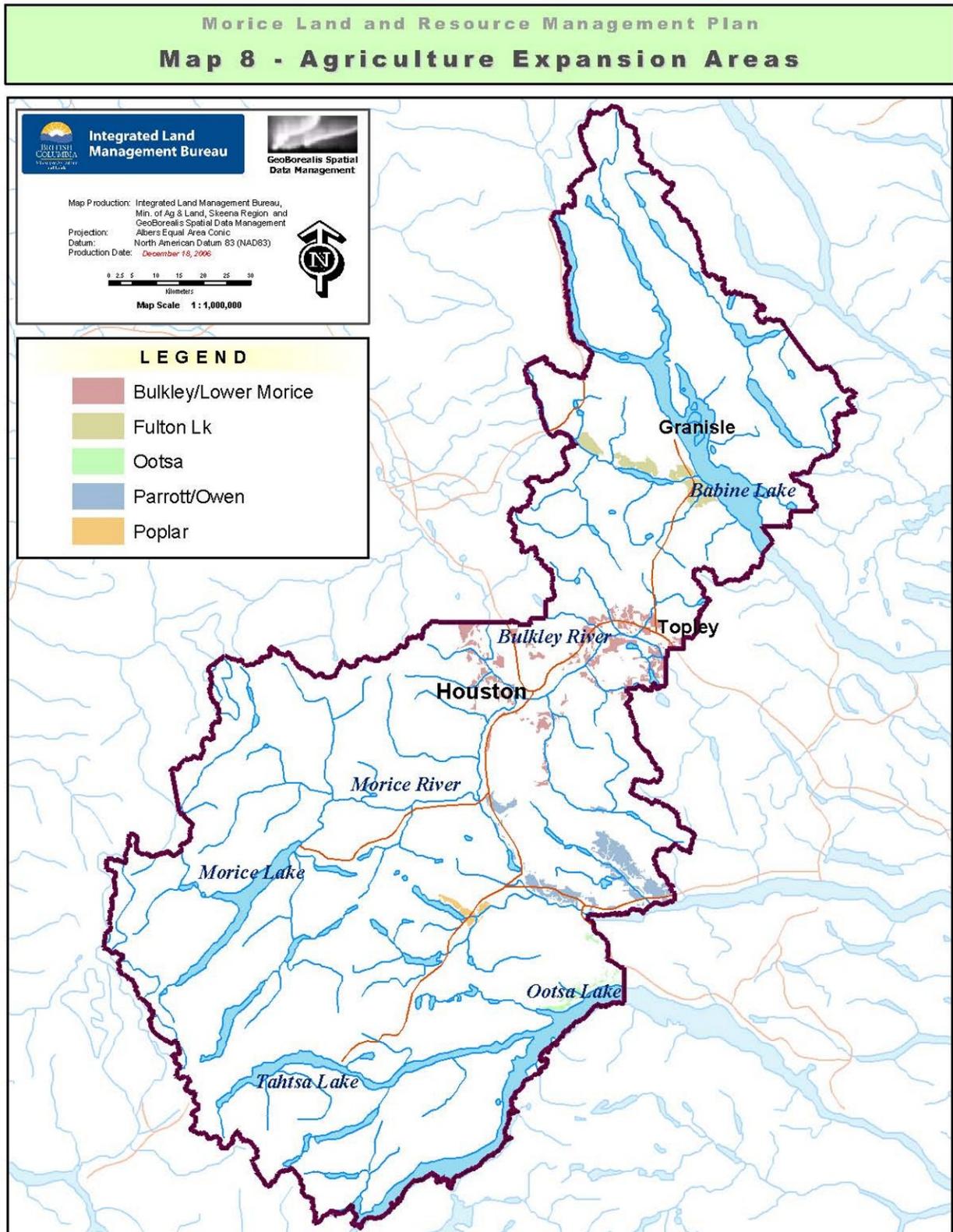
<sup>21</sup> Carrying capacity will reflect changes in range condition, size, and productivity, whether changes are due to management, natural / weather related events, forest harvesting activity or other.

Agriculture and Range Objectives	Measures/Indicators	Targets
<p>4. <i>Maintain access to water resources for domestic livestock on Crown range tenures.</i></p>	<p>4.1 Percent of range tenures with access to water.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Access to water for domestic livestock is to be provided in a manner that minimizes impact to environmental values. Use best management practices, such as completion of site-specific range riparian assessments, timing of water access around sensitive riparian functions, the use of modified grazing systems to improve riparian condition, rehabilitation of damaged riparian systems and implementation of measures to avoid impacts to recreation features.</li> <li>• Ensure site level plans identify measures for the prevention and rehabilitation of damage to water sources.</li> </ul>	
<p>5. <i>Maintain access to water resources for agricultural purposes outside of Crown range tenures, e.g., livestock watering and irrigation purposes.</i></p>	<p>5.1 Percent of water licence applications approved<sup>22</sup> for water storage (reservoirs).</p>	<p>100</p>
	<p>5.2 Percent of water licence applications approved<sup>23</sup> for ground water where water supply is adequate.</p>	<p>100</p>
	<p>5.3 Number of agriculture operations without access to adequate water resources.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Refer to Fish, Fish Habitat and Aquatic Ecosystems (Section 3.4.2), Objective 11 for further direction on water withdrawals.</li> <li>• Ensure streams and rivers provide adequate flows for fish prior to granting additional water licences.</li> <li>• Promote water conservation through education and incentives.</li> <li>• Develop and implement best management practices to ensure efficient use of water.</li> </ul>	

<sup>22</sup> Consistent with Fish, Fish Habitat and Aquatic Ecosystems (Section 3.4.2), Objective No.11.

<sup>23</sup> Consistent with Fish, Fish Habitat and Aquatic Ecosystems (Section 3.4.2), Objective No.11.

Map 8. Agriculture Expansion Areas



### 3.3.4 Botanical Forest Products

Botanical forest products<sup>24</sup> encompass all plant and fungal species that are of cultural, social or economical importance. Plant and fungal species may contain certain ingredients that are of pharmaceutical importance. As our knowledge of these ingredients and their effects on human health grows, some botanical forest products may gain social as well as economic importance in the future. Currently more than 100 plant species occurring in the Morice area are of pharmaceutical value, or have immediate commercial value. Some of these species occur in rare plant communities (see Section 3.4.1, Biodiversity).

Botanical forest products are largely utilized as:

- ◆ pharmaceuticals
- ◆ nutraceuticals (foods and drinks)
- ◆ herbal remedies and prevention therapy
- ◆ beauty and personal care products
- ◆ condiments
- ◆ aromatherapy oils and candles
- ◆ pest control and insect repellents
- ◆ cultural products (e.g. bows, crafts, tools)
- ◆ crafted products (e.g. wreaths, baskets)

Botanical forest products have always played an important role in First Nations culture. The use of plants and mushrooms for food, medicinal and spiritual remedies and construction material for essential artefacts is deeply entrenched in the culture of First Nations people. The availability and density of botanical forest products within each Wet'suwet'en House territory is considered a status symbol. The list of plant species historically utilized by the Wet'suwet'en people exceeds 130 plants. Similarly, Nedo'ats people continue to use botanical forest products.

The Yekooche First Nation consider the ability to continue to collect flora for consumptive and non-consumptive uses an aboriginal interest. Many gathering areas are associated with family stewardship zones and as such, meaningful consultation must occur prior to these areas being impacted. The process of replacing one gathering area with another may have social ramifications. Many cultural products are made out of necessity while engaged in other hunting or gathering activities — the full cultural context of an activity must be taken into account (see Appendix 4).

Local, non-aboriginal, residents also utilize botanical forest products for their personal use and consumption.

#### Issues:

- ◆ Loss of the natural abundance and diversity of botanical forest products through resource development.
- ◆ Contamination of botanical forest products.
- ◆ Impacts on aboriginal culture due to loss of access to botanical forest products.

<sup>24</sup> Further information on botanical forest products, their uses and the habitats they are located in can be found in the Ministry of Forests guide *Botanical Forest Products in British Columbia – An Overview* (January 1995).



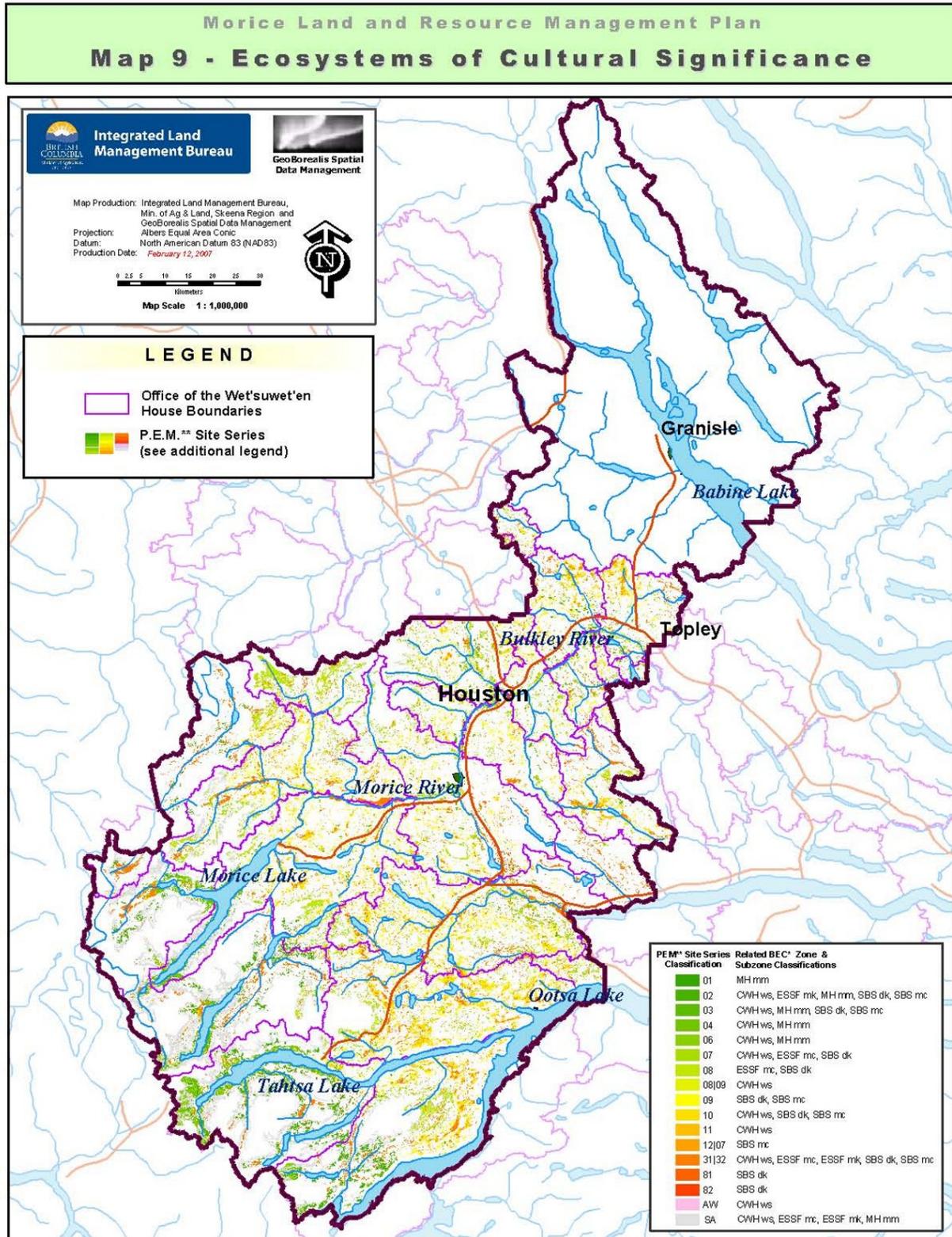
**Goals:**

- ◆ An abundance and diversity of botanical forest product species reflective of the natural range of variability.
- ◆ Natural growing conditions for botanical forest products.
- ◆ Certifiable, healthy botanical forest products.
- ◆ Sustainability of First Nations culture.
- ◆ Enhanced production of botanical forest products (e.g. berries), where ecologically appropriate.

Botanical Forest Products Objectives	Measures/Indicators	Targets
<p>1. <i>Maintain or enhance the distribution and abundance of culturally important botanical species over time.</i></p>	<p>1.1 Area on which the distribution and abundance of culturally important botanical species is consistent with their BEC zone, subzone, site series and natural disturbance regime.</p> <p>1.2 Area on which naturally high abundance and quality of culturally important botanical species are retained or restored (Table 11).</p> <p>1.3 Area on which old growth dependent species of interest are present within their natural range of distribution and abundance.</p>	<p>No net loss</p> <p>No net loss</p> <p>No net loss</p>
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Adhere to natural disturbance regimes targets in the Biodiversity GMD (Section 3.4.1).</li> <li>• Map 9 (Ecosystems of Cultural Significance) is to be used as a reference for the distribution of culturally significant ecosystems that are rare in occurrence across the landscape.</li> <li>• Office of the Wet’suwet’en Territorial Stewardship Plan (TSP) will periodically update culturally significant species associated and their associated ecosystems.</li> <li>• The Yekooche First Nation will provide data to help with implementation of this objective.</li> <li>• Silviculture stand tending techniques include avoidance of species of interest.</li> <li>• Harvest of botanical forest resources is to be from surplus, after wildlife habitat and forage needs are met.</li> <li>• Use traditional and modern methods of environmental management (e.g. prescribed burning for berries).</li> </ul>		
<p>2. <i>Maintain or enhance access to areas with culturally important botanical species.</i></p>	<p>2.1 Percent of areas with naturally high abundance of culturally important botanical species where access is retained or restored within 5 years.</p>	<p>100</p>
<p>3. <i>Minimize impacts to culturally important botanical species and the ecosystems that support them.</i></p>	<p>3.1 Incidence of impact to important botanical species, and ecosystems that support them, beyond natural disturbance regimes (Table 11).</p>	<p>Zero</p>

Botanical Forest Products Objectives	Measures/Indicators	Targets
<i>4. Maintain or enhance the distribution and abundance of organically certifiable botanical species.</i>	4.1 Area with culturally important botanical species capable of being organically certifiable (Table 11).	No net loss
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Develop a process for certifying organically grown botanical species.</li> </ul>	
<i>5. Maintain, conserve or enhance pine mushroom habitat.</i>	5.1 Percent of productive pine mushroom habitat maintained.	100
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Use alternative harvest methods and silviculture systems (other than clearcutting) in these areas.</li> </ul>	

Map 9. Ecosystems of Cultural Significance











### 3.3.5 Guide Outfitting

Guide outfitting in the plan area is primarily based on large game hunting, although many outfitters are expanding their operations to include non-hunting activities, such as fishing, wildlife viewing and photography. Guide outfitting is dependent on the Crown land base, the availability of suitable habitat and wildlife populations of the species of interest, and access onto the land base. Moose hunting is currently the most significant component of the industry in the plan area. Other key species include mountain goat, black and grizzly bear and mule deer.

Guide outfitters are licensed to guide hunters within a tenured guiding area or territory. As of 2006, the entire Crown land base was allocated for guide outfitting. In all cases, guide outfitters make capital investments in developing base camps, satellite camps and trails within their tenured territories. Most guide outfitters offer a variety of hunting experiences to their clients, from larger base camps with full amenities to smaller spike (overnight tent) camps. While the extensive off highway road system provides good access to most of the tenured areas, outfitters still need to be able to offer some clients a more isolated wilderness experience. Some guide outfitters also use non-motorized access methods.

Guiding activities involving hunting are restricted by the allocation of species specific quotas, issued by the Ministry of Environment. It is outside of the mandate of the LRMP to provide direction on the allocation of quotas for hunting and fishing. Ministry of Environment manage fish and wildlife harvests to maintain viable, sustainable populations with conservation as the first priority. After conservation needs have been met, the harvestable surplus is made available to aboriginal hunters and fishers (pursuant to aboriginal rights), BC residents, and non-resident hunters and fishers. Non-residents must be guided to hunt big game species.

#### Issues:

- ◆ Amount and distribution (spatial and temporal) of suitable habitat for key species within each tenured area.
- ◆ Level of access into tenured areas.
- ◆ Level of consultation with other resource users (addressed in Section 3.1, Consultation).

#### Goals:

- ◆ Viable wild game populations that continue to support the economic needs and quality of experience required by the industry.
- ◆ Management of resources that enables expansion opportunities for non-hunting activities, such as fishing and wildlife viewing and photography.
- ◆ Meaningful consultation with other resource users (addressed in Section 3.1, Consultation).



Guide Outfitting Objectives	Measures/Indicators	Targets
1. Maintain sustainable populations of game species.	1.1 Refer to Wildlife and Wildlife Habitat GMD (Section 3.4.4) for indicators associated with wildlife populations and habitats.	
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>Apply timely hunting and/or access restrictions when there is substantiated evidence that game populations are at risk or are declining; this includes verifiable local information and scientific/biological studies.</li> </ul>	
<b>Intent:</b> Recognize the economic and lifestyle contribution of the guiding industry to the plan area by providing guiding opportunities across the plan area.		
2. Maintain guide outfitting opportunities across the plan area.	2.1 Annual change in land base available for guide outfitting activities.	No change
<b>Intent:</b> To maintain both the level and type of physical access to guide territories.		
3. Maintain physical access <sup>26</sup> to guide territories.	Refer to Sections 3.1 (Consultation) and 3.3.2 (Access).	
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>Where practicable, retain all existing access routes and methods of transportation on these routes whether in protected areas, special management areas or general management areas.</li> <li>Changes to access routes (e.g. deactivation, motorized access restrictions, new development) should be carried out in consultation with tenure holders or through a TSA Access Management Plan.</li> </ul>	

### 3.3.6 Minerals and Energy

Mining activity in the Morice plan area has played a key role in the area's development. The plan area has some of the best mineral potential in the province. The highest potential for future development exists with metals including copper, lead, zinc, gold and silver. The potential for high value metallurgical coal also exists in the area. Potential for industrial minerals (e.g. limestone, clay, graphite) is considered fair to low. Aggregate resources (sand, gravel, quarried rock) occur over much of the plan area, however the location, quality and quantity is largely undefined. Presently, aggregate resources within the plan area are predominantly used by the local, forestry and transportation sectors.

Energy resources include oil, gas, coalbed methane, geothermal and hydroelectric potential. Moderate to good oil and gas potential exists in the northern and southeastern sections of the LRMP area. The geothermal potential is unknown within the Morice. Alcan produces hydroelectric power from damming

<sup>26</sup> Retain over time, all existing and future access routes and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holders access to guide territories.

the Whitesail-Eutsuk-Ootsa Lakes system. There is additional electric potential from projects utilizing 'run of river,' wind or biomass.

Mineral resource proponents undertaking exploration and development activities that involve mechanical disturbance of the ground assess impacts and mitigate effects on other resources. Aggregate exploration and development activities on Crown lands are regulated by several Ministries. Tenures are issued under the *Land Act* and bonding is held by the Ministry of Energy, Mines and Petroleum Resources (MEMPR). Aggregate mining operations are also regulated by MEMPR. Oil and gas, coalbed methane and geothermal projects are regulated under the *Petroleum and Natural Gas Act* and associated regulations. Large or environmentally sensitive mineral and energy projects are reviewed under the Environmental Assessment Process.

Access to mineral resources is provided under the *Mineral Tenure Act*, which legislates a two-zone system of land management in BC. The two-zone system ensures that mining and mineral exploration applications are considered, subject to all applicable laws, in all areas except parks, ecological reserves, protected heritage properties or areas where mining has been prohibited by an order under the *Environment and Land Use Act*. The statutory decision maker for mineral exploration and development tenuring and permitting activities must consider LRMP direction as advice to ensure effective integration with other Crown land uses.

The Office of the Wet'suwet'en offer the following set of understandings and perspective that outline the way in which they envision exploration, mining and mine closure to be undertaken on Wet'suwet'en territory:

- ◆ *Engagement with the Office of the Wet'suwet'en at the earliest stage of promoting or soliciting opportunities for natural resource development.*
- ◆ *Engagement processes that:*
  - *recognize Wet'suwet'en rights and title;*
  - *reflect respect, equality and fairness; and*
  - *are driven by a genuine sense of partnership and inclusion.*
- ◆ *Protection of the long-term interests, health and well-being of the Wet'suwet'en, including the possibility that mining activity may not be warranted or justified.*
- ◆ *Promotion of environmentally and economically sustainable resource development in line with Wet'suwet'en Inuk Nu'at'en and Yintahk.*
- ◆ *Mining development designed and operated with efficient use of energy resources and materials with the minimization of waste.*
- ◆ *From project inception through closure, consultation and accommodation efforts are ongoing and continuous.*
- ◆ *Tangible accommodation is made that minimizes the infringement of aboriginal interests and provides real benefits to the Wet'suwet'en.*
- ◆ *Economic benefit agreements are to be negotiated.*

#### **Issues:**

- ◆ Lack of opportunities for exploration and development activity.
- ◆ Inadequate road access to the land base to support exploration and development activities.
- ◆ Lack of emphasis on reclamation as a productive end land use, with care and maintenance through time.
- ◆ Lack of ecological management for the full mine lifecycle.

- ◆ Inadequate economic stewardship of the mineral resource for the full mine lifecycle including post mine closure.
- ◆ Cumulative impacts.

**Goals:**

- ◆ Diverse and prosperous mineral and energy sectors that provide certainty for investors and encourage innovation.
- ◆ Contributions to local and regional economies.
- ◆ An accessible land base for exploration and development.
- ◆ Economic stewardship of the mineral resource for the full mine lifecycle, including post mine closure.
- ◆ Reclamation to a productive end land use, with care and maintenance through time.
- ◆ Develop cumulative impacts toolbox.

Minerals and Energy Objectives	Measures/Indicators	Targets
<i>Intent: Progress in achieving measures and targets needs to be assessed over a number of years to account for market fluctuations inherent to the industry.</i>		
<p>1. Promote mineral, aggregate and energy projects that provide a variety of economic opportunities for their full life cycles.<sup>27</sup></p>	<p>1.1 Number of programs for mineral and aggregate exploration, development, reclamation and closure.</p> <p>1.2 Number of requests for energy tenure bidding.</p> <p>1.3 Number of mineral and aggregate tenures.</p> <p>1.4 Dollars spent on mineral, aggregate and energy exploration.</p> <p>1.5 Percent of local people employed by mineral, aggregate and energy sectors.</p> <p>1.6 Incidence of mine closure activities limiting future economic potential of that site.</p>	<p>Increase</p> <p>Increase</p> <p>No decrease</p> <p>Increase</p> <p>Aim for 80% of employees and contractors being local</p> <p>Zero</p>

<sup>27</sup> Full life cycle = the range of mining activities over time, including exploration, development, operations, transmission decommission, remediation, reclamation and post closure conditions.

Minerals and Energy Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Continue to monitor the number of claims staked or having lapsed plus the number, type and expenditure of exploration and development programs (e.g. information, including reclamation and expenditure, from MEMPR forms such as Notice of Work, Notice of Completion).</li> <li>• Encourage alternate energy production (e.g. wind, biomass, run-of-river).</li> <li>• Encourage local preferential hiring.</li> <li>• Encourage local education, training and skill development.</li> <li>• Respect existing agreements with First Nations.</li> </ul>	
<p><b>Intent:</b> <i>The legal right of access, which is integral to the mineral exploration industry, will be maintained. All access requests will be subject to applicable regulations, permitting conditions and review processes.</i></p>		
<p>2. Maintain the legal right of access for mineral exploration.</p>	<p>2.1 Number of mineral programs that request access.</p> <p>2.2 Extent of access established.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Monitor exploration and development programs requesting access (e.g. information from MEMPR forms — Notice of Work and Notice of Completion).</li> <li>• Consideration is needed for historical exploration and mining activities, including access.</li> </ul>	<p>Increase</p> <p>Increase</p>
<p><b>Intent:</b> <i>Aggregate and energy exploration do not have legal entitlements to access and the sector requires commitment that access opportunities will be made available to them. All access requests will be subject to applicable regulations, permitting conditions and review processes.</i></p>		
<p>3. Allow for access for aggregate and energy exploration and development, outside of protected areas.</p>	<p>3.1 Number of energy and aggregate applications requesting access.</p> <p>3.2 Extent of access established.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Consideration is needed for historical aggregate and energy exploration activities, including access.</li> </ul>	<p>Increase</p> <p>Increase</p>
<p>4. Minimize environmental impacts, over the full lifecycle, of mineral, aggregate and energy projects.</p>	<p>4.1 Incidence of adverse environmental effects beyond permitted limit.</p> <p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Operators are encouraged to assess conditions (baseline data) prior to operation in order to measure impacts.</li> </ul>	<p>Zero</p>

Minerals and Energy Objectives	Measures/Indicators	Targets
<i><b>Intent:</b> Assuring the energy and mineral industry opportunities for development will have a positive impact on investment in development activities. All development will be subject to the regulations and conditions of permitting.</i>		
5. Encourage opportunities to develop mineral and energy resources.	5.1 Dollars expended towards development. 5.2 Number of claims staked. 5.3 Number of projects entering the development phase.	Increase Increase Increase
6. Respect all communities of interest.	6.1 Level of local involvement in new mine developments.  6.2 Amount of community satisfaction with communications	Development of local public advisory committees by mining companies.  Full satisfaction
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Respect for First Nations traditional territories, governments and goals.</li> <li>• Respect for all communities interests and goals within development areas.</li> <li>• The Yekooche First Nation request engagement in the development of reclamation plans for mining and energy developments.</li> </ul>		

### 3.3.7 Timber

The large volume of high quality timber and accessible terrain of the Morice plan area are key factors in the success of the forest industry. Currently much of the forested land base is considered available for timber extraction. Forestry is a major contributor to the local economy. In addition to providing opportunities for local employment and income generation, the timber industry contributes significantly to government revenues at the local, provincial and federal level.

Two major sawmills operate in the plan area, with corresponding forest licences accounting for the majority of the timber harvested on local Crown land. A third major sawmill relies directly upon forest licence volume from the plan area. Other licences for timber harvest in the plan area include the BC Timber Sales program (formerly the Small Business Forest Enterprise Program), woodlot licences and community salvage tenures. In addition to the three major sawmills, there are currently a number of re-manufacturing facilities and small, independent sawmills relying on timber resources. Outside the plan area four pulp mills, a paper mill and a panelboard plant receive by-product chips and sawdust from plan area sawmills.

**Issues:**

- ◆ Economic and operational viability.
- ◆ Reduction in the timber harvesting land base.
- ◆ Access to fibre.
- ◆ Forest health impacts to the timber resource.

**Goals:**

- ◆ Full utilization of productive sites for timber.
- ◆ Stable or increasing harvesting levels.
- ◆ A sustainable and economically viable forest industry.
- ◆ Contributions to the local community, over the short and long-terms.
- ◆ Meaningful consultation with other resource users (to be addressed in Section 3.1, Consultation).

Timber Objectives	Measures/Indicators	Targets
<p><i>1. Maintain or increase timber production and harvesting across the available landbase.</i></p>	1.1 Current harvest levels.	Maintain or increase
	1.2 Mean annual increment.	Maintain or increase
	1.3 Net area of timber available for harvest.	Maintain or increase
	1.4 Percent of productive land base in permanent access structures.	< 6
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Apply adaptive management principles to meet timber objectives.</li> </ul>		
<p><i>2. Maintain the health of the timber resource.</i></p>	2.1 Percent of detected beetle infestations within Suppression Beetle Management Units that remain untreated one year after detection.	< 20
	2.2 Percent of detected beetle infestations within Holding Beetle Management Units that remain untreated one year after detection.	< 50
	2.3 Area of forest by other types of forest health issues (pest and disease).	Decrease from current levels.
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Maintain forest health through integrated pest management.</li> <li>• Use best management practices for beetle management within the context of other resource values.</li> <li>• Consultation is needed regarding harvesting for forest health (see Section 3.1, Consultation).</li> </ul>		

Timber Objectives	Measures/Indicators	Targets
3. Minimize alienation of the available productive forest land base due to development activities.	3.1 Area permanently removed from the gross forest area due to industrial activities.	0 ha
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>It is recognized that some alienation will occur.</li> </ul>	
4. Reduce non-recoverable losses over time.	4.1 Volume of non-recoverable losses.	Improve performance over previous allowable annual cut calculation
	4.2 Development of best management practices for non-recoverable losses.	Ongoing
	4.3 Implementation of best management practices.	100%
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>Consider alternatives for reducing non-recoverable losses (e.g. marketing blue-stained wood).</li> <li>Development of BMPs is an ongoing adaptive process dependant on new technologies and market demand.</li> </ul>	
<i><b>Intent:</b> Individual small forest tenures (e.g. woodlot licences, community forest tenures, First Nations tenures) are sensitive to land use decisions that reduce the harvestable area of the tenure. This objective applies to each individual tenure, not all small tenures combined, as a means to maintain the harvestable landbase for each tenure holder.</i>		
5. Maintain a forest landbase to support small, area-based forest tenures.	5.1 Area of forest land available for harvest within each small, area-based forest tenure.	No net loss

### 3.3.8 Trapping

Trapping is a traditional activity of First Nations and long-standing activity of non-First Nations people. While it is an activity with economic benefits, it also provides items of cultural significance for First Nations ceremonies.

Trapping is dependent on viable furbearer populations and access onto the Crown land base. The viability of furbearer populations is dependent upon the availability of suitable habitat. Key attributes of furbearer habitat include mature and old conifer forest habitat. Trapping season extends from October to May and relies on the use of snowmobiles, ATV's and trucks for access. Trapline holders require an extensive road and trail network that provides good access to trap line areas.

Currently the plan area is fully allocated to registered trap line areas; there are approximately 75 trap line areas either entirely or partially within the plan area. Some First Nations people hold registered trap lines while others trap within their house territories for cultural and traditional purposes.

All non-First Nations trappers holding registered trap lines are required to be certified and follow a code of best management practices that are laid out in the certification course manual and the annual *Trapping Regulations*. First Nations trappers are not required to certify. Best management practices for trapping consider life cycles and biophysical requirements of the furbearing species and include provisions for trap line management when indicators imply that populations are decreasing to below normal levels. Best management practices additionally contain guidelines for handling pelts and preparing them for sale.

**Issues:**

- ◆ Amount and spatial distribution of furbearer habitat (e.g. mature timber) for key species within each registered trap line area.
- ◆ The level of access, including mode, routes and cabins into and within registered trap line areas.
- ◆ The level of consultation with other resource users (addressed in Section 3.1, Consultation).

**Goals:**

- ◆ Viable furbearer populations that support the quality of life and economic needs of the trapping industry.
- ◆ Meaningful consultation with other resource users (addressed in Section 3.1, Consultation).
- ◆ Maintenance or expansion of access to the land base for the purpose of trapping.
- ◆ Maintenance of opportunities for trapping across the land base.

Trapping Objectives	Measures/Indicators	Targets
1. Provide trapping opportunities across the land base.	1.1 Number of registered trap lines	No decrease
	1.2 Area of land suitable for the purpose of trapping.	No decrease
<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Recognize and respect the trapping practice of leaving traps and related equipment (i.e. boxes) on trap lines.</li> <li>• Amalgamation of trap lines is not considered a decrease.</li> </ul>		
<i>Intent: To promote a diversity of furbearer species through wildlife habitat management, thereby providing trapping opportunities. Specific management direction for furbearer habitat can be found in Sections 3.4.1 (Biodiversity) and 3.4.4 (Wildlife and Wildlife Habitat).</i>		
2. Provide trapping opportunities within each registered trap line area.	2.1 Number of active registered trap lines. <sup>28</sup>	No decrease
	2.2 Number of trapping cabins impacted by other land use decisions.	Zero
<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Refer to the Recreation GMD (Section 3.2.6) for management direction related to cabins.</li> </ul>		

<sup>28</sup> Active registered trap line — a trap line is considered active if it is being trapped or if it is being rested for a period and there is a letter on file stating that the area is being rested.



Trapping Objectives	Measures/Indicators	Targets
<p>3. <i>Maintain or enhance access to registered trap lines.</i><sup>29</sup></p>	<p>3.1 Level of access to trap line areas (tenured &amp; untenured) including previously unutilized areas.</p>	<p>Maintain or increase</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Effective consultation is required between forest tenure holders, oil, gas and mining and registered trap line holders and First Nation trappers.</li> <li>• Any decisions to alienate land currently available for trap lines will not be undertaken without consultation.</li> <li>• Registered trappers will be consulted by recreation groups, or any other group, regarding any activities that affect their interests.</li> <li>• Cabins and trails are to be managed accordance with management direction identified in the Recreation GMD (Section 3.2.6).</li> <li>• Where forest harvesting and road development are planned on identified trap line trails, the forest licencees are to re-establish reasonable access to the trail (note that trail access points should be marked).</li> <li>• When identified by trappers, forest licensees are to take reasonable measures to provide safe and functional entry/exit points for snowmobiles and parking of vehicles.</li> </ul>	
<p><b>Intent:</b> <i>To encourage forest licencees and others to work with trappers to minimize impacts to the integrity of trapline trails and avoid conflicts with trapping activities.</i></p>		
<p>4. <i>Manage the impacts of land use activities on the integrity of trap lines and access trails used to maintain trap lines.</i></p>	<p>4.1 Refer to Sections 3.1 (Consultation) and 3.3.2 (Access).</p>	
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Trappers are to be supplied with a forest cover map of tenure area on a seasonal basis — the intent is to enable tenure holders to shift traps to follow habitat.</li> <li>• Holders of registered trap lines to supply trap line location maps to forest licencees for development plan purposes; information provided is confidential.</li> <li>• Avoid accumulation of unplanted small openings (less than 1 ha and &gt;30 m apart). Forest licencees are encouraged to replant and reseed harvested areas where appropriate.</li> </ul>	

<sup>29</sup> Retain over time, all existing and future access routes and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holders access to trap line areas.

## 3.4 Ecosystem Values

### 3.4.1 Biodiversity

Biodiversity is defined as the diversity of plants, animals and other living organisms in all their forms and levels of organization. It includes the diversity of genes, species and ecosystems at a range of geographic and temporal scales, and the evolutionary and functional processes that link them. Biodiversity is generally synonymous with an intact ecology of whatever system is under consideration. Management for biodiversity includes consideration for representation (including both abundance and distribution) of native species and functioning ecosystems. Management for biodiversity in harvested forests must include provisions to protect structure provided by elements such as downed trees, standing dead trees and old, standing live trees. This will be especially important in larger openings intended to approximate large fires in drier biogeoclimatic variants.

Key features of biodiversity in the plan area include extensive sub-boreal coniferous and mixed deciduous forests with frequent stand initiating events such as fire and insects, high elevation and coastal type ecosystems characterized by small and rare stand initiating events, extensive wetland complexes, large active floodplains dominated by black cottonwood and high elevation alpine meadows. The variety of species and ecosystems results from the diversity of landscape and climatic influences within the plan area. The topography ranges from coastal mountains in the southwest to gently rolling interior plateau in the east. Similarly the climate varies from a warmer maritime climate in the southwest to a cold continental climate in the east.

Biodiversity is frequently reduced to a description of its component pieces in order to assess species composition and structural elements, at a range of scales, as surrogates for functional processes. Recent research and current government policy direction recommend managing forest structure and composition for biodiversity conservation at two levels: coarse filter and fine filter. Coarse filter management is intended to provide for a range of structural habitat elements across landscapes; the assumption is that a broad range of species will respond to managed landscapes that approximate natural landscapes in composition and structure. Fine filter management is directed at specific ecosystems or species assumed at risk or of sufficient significance that reliance on the coarse filter is considered inadequate to meet the conservation concerns of the species or ecosystem. However, coarse and fine filter management must be placed in a functional context: a biodiversity conservation strategy needs to maintain a focus on the processes that guide the management of component pieces (species and structure; fine and coarse filter respectively). Recognizing that forest harvesting is the most significant influence on biodiversity conservation, a practical approach is to employ an ecosystem management strategy that integrates forest ecosystem dynamics into land use planning. A forest ecosystem management strategy is included as Appendix 5.

Management direction for fine filter biodiversity, as it pertains to specific ecosystems of interest, is addressed here. Direction for fine filter management of vertebrate species is found in the Wildlife and Wildlife Habitat GMD (Section 3.4.4).

Criteria necessary to manage biodiversity, such as old growth, structural attributes, patch characteristics, and range of natural variation as described in this section require periodic review, and may require change to incorporate new information or understanding.

**Issues:**

- ◆ Changes to the natural landscape patterns, including connectivity and distribution of seral stages and patch sizes from development.
- ◆ The amount of mature old forest ecosystems throughout the landscape.
- ◆ Change in functional forest structure at the stand level, such as large live trees, coarse woody debris and standing dead trees from development.
- ◆ Change in the natural diversity of ecosystems and abundance of species from development, particularly those identified as being sensitive, rare or endangered.
- ◆ Decrease in ecological integrity, particularly for ecosystems of importance to wildlife, such as riparian areas and floodplains, natural grasslands and mature shrub communities.

**Goals:**

- ◆ Ecosystem function and processes, including the range of ecosystem types, reflective of the historic natural disturbance regime at the landscape and stand scale over time.

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
<p><i>1. Maintain a distribution of representative seral stages across the plan area that is reflective of the range of natural variation.</i></p>	<p>1.1 Delineation of high biodiversity emphasis areas (HBEA).<sup>30</sup></p>	<p>By 2008</p>	<p>Distribute HBEA throughout plan area, independent of landscape unit (LU) boundaries. BEC variant and LU will be considered as units of measure for assessing distribution of HBEA.</p> <p>Identification of HBEA will maintain representation of ecosystems at a range of scales.</p>
	<p>1.2 Proportion of plan area managed for high biodiversity emphasis.</p>	<p>10–20%</p>	<p>10% is the proportion of the plan area included in high biodiversity emphasis areas as directed by the <i>Biodiversity Guidebook</i>; 20% is twice this figure, and is intended to permit achievement of a greater degree of biodiversity emphasis.</p> <p>Locations managed as HBEA may change with time as knowledge base improves.</p>

<sup>30</sup> High Biodiversity Emphasis Area (HBEA) — a spatially explicit portion of the forested landscape managed for high biodiversity values, particularly structural integrity. HBEAs are distributed throughout the plan area and are related to, but not limited by, landscape unit boundaries.

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
	1.3 Percent of total forested area in each HBEA in old seral forest condition.	Within the Range of Natural Variation (RNV), <sup>31</sup> percent of old minimum by BEC variant as identified in Table 12.	Old seral targets in HBEA will be set according to the range of natural variation (RNV) — see principles for applying ecosystem management direction (Appendix 5).
	1.4 The proportion of old seral forest target within each HBEA contained in delineated old growth areas (OGAs).	50% of the old seral target in each HBEA will be spatially located in OGAs.	OGAs will be delineated by 2008 to achieve old seral targets, in combination with existing reserves and management. OGAs will meet the following criteria: <ul style="list-style-type: none"> <li>• Representative of ecosystem diversity at the scale of measure;</li> <li>• Maintain structural and functional forested connections between OGAs;</li> <li>• In an unmanaged or natural condition;</li> <li>• Represent a range of sizes; and</li> <li>• Spatial distribution is representative across the HBEA.</li> </ul>
	1.5 Percent of total forested area in each HBEA in mature and old seral forest condition.	Within the RNV percent of mature and old minimum by BEC variant as identified in Table 12.	

<sup>31</sup> Range of Natural Variation/Variability (RNV) — The range of dynamic change in natural systems in the last 2000 years prior to the influence of European settlers (see Glossary).

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
	1.6 Percent of total forested area in each HBEA in early seral forest condition.	Within the RNV percent of early maximum by BEC variant as identified in Table 12.	
	1.7 Percent of the general forested area (GFA) <sup>32</sup> outside of HBEA in old seral forest condition.	Consistent with thresholds identified in Table 13.	Target will be measured by BEC variant and monitored by BEC variant and LU. If future monitoring suggests that seral representation within individual LUs constitutes a risk to biodiversity, consideration should be given to application of targets to LUs or groups of comparable LUs.
	1.8 Proportion of old seral forest target within the GFA contained in delineated Old Growth Areas.	50% of the old seral target in the GFA will be spatially located in OGAs.	Refer to management direction for Measure 1.4 above, with the following exception: <ul style="list-style-type: none"> <li>• Spatial distribution of OGAs is representative across the GFA, rather than the HBEA.</li> </ul>
	1.9 Percent of GFA outside of HBEA in mature and old seral forest condition.	Consistent with thresholds identified in Table 13.	
	1.10 Percent of GFA outside of HBEA in early seral forest condition.	Consistent with thresholds identified in Table 13.	
2. <i>Achieve structurally complex forested ecosystems, through all successional stages, distributed across the plan area.</i>	2.1 Proportion of plan area in small patches (<40 ha) by BEC variant.	Within acceptable range as per Table 14.	Reported by BEC variant and landscape unit.  Large patches can be created through the aggregation of several smaller cutblocks over time.  Manage aggregation of cutblocks to achieve a range of age complexities within early seral patches.

<sup>32</sup> General Forested Area (GFA) — the forested land base outside of high biodiversity emphasis areas (HBEAs) that is managed for a range of resource interests inclusive of, but not exclusive to, biodiversity.

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
	2.2 Proportion of plan area in large patches (>250 ha) by BEC variant.	Within acceptable range as per Table 14.	Reported by BEC variant and landscape unit.
	2.3 Proportion of large patches (totalled across all seral stages) achieving interior forest condition in plan area by BEC variant.	30%	<p>Measured by BEC variant and landscape unit.</p> <p>Further research needs to be completed on interior forest and edge definitions. As research is completed, targets and best management practices will be developed.</p>
	2.4 Percent of area of harvested patches <250 ha and >5 ha in size retained as mature and old forest over the rotation.	Consistent with thresholds identified in Table 15.	<p>Target wildlife tree retention will be as per Table 15. Targets will be revised when HBEA planning is completed.</p> <p>Due to their small size it is not usually practical or necessary to retain wildlife patches within bark beetle salvage patches &lt;5 ha. Over time, these small openings will be incorporated into larger openings as harvested area and be used in the calculation for wildlife tree patch retention targets in the larger opening.</p> <p>Guidance for implementation of ecologically sound wildlife tree retention will be as per <i>Provincial Wildlife Tree Policy and Management Recommendations</i> (Ministry of Forests, 2000). These recommendations will be replaced by the best management practices referred to in Measure 2.9 below, once they are developed.</p>

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
	<p>2.5 Percent of area within harvested patches &gt;250 ha in size retained as mature and old forest.</p>	<p>Median of 25% (20-30% range) in HBEAs.</p> <p>Median of 15% (10-20% range) in the GFA.</p>	<p>The difference between the 15% or 25% large patch retention target and the biodiversity guidebook WTP retention % will be established as “take later” set asides, identified for removal at a later date in the management<sup>33</sup> rotation; generally third pass (see principles for applying ecosystem management direction Appendix 5).</p> <p>Where small (&lt;5 ha) harvested openings are aggregated into patches &gt;250 ha in size, these previously harvested openings will be used in the calculation for wildlife tree patch retention targets in the larger opening.</p> <p>This requirement should not be met by extending block boundaries to include inoperable forest.</p> <p>Planning of large blocks must consider impacts on soil hydrology.</p> <p>Retained mature and old should be located to increase use of large blocks by wildlife.</p> <p>Distribute mature and old throughout harvest blocks.</p>
	<p>2.6 Proportion of plan area in large harvested openings by BEC managed on an ecological rotation as identified in Table 16.</p>	<p>5-10%</p>	<p>Measured by BEC variant and landscape unit.</p> <p>Where possible, openings placed on an ecological rotation will be located in the HBEAs.</p> <p>The long term biological implications of retained structural attributes should be evaluated and the target refined — see principles for applying ecosystem management direction (Appendix 5).</p>

<sup>33</sup> If the management (culmination) rotation is 80 years, harvest would be deferred for at least 70 years.

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
	2.7 Development of retention targets, by sites series groupings, for coarse woody debris (CWD), snags and large live trees (LLT) retained in harvested areas.	By 2008	Retention targets are applied to all openings, regardless of size across the plan area. Retention targets will reflect the need for retention of stand level dispersed structural attributes (such as snags, deciduous stems, poles, saplings, advanced regeneration and coarse woody debris), where available, within small (<5 ha) patches harvested for bark beetles.
	2.8 Amounts of coarse woody debris (CWD), snags and large live trees (LLT) retained in harvested areas by sites series groupings.	Within the target ranges specified for Measure 2.6 above	Habitat elements at a landscape scale will also be managed through implementation of old growth areas.  In landscape units within which substantial historical harvest occurred prior to retention targets being applied, compensatory increase in retention within new cut areas should be made.
	2.9 Development and implementation of best management practices and refined target levels for stand level structural retention.	By 2010	Best management practices to incorporate different scales for reporting versus measuring, as well as a full suite of habitat elements contributing to structural complexity.  A number of different approaches will be considered, including partial cutting, dispersed tree retention and individual habitat elements.

Biodiversity Objectives	Measures/Indicators	Targets
<i>3. Maintain representation of natural tree species diversity and deciduous ecosystems through time.</i>	3.1 Identification and retention of disclimax aspen stands.	100% of stands identified; 90% retained
	3.2 Amount of deciduous component maintained.	No net loss
	3.3 Development of best management practices and targets for managing tree species diversity.	By 2008



Biodiversity Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Disclimax aspen stands are aspen leading and self perpetuating over the long term, generally with a predominantly herbaceous understory.</li> <li>• The 90% retention criterion is intended to recognize unavoidable losses due to road and infrastructure development.</li> <li>• Deciduous component includes individual trees and/or deciduous leading stands.</li> <li>• Maintain immature and mature deciduous trees as a component of managed stands. Manage for recruitment of new deciduous stands. Greater emphasis to be placed on mature deciduous retention where the mature stand component is &lt;20%.</li> <li>• Design vegetation management treatments to create variability within the treatment area and minimize impacts to non-target vegetation.</li> <li>• Avoid extensive stand conversion that exceeds natural successional variability at the landscape level.</li> <li>• Complete an analysis of historical tree species diversity and successional pathways as a means to inform best management practices.</li> </ul>	
<p><b>Intent:</b> <i>The purpose of this objective is to maintain the functionality of ecosystems and features not otherwise managed for within General Management Direction and/or Area Specific Management Direction. Regionally significant ecosystems and features are those which are locally rare or unique to the plan area, however, they have not been listed by the Conservation Data Centre as rare or endangered. Sensitive ecosystems are those which tend to be easily impacted by human activity and are impossible or very difficult to rehabilitate.</i></p>		
<p>4. Identify and maintain the ecological integrity of regionally significant and sensitive ecosystems and features.</p>	<p>4.1 Functional area of regionally significant ecosystems, landforms and features, identified in Table 17.</p> <p>4.2 Area of functional sensitive ecosystems with attributes indicated in Table 18.</p> <p>4.3 Area of timber harvest on islands.</p>	<p>No reduction in functional area.</p> <p>No reduction in functional area.</p> <p>Zero</p>
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Table 17 to be periodically reviewed and updated.</li> <li>• Avoid infrastructure development (including roads) within regionally significant and sensitive ecosystems. Where non-recoverable ecosystem losses occur, ecological compensation/ enhancement on an area of an equivalent size is recommended.</li> <li>• Manage grazing of domestic animals and recreation use.</li> <li>• Maintain the integrity of grassland and deciduous ecosystems through the use of appropriate management tools (e.g. burning).</li> <li>• Islands are of significant cultural value for First Nations.</li> </ul>		

Biodiversity Objectives	Measures/Indicators	Targets
<p><b>Intent:</b> <i>Within the plan area, ninety five ecosystems have been identified as having cultural significance based on the abundance and value of plant species for traditional values, such as for medicine and food, and wildlife forage value. Islands are of significant cultural value and are addressed through Objective 4. The ecosystems described in this objective are those which have been identified as being relatively rare within the plan area.</i></p>		
<p>5. Manage culturally significant ecosystems of concern, identified in Table 19, in a manner that ensures a sustainable supply of culturally important attributes, distributed across the plan area, through time.</p>	<p>5.1 Loss of functionality of culturally significant ecosystems (Table 19) at the landscape level.</p>	<p>No net loss</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Avoid infrastructure development.</li> </ul>	
<p>6. Conserve red and blue listed ecosystems as listed by the Conservation Data Centre (CDC).</p>	<p>6.1 Area of undisturbed red listed ecosystems.</p>	<p>No reduction.</p>
	<p>6.2 Level of risk to red and blue listed ecosystems as identified by the CDC (provincial) ranking.</p>	<p>Decreasing risk.</p>
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Red and blue listed ecosystems will be identified and addressed as encountered at the stand development stage.</li> <li>Avoid infrastructure development (including roads) within red and blue listed ecosystems. Where development related non-recoverable partial ecosystem losses occur, ecological compensation/ enhancement on an area of an equivalent size is recommended.</li> <li>Minimize adverse impacts from grazing and human activities.</li> <li>Maintain the integrity of grassland and deciduous ecosystems through the use of appropriate management tools (e.g. burning).</li> <li>Develop conservation strategies for blue listed ecosystems at the stand level with consideration given to alternate silviculture systems and retention.</li> </ul>		

Biodiversity Objectives	Measures/Indicators	Targets	Implementation Direction
<p>7. Employ a range of silviculture practices on harvested forests, to provide for a distribution of natural successional pathways through time.</p>	<p>7.1 Percent of harvested forests permitted to proceed through natural successional pathways using natural regeneration.</p>	<p>5</p>	<p>A portion of harvested area will be allowed to naturally regenerate without site intervention and placed on a natural regeneration delay for recruitment as future old growth areas.</p>

<b>Biodiversity Objectives</b>	<b>Measures/Indicators</b>	<b>Targets</b>	<b>Implementation Direction</b>
	7.2 Percent of artificially regenerated forests permitted to proceed through successional pathways without stand tending.	1-15	Avoid stand tending treatments. Avoid rehabilitation of small, naturally occurring non-commercial brush patches into plantations.
	7.3 Development and implementation of BMPs and target levels to maintain natural successional pathways.	By 2008	Until such a time as best management practices and targets are determined, successional pathways will be managed through implementation of the above management direction.  BMPs will consider alternate methods of reforestation, such as varying stocking standards (e.g. multi-block stocking standards) and broadcast seeding.

**Table 12. Seral Stage Distribution for High Biodiversity Emphasis Areas**

<b>BEC Variant</b>	<b>% Representation Across Each HBEA</b>		
	<b>Early* Seral Maximum</b>	<b>Mature* + Old* Seral Minimum</b>	<b>Old* Seral Minimum</b>
ATp	N/A	N/A	N/A
CWH ws2 and MHmm2**	16	71	70
ESSF mc and ESSF mv3***	28	48	42
ESSF mk	7	86	84
SBS dk	50	21	16
SBS mc2 and SBS wk3***	37	33	26

\* Early = <40 years; Mature = 100-140 years; Old = >140 years.

\*\* CWHws2 and MHmm2 are combined due to small area present and similarity of RNVs.

\*\*\* ESSF mv3 is included under ESSFmc criteria, and SBSwk3 under SBSmc2 due to combination of small area present in the LRMP plan area.

**Table 13. Seral Stage Distribution for the General Forested Area**

BEC Variant	% Representation Across the General Forested Area		
	Early* Seral Maximum	Mature* + Old* Seral Minimum	Old Seral Minimum
Atp	N/A	N/A	N/A
CWH ws2 and MH mm2**	27	64	62
ESSF mc and ESSF mv3***	38	37	34
ESSF mk	9	83	82
ESSF mv3	34	48	47
SBS dk	64	10	8
SBS mc2 and SBS wk3***	48	20	17

\* Early = <40 years; Mature = 100-140 years; Old = >140 years.

\*\* CWHws2 and MHmm2 are combined due to small area present and similarity of RNVs.

\*\*\* ESSF mv3 is included under ESSFmc criteria, and SBSwk3 under SBSmc2 due to small area present in the LRMP plan area.

**Table 14. Patch Size Distribution**

BEC Zone	% Land in Patches <40 ha		% Land in Patches >250 ha	
	Min	Max	Min	Max
All SBS	20%	30%	50%	60%
All ESSF, CWH, and MH	15%	25%	50%	60%
AT and ATp	N/A	N/A	N/A	N/A

**Table 15. Minimum Percent of Harvested Area Required in Wildlife Tree Retention**

Percent of the Area Available for Harvesting that has Already Been Harvested Without Recommended Wildlife Tree Retention	% of the Biogeoclimatic Subzone within the Landscape Unit Available for Harvest				
	90	70	50	30	10
10	10	8	6	4	3
30	12	10	8	6	4
50	14	12	10	8	6
70	16	14	12	10	8
90	18	16	14	12	10

Note: The table axes refer to the area of the biogeoclimatic subzone.

**Table 16. Ecological Rotation Age**

<b>BEC Variant</b>	<b>Stand Type Leading Species (Site Series)</b>	<b>Mean Fire Return Interval*</b>
ATp	N/A	N/A
MHmm2	All stands	350
CWH ws2	All stands	200
ESSF mk	Pa/Pl (02)	300
	All stands	650
ESSF mc and ESSF mv3**	Pl Open (02/03)	180
	All other stands	219
	Bl-Sxw (07/08)	350
SBS mc2 and SBS wk3**	All stands	133
	Sxw/Bl (09)	200
SBS dk	All stands	93
	Sb (09/10)	250

\* Ecological rotation age is described by the mean fire return interval for each biogeoclimatic variant and, where available, stand type.

\*\* ESSF mv3 is included under ESSF mc criteria, and SBS wk3 under SBS mc2 due to combination of small area present in the LRMP plan area.

**Table 17. Examples of Regionally Significant Ecosystems and Features**

<ul style="list-style-type: none"> <li>• Rare wetlands (e.g. Old Man Lake area)</li> <li>• Geological features — canyons, volcanic outcrops, limestone outcrops, cliffs, hoodoos</li> <li>• Waterfalls (and associated plant communities)</li> <li>• Islands on lakes</li> <li>• Isolated alpine areas</li> <li>• Wetlands at the mouth of Nadina River at Francois Lake</li> <li>• Deciduous ecosystems along the Highway 16 corridor</li> <li>• South aspects (e.g. Old Fort Mtn, Emil Rd)</li> <li>• Whitebark pine forests</li> <li>• Small coastal ecosystems (e.g. CWH plant associations — skunk cabbage, amabilis fir, mountain &amp; western hemlock sites)</li> <li>• Meadows on Upper Clore</li> <li>• Extensive terrestrial lichen fields</li> <li>• Gravel dunes in the Morice River at outflow of Morice Lake</li> <li>• Nanika and Nadina sockeye spawning habitat</li> <li>• Wetlands in the Gosnell, Morrison, Nadina and Whitesail</li> </ul>
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**Table 18. Sensitive Ecosystems and Attributes**

<ul style="list-style-type: none"> <li>• Avalanche tracks</li> <li>• Eskers</li> <li>• Grasslands</li> <li>• Wetland complexes</li> <li>• Lake chains</li> <li>• Rare wetlands</li> </ul>
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**Table 19. Culturally Significant Ecosystems of Concern**

Biogeoclimatic Ecosystem Classification		
Zone	Subzone/ Variant	Site Series
CWH	ws 2	All
MH	mm 2	All
ESSF	mc	02, 07, 08, 09, 10, 31
	mk	02
SBS	dk	02, 03, 04, 07, 08, 09, 10, 31 32, 81, 82
	mc 2	02, 03, 09, 10, 12, 31

### 3.4.2 Fish, Fish Habitat and Aquatic Ecosystems

#### Fish populations:

Fish populations in the LRMP area are diverse. Sockeye, Chinook, coho and pink salmon populations support regionally important commercial, recreational and First Nation fisheries. The steelhead sport fishery provides world class angling opportunities and hosts an important fish guiding industry. The plan area also supports local fisheries for resident rainbow, cutthroat, lake and brook trout and burbot. Other species present include Dolly Varden, bull trout, kokanee, mountain, lake and pygmy whitefish, lake chub, long-nose sucker, large scale sucker, long-nose dace, redbside shiner, prickly sculpin and Pacific lamprey.

Cutthroat trout, Dolly Varden and bull trout are all blue listed in British Columbia, which means that these species are of special management concern but not under immediate threat. Bull trout is discussed individually below. Within the plan area the population status of fish varies greatly by species. Among anadromous salmonids, returns of Chinook and pink salmon populations are presently high by historical standards. Returns of coho, although diminished in the 1980s and early 1990s, have rebounded significantly during the five years period up to 2003, largely due to changes in fisheries management. Natural sockeye populations are currently depressed, particularly the Maxan and Bulkley Lakes stocks. The status of steelhead populations is less certain; presently adult escapements are believed to be insufficient to fully populate available habitat with juveniles. The status of resident fish populations is uncertain and varies across different geographic locations.

**Fish Habitat:**

The fish populations in the plan area use many varied types of aquatic habitat. Fish habitats include large and medium sized rivers such as the Morice and Bulkley and also include the smaller streams, lakes and wetlands distributed throughout the plan area. Lake habitats found in the plan area include large lakes, both impounded (Ootsa, Whitesail) and natural (Babine Morice, Nanika, Kidprice), and numerous small and medium sized lakes.

All salmon and trout, except lake trout and lake-spawning sockeye salmon, require access to clean stream gravels for spawning and egg incubation. The size of streams used for spawning varies from the main channels of large rivers, which are used by Chinook salmon, to the very small streams which are utilized by bull trout, steelhead, Dolly Varden and cutthroat trout. Some species, such as steelhead, use a wide variety of stream sizes for spawning.

Juvenile Chinook salmon, coho salmon and steelhead trout all rear in freshwater habitat for up to four years before they migrate to the sea. Good rearing habitat for these species requires stable physical complexity, which in smaller streams is often provided by wood debris embedded in the stream channel. Stream habitat effectiveness requires that fish have access to spawning locations, with clean spawning gravels not subject to dewatering or freezing, and to rearing habitat, with appropriate physical structure, water quality, flow regime and overhead cover.

**Aquatic Ecosystems:**

Lakes, ponds, rivers, streams, wetlands and puddles are all examples of aquatic ecosystems. Algae and other plants, including microscopic phytoplankton, fix energy from the sun and form the foundation of the food chain. Nutrients required for growth come from terrestrial environments, riparian zones and groundwater. Invertebrates, including insects, zooplankton and molluscs, feed on dissolved and particulate organic matter, including plant material, and in turn become food for fish or other animals. Amphibians and some birds and mammals are also key components of aquatic communities. Aquatic communities are influenced by physical and chemical habitat characteristics, including water depth and velocity, temperature, oxygen levels, turbidity, light transmittance, substrate type, cover, space and water chemistry, including nutrient levels.

**Riparian Ecosystems Habitat:**

Riparian ecosystems provide multiple ecological functions that influence and maintain aquatic and terrestrial habitats and water quality and quantity. The ecological functions are reflective of the associated water bodies, including streams (fish bearing and non-fish bearing), wetlands, lakes and stream confluence areas.

Riparian forests provide streams with large woody debris (LWD), which provides stability and physical structure to many stream channels, especially smaller ones. Stable wood debris breaks stream gradient into steps, forms pools, retains spawning gravel and serves as substrate for many organisms which are part of the food web. This food web supports fish, as well as many birds, mammals and other organisms which use riparian habitats. Roots in stream banks resist erosion, thereby controlling stream width and also limiting the amount of silt and bedload contributed by bank erosion. Roots also provide important refuge and in-stream cover for fish. Riparian vegetation also helps filter runoff from upland sources, provides shade, which moderates water temperatures, and provides organic litter, in the form of needles and leaves, which is used directly or indirectly as food by many aquatic organisms.

Not all streams and their associated riparian ecosystems have equal functions and processes; an important distinction exists between streams that have abrupt transitions between riparian and upland vegetation

communities and those that have wide hydro-riparian ecosystems. Streams that have wide hydro-riparian ecosystems have much more frequent over-bank flooding and subsequent off-channel habitat development and maintenance (alluvial aquifer recharge); ecosystem structure is based on hydro-tolerant and hydrophytic vegetation communities. Incised channels have less frequent over-bank flooding events and less aquifer recharge. Further distinctions in stream morphology and riparian ecosystem structure and function are resultant of stream size and order. Lower order stream reaches tend to be characterized by a high percentage of channel spanning LWD. As stream size and order increase, channels become more competent and LWD is often clustered, with few channel spanning pieces.

Lakeshore riparian ecosystems provide erosion resistance from wave action and lake fluctuations, LWD recruitment for LWD dependant littoral zones (fish habitat, sediment storage), and vegetative cover for maintenance of shade in shallow littoral zones. Wetland riparian ecosystems help maintain water tables through hydrologic storage, and vegetative cover for maintenance of shade. Stream confluence areas have complex hydrology because they often occur at slope breaks where the flow of sediment and water fans out. Riparian communities are maintained by this complex hydrology, which in turn maintains important aquatic habitat including thermal refugia, complex channel features and sediment and water storage.

### **Bull trout:**

Bull trout are known to be present in all watersheds within the LRMP area, except the Nechako Reservoir system, where no information is available, and the Burnie/Clore system. The population size of bull trout in the plan area is uncertain; the largest known concentration is in the Morice watershed, where the spawning population is estimated to be less than 1000 fish. Regional fisheries biologists believe the populations are in decline. In British Columbia bull trout is blue listed, which means the species is of special concern but not under immediate threat.

Bull trout populations are not productive because fish mature late. Populations are readily damaged by fishing pressure, especially when fish are congregated in pools before spawning. Some bull trout populations migrate between spawning areas and habitats used at other times; others are not migratory. Non-migratory fish are generally smaller and live their whole lives in small headwater streams. Adults of migratory populations live in lakes or large streams and migrate to small streams to spawn.

Young bull trout spend 2-3 years in small streams, where they feed on aquatic insects and use wood debris, cut banks, overhead vegetation or the spaces in coarse gravel and cobble substrate as cover from predators. As the young fish grow, they move to faster water and larger cover structure, and their diet shifts from insects to fish.

The main population in the Morice watershed lives in the main river and, during summer, migrates to specific locations in small, cold tributaries, such as upper Gosnell Creek, to spawn in early fall. Specific locations chosen for spawning may be related to presence of groundwater upwelling which may help avoid freezing of eggs during winter incubation. Resident adults continue to use the same small streams in which spawning and rearing as juveniles occurred, and often continue to eat mostly aquatic insects. Migratory adults generally live in larger rivers or lakes except during spawning migrations. Most adult bull trout in the Morice watershed use the upper Morice River for about 2-3 km downstream from Morice Lake, wintering in deep pools. Adults in migratory populations are aggressive fish eaters (piscivores); salmon eggs can also be an important food source.



**Issues:**

- ◆ Impact to water quantity and quality, including nutrient loading, on fish and aquatic ecosystems.
- ◆ Loss of ecological integrity and the structure and function of riparian ecosystems, including stream shading, sediment filtration, small organic and large woody debris inputs and stream bank and channel stability.
- ◆ Loss of fish habitat structure and function.
- ◆ Impacts to bull trout populations from over fishing.
- ◆ Impacts to bull trout populations from habitat loss.

**Goals:**

- ◆ Protection, maintenance and restoration of indigenous fish species and their habitats reflective of their life histories.
- ◆ Maintenance of the ecological integrity of the full range of riparian and aquatic ecosystems.
- ◆ Viable bull trout populations.

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
<p><i><b>Intent:</b> Water quality monitoring, relative to baseline conditions, is integral to the maintenance of water quality. It is recognized that baseline water quality conditions are variable and reflective of the biological, chemical and physical characteristics of watersheds.</i></p>		
<p><i>1. Maintain water quality to support healthy aquatic ecosystems.</i></p>	<p>1.1 Compliance<sup>34</sup> with water quality objectives and water quality guidelines for chemical, biological and physical parameters for aquatic life.</p>	<p>100%</p>
	<p>1.2 Number of events related to human and/or industrial development activities resulting in damage to aquatic ecosystems and habitat.</p> <p>1.3 Number of development related incidents of erosion and/or slope failure resulting in sedimentation into streams.</p>	<p>Zero</p> <p>Zero</p>
<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Establish a Watershed Advisory Committee.</li> <li>• Utilize BMPs in the maintenance of water quality. The Watershed Advisory Committee<sup>35</sup> will provide a mechanism for reviewing and updating BMPs.</li> </ul>		

<sup>34</sup> Guidelines for water quality are set provincially by the government. Government may also establish water quality objectives for specific water bodies pursuant to the *Environmental Management Act*.

<sup>35</sup> Refer to Section 3.4.3 Water, Objective 1.

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
	<ul style="list-style-type: none"> <li>• Collection of watershed specific baseline data, including the establishment and maintenance of a data warehouse, is required for an effective monitoring system. This may be achieved through the establishment of a range of reference and monitoring sites (Appendix 6) that reflect the full range of management activities. Examples of water quality monitoring tools include biological indices (abundance, distribution, and diversity), fish sampling and frozen core samples.</li> <li>• Water quality monitoring for aquatic biology should consider linkages with, and the work completed by, the Watershed Based Fish Sustainability Planning process or similar future processes for the Morice watershed and LRMP area.</li> <li>• Promote education and public outreach as a tool to address water quality issues on both public and private lands.</li> <li>• Establish baseline water quality levels through mapping of natural sediment sources and a description of the natural sediment regime (timing).</li> <li>• The intent is to strive for a target of zero erosion and/or slope failure resulting in sedimentation into streams, however, it is recognized that some incidences may occur. When incidences do occur, review and revise practices accordingly.</li> </ul>	

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets	Implementation Direction
<p><b>Intent:</b> Stream reach morphology will be monitored in “watersheds at risk” as identified by the Watershed Advisory Committee; this may include watersheds that have been, or will be, influenced by human development and are of concern.</p>			
<p>2. Maintain or enhance the structural and functional integrity of streams, including off- channel habitat.</p>	<p>2.1 Percent of select reaches of watersheds identified at risk through the coarse filter which are assessed through existing <i>Channel Assessment Procedures</i> (1996).</p>	<p>100% of identified reaches will be assessed.</p>	<ul style="list-style-type: none"> <li>• <i>Channel Assessment Procedures</i> (Ministry of Forests 1996) will be replaced by improved assessment and monitoring tools, as they become available.</li> </ul>

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets	Implementation Direction
	2.2 Development and implementation of an effective monitoring strategy to assess impacts of human development on stream channel morphology.	By 2009	<ul style="list-style-type: none"> <li>• This will provide a baseline for detecting change, at which point a measure and target for acceptable impacts to stream channel morphology will be developed.</li> <li>• Utilize analogue sites, historic aerial photography, overview flights and monitoring sites as reference for the range of natural variability.</li> <li>• Utilize BMPs, including retention of pre-development levels of in-stream LWD and a supply of LWD inputs through time adjacent to all woody debris dependent streams, completion of pre-development assessments of stream structure and associated riparian structure and development of a monitoring system for fish habitat.</li> </ul>
<p><b>Intent:</b> To avoid disturbance to the natural processes associated with meandering stream systems on active floodplains. The floodplain is defined by the area subject to over bank flooding resulting from the 100 year flood event.</p>			
3. Maintain the natural structural integrity and functional processes of floodplains, including off-channel habitat on streams.	3.1 Percent of select reaches of watersheds identified at risk through the coarse filter which are assessed through existing <i>Channel Assessment Procedures</i> (1996).	100% of identified reaches will be assessed.	<ul style="list-style-type: none"> <li>• <i>Channel Assessment Procedures</i> (Ministry of Forests 1996) will be replaced by improved assessment and monitoring tools, as they become available.</li> <li>• Avoid settlement structures on 100 year floodplain.</li> <li>• Roads should not constrain floodplain processes.</li> </ul>

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets	Implementation Direction
	3.2 Development and implementation of an effective monitoring strategy to assess impacts of human development on stream channel morphology.	By 2009	<ul style="list-style-type: none"> <li>• This will provide a baseline for detecting change, at which point a measure and target for acceptable impacts to stream channel morphology will be developed.</li> <li>• Utilize analogue sites, historic aerial photography, overview flights and monitoring sites as reference for the range of natural variability.</li> <li>• Utilize BMPs, including retention of pre-development levels of in-stream LWD and a supply of LWD inputs through time adjacent to all woody debris dependent streams, completion of pre-development assessments of stream structure and associated riparian structure and development of a monitoring system for fish habitat.</li> </ul>

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
<i><b>Intent:</b> To manage stream temperature in a manner that minimizes stress and disease on fish and avoids aquatic species shifts. This objective considers aquatic ecosystems and fish life cycles.</i>		
4. Maintain water temperature within critical limits for salmonid species on all water bodies.	4.1 Identification of watersheds at risk for temperature sensitivity and establishment of best management practices. 4.2 Percent of ‘watersheds at risk for temperature sensitivity’ in which best management practices have been implemented. 4.3 Temperature regime in identified temperature sensitive watersheds.	By May 2009  100  No shift in temperature regime

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• The initial list of salmonid watersheds potentially at risk for temperature sensitivity includes Morrison, Tahlo, Tachet, Sockeye, Fulton and Guess, Wilkinson (9 Mile), Big Loon, Forks (Old Fort), Hazelwood, Gloyazikut, Hautete, Natowite, Lamprey, Owen, Shea, and Parrott Creeks and the Upper Bulkley and Nadina Rivers. The Watershed Advisory Committee will continue to research and develop a more complete list.</li> <li>• Adopt best management practices as soon as they become available.</li> <li>• Utilize latest available published and unpublished data for critical temperatures.</li> <li>• Maintain stream temperature below critical limits for bull trout.</li> <li>• Apply BMPs on identified temperature sensitive streams. Examples of BMPs for water temperature control include retention of effective shade adjacent to fish and non-fish bearing streams, solar angle layouts and angular canopy density for riparian vegetation retention, patch cut considerations, road layout and management considerations and wet area management.</li> <li>• BMPs will include management of ground water flow and ground water interception.</li> <li>• Identify the natural range in temperature variation where research information is available.</li> <li>• Pursue adaptive management research to test the effectiveness of BMPs.</li> <li>• Develop monitoring strategies that are effective in detecting changes in the temperature regime.</li> </ul>	
<p><b>Intent:</b> <i>To retain the structural and functional integrity and productive capacity of riparian ecosystems, including lakes, streams and wetlands that will support a natural abundance of fish, other aquatic organisms and wildlife.</i></p>		
<p>5. <i>Maintain the functional integrity of riparian ecosystems.</i></p>	<p>5.1 Establish BMPs for development activities in all riparian ecosystems.</p> <p>5.2 Compliance with BMPs.</p>	<p>June 2008</p> <p>100%</p>

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Examples of BMPs include the retention of riparian vegetation representative of natural levels and composition (species mix) adjacent to all water bodies. Priorities are headwater streams, small wetlands and lakes. The <i>Riparian Management Area Guidebook</i> (Ministry of Forests 1997) provides the current minimum standard for BMPs.</li> <li>• Management for riparian ecosystems will consider work completed by, and recommendations of, the Watershed Based Fish Sustainability Planning for the Morice watershed and other processes (i.e. IFPA).</li> <li>• The Watershed Advisory Committee<sup>36</sup> will audit performance and review the efficacy of best management practices.</li> </ul>	
<p>6. Maintain the functional integrity of lakeshore management areas.</p>	<p>6.1 Development of a lakeshore management strategy.</p> <p>6.2 Percent of identified lakes managed consistent with the lake shore management strategy</p> <p>6.3 Percent of identified lakes managed to maintain functional integrity prior to completion of the lakeshore management strategy.</p>	<p>By 2009</p> <p>100</p> <p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Goals and a framework for development of a Lakeshore Management Strategy are found in Appendix 7.</li> <li>• An initial list of candidate sensitive lakes is provided in Appendix 7.</li> <li>• An interim management strategy for lakeshore management is provided in Appendix 7, to be applied until such time as a lakeshore management strategy is completed.</li> </ul>	
<p><b>Intent:</b> Fans are recognized as potentially unstable and requiring appropriate considerations before any development activities occur.</p>		
<p>7. Maintain the structural and functional integrity of alluvial and colluvial fans that impact water processes.</p>	<p>7.1 Number of developments resulting in the loss of structural and functional integrity.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Retain the structure and function of the hydrogeomorphic riparian zone on all alluvial fans.</li> <li>• Minimize road crossings on fans; where unavoidable employ the services of a qualified professional (e.g. P.Geo. or P.Eng.)</li> </ul>	

<sup>36</sup> Refer to Section 2.4.3 Water, Objective 1

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
<p>8. <i>Rehabilitate high value fish habitat where degraded by land use activities.</i></p>	<p>8.1 Number of kilometres of rehabilitated habitat over 5-year period.</p>	<p>Target to be developed by the Watershed Advisory Committee and/or the Watershed-based Fish Sustainability Program.</p>
	<p>8.2 Number of rehabilitation projects.</p>	<p>Target to be developed by the Watershed Advisory Committee and/or the Watershed-based Fish Sustainability Program.</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Coordinate restoration activities and projects with the Watershed-based Fish Sustainability Program (WFSP) for the Morice watershed and the Watershed Advisory Committee.</li> <li>• Sites for rehabilitation and access restoration have been identified through the Watershed Restoration Program (see Appendix 8). This list is not considered complete. Habitats to be considered for rehabilitation include both streams and lakes.</li> <li>• Projects to be prioritized to realize the greatest gain for investment.</li> </ul>	
<p><b>Intent:</b> <i>To restore natural, historic fish access that is currently impeded or blocked by roads or other development activities. This does not include access beyond natural permanent barriers.</i></p>		
<p>9. <i>Restore fish access to habitat that is impeded by road or land use development.</i></p>	<p>9.1 Percent of identified access barriers restored for fish movement and migration by 2012.</p>	<p>Target to be developed by the Watershed Advisory Committee and/or the WFSP.</p>
	<p>9.2 Number of kilometres of habitat made available per year.</p>	<p>Target to be developed by the Watershed Advisory Committee and/or the WFSP.</p>

Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Coordinate restoration activities and projects with projects such as the WFSP for the Morice watershed and the Watershed Advisory Committee.</li> <li>• Sites for rehabilitation and access restoration have been identified through the Watershed Restoration Program (see Appendix 8). This list is not considered complete.</li> <li>• Undertake an inventory to identify candidate sites for access restoration that were not identified through the WRP process (e.g. highway and railway crossings).</li> <li>• Projects to be prioritized to realize the greatest gain for investment.</li> </ul>	
<p>10. Maintain populations of resident lake fish that are sensitive to over-fishing.</p>	<p>10.1 Number of resident fish populations in which recruitment may not be sufficient to sustain the population at historical levels.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Identify lakes with fish populations that are sensitive to over fishing by 2009.</li> <li>• Monitor populations of concern of lake trout and bull trout every 5 years.</li> <li>• Manage access to reduce accessibility to sensitive populations (see Section 3.3.2 Access).</li> </ul>	
<p>11. Minimize negative effects of water withdrawals on flow regimes and aquatic ecosystems.</p>	<p>11.1 Number of watersheds where withdrawals are contributing to negative impacts<sup>37</sup> to flow regimes and aquatic biology.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Ensure streams and rivers provide adequate flows for fish prior to granting additional water licences. In watersheds with water licences, estimate the base flows necessary to maintain ecological integrity, promote water conservation through education and incentives, adopt or develop drought management strategies and develop a groundwater management strategy.</li> </ul>	

<sup>37</sup> Examples of negative impacts include fish or aquatic organism die-offs, temperatures exceeding critical levels for fish during low flows, year round streams drying up — restricting or preventing spawning salmon from migrating upstream, inadequate water depths and water velocities for spawning fish, increased prevalence of algae blooms — cyanobacteria (blue-green algae) are of particular concern and a reduction in the waterbody's ability to assimilate and dilute wastes.



Fish, Fish Habitat, & Aquatic Ecosystems Objectives	Measures/Indicators	Targets
12. Conserve known critical bull trout habitat (staging areas and spawning or natal tributary reaches).	12.1 Number of development activities affecting critical bull trout habitat.	Zero
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Avoid in-stream operations during periods of bull trout spawning activity.</li> <li>• Check for local windows suitable for in-stream operations.</li> </ul>	
<i><b>Intent:</b> To locate access structures as far from bull trout staging areas as possible. No new permanent access structures that provide easy access to bull trout staging areas will be built. It is recognized that access alone will not address the issue of bull trout over fishing. Consideration of species specific fishing regulations is recommended (e.g. seasonal closures, gear, catch release).</i>		
13. Maintain populations of bull trout that are sensitive to over fishing.	13.1 Number of new permanent access structures within 500 metres of bull trout staging areas.	Zero
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Deactivate existing permanent access structures to a condition that severely restricts public access to bull trout staging areas.</li> <li>• Undertake public education to enhance and promote bull trout conservation (e.g. signage, public outreach)</li> </ul>	
14. Maintain stream temperature below critical limits for bull trout.	Refer to Objective No. 4 above.	

### 3.4.3 Water

Six major watersheds within the plan area provide abundant supplies of quality surface water in rivers, streams, wetlands and lakes. Groundwater supplies are also generally of high quality. Freshwater provides important habitat for fish and other aquatic creatures, as well as for terrestrial animals and plant communities. Human uses of freshwater include drinking, recreation, industry, hydropower generation and irrigation.

As of 2007, there was no groundwater legislation in British Columbia; as such, all groundwater use is unlicensed. The most common licence category is for domestic use, however, the majority of domestic water users in the planning area are unlicensed. The next most common licensed use of water is stockwatering. Two large-scale industrial licences are held by Huckleberry Mine and a joint allocation to Alcan and Fisheries and Oceans Canada. In addition, the Village of Granisle and the District of Houston hold licences for community water systems.

This section focuses on maintaining the water quality and quantity within watersheds for social or human-based values. These uses include domestic (e.g. drinking water), recreation and aesthetics, agriculture (including irrigation and livestock watering) and industry (e.g. mining). Management direction for the

water resource as it relates to fish, aquatic, and wildlife values can be found in Sections 3.4.2 (Fish, Fish Habitat and Aquatic Ecosystems) and 2.4.4 (Wildlife and Wildlife Habitat).

**Issues:**

- ◆ Degradation of water quality and reduction of water quantity.
- ◆ Hydrological integrity of watersheds.
- ◆ Availability of water across all watersheds for a variety of users.

**Goals:**

- ◆ Reliable access to safe drinking water.
- ◆ Sufficient water of acceptable quality to support industrial and agricultural uses.
- ◆ Hydrologically intact watersheds that support healthy communities and healthy ecosystems.

Water Objectives	Measures/Indicators	Targets
<p><i><b>Intent:</b> To monitor indicators of hydrological integrity, by watershed, to prevent problems before they occur. Thresholds used to determine watershed risk are set at a precautionary level such that a hydrological assessment and prescription can be completed prior to a watershed losing its hydrological integrity. Hydrological integrity means the degree to which a watershed retains its natural diversity, characteristics and types and levels of processes. Elements of hydrological integrity include; the magnitude, timing, duration, frequency and rate of change of flows. Standards for hydrological integrity may be based on research within watersheds showing minimal evidence of human impact to natural features and processes.</i></p> <p><i>Where one or more of the risk thresholds has been exceeded for a watershed, a hydrological assessment will be completed. Hydrological assessments will be issue and watershed specific, reflective of the range of biophysical conditions. The hydrological assessment report will contain timelines for implementation of the recommendations. A Watershed Advisory Committee will be formed and will act in a review and advisory role to ensure best management practices are implemented.</i></p>		
<p><i>1. Maintain or restore the hydrological integrity of all watersheds in the plan area.<sup>38</sup></i></p>	<p>1.1 Percent of priority watersheds where thresholds for coarse filter hydrological integrity indicators have been set.</p> <p>1.2 Assessment of coarse filter hydrological integrity indicators for watersheds with development activities.</p> <p>1.3 Percent of hydrological assessments that are completed where one or more risk thresholds has been exceeded.</p> <p>1.4 Percent of recommendations from hydrological assessments that are implemented within recommended timeframes.</p>	<p>100% by 2008</p> <p>Completed annually</p> <p>100%</p> <p>100%</p>

<sup>38</sup> Watersheds, for the purpose of maintaining hydrological integrity, will be defined by 2<sup>nd</sup> or 3<sup>rd</sup> order watersheds (1:50000) and the watershed area. The IFPA watershed map will be used as a starting point.

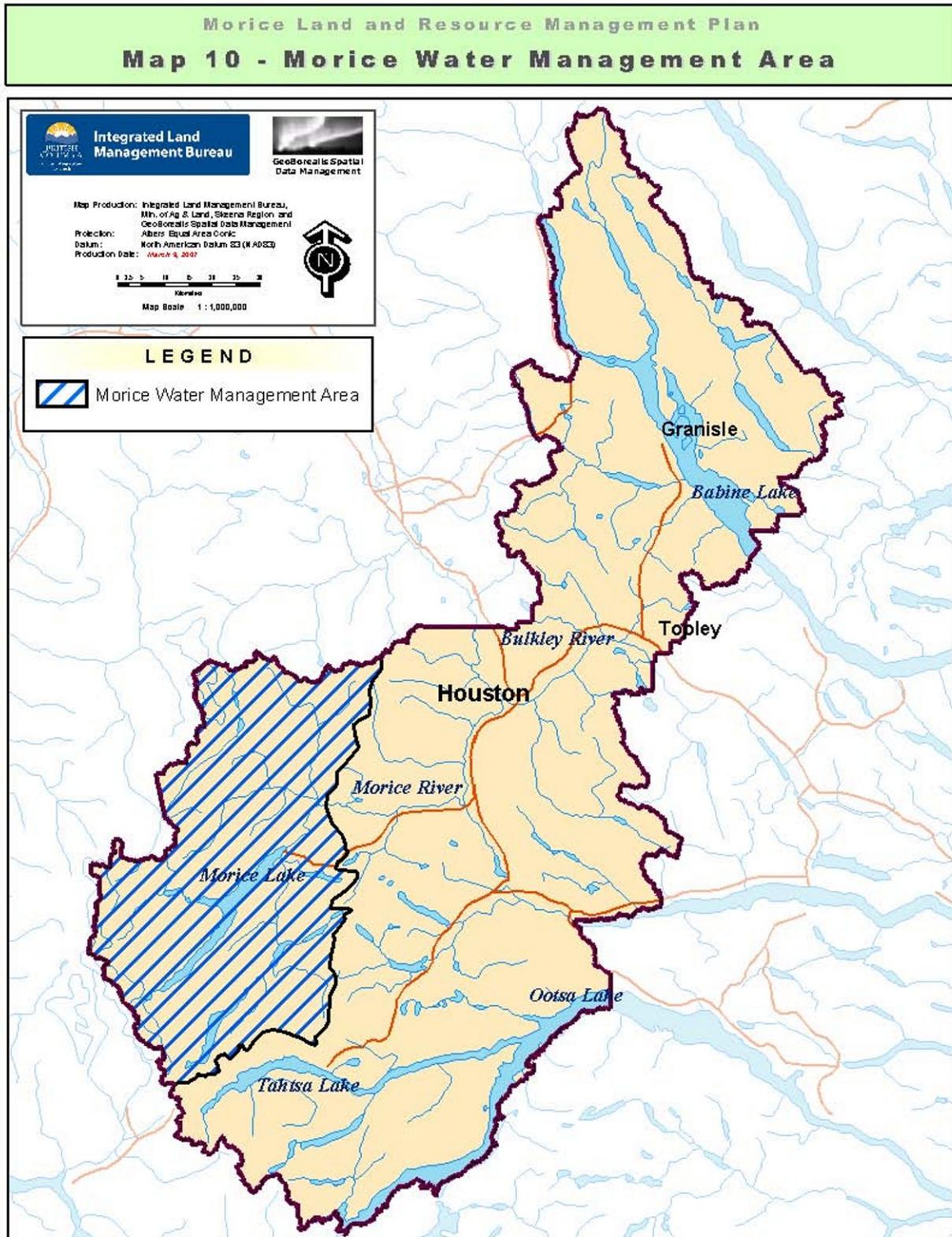
Water Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Coarse filter indicators for hydrological integrity will reflect the intent described in the <i>Watershed Assessment Guidebook</i> (Ministry of Forests 1999).</li> <li>• Form a “Watershed Advisory Committee” for the plan area by December 2007. The Watershed Advisory Committee will, among other things: <ul style="list-style-type: none"> <li>- Be multidisciplinary, including resource professionals from forestry, biology and hydrology/geomorphology, range agrology and other tenured users.</li> <li>- Draw upon local knowledge and seek advice and recommendations.</li> <li>- Seek to partner with universities and other research and development organizations.</li> <li>- Review threshold triggers for watersheds and the watershed scale to which they are applied.</li> <li>- Review the results of hydrological assessments and the implementation of the assessment recommendations.</li> </ul> </li> <li>• Watershed Advisory Committee to determine priority watersheds and thresholds for coarse filter hydrological integrity indicators by December 2008.</li> <li>• Watershed Advisory Committee to review the need for hydrological assessment on an annual basis and consider that there may be exceptions that are triggered below these thresholds.</li> <li>• Assessments will be completed within one year; no new development will occur prior to assessment.</li> <li>• Where the hydrological assessment does not include an implementation timeframe, recommendations will be completed within one year of assessment completion.</li> <li>• Where hydrological integrity has been compromised beyond acceptable levels develop a rehabilitation plan.</li> <li>• To reduce the hydrological impacts of insect control activities, partial cutting, selective harvesting, or commercial thinning is recommended instead of clearcutting.</li> </ul>	
<p>2. <i>Maintain water quality (surface, subsurface and ground water) to support First Nations, domestic, industrial, agriculture and recreational uses.</i></p>	<p>2.1 Number of land use activities causing harmful sedimentation and pollution.</p> <p>2.2 Number of operations or land use activity discharges to the receiving environment.</p> <p>2.3 Changes to the chemistry and biology of each waterbody.</p>	<p>Zero</p> <p>Monitor only</p> <p>Within the range of natural variation (RNV) of the waterbody</p>

Water Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Complete sediment source mapping to identify natural sediment sources and minimize risk.</li> <li>• Utilize compliance inspection reports as a tool for identifying incidents of development related erosion and/or slope failure.</li> <li>• “Harmful for domestic consumption” is defined by provincial water quality guidelines.<sup>39</sup></li> <li>• Comply with safe levels of concentrations of chemicals (e.g. phosphates).</li> <li>• Complete cumulative effects assessments, as required, where there are a number of operations or land use activity discharges to the receiving environment.</li> <li>• When developments on water bodies are proposed base line assessments are required prior to development.</li> </ul>	
<p>3. Minimize the negative effects<sup>40</sup> of commercial and industrial water use on water quantity, including water flows (surface, subsurface and ground water).</p>	<p>3.1 Number of bulk water export operations.</p>	<p>Zero</p>
	<p>3.2 Number of diversions that negatively impact current licensed users.</p>	<p>Zero</p>
	<p>3.3 Number of diversions with negative impacts to flow regimes and aquatic biology.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Ensure adequate water volumes to maintain all water users’ interests and support healthy aquatic ecosystems. Where current licenses have negative impact to water flow and aquatic habitat take measures to reverse these impacts and avoid future impacts.</li> </ul>	
<p><i>Intent: To maintain hydrological integrity, including water quality and quantity, within the Morice Water Management Area. The desired outcome is to ensure that the habitat and water quality supporting salmon and other fish is not negatively impacted.</i></p>		
<p>4. Provide the maximum practicable water quality within the defined Morice Water Management Area (Map 10).</p>	<p>4.1 Development of a water monitoring program.</p>	<p>March 2008</p>
	<p>4.2 Development of an area based water management plan.</p>	<p>March 2008</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• The water monitoring framework should include: monitoring strategies and objectives; identification of potential contamination sources and impact assessment needs; linkage of potential contamination sources to monitoring sites; data collection over time involving the Wet’suwet’en; application of baseline data to inform standards.</li> <li>• The intent of an area based water management plan is to establish/refine comprehensive water quality objectives.</li> </ul>	

<sup>39</sup> Guidelines for water quality are set by provincially by the government. Government may also establish water quality objectives pursuant to the *Environmental Management Act*.

<sup>40</sup> Benchmark is the historic low flow regime for any given waterbody.

Map 10. Morice Water Management Area



### 3.4.4 Wildlife and Wildlife Habitat

The Morice LRMP area supports a diverse community of wildlife species typical of northern boreal and mountain topography. Habitats are diverse, ranging from wetter conifer forest near the coast to drier conifer/deciduous forests in valley bottoms of major interior rivers, and from alpine tundra at high elevations in mountain terrain to riparian forests at the lowest elevations along major rivers.

Habitat requirements of most wildlife species are addressed in this plan through the objectives and measures for coarse filter biodiversity (Section 3.4.1). Under this approach, the biodiversity objectives and measures for land management are intended to constrain how far managed forests depart from the range of natural variability, using characteristics such as forest age, patch size, and patch distribution. By ensuring that managed forests retain structures and patterns similar to natural ones, the habitat requirements of numerous organisms, including most wildlife species, will be met to the degree intended by the plan. However, several wildlife species in the LRMP area are considered to be not adequately addressed by coarse filter biodiversity measures because of special habitat requirements or life history characteristics. These “focal wildlife species” are discussed individually.

Riparian areas occur next to the banks of streams, lakes and wetlands and have distinct vegetation communities due to the influence of water on land. These areas provide habitat to a variety of wildlife, some of which prefer, or are fully reliant on, riparian vegetation for their habitat needs. Cottonwood forests along the Bulkley and Morice Rivers provide important riparian habitat in the plan area. Special habitat features provided by riparian forests in the Morice include potential denning habitat for fisher and black bears, nest sites for pileated woodpeckers and several species of cavity nesting ducks and winter range for moose. Management direction for terrestrial riparian habitat is addressed primarily in the Fish, Fish Habitat and Aquatic Ecosystems GMD (Section 3.4.2), and, in addition, details about the habitat features important to individual wildlife species are outlined for each focal species below.

The LRMP recognizes and supports the development of Ungulate Winter Range (UWR) and Wildlife Habitat Areas (WHA) under existing legislation to manage wildlife species within the LRMP area. Potential UWR or WHA designations were not explicitly outlined in this plan, although direction for their location can be found in the various maps produced through the development of general management direction, as well as through area specific management objectives. It is expected that any potential UWR or WHA designations will build upon the information obtained through the LRMP process and use a public involvement and review process that involves the people of the Morice LRMP area.

#### Issues:

- ◆ Amount and availability of quality seasonal foraging habitats.
- ◆ Amount and availability of habitats and features important for species reproduction.
- ◆ Change in functional forest structure at the stand level, such as large live trees, coarse woody debris and standing dead trees.
- ◆ Mortality from human-wildlife interaction.
- ◆ Displacement of wildlife from preferred habitat by human activity.
- ◆ Disease transfer between wildlife and domestic animals.
- ◆ Maintenance of a natural balance of wildlife populations.

#### Goals:

- ◆ Functional ecosystems across the landbase that support the natural range of wildlife species, for both consumptive and non-consumptive uses, through provision of good quality habitat.

#### **3.4.4.1. Grizzly Bear**

Although most of the LRMP area is used at least intermittently by grizzly bears, the size and trend of area populations are unknown. In British Columbia grizzly bear is blue listed, which means the species is of special management concern but not under immediate threat. Historically, grizzly bears have disappeared from much of their range in North America, including southern B.C. Local populations in many parts of B.C. are believed to be still declining.

Grizzly bears are adaptable opportunists, spending much of their summer searching for food to sustain them during winter hibernation. Grizzly bears utilize a wide variety of foods and habitats; with large differences in the types of food eaten from year to year and amongst bears. Generally, bears in the plan area use habitats that provide the best food source available at a given time and move to new locations as better alternatives become available. In spring, grizzly bears use lower elevation locations that lose snow early and provide new growth of grasses, sedges and other herbaceous plants. During summer, habitat use in the plan area is variable, and includes locations from the alpine tundra to the valley bottoms. Summer foods include green vegetation, berries and insect larvae. Preferred fall habitats include berry producing areas and salmon spawning areas.

Throughout the active season, grizzly bears will use carrion whenever they find it. Carrion may be particularly important in spring because winter moose range is often good spring bear habitat; bears can simultaneously exploit newly emerging vegetation and feed on any dead moose. In early summer individual bears may be proficient predators on young moose or caribou. Grizzly bears may also prey on marmots in alpine and sub-alpine habitats and, at least occasionally, on other small mammals.

Grizzly bears are easily attracted to human settlements by food such as garbage, carrion or fruit on trees. They are sometimes also attracted by natural foods which happen to be available near human settlements. As is typical elsewhere in British Columbia, bears that move into areas settled by people usually end up killed or translocated because sooner or later they frighten people or cause damage; the Conservation Officer Service is then obliged to remove them due to intolerable risk to people. Management of grizzly bear populations requires effective monitoring of the numbers of bears killed or translocated as a result of conflicts with people, and can be greatly assisted by public education programs such as the provincial Bear Aware program.

Salmon are a critical component of the diet of grizzly bears and there is a direct link between the health of fish populations and the size of grizzly bear populations. Management of salmon stocks is outside the scope of this LRMP, but its importance is recognized for ensuring continued availability of salmon to grizzly bears as food. Management objectives for salmon spawning grounds can be found in Section 3.4.2 (Fish, Fish Habitat and Aquatic Ecosystems). Management of security cover for bears while fishing is outlined in this section.

Both the Wet'suwet'en and the Nedo'ats Hereditary Chiefs continue to use grizzly bears for ceremonial purposes.

#### **Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats.
- ◆ Amount and availability of denning habitats.
- ◆ Mortality from human-bear interaction.
- ◆ Population displacement due to human access and other land use.

## Goals:

- ◆ Adequate denning and foraging habitat to ensure a healthy, sustainable population of grizzly bears across their present range within the plan area.
- ◆ Appropriate management of road access and human activities to minimize the risk of grizzly bear displacement and human induced mortality.

### 3.4.4.2. Caribou

Caribou are widely distributed in mountainous terrain in British Columbia. All but the northern populations are considered to be at conservation risk. Under British Columbia's risk classification system, caribou in the plan area are blue listed, which means that the population is a conservation concern but is not under immediate threat. Under the Federal Committee on the Status of Endangered Species in Canada (COSEWIC) system, caribou in the plan area are threatened and are designated under the *Species at Risk Act (SARA) of Canada* to have a recovery strategy developed. Caribou populations have low reproductive rates; extra mortality can readily cause population declines. The risk of harm is particularly high for small populations like the Telkwa and Takla caribou herds because even small increases in mortality, especially of adult females, can result in loss of small populations in the long run. Caribou in British Columbia suffered dramatic population declines during the early to mid 1900s; most populations are continuing to decline, often as an apparent result of predation.

Three caribou herds use habitats within the LRMP area: the Takla, Tweedsmuir and Telkwa herds. The Takla caribou herd includes approximately 100 animals that live mostly north of the plan area. In 2001 the 25,000-hectare Mount Blanchet Provincial Park just north of the plan area was established largely to protect habitat of this herd. The Takla herd primarily uses habitats at 1200m elevations or higher all year round. Most winter food appears to be arboreal lichens in high elevation forest, and terrestrial lichens in the alpine. This herd does not appear to use terrestrial lichens in low elevation forested habitats, due to the lack of this habitat in the area.

The Tweedsmuir-Entiako caribou herd currently includes about 300 animals; the population appears to be declining. Only the northernmost 10% of the habitat used by this herd lies inside the LRMP area. This herd is migratory and winters to the south of the plan area in the vicinity of Entiako Lake, east of Tweedsmuir Park. In late winter and spring, the herd migrates west and north to widely scattered habitats, both forested and alpine. Some caribou migrate into the LRMP area for the summer by crossing Ootsa Lake in the vicinity of Whitesail Reach. Some remain near Ootsa Lake the whole summer, and others continue on to habitats further west and north. The plan area contains important calving habitat on islands in Whitesail Reach, in highlands surrounding Troitsa Lake and in the eastern portion of the Sibola Range, north of Tahtsa Lake. Spring and summer foods in the LRMP area include grass, forbs and sedges, as well as terrestrial and arboreal lichen.

The Telkwa herd currently includes about 75 animals, and appears to be increasing since the herd was supplemented by moving 32 animals into the area in 1997-98. Prior to the introduction of new animals, the herd had been declining for several decades. Roughly half of the range of the Telkwa herd lies inside the LRMP area. The herd is generally not migratory, but habits vary between years and among animals. Generally, most animals remain in the alpine or subalpine forest all year round. Winter food for the Telkwa herd probably consists of mostly arboreal lichens in high elevation forests, and terrestrial lichens in alpine or sub-alpine locations. Spring, summer and fall foods probably include grass, forbs and sedges, as well as substantial amounts of terrestrial lichen.



**Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats.
- ◆ Impacts of human activities on caribou while in calving, rutting and wintering areas.
- ◆ Increased vulnerability of caribou populations to predators as a result of access and other developments.
- ◆ Disease transfer between livestock and caribou.

**Goals:**

- ◆ Adequate calving and foraging habitat to ensure a healthy and sustainable population of caribou across their present range, within the plan area.

**3.4.4.3. Fisher**

The size and trend of the fisher population in British Columbia and in the Morice LRMP area is unknown. In British Columbia fisher are currently red listed, which means that the species is considered to be under immediate threat, and is a candidate for designation as ‘threatened’ or ‘endangered’ under the British Columbia *Wildlife Act*.

Fisher strongly prefer areas with overhead cover and avoid areas without it. Overhead cover can be shrubs or other vegetation and does not have to be mature forest. Female fishers need secure dens in which young fishers are safe from predators while their mothers are away hunting. In British Columbia all such maternal dens discovered to date have been in large black cottonwood or balsam poplar trees. In the LRMP area, black cottonwood trees are probably important and may be critical to breeding female fisher. The highest capability habitat for fisher maternal denning is in lower elevation valley bottoms of the Morice and Bulkley watersheds, within floodplain cottonwood stands. Overall, habitat capability for fisher is considered low to negligible in nearly 90% of the plan area.

Fisher in British Columbia use a variety of resting sites usually associated with older forest. Such structures include tree branches (especially branches of large spruce and sub-alpine fir infected with rust broom), tree cavities, coarse woody debris and cavities in the ground. In winter fisher avoid cold temperatures by using rest sites beneath the snow pack. Fisher are less effective than marten at hunting in deep snow, which may be why marten use higher elevation habitats with more snow.

Fisher will forage in most habitats with sufficient overhead cover and available prey. They are opportunists and will kill and eat any animal they can catch. They are known to eat numerous species of small and medium sized mammals, as well as carrion, birds, snakes, fish, insects and plant material including berries. Fisher is the only predator that regularly kills and eats porcupines.

**Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats.
- ◆ Amount and availability of denning and resting habitats.

**Goals:**

- ◆ Adequate denning habitat to ensure a healthy and sustainable population of fisher across their present range within the plan area.

#### **3.4.4.4. Northern goshawk**

Northern goshawks are widely distributed in British Columbia. In the Morice LRMP area they are found where forests have appropriate structure. The population in the plan area is estimated to be less than 450 pairs and is apparently stable. The subspecies present in the LRMP area, *Accipiter gentilis atricapillus*, is yellow listed, which usually means that the species' welfare is not of immediate conservation concern, however, it has been identified as being a long term conservation concern.

Northern goshawk is generally considered to be resident all year, although during occasional winters substantial numbers of goshawks move south, perhaps in response to prey scarcity. Goshawks use three types of habitat: nesting areas, post-fledging areas and foraging areas. Nesting areas form the core for activities during the nesting season and are aggressively defended by the adult pair. Usually more than one nest site is present in a nest area. Breeding pairs often return year after year to the same nest areas. Nest areas also form the cores of fledgling activity once the young birds leave the nest, although over time activity centers shift gradually away from the nests, usually in the direction from which adults bring food. Nesting and post-fledging activities are typically confined to an area of about 24 hectares, and usually occur away from forest edges, in mature, closed canopy forest with an open understory.

Goshawk requirements for foraging habitat are still poorly understood, but these birds are widely considered to be specialist predators dependent on particular types of older forest. Their short rounded wings and long tail are considered to be adaptations for manoeuvring through trees in forested habitat. They are ambush predators that attack prey with a short explosive flight from a perch, where they wait for prey to appear. Their method of hunting appears to require forest with well-spaced trees and a relatively open understory. Goshawks may also prefer mature forests, in order to avoid competition or harassment from other hawks, especially red-tailed hawks. Prey species of importance for northern goshawks in the plan area include red squirrels, grouse and snowshoe hares; many other species, including other small mammals, forest birds and ducks, are taken as well.

Northern goshawk is specifically considered in this LRMP because it is an identified species under the former *Forest Practices Code Act*. Additionally, northern goshawk is considered by some managers as a good indicator of landscape scale fragmentation of mature and old forest due to their preference for mature forest with a closed canopy. Goshawk nest sites will be managed through the application of specific wildlife management objectives, while goshawk foraging habitat requirements will be managed through seral stage and patch distribution monitoring (refer to Section 3.4.1, Biodiversity).

#### **Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats.
- ◆ Amount and availability of nesting habitats.

#### **Goals:**

- ◆ Adequate nesting and foraging habitat to ensure a healthy and sustainable population of northern goshawks across their present range within the plan area.

#### **3.4.4.5. Mountain Goat**

The British Columbia population of mountain goats is roughly estimated at 30,000 to 60,000 goats, of which approximately 1100 live in the Morice LRMP area. In British Columbia mountain goat is yellow listed, which usually means that the species' welfare is not of immediate conservation concern. However, as is true for goshawk, mountain goat is classed as S4,<sup>41</sup> which means that it is considered to be of long-term conservation concern. Mountain goats have low reproductive rates and are vulnerable to hunting mortality, which can increase as the result of new access. Goats spend little time greater than 500 metres from steep rocky terrain used as refuge from predators; goats in the LRMP area are found only where they have access to these habitats. Mountain goats are of interest in the LRMP due to their reliance on cliff features that are geographically fixed on the landscape and have a finite supply. Interactions with road development activities increase opportunities for wildlife viewing and hunter access. Most of the goats in the LRMP area are found south of the Bulkley River and north of Babine Lake.

Summer habitat for most goats consists of alpine ridges and meadows with nearby cliffs. The cliffs provide escape terrain, and the vegetation at high elevation typically provides more nutritious forage than nearby areas at lower elevations.

In the areas, such as the Telkwa Ranges, Nadina Mountain and Morice Mountain, goats use alpine habitats in summer and typically winter in subalpine areas nearby, often on southerly aspects. These goats will remain in, or occasionally return to, alpine locations during winter if wind scouring permits foraging at these locations. In portions of the LRMP area closer to the coast, and consequently with deeper alpine snowpack, goats probably migrate to forested winter range at lower elevations. Limited radio telemetry results from elsewhere in the Skeena region suggest that forested habitat as far as five kilometres from summer range may be used in winter.

Whether, or to what degree, wintering goats are dependent on forest canopy probably varies. Interior populations often winter in habitats with open or no forest canopy; coastal populations often choose dense mature canopy that is thought to intercept snow and permit access to forage.

While most goats in British Columbia and elsewhere follow the general pattern of summering in alpine areas with cliffs and wintering nearby or downhill (as dictated by snow depth), this pattern is not universal. Some goat populations also inhabit lower elevation areas all year round, so long as escape terrain is available. Within the central portion of the plan area, it is estimated that at least 150 animals use lower elevation cliff systems and canyons surrounded by forested terrain all year round.

Goats have broad tolerance for different foods; for example, they are one of the few native wildlife species that will eat Soopolallie and western hemlock. This characteristic, coupled with an ability to tolerate deep snow temporarily allow mountain goats to occupy coastal areas in which snow conditions are typically too severe for other native ungulates. The specific diet chosen by goats is dictated by what is available locally. Winter diets in interior areas are predominantly grasses and sedges, and in coastal areas predominantly browse. Summer diets vary but usually include a mixture of succulent herbs, newly growing grass and sedges, and browse.

#### **Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats and thermal cover.
- ◆ Opportunities for both dispersed and corridor goat movement between habitats.
- ◆ Disease transfer between livestock and mountain goat.

<sup>41</sup> The S series ranking is a numeric rank of relative imperilment applied at the provincial scale, based on the conservation status ranking system developed by NatureServe.

**Goals:**

- ◆ Adequate foraging habitat to ensure a healthy and sustainable population of mountain goats across their present range within the plan area.
- ◆ Functional goat movement corridors that minimize the risk of mountain goat displacement and mortality.

**3.4.4.6. Moose**

In British Columbia moose is yellow listed, which means that the species' welfare is not of immediate conservation concern. Provincially, moose are managed primarily as a hunted species. The provincial population is believed to be stable or declining in most areas. Periodic aerial census of moose has been undertaken in the Bulkley-Lakes area since 1983. The most recent census suggests that roughly 3,000 moose live in the Morice LRMP area.

In the Morice LRMP area, moose provide an important source of food for First Nations communities. They also provide a highly valued source of both food and recreational hunting opportunities to other resident hunters, and are a critical species for the local guiding industry.

During all seasons, moose tend to select habitats that provide abundant, high quality forage; this underlying selection is modified as needed to avoid predators, deep snow or excessive heat. During fall and early winter, moose in the LRMP area usually move to lower elevations in response to snow accumulation. During winters with high snow, shrub dominated wetlands, such as those in the Owen-Nadina area, support high densities of moose. Although such moose concentrations are impressive, surveys show that most moose winter at lower densities in more widely distributed locations. The long-term welfare of moose will depend greatly on habitat more widely distributed and less densely populated than locations like the Owen-Nadina complex.

Many moose use conifer cover, at least in late winter, but exactly why they do so is not certain. Various reasons have been hypothesized, including thermal shelter from heat and cold, predator avoidance and favourable snow conditions. While moose are in their winter coats, shelter from heat is important at temperatures above zero, however, there is no evidence to suggest that they require cover to escape cold. The role of cover in predator avoidance is uncertain, as is the role in moderating snow conditions. Wintering moose in the plan area preferentially eat willow wherever preferred species are available (especially Scouler's and Bebb's willows); red osier dogwood, Saskatoon and other shrub species are also utilized.

In summer, moose in the plan area distribute more widely and are found at higher elevation than they are in winter. Summer habitat may be as far as 80 km from winter range. Specific summer habitats vary; however, two ingredients are universal: a relative abundance of summer foods and thermal shelter. Heat stress is an important issue for moose during summer and access to shade and/or water is an important component of effective summer habitat. Summer foods include newly growing herbs, new shoots and leaves on shrubs, especially willow, and an assortment of aquatic plants that grow in lakes, ponds and other small waterbodies.

Often, winter range is considered the critical influence on moose populations; during winter, food availability is at its worst and moose suffer weight loss and lose conditioning. In fact, it is high quality summer food that supports growth, lactation and reproduction in moose. Winter range is not the only factor driving moose populations in the plan area, and it may not be the most important one.

**Issues:**

- ◆ Amount and availability of quality seasonal foraging habitats and thermal cover.

**Goals:**

- ◆ Adequate foraging habitat to ensure a healthy and sustainable population of moose across their present range within the plan area.

**3.4.4.7. Mule and White-tailed Deer**

In British Columbia mule and white-tailed deer are both yellow listed, which means that the species' welfare is not of immediate conservation concern. Provincially, both are managed primarily as hunted species.

Mule and white-tailed deer are widely distributed at low densities in the LRMP area during summer, but are confined to lower elevation habitats in winter. The LRMP area periodically experiences snow depths that significantly impede movement and foraging opportunities. During winters with atypically deep snow, both species are likely to suffer considerable winter mortality. Low elevation habitats in the SBS dk biogeoclimatic variant provide winter range which is very important to ensure survival of a portion of the deer population during winters of atypically deep snow. An important component of this key winter range is closed canopy, mature conifer forest, which enables deer to move in search of food when snow would otherwise be too deep and provides arboreal lichen, both as litterfall and as lichens still attached to trees.

Much of the best deer winter range is located in areas that are suitable for settlement and agriculture in the Bulkley and lower Morice Valleys, and in local areas near Owen and Francois Lakes; as a result, the value of much of it has been reduced due to clearing of conifer forests for timber production and for expansion of agricultural land. Careful management of deer winter range on suitable Crown land areas will be important for the long term welfare of these species in the LRMP area.

**Issue:**

- ◆ Amount and availability of functional winter range during winters with deep snow.

**Goals:**

- ◆ Functional deer winter range.

Wildlife and Wildlife Habitat: Grizzly Bear Objectives	Measures/Indicators	Targets
<p><b>Intent:</b> Objectives and management direction for grizzly bear apply only in Grizzly Bear Management Areas (see Map 11: Grizzly Bear Management Areas). This plan assumes that grizzly bear mortality cannot be effectively controlled in areas heavily developed for settlement and agriculture, and that grizzly bears attracted by habitat or human provided food are likely to be killed as a result of conflicts with humans.</p>		
<p>1. Maintain effective high value spring forage habitats for grizzly bears.</p>	<p>1.1 Proportion of potential high value spring forage habitats that are field verified prior to development activities.</p> <p>1.2 Proportion of known high value spring forage habitats not impacted.<sup>42</sup></p>	<p>&gt; 80% field verified where presence not known.</p> <p>&gt; 70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use predictive modeling<sup>43</sup> and existing field knowledge to outline potential high value spring foraging habitats.</li> <li>• Spring habitats are those that are productive ecosystems as suggested by predictive modelling or local or First Nations knowledge, and/or grizzly bears or grizzly bear tracks, feces, and/or sign of bear feeding between May 15 and July 15 in any year. Potential high value spring forage habitats include sedge dominated wetlands, avalanche tracks, herbaceous meadows and riparian areas.</li> <li>• Minimize brush control in high value grizzly bear foraging areas.</li> <li>• Maintain high value spring forage habitat by: <ul style="list-style-type: none"> <li>- achieving biodiversity targets for seral stage distribution, sensitive ecosystems and early seral structure; and</li> <li>- employing harvesting and silviculture strategies to maintain stand level forage supply (e.g. alternative harvesting strategies, cluster planting).</li> </ul> </li> </ul>	

<sup>42</sup> Impacted habitats are those where impact to soils or hydrology results in long-term (> 10 years) loss of productivity for spring forage.

<sup>43</sup> Habitat suitability modelling.

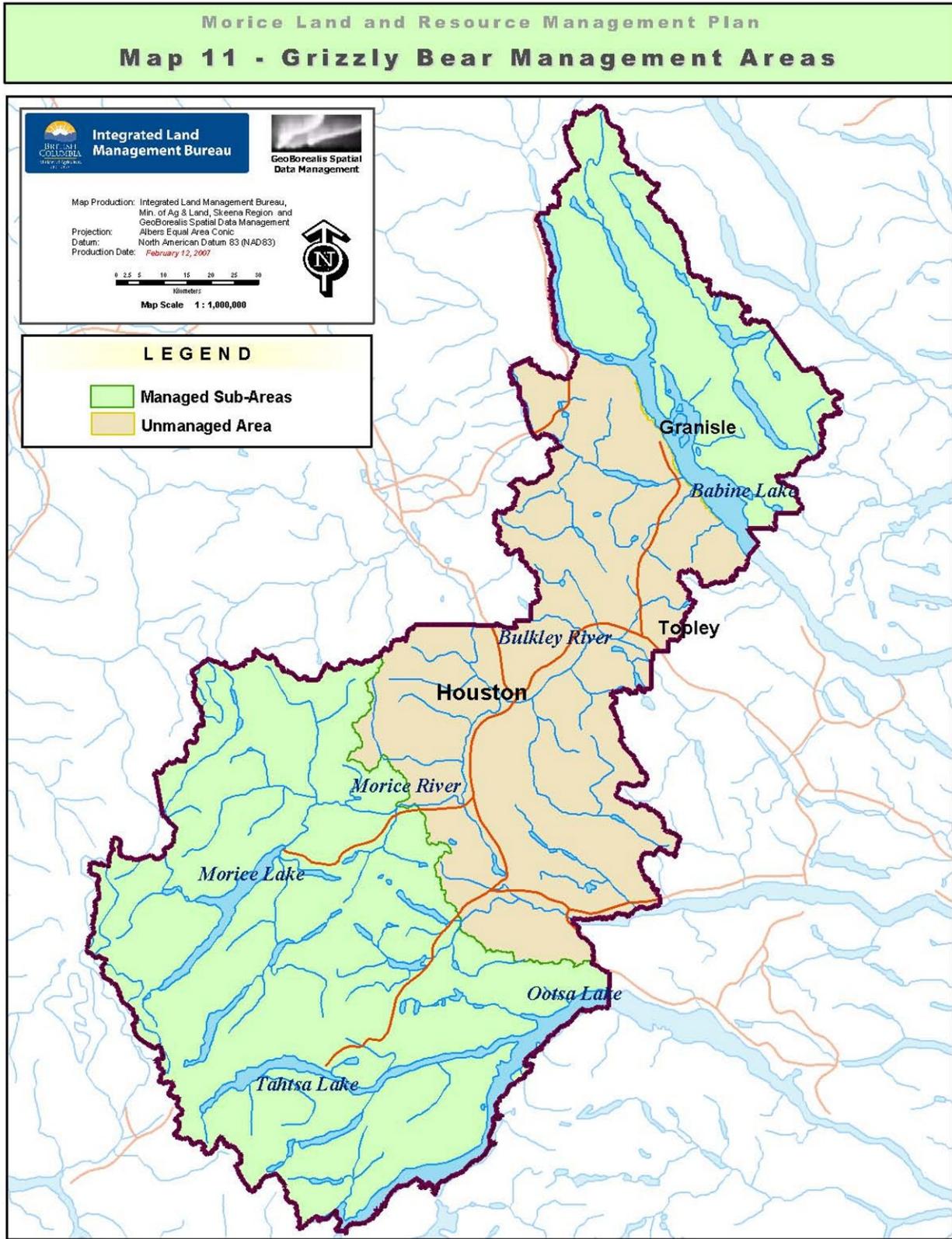
Wildlife and Wildlife Habitat: Grizzly Bear Objectives	Measures/Indicators	Targets
<p>2. <i>Limit disturbance from development activities adjacent to high value spring or salmon forage areas.</i></p>	<p>2.1 Proportion of known spring or salmon feeding sites &lt;200 metres from roads, trails, recreation sites or permanent facilities.</p>	<p>&gt; 70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Spring feeding sites are described in Objective 1 above.</li> <li>• Potential salmon feeding sites are any streams with known salmon spawning.</li> <li>• Salmon feeding sites are confirmed by presence of grizzly bears or grizzly bear tracks/feces, in either case, in combination with sign of bear feeding on salmon between August 15 and November 15 in any year.</li> <li>• Locate roads, trails, recreation sites, and permanent facilities to avoid high value spring or salmon foraging habitats and minimize disruption of bear habitat use.</li> </ul>	
<p>3. <i>Maintain effective thermal and security cover adjacent to high value spring forage habitats or salmon foraging areas.</i></p>	<p>3.1 Proportion of area of each known high value spring habitat or salmon foraging area that have effective thermal or security cover.</p>	<p>&gt; 70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Thermal Cover — provides shade; generally found in forests that have greater than 30% crown closure and heights over 7 metres.</li> <li>• Security Cover — provides visual screening especially from roads, and exists when vegetation obscures a person 20 metres away from the observer.</li> <li>• Configure forested areas adjacent to grizzly bear spring or salmon foraging habitats to provide shading, capture bedding areas and provide security cover. Ensure distance to cover is included in the design.</li> </ul>	
<p>4. <i>Reduce mortality risk to grizzly bears due to industrial and range activities.</i></p>	<p>4.1 Development and implementation of strategies/practices for effective planning of access, and timing and duration of industrial activities.</p>	<p>By 2008</p>
	<p>4.2 Number of grizzly bears killed as a result of livestock-bear conflicts.</p>	<p>Zero</p>
	<p>4.3 Number of grizzly bear complaints per year by industry or members of the public to the Conservation Officer Service.</p>	<p>Reduction</p>

Wildlife and Wildlife Habitat: Grizzly Bear Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Industrial activities of concern in Grizzly Bear Management Areas include road building, timber harvesting, drilling, blasting, mining, mine deactivation, and tourism facilities.</li> <li>• Reduce mortality risk to bears by using, as appropriate, the following: <ul style="list-style-type: none"> <li>- providing large areas where industrial activities are not occurring for periods of 20 to 30 years (i.e. using get in/get out forest harvesting strategies);</li> <li>- timing activities such as road building, harvesting and blasting to avoid impacting high value spring or salmon foraging habitats;</li> <li>- timely deactivation of roads after operations are complete;</li> <li>- using predominantly unpalatable grass mixes on roadsides and deactivated roads (i.e. minimize the use of clover);</li> <li>- avoid locating tourism infrastructure, such as lodges and trails, in close proximity to high value spring or salmon foraging areas; and</li> <li>- manage bear viewing to prevent displacement of bears or risk to people.</li> </ul> </li> <li>• Access restrictions should be sufficient to minimize roaded motorized access within selected portions of grizzly bear management areas for periods of time.<sup>44</sup> Cross reference to the Access GMD (Section 3.3.2). This provision is intended to provide security for bears in selected sub-units of grizzly bear management areas for a period of time. This can be achieved through the identification and use of control points where access restrictions such as bridge removal or gating can be employed.</li> <li>• Grizzly bear denning sites are likely not limiting within the LRMP area, however, development within high elevation steep slopes need to be on the lookout for concentrations of grizzly denning sites and avoid them.</li> <li>• High value berry producing sites (e.g. natural early seral and late seral huckleberry, raspberry, crowberry sites) should not be affected by long-term development. Refer to Section 3.3.4, Botanical Forest Products, for further direction on berry management.</li> <li>• Until replaced by alternative programs, use best management practices for preventing livestock-bear conflicts, as suggested by the Provincial Conservation Officer Service and Bear Aware program.</li> <li>• Plan development to ensure that grizzly bear/human conflicts are minimized.</li> <li>• This LRMP supports continuation of the Provincial Bear Aware program or similar efforts to increase public awareness of bear/human interactions and reduce bear mortalities.</li> </ul>	

<sup>44</sup> Planning of any access restriction for grizzly bear management requires that access by existing tenure holders (e.g. trappers, guides, tourism operators), First Nations and other interested parties be managed to meet the needs of the tenure holders, First Nations, other interested parties and grizzly bears.



Map 11. Grizzly Bear Management Areas



Wildlife and Wildlife Habitat: Woodland Caribou Objectives	Measures/Indicators	Targets
<p><b>Intent:</b> Objectives and management direction for woodland caribou apply only in the Caribou Management Areas (see Map 12: Caribou Management Areas) for the three caribou herds found in the LRMP Area: Telkwa, Tweedsmuir and Takla. It is recognized that woodland caribou within the LRMP area are currently designated under the Species at Risk Act of Canada and require a recovery strategy to be developed. The objectives, measures and targets outlined below are considered a minimum for caribou management and should not be seen as limiting any future recovery measures. If future monitoring indicates that impacts to caribou habitat and populations are occurring due to non-compliance with the objectives of caribou recovery strategies, then it is recommended that the full range of legislative tools be used by government to ensure the viability and long-term survival of caribou in the LRMP area.</p>		
<p>5. Maintain effective high value seasonal forage habitats for woodland caribou.</p>	<p>5.1 Proportion of potential high value seasonal forage habitats that are field verified prior to development activities.</p>	<p>80% field verified where presence not known.</p>
	<p>5.2 Proportion of known high value seasonal forage habitats not impacted.<sup>45</sup></p>	<p>&gt; 70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use predictive modeling and existing field knowledge to outline potential high value seasonal foraging habitats.</li> <li>• High value seasonal habitats are productive ecosystems as suggested by predictive modelling or local or First Nations knowledge, and/or evidence of caribou tracks and/or feeding.</li> <li>• High value habitats during spring, summer and fall are: <ul style="list-style-type: none"> <li>- those that produce large amounts of green forage used during spring, summer and fall seasons, and may include open habitats in riparian areas, or other forests with rich soils and open canopies; and</li> <li>- terrestrial lichen habitats (e.g. dry forest types).</li> </ul> </li> <li>• High value winter habitats include: <ul style="list-style-type: none"> <li>- alpine or subalpine ridges with terrestrial lichen;</li> <li>- dry forests with terrestrial lichen; and</li> <li>- forests, mostly but not entirely high elevation, with arboreal lichen.</li> </ul> </li> <li>• Comply with the existing and any future <i>Telkwa Caribou Recovery Plan</i> and use best management practices (see below) regarding woodland caribou until these practices are replaced by enactment of a species recovery strategy under the <i>Species At Risk Act of Canada</i>.</li> </ul>	

<sup>45</sup> For non-lichen sites, impacted habitats are those where impact to soils or hydrology results in long-term (> 10 years) loss of productivity for spring forage. For arboreal and terrestrial lichen sites, impacted habitats are those where the site is converted to a seral stages that reduces lichen production (i.e. mature/old to early seral).

Wildlife and Wildlife Habitat: Woodland Caribou Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction (Cont'd.)</b></p> <ul style="list-style-type: none"> <li>• Current best management practices for the Telkwa Caribou herd are found in Appendix 9, Interim Harvesting Guidelines for the Telkwa Recovery Plan Area. Refer to Map 12: Caribou Management Areas for locations of Key<sup>46</sup> Forested Habitats.</li> <li>• Current best management practices for the Takla herd are based on the ungulate winter range guidelines for the Takla herd and are found in Appendix 10.</li> </ul>	
<p>6. Maintain effective calving / post-calving habitats for woodland caribou.</p>	<p>6.1 Proportion of potential calving / post-calving habitats that is field verified prior to development activities.</p>	<p>80% field verified where presence not known.</p>
	<p>6.2 Proportion of known calving / post-calving habitats not impacted.<sup>47</sup></p>	<p>100%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use predictive modeling and existing field knowledge to outline potential calving / post-calving habitats.</li> <li>• Calving and post-calving habitats include high elevation (&gt;1200 m) alpine and sub-alpine habitats, wetland complexes and known calving islands (Map 12: Caribou Management Areas).</li> <li>• Presence of multiple (&gt;3) caribou cows with calves indicates calving/post-calving habitats.</li> <li>• Comply with the existing and any future Telkwa Caribou Recovery Plan and use best management practices regarding woodland caribou until these practices are replaced by enactment of species recovery strategies under the <i>Species At Risk Act of Canada</i>.</li> </ul>	
<p>7. Maintain effective security cover adjacent to high value seasonal forage or calving / post-calving habitats.</p>	<p>7.1 Proportion of area of each known high value foraging or calving / post-calving habitats that has effective screening cover.</p>	<p>&gt; 70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Screening cover is located adjacent to high value seasonal forage or calving / post-calving habitats (defined in Objectives 5 and 6 above).</li> <li>• Screening Cover — provides visual screening especially from roads; and exists when vegetation obscures a person 20 m away from the observer.</li> </ul>	

<sup>46</sup> “Key” Forested Caribou Habitats are defined as outlined in the Interim Harvesting Guidelines for the Telkwa Recovery Plan Area (Appendix 9).

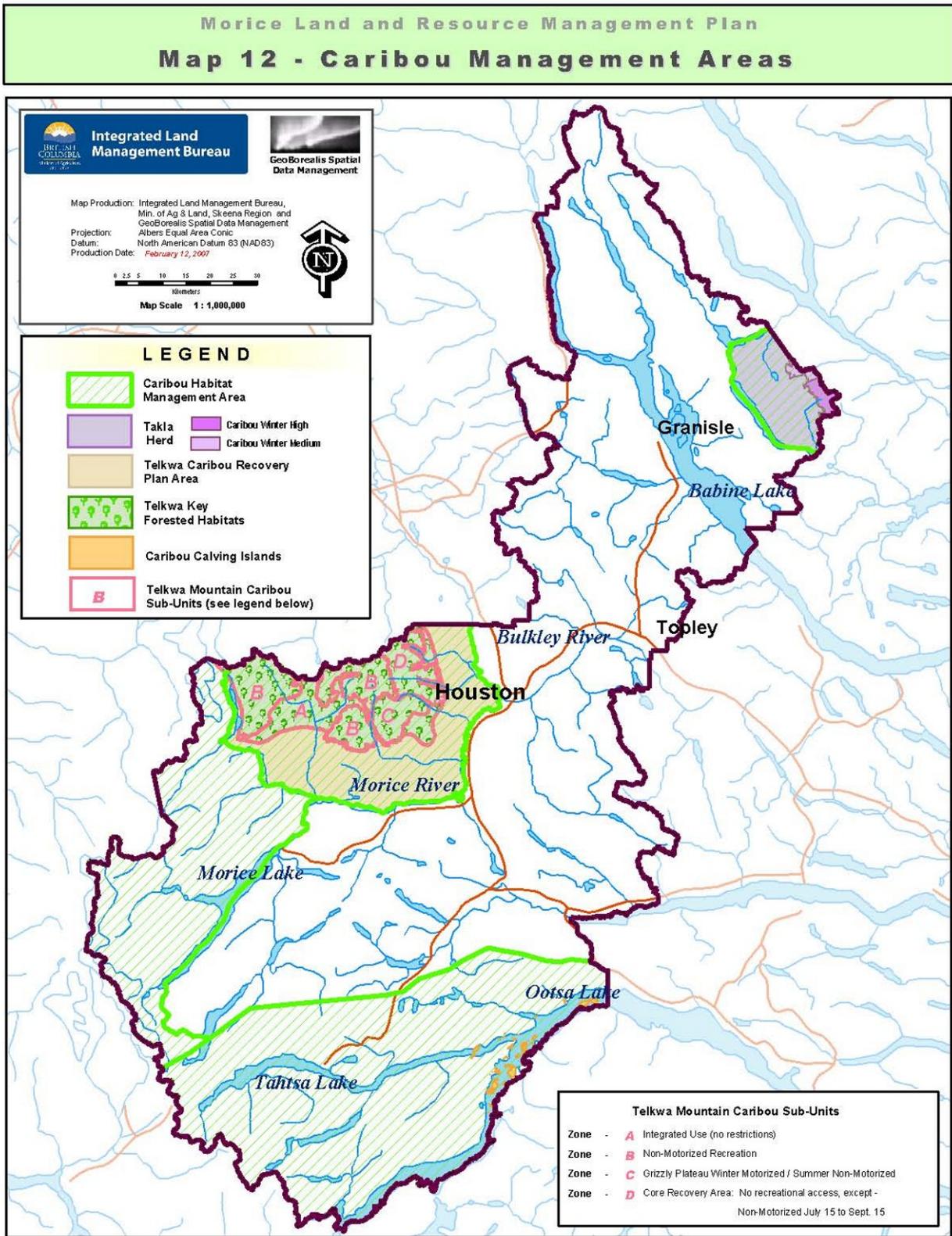
<sup>47</sup> Impacted calving and post-calving habitats are those with permanent facilities or roads in them.

Wildlife and Wildlife Habitat: Woodland Caribou Objectives	Measures/Indicators	Targets
8. <i>Limit disturbance to caribou from development activities adjacent to calving / post-calving habitats.</i>	8.1 Amount of human, industrial, or commercial activity during calving season within or near calving / post-calving areas.	No human, industrial or commercial activity on known calving islands (Map 12: Caribou Management Areas).  No industrial activities within 500 metres of known calving / post-calving habitats from May 15 to June 30.
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Calving / post-calving habitats are defined above (Objective 6).</li> </ul>	
9. <i>Limit disturbance of caribou as a result of motorized activities in identified caribou management sub-areas.</i>	9.1 Incidence of seasonal motorized access within identified caribou management sub-areas.	Zero
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Identified caribou management sub-areas are from the <i>Telkwa Caribou Recovery Plan</i> and the proposed Ungulate Winter Range map for the Takla Caribou herd (Map 12: Caribou Management Areas).</li> <li>• The sub-areas map identifies areas where winter motorized access is restricted and where summer motorized access is restricted.<sup>48</sup></li> <li>• Where practicable, avoid repeated flights in or near no-fly zones, identified through the <i>Telkwa Caribou Recovery Plan</i> on Map 12: Caribou Management Areas, during the period May 15 to June 30. In other Caribou Management Areas, use best management practices when operating aircraft in the vicinity of caribou habitat. Inform local pilots of known high value areas and season of use. Provide information on flying and landing practices that minimize caribou disturbance.</li> </ul>	
10. <i>Limit risk of disease transfer between caribou and cattle.</i>	10.1 Number of new grazing tenures issued above 1000 metres within the Telkwa and Takla Caribou Management Areas or south of Tahtsa Reach and Tahtsa Lake in the Tweedsmuir Caribou Management Area.	Zero

<sup>48</sup> Planning of any access restriction for caribou management requires that access by existing tenure holders (e.g. trappers, guides, tourism operators, etc.), First Nations and other interested parties be managed to meet the needs of the tenure holders, First Nations, other interested parties and grizzly bears.

Wildlife and Wildlife Habitat: Woodland Caribou Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Where possible, investigate all known caribou deaths to determine if a disease communicable between livestock and caribou was the cause.</li> <li>• Encourage development of best management practices for management of herd health of livestock in the vicinity of caribou.</li> <li>• Existing grazing tenures will be renewed subject to compliance with best management practices.</li> </ul>	

Map 12. Caribou Management Areas



Wildlife and Wildlife Habitat: Mountain Goat Objectives	Measures/Indicators	Targets
<b>Intent:</b> Objectives and management direction for mountain goat apply only in Mountain Goat Management Areas (see Map 13 : Mountain Goat Habitat Areas). Map 13 shows suitable and known mountain goat use areas based on predictive habitat suitability modeling and extensive survey work.		
11. Maintain effective thermal cover adjacent to known mountain goat use areas.	11.1 Proportion of potential thermal cover that is field verified prior to development activities.	> 80% field verified where presence not known.
	11.2 Proportion of known thermal cover habitats not impacted. <sup>49</sup>	> 70%
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Suitable and known mountain goat habitat areas shown on Map 13 (Mountain Goat Habitat Areas) indicate potential areas to check prior to development activities. Other areas are steep slopes (&gt; 40 degrees) within 5 km of known goat locations.</li> <li>• Presence of mountain goats, trails, hair or feces indicates habitat use in the area.</li> <li>• Thermal cover is generally found in forests that have greater than 30% crown closure and heights over 7 metres.</li> <li>• Where feasible incorporate old growth areas in and/or around occupied goat habitat areas.</li> </ul>	
12. Maintain important mountain goat trails.	12.1 Development and implementation of best management practices for access management in the vicinity of mountain goat trails.	100% of land within 3 km of known goat trails will have no main roads or will have best management practices applied by 2008.
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Important mountain goat trails will include trails identified based on local and First Nations knowledge.</li> <li>• Presence of animal trail occupied by mountain goats, or with mountain goat hair or feces will indicate an important mountain goat trail.</li> <li>• Where feasible locate main roads greater than 3km from mountain goat trails.</li> </ul>	

<sup>49</sup> Impacted thermal cover habitats are those where the thermal cover has been removed

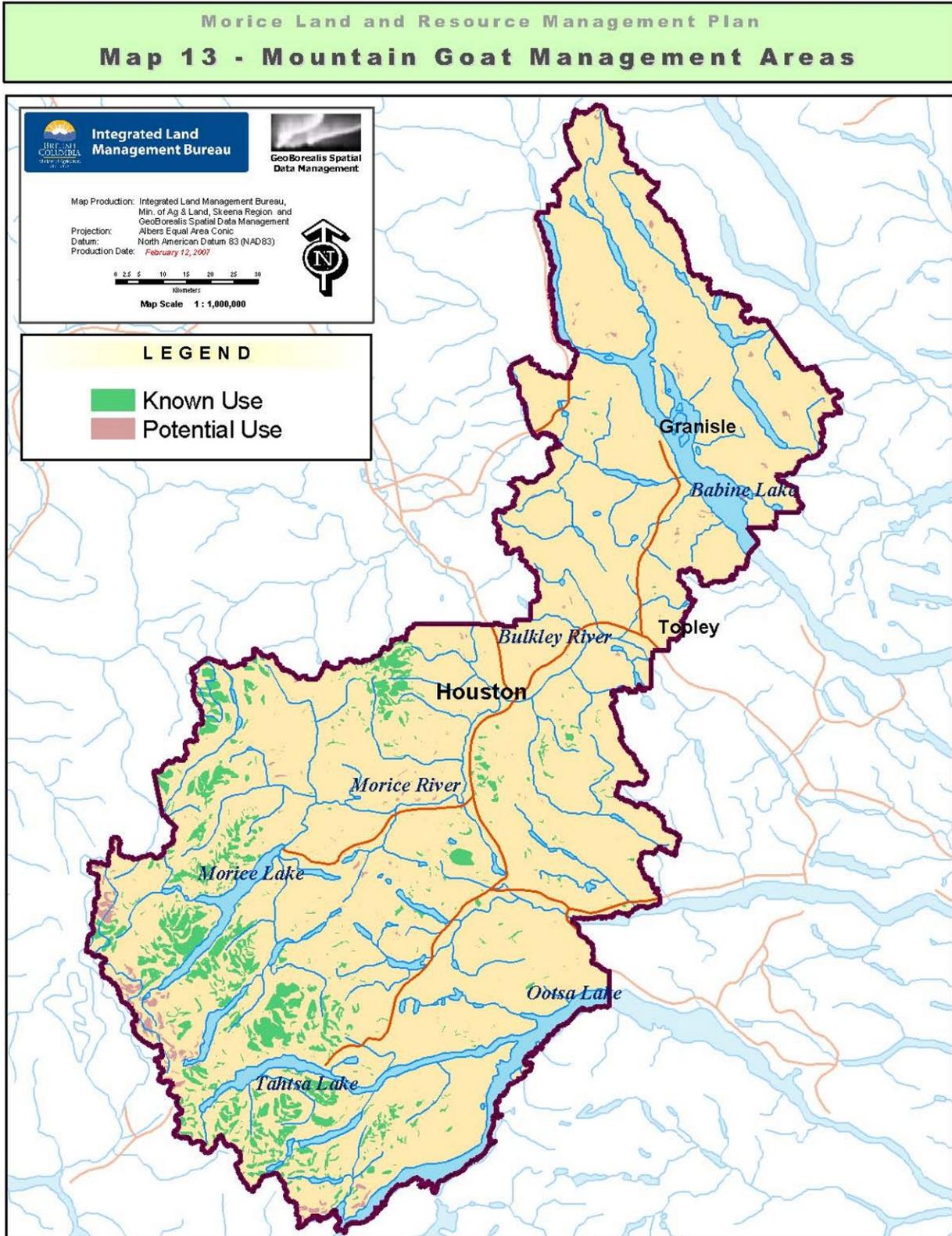
Wildlife and Wildlife Habitat: Mountain Goat Objectives	Measures/Indicators	Targets
13. <i>Reduce mortality risk to mountain goats due to access.</i>	13.1 Development and implementation of best management practices for access management in the vicinity of occupied mountain goat habitat (Map 13: Mountain Goat Habitat Areas).	100% of land within 3 km of occupied mountain goat habitats will have no roads or will have best management practices by 2008.
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Use access restrictions wherever possible to minimize risk to goats related to roaded access.<sup>50</sup></li> <li>• Minimize the length of time that roads are drivable within 1 km of occupied goat habitat. Deactivated roads should not be driveable by 4 wheel vehicles (includes ATVs).</li> <li>• Where feasible locate roads greater than 3km from occupied mountain goat habitat.</li> </ul>	
14. <i>Limit risk of disease transfer between domestic sheep, goats or llamas and mountain goats.</i>	14.1 Presence of domestic sheep, goats or llamas uncontrolled within 10 km or controlled within 3 km from occupied mountain goat habitat.	Zero
	<b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• “Controlled use” means that the domestic animals are contained in a specified area through the use of shepherds, herding dogs, temporary fencing or corrals, etc.</li> </ul>	
15. <i>Limit disturbance to mountain goats as a result of motorized activities in identified mountain goat areas.</i>	15.1 Incidence of summer motorized access within alpine and parkland areas of Morice and Nadina mountains.	Zero.
	15.2 Development and implementation of best management practices for winter motorized access and all-season air access.	Best management practices for both winter motorized and all-season air access developed and implemented by 2008.

<sup>50</sup> Planning of any access restriction for mountain goat management requires that access by existing tenure holders (e.g. trappers, guides, tourism operators, etc.), First Nations and other interested parties be managed to meet the needs of the tenure holders, First Nations, other interested parties and mountain goats.



Wildlife and Wildlife Habitat: Mountain Goat Objectives	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Use best management practices when operating aircraft in the vicinity of occupied mountain goat habitat. Inform local pilots of known high value areas and season of use. Provide information on flying and landing practices that minimize goat disturbance.</li> <li>• Where practicable, avoid repeated flights in or near occupied mountain goat areas identified on Map 13: Mountain Goat Habitat Areas.</li> <li>• Consider the use of an adaptive management approach to refine and test best management practices for helicopter and winter motorized access.</li> <li>• Further management direction for motorized recreation use on Morice and Nadina mountains is found in Sections 4.2.11 and 5.3.3, respectively.</li> </ul>	

Map 13. Mountain Goat Habitat Areas



Wildlife and Wildlife Habitat: Other Wildlife Species Objectives	Measures/Indicators	Targets
<i>Intent: Objectives and management direction for other wildlife species are intended to maintain important forage habitats or habitat features such as dens and nests as they are encountered during development activities.</i>		
<i>16. Maintain, restore or enhance effectiveness of wildlife habitats and features important to species at risk.</i>	16.1 Development and implementation of BMPs to identify and maintain these habitats and features.	Within 5 years of LRMP approval or designation of a species as 'at risk'.
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Current 'species at risk' not addressed elsewhere in general management direction include: <ul style="list-style-type: none"> <li>- American Bittern</li> <li>- Peregrine Falcon (<i>anatum</i> sub-species)</li> <li>- Short-eared Owl</li> <li>- Swainson's Hawk</li> <li>- Trumpeter Swan</li> <li>- Wolverine</li> </ul> </li> <li>• Future 'species at risk' will be determined through the Conservation Data Centre designation as red or blue listed or through the Committee on Status of Endangered Wildlife in Canada (COSEWIC) designation of 'endangered' or 'threatened'.</li> </ul>	
<i>17. Maintain, restore or enhance effectiveness of wildlife habitats and features important to species of interest.</i>	17.1 Development and implementation of BMPs to identify and maintain these habitats and features.	By 2008 or as need dictates.
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Develop best management practices for the following regionally-defined species of interest and for new species of interest as they arise in the future: <ul style="list-style-type: none"> <li>- Bald Eagle</li> <li>- Beaver</li> <li>- Black Bear</li> <li>- Elk</li> <li>- Lynx</li> <li>- Marten</li> <li>- Osprey</li> <li>- Snowshoe Hare</li> </ul> </li> </ul>	

Wildlife and Wildlife Habitat: Other Wildlife Species Objectives	Measures/Indicators	Targets
18. Minimize the risk of disease transfer between livestock and wildlife.	18.1 Occurrence of identified disease transfer.	Zero
	18.2 Development of BMPs to minimize disease transfer.	Within 5 years of plan approval.
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Monitoring will be opportunistic in conjunction with other management activities.</li> </ul>	
19. Maintain or enhance moose summer and winter forage habitats.	19.1 Development and implementation of BMPs for maintaining and/or enhancing moose forage.	By 2008
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>Use predictive modeling and existing field knowledge to outline potential high value summer or winter foraging habitats.</li> <li>Develop and apply best management practices regarding management of thermal cover and screening for moose.</li> <li>Thermal cover is found in coniferous forests with canopy closures greater than 30% and heights greater than 7 metres. Thermal cover areas should be wide enough to provide adequate resting and movement areas (e.g. &gt; 50m from edges).</li> <li>Production of food species used by moose in summer should be considered a comparable priority to production of winter food. Moose summer forage production may be enhanced through alternate silviculture methods such as willow regrowth (species such as Scouler's, Bebb's) on the perimeter of harvest areas (+/- 50m), cluster planting, alternate stocking standards, coppicing existing willow and increased spacing of crop trees.</li> <li>The intent of measures regarding moose habitat is to ensure increasing, or at least stable, moose populations in order to provide sustainable harvest opportunities for First Nations, resident and guided hunters, and continuing viewing opportunities for individuals who enjoy viewing moose in the LRMP area.</li> <li>This LRMP supports and encourages regular aerial census of moose populations in the Bulkley Valley/Lakes area because accurate population data is critical to effective management of sustainable harvest.</li> </ul>	

Wildlife and Wildlife Habitat: Other Wildlife Species Objectives	Measures/Indicators	Targets
20. <i>Maintain or enhance deer winter range.</i>	20.1 Proportion of identified deer winter range maintained in effective winter range condition.	100%
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Both mule deer and white-tailed deer are considered under this management objective.</li> <li>• Deer winter range for the purpose of this LRMP is considered to be the SBS dk biogeoclimatic variant.</li> <li>• Deer winter range is indicated by the presence of deer in January and/or presence of preferred food shrubs, in conjunction with mature conifer cover, within the SBS dk indicate deer winter range.</li> <li>• Retain closed canopy forest in low elevation habitats used by wintering mule and white-tailed deer. The intent is to retain the effectiveness of key winter ranges in the SBS dk variant. These are habitats of last resort during deep snow winters. They usually contain a combination of closed canopy conifer forest and adjacent shrub and herb communities that contain important foods such as huckleberry, rose, raspberry and grasses. The conifer forest on these winter ranges also provides arboreal lichens, both those attached to trees and those which become available as litterfall.</li> </ul>	
21. <i>Maintain known northern goshawk nest sites.</i>	21.1 Implementation of BMPs to known goshawk nest locations.	100%
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Northern goshawk nests are identified through opportunistic identification of nesting areas during operational field work and known sites from local and First Nations knowledge.</li> <li>• Establish a no harvest zone of approximately 24 hectares around each known nest site, except as varied in specific adaptive management trials. The no harvest zone should include and buffer alternative nest sites, roosts, plucking perches and juvenile post-fledging areas, and should be designed to maximize the value of the area in maintaining nest area occupancy and breeding success.</li> <li>• Where multiple nests occur, provide at least a 100 metre forested buffer around each nest.</li> <li>• From Feb. 15 to Aug. 15, limit mechanical activity within 500 metres, and human activity within 200 metres, of nest sites. Mechanical activities include road building, harvesting, drilling and blasting; human activities include layout, assessments, hand-falling, surveying and silviculture.</li> </ul>	

Wildlife and Wildlife Habitat: Other Wildlife Species Objectives	Measures/Indicators	Targets
22. <i>Maintain known fisher den sites.</i>	22.1 Proportion of known fisher den trees retained and buffered in non harvested areas.	100%
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Fisher den sites are identified through opportunistic observation and known sites from local and First Nations knowledge.</li> <li>• Fisher den trees are usually in large diameter cottonwood (&gt;40cm dbh) or sometimes other tree species of similar size that contain large cavities.</li> <li>• Attempt to incorporate identified fisher den trees into forested reserves (e.g. edge wildlife tree patches, riparian management areas) that maintain continuity of overhead cover with nearby forest.</li> </ul>	
23. <i>Maintain known black bear den sites.</i>	23.1 Proportion of known den sites maintained.	100%
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Black bear den sites are identified through opportunistic observation and known sites from local and First Nations knowledge.</li> </ul>	
24. <i>Maintain structural features important for the habitat needs of a variety of wildlife species.</i>	24.1 Development and implementation of BMPs for important structural habitat features.	By 2008 or as need dictates
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Important habitat features for wildlife are those needed for specific life requisites, such as denning/nesting, feeding and territorial marking. Examples of important habitat features that need to be considered include, but are not restricted to large stick nests (e.g. eagle/osprey), den sites (e.g. wolf, wolverine), large diameter trees with evidence of nest holes, caves and limestone outcrops (used by bats and reptiles), bear mark trees, wildlife trails and mineral licks.</li> <li>• Attempt to incorporate identified features into forested reserves. Where feasible and appropriate for the feature, maintain connectivity between features and mature overstory cover at block edges.</li> <li>• Retain a proportion of debris piles from harvesting activities as potential black bear and other species denning sites.</li> <li>• Retain large live trees and snags in riparian areas as nest sites for ospreys and as nest sites and congregating sites for bald eagle.</li> <li>• Manage elk winter range on Crown lands by retaining grassland ecosystems in their natural state (refer to Objective 6 in Section 3.4.1, Biodiversity).</li> <li>• Additional management direction that will serve to maintain important wildlife habitat features can be found in Sections 3.4.1 (Biodiversity) and 3.4.2 (Fish, Fish Habitat and Aquatic Ecosystems).</li> </ul>	

### 3.4.5 Air Quality

The Morice plan area is located within the Bulkley Valley airshed. The Bulkley Valley experiences strong temperature inversions (valley bottoms colder than the higher elevations) during winter months, with less severe inversions occurring throughout the balance of the year. Inversions result in stable conditions characterized by minimal atmospheric mixing. Such conditions have limited capacity to disperse emissions, resulting in the build-up of pollutants in the valley bottoms. Local topography influences the retention of air contaminants, as does radiative cooling of mountain and hill slopes, resulting in the flow of cold air down into the valley bottoms. There are also long periods of high pressure anticyclones in the winter, yielding deep subsidence inversions that additionally trap pollutants in interior mountainous communities such as the Bulkley Valley.

Air contaminants in smoke emissions are the primary source of air pollutants within the Bulkley Valley Airshed. Particulate matter (PM) is one of the main air contaminants in smoke. Guidelines for air quality, including particulate matter, are provided by both the federal and provincial governments. An Airshed Management Plan is currently being implemented for the Bulkley Valley and Lakes District.

#### Issues:

- ◆ Impacts to human health associated with poor air quality.
- ◆ Visual impacts from smoke.
- ◆ Impacts to flight paths and the safe operation of aircraft due to limited visibility.

#### Goals:

- ◆ Air quality that supports healthy communities.
- ◆ Good visibility.

Air Quality Objective	Measures/Indicators	Targets
1. Maintain and improve air quality.	1.1 Incidence of unacceptable air quality as defined by applicable federal (CCME) standards for ambient air quality.	As per CCME <sup>51</sup> standards.
	1.2 Incidence of unacceptable air quality as defined by applicable provincial standards for ambient air quality.	Less than 1% of days where air quality exceeds applicable provincial guidelines. <sup>52</sup>
	1.3 Number of recorded complaints of adverse visual impacts.	Zero
	1.4 Number of air quality health advisories.	Zero

<sup>51</sup> CCME = Canadian Council of Ministers of the Environment

<sup>52</sup> Provincial Guideline for air quality is for ambient air to be less than 50 µg/m<sup>3</sup> PM10.

Air Quality Objective	Measures/Indicators	Targets
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Promote productive use of wood residue.</li> <li>• Manage the timing and amount of burning<sup>53</sup> to minimize health effects and visual quality impacts.</li> <li>• Manage for low or no impact on flight operations for small aircraft; burning activities to be coordinated with flight centres.</li> <li>• Consideration to be applied for culturally significant activities (e.g. burning for berries).</li> <li>• Coordinate implementation with the Bulkley Valley-Lakes District Airshed Management Plan.</li> <li>• The intent is to strive for targets, however it is recognized that some instances may occur where identified thresholds are exceeded.</li> </ul>	

### 3.4.6 Invasive Organisms

Invasive organisms, such as noxious weeds, can put many resource values at risk through the displacement of native species, including those which are already considered rare or threatened. Through the displacement of these species the value of the land base to those who rely on it, both economically and socially, can be greatly reduced. In addition, the displacement of native species can have significant impacts on the fish and wildlife populations that rely on them.

#### Issues:

- ◆ Risk to natural ecosystem communities, components and species due to invasive, non-native organisms.

#### Goals:

- ◆ Elimination of aquatic and terrestrial invasive non-native organisms (e.g. noxious weeds).
- ◆ Limited spread of invasive native organisms (e.g. noxious weeds).

<sup>53</sup> Examples of burning are; burning of wood waste, land clearing and prescribed burning.



Invasive Organisms Objective	Measures/Indicators	Targets
<p><i>1. Minimize the spread and, where possible, eradicate invasive terrestrial and aquatic organisms.</i></p>	<p>1.1 Number of species of invasive organisms.</p> <p>1.2 Area covered by invasive organisms.</p> <p>1.3 Percent of area of noxious weeds treated compared to area infected by category (as listed in Appendix 11).</p> <p>1.4 Percent of area of non-categorized invasive organisms treated compared to area infected.</p>	<p>No new species</p> <p>Decrease from current levels</p> <p>80% of infected areas treated for category 1 species.<sup>54</sup></p> <p>75% of infected areas treated for category 2 species.</p> <p>75% of infected areas treated for category 3 species.</p> <p>75% of infected areas treated for category 4 species.</p> <p>70%</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Prevent new infestations (e.g. prompt planting of disturbed areas such as right of ways using certified native seeds).</li> <li>• Control infestations using the most effective method while considering social, cultural and environmental values.</li> <li>• Support coordination of a weed control committee, consisting of multi-agency and public members, which will provide public education and outreach on prevention, detection treatment and signage.</li> <li>• Further direction for managing noxious weeds can be found in the Northwest Invasive Plant Committee Plan and pest management plans approved by government.</li> </ul>	

<sup>54</sup> A list of noxious weeds by category can be found in Appendix 11.

### 3.4.7 Point Source Pollution

Point source pollutants are regulated through both Federal and Provincial legislation and policy. However, due to their impacts on the landbase, an objective is provided in the LRMP for the purposes of monitoring.

#### Issues:

- ◆ Impacts of pollution on environmental and health values.

#### Goals:

- ◆ Clean water and soils.

Point-Source Pollution Objective	Measures/Indicators	Targets
1. Maintain clean soil and water through avoidance of point source pollution.	1.1 Incidence of adverse point source impacts to soil and water.	Zero

### 3.4.8 Use of Fertilizers and Pesticides

The use of fertilizers is also regulated through both federal and provincial legislation and policy. Fertilizers are generally used for improving the establishment and/or growth of vegetation. Fertilizers are also used for mining post-closure activities. Specific applications include:

- ◆ maintenance or enhancement of range forage and crop production;
- ◆ establishment of tree seedlings and enhancement of timber production;
- ◆ establishment of vegetation for rehabilitation and reclamation of degraded sites (e.g. decommissioned roads, post-closure mines);
- ◆ binding of metals and chemicals in open pit mines and tailing ponds; and
- ◆ establishment of vegetation for maintenance of slope and soil integrity.

The planning table discussed pesticide use as a potential issue to be addressed in the LRMP. Pesticides are used for a variety of purposes within the Morice plan area, including the treatment of vegetation that is impeding crop tree seedling growth, the removal of noxious and/or invasive plants, and the control of insects that pose a threat to land based resources. Pesticides used within the plan area vary greatly in the level of toxicity and the target species for treatment. The use of these pesticides is regulated through both provincial and federal legislation and policy.

Through the course of discussions, it was recognized that a number of sectors held opposing, value-based views on pesticide use. Some sectors held the view that pesticide use posed significant risks to human health, cultural heritage values and the environment and therefore should not be permitted in the plan area. Other sectors, while expressing concerns about the health and environmental impacts associated with pesticide use, believed that it should be available for use in appropriate extenuating circumstances (e.g. West Nile virus, noxious weed infestations). And still other sectors expressed the view that pesticides were an important tool in the resource management tool box, and that with strict regulation and best management practices, risks to human health and the environment could be minimized thus allowing pesticides to be used in situations where they were deemed to provide the most effective solution.

As there appeared to be very little common ground on which to build an agreement, the planning table did not explicitly address pesticide use as a resource management issue in the LRMP. The nature of the discussions held on pesticide use, were documented and included as an appendix to the LRMP. Sector submissions on pesticide use are located in Appendix 12. In addition, First Nations have made the following statements about the use of fertilizers and pesticides on their traditional territories:

- ◆ The Office of the Wet’suwet’en do not support the use of chemicals (pesticides and fertilizers) within their House Territories stating that pesticides conflict with their cultural interests.
- ◆ The Yekooche First Nation state that the use of chemicals conflicts with their cultural interests. The Yekooche First Nation consultation protocol requests that proponents must consult with the Yekooche First Nation with regards to proposed use of chemicals in their territory.

**Issues:**

- ◆ Impacts of pollution on environmental and health values.
- ◆ Conflicting views over pesticide use (including concern by the Office of the Wet’suwet’en over impacts to cultural values).
- ◆ Impacts associated with the use of fertilizers.

**Goals:**

- ◆ Clean water and soils.

<b>Use of Fertilizers Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>
1. <i>Avoid adverse impacts from the use of fertilizer.</i>	1.1 Incidence of adverse impacts. 1.2 Incidence of adverse point source impacts to soil and water.	Zero Zero
<b>Use of Pesticides Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>
2. <i>Minimize and, where possible, eliminate the use of pesticides in silviculture practices.</i>	2.1 Area of forest land where pesticides are used  <b>Implementation Direction</b> <ul style="list-style-type: none"> <li>• Identify and disclose spatial information and site series and block stratification data regarding historical and proposed pesticide use.</li> <li>• Employ pest management planning processes that will consider information from traditional use studies, archaeological studies and traditional ecological knowledge (e.g. not using pesticides in areas where infestation is not an issue).</li> <li>• The Office of the Wet’suwet’en will be engaged and meaningfully consulted on pesticide use, including the establishment of a process for this purpose that involves areas within their territory; where possible, pesticide use will be avoided.</li> </ul>	Decrease

## 4. Area Specific Management Direction

Area Specific Resource Management Zones (RMZs) are areas where management direction for some resource values is incremental to General Management Direction (GMD) as outlined in Section 3.0. The Morice LRMP identifies twenty zones for area specific management. These zones are shown in Map 3 (LRMP Resource Management Zones). Each Area Specific RMZ has management objectives, incremental to the GMD, that have been developed to address the distinct values for that area. Mineral exploration and development are acceptable practices in all Area Specific RMZs.

### 4.1 No Timber Harvesting Areas

Five Area Specific RMZs have been designated as no timber harvesting areas. Commercial timber harvesting is not permitted in these areas.

#### 4.1.1 Morice Ranges – Nanika Lake

The Morice Ranges – Nanika Lake Area Specific RMZ is located in the south western portion of the plan area. The zone follows the plan boundary and comprises the Morice Mountain Range and the area surrounding Nanika Lake, but excludes Morice Lake. The overall RMZ consists of two polygons that are bisected by the Atna River Protected Area (Map 3). Ecosystems unique to the plan area are found in this area, including coastal-influence forests.

Nanika Lake is a large, remote lake framed by forests and rugged snowcapped coastal mountains. The lake comprises part of a chain of lakes used recreationally by canoeists and kayakers, however, the remoteness of Nanika Lake and lack of portage connecting it to the more accessible Kidprice Lake results in a low level of use.

The zone includes the headwaters to the Morice watershed, which is a significant plan area watershed. The Morice has very high fisheries values and is one of the most important salmon and steelhead rivers in the Skeena basin. The high fisheries values in this area are integral to the Wet'suwet'en people and their culture. Careful attention to future development plans and associated access are key to maintaining the critical and sensitive fisheries habitats in the Morice watershed.

In addition to high fisheries values, this area supports a range of wildlife habitats, including old forests, wetland ecosystems, avalanche tracks, high elevation meadows and riparian ecosystems. The area supports healthy populations of grizzly bear, wolverine, and mountain goat, as well as other species, and this is attributed, in part, to the wilderness character of the area and its lack of development. Caribou from both the Tweedsmuir and Telkwa herds use this area seasonally; expansion of the Telkwa herd may increase this use. These healthy wildlife populations support high value guiding and hunting opportunities.

#### Issues:

- ◆ Impacts to the integrity of the ecosystems, and fish and wildlife habitat.
- ◆ Impacts to water quality.
- ◆ Impacts to sensitive wetland ecosystems.
- ◆ Risk of loss to local recreational value.

**Goals:**

Management as a timber harvest exclusion zone (including no timber salvage).  
 Conservation of a range of ecological values in a large, contiguous wilderness landscape.  
 Maintenance of critical fish and wildlife habitat.  
 Water quality that supports aquatic life.  
 Continued opportunity for a high value recreational experience.

**Management Intent:**

Area to be managed to reflect important ecological and recreation values, with no timber harvesting and limits on road development and settlement.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Conserve the function and integrity of large, contiguous forested ecosystems by managing as a non-timber harvesting area.</i>	1.1 Incidence of timber harvesting or salvage.	Zero	
<i>2. Maintain the quality of the wilderness recreation experience.</i>	2.1 Incidence of unacceptable impact to the recreation experience.	Zero	Avoid conflict among recreational uses. Manage for carrying capacity if impacts become unacceptable.
	2.2 Number of new roads.	Zero	It is recognized that some road development may be required for mine development. Avoid road development until advanced exploration begins — subsequent road construction is to be kept to a minimum.
<i>3. Minimize impacts to ecological and wildlife values as a result of resource use and development activities.</i>	3.1 Number of new roads.	Zero	It is recognized that some road development may be required for mine development. Avoid road development until advanced exploration begins — subsequent road construction is to be kept to a minimum.

Objective	Measures/Indicators	Targets	Implementation Direction
	3.2 Area of new settlement.	Zero	First Nations settlement is allowed. Leases for the purpose of commercial recreation and guiding are allowed. For recreation and tourism developments ecological values are the primary consideration.  No concentrated settlements allowed around the lake.
	3.3 Incidence of impact to alpine ecosystems.	Zero	No summer motorized recreational use in the alpine.
4. Maintain water quality to support healthy aquatic ecosystems.	<b>Intent:</b> Water quality in this RMZ is primarily addressed through GMD for Water (Section 3.4.3), which includes direction for the Morice Water Management Area (Map 10). Water quality is also addressed in Section 3.4.2 (Fish, Fish Habitat and Aquatic Ecosystems). Due to the sensitivity of the Morice and Nanika Lake systems to pollutants, and the resultant impacts to downstream fisheries values, the LRMP table has chosen to provide additional area-specific direction here to emphasize the need to protect water quality.		
	4.1 Compliance <sup>55</sup> with water quality objectives and water quality guidelines for chemical, biological and physical parameters for aquatic life.	100%	BMPs in the maintenance of water quality. The Watershed Advisory Committee <sup>56</sup> will provide a mechanism for reviewing and updating BMPs.  Establish baseline data for chemical, biological and physical parameters and their ecological relationship to one another.
	4.2 Number of events related to human and/or industrial development activities resulting in damage to aquatic ecosystems and habitat.	Zero	

<sup>55</sup> Guidelines for water quality are set provincially by the government. Government may also establish water quality objectives for specific water bodies pursuant to the *Environmental Management Act*.

<sup>56</sup> Refer to Water (Section 3.4.3), Objective 1.

Objective	Measures/Indicators	Targets	Implementation Direction
	4.3 Number of development related incidents of erosion and/or slope failure resulting in sedimentation into streams.	Zero	Establish baseline water quality levels through mapping of natural sediment sources and a description of the natural sediment regime (timing).

#### 4.1.2 Herd Dome

Herd Dome lies between Gosnell Creek and Burnie River. A small mountain range with low timber values, its value lies in its wilderness character that provides mountain goat habitat and historic and current caribou use. These attributes make it a highly valued area for a wilderness mountain experience.

##### Issues:

- ◆ Impacts to alpine and forested ecosystems.
- ◆ Impacts to the quality of the wilderness experience.

##### Goals:

- ◆ Intact alpine and forested ecosystems.
- ◆ Opportunities for a quality summer non-motorized wilderness experience.

##### Management Intent:

Area to be managed to reflect wildlife and recreation values, with no timber harvesting and limits on motorized recreation.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Conserve the function and integrity of large contiguous forested ecosystems by managing as a non-timber harvesting area.</i>	1.1 Incidence of timber harvesting or salvage.	Zero	
	1.2 Incidence of impacts to alpine ecosystems.	Zero	
<i>2. Maintain the quality of the wilderness recreation experience.</i>	2.1 Incidence of summer motorized recreational use in the Herd Dome area.	Zero	Refer to Section 3.2.6 (Recreation) for the motorized and seasonal access restrictions and area boundaries.

### 4.1.3 Starr Creek

Starr Creek Basin lies in the southwestern portion of the plan area east of Howson Range. The headwaters of Starr Creek are on Eagle Peak, eventually flowing into the Thautil River. Starr Creek falls within the Telkwa Caribou Recovery area, which has received current and historical use by caribou in both alpine and sub-alpine areas. High value mountain goat and grizzly bear habitats are also found in this area, which is relatively undisturbed by development activities.

Starr Creek supports high recreational values, particularly backcountry skiing and snowmobiling. A backcountry cabin, operated by the Bulkley Valley Cross Country Ski Club, is located in Starr Creek basin.

#### Issues:

- ◆ Risks to caribou recovery from recreational use.
- ◆ Conflicts among recreational uses.
- ◆ Loss of recreational opportunities.

#### Goals:

- ◆ Recreational use that is consistent with the Telkwa Caribou Recovery Strategy.
- ◆ Continued opportunity for a high value recreational experience, including motorized and non-motorized uses.

#### Management Intent:

Area to be managed to reflect ecological, wildlife and recreational values, with no timber harvesting and caribou recovery as a priority. Recreation is to be managed through the development of a collaborative plan that addresses users' needs.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Conserve the function and integrity of large contiguous forested ecosystems by managing as a non-timber harvesting area.</i>	1.1 Incidence of timber harvesting or salvage.	Zero	
<i>2. Maintain the quality of the recreational experience.</i>	2.1 Incidence of unacceptable impact to the recreation experience.	Zero	Avoid conflict among recreational uses.



Objective	Measures/Indicators	Targets	Implementation Direction
	2.2 Development of a recreation plan for the Starr Creek area.	By 2009	<p>Caribou recovery to take precedence in the area.</p> <p>Include user groups and First Nations in development of the recreation plan.</p> <p>Manage recreation to reduce conflicts between different users and between users and wildlife.</p> <p>Manage for carrying capacity if impacts become unacceptable.</p>

**4.1.4 Swan Lake-China Nose**

The Swan Lake-China Nose area is located approximately 25 kilometres east of Houston. China Nose is a prominent feature which can be viewed by looking south from Highway 16. It is a high, rugged north facing cliff which slopes gently back to the south. While the actual cliff face is not within the plan area, many of the features associated with it, including Old Man Lake, are. The cliffs were historically used by peregrine falcons, although no recent sightings have occurred, and mountain goats can often be spotted on the cliff face. At the foot of China Nose is the Old Man Lake Protected Area, which includes a complex of small lakes and wetlands. Some of the most northerly breeding populations of black terns and yellow-headed blackbirds are found in the area, as well as bitterns and waterfowl, which use the wetlands and lake systems for breeding and as a migration stopover.

The Swan Lake area consists of a series of grasslands, mixed timber stands and lakes. Of particular ecological value are the natural grasslands located on the south facing slopes, some of which are red-listed. Grasslands are important traditional settlement areas for the Wet’suwet’en. Contributing to the area’s cultural significance is the abundance of Saskatoon on the south facing natural grasslands. This rare plant community is of conservation importance, both from an ecological and a cultural perspective. The area is used extensively for range and other activities. Due to its proximity to local communities, the area is convenient for both summer and winter recreation. A well-used trail enables hikers to reach the top of the cliff, which is also frequented by rock climbers.

**Issues:**

- ◆ Loss of historical high value domestic livestock range.
- ◆ Loss of opportunities for motorized and non-motorized recreation.
- ◆ Loss of high ecological values, particularly natural grasslands and wetlands.

**Goals:**

- ◆ Maintenance of ecosystem integrity, particularly natural grasslands and wetlands.
- ◆ Viable range use consistent with ecological values.
- ◆ Opportunities for motorized and non-motorized recreation.

**Management Intent:**

Area to be managed to maintain ecological values, particularly the natural grasslands, with timber harvest exclusions and access limitations, while allowing for appropriate range use.

Objective	Measures/Indicators	Targets	Implementation Direction
1. Conserve the function and integrity of forested ecosystems by managing as a non-timber harvesting area.	1.1 Incidence of timber harvesting or salvage.	Zero	
	1.2 Number of new roads.	Zero	
2. Avoid impacts to the functional integrity of the wetlands and red listed grasslands.	2.1 Incidence of range use adversely impacting functional integrity.	Zero	Utilize BMPs for range management, including rotational grazing systems and the use of native seed.  Grazing of domestic sheep, llamas and goats is not allowed.
	2.2 Incidence of summer motorized recreation off of hard trail surfaces.	Zero	
3. Avoid impacts to Tsa zool First Nation traditional homestead and wagon trail.	3.1 Incidence of unacceptable impacts.	Zero	Grasslands are important traditional settlement areas for the Wet'suwet'en.

**4.1.5 Tahtsa-Troitsa**

The most southerly and westerly portion of the plan area, the Tahtsa-Troitsa area is a series of mountain ranges with gentle slopes and large lakes. The Whitesail, Kasalka and Sibola Ranges are bounded by Whitesail Lake to the south, with Troitsa Lake and Tahtsa Lake nestled in different valleys between the mountain ranges. The entire area provides a large expanse of remote alpine terrain with deep, lake filled valleys used by the Tweedsmuir caribou herd, mountain goats and a variety of other wildlife species.

Whitesail Lake is a large body of water that is part of the Nechako Reservoir system. The size of the lake was increased substantially by the flooding of the reservoir and it is potentially dangerous due to submerged snags. It is accessed by way of Ootsa Lake and is only suitable for large boats. Access to Tweedsmuir Park and Eutsuk Lake are gained through Whitesail Lake.

Lying north of Whitesail Lake and over the Whitesail Range are Troitsa Lake and the Coles Lake chain. Access to this area is by air in summer and snowmobile or air in winter.

Tahtsa Lake, which is also part of the Nechako Reservoir system, lies to the north of the Kasalka Range and can be accessed by way of the Huckleberry Mine road. The Huckleberry Mine road also links with old exploration trails which provide access to the Sibola Range, a popular area for hiking, extended season skiing, snowmobiling and ATV exploration.

Recreational use of this area primarily involves a remote backcountry experience, both motorized and non-motorized. The southern portion of the area is used for both summer and winter wilderness recreation. Timber values are low, however high mineralization occurs throughout the area.

**Issues:**

- ◆ Impacts to water quality resulting from the removal of submerged trees from the Tahtsa Reservoir.
- ◆ Impacts to terrestrial lakeshore ecosystems.
- ◆ Loss of recreational opportunities.

**Goals:**

- ◆ Opportunities for a range of motorized and non-motorized recreation.
- ◆ Representation of ecological values in a large, contiguous wilderness landscape.

**Management Intent:**

Area to be managed to maintain functionality of forested and alpine ecosystems and pristine wilderness condition, through management as a timber exclusion area and limitations on motorized recreation.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Conserve the function and integrity of forested ecosystems by managing as a non-timber harvesting area.</i>	1.1 Incidence of timber harvesting or salvage	Zero	Single tree management for forest health is acceptable; biomass must be retained on site.
<i>2. Maintain or improve opportunities for a range of wilderness recreation experiences across the landscape.</i>	2.1 Incidence of summer motorized recreation in designated summer non-motorized areas.	Zero	Provide a range of recreational opportunities at Coles Lake.  Refer to Section 3.2.6 (Recreation) for motorized and seasonal access restrictions and area boundaries.
	2.2 Incidence of winter motorized recreation in designated winter non-motorized areas.	Zero	

**4.2 Other Area Specific Management**

Timber harvesting is permitted in the following Area Specific RMZ, however other area-specific management direction applies.

**4.2.1 Nanika River**

The Nanika River flows from Nanika Lake through Kidprice Lake and then north into Morice Lake near the east end, not far from the Morice Lake recreation site. Nanika Falls are situated at the mouth of the river near Kidprice Lake. The falls feed this fast flowing river that travels through a narrow valley on its

way to Morice Lake. The portion of the Nanika River between Nanika Lake and the Red Slide Creek confluence, including Nanika Falls, is located within the Kidprice Lake Chain Protected Area (Section 5.3.1).

The Nanika River provides 40% of the water flow of the Morice watershed, therefore water quality and quantity is a significant management consideration. It contains some of the highest fish values in the Morice watershed, including important habitats for salmon, namely sockeye, and steelhead spawning and bull trout. The river is frequented by grizzly bears taking advantage of the abundant salmon, as is evident from a large travel corridor that follows the river.

The Nanika River has high cultural values for First Nations. The high fisheries values are integral to Wet'suwet'en culture. The fish and wildlife values support a variety of recreational experiences, including angling, nature photography and hiking.

**Issues:**

- ◆ Impacts to the quality and quantity of water, including potential increases in sedimentation from adjacent land use activities.
- ◆ Impacts to salmon spawning and rearing habitat.
- ◆ Impacts to the grizzly bear travel corridor.

**Goals:**

- ◆ Water quality and quantity that supports aquatic life and domestic consumption requirements.
- ◆ Conservation of high value salmon habitat.
- ◆ Minimal impact to grizzly bears that utilize the river, both for feeding and as a travel corridor.

**Management Intent:**

Area to be managed to maintain aquatic, riparian, fish and wildlife values, with limits on forestry activities and no infrastructure or hydroelectric development.

Objective	Measures/Indicators	Targets	Implementation Direction
1. Conserve the natural composition, structure and function of the 100-year floodplain.	1.1 Area of timber harvest or new development within the floodplain.	0 ha	Single tree management for health is acceptable; biomass must be retained on site.  It is recognized that mineral exploration and development may occur.
2. Maintain ecological structure and function within the 500 metre buffer beyond the 100-year floodplain.	2.1 Proportion of the area managed for high biodiversity emphasis (with the exception of mature and old seral representation).	100%	Refer to Section 3.4.1, Biodiversity, for high biodiversity emphasis targets.  Utilize small patch (<10 ha) harvesting or single tree management, with due consideration for road densities.

Objective	Measures/Indicators	Targets	Implementation Direction
	2.2 Percent of forested area retained as mature and old forest.	70	Mature and old forest retention is to be in contiguous units and distributed throughout the corridor.
	2.3 Incidence of human use adversely impacting ecological structure and function.	Zero	
3. Avoid infrastructure and road development.	3.1 Number of new permanent roads.	Zero	Retain the existing main road and river crossing. Upon completion of harvesting activities implement motorized access restrictions on all other roads to allow ATV access only.
	3.2 Number of new permanent infrastructure developments.	Zero	It is recognized that mineral exploration and development may occur.
4. Maintain the natural water flow regime.	4.1 Number of diversions affecting the hydrology of the Nanika River.	Zero	No hydroelectric developments on the river. Large scale industrial water diversions are prohibited.
5. Avoid impacts to the natural sediment regime of the river.	5.1 Number of development related incidents of erosion and/or slope failure resulting in sedimentation into streams.	Zero	Where development is proposed on slopes >50% a terrain stability assessment will be required prior to commencement of activities.
6. Maintain the functional integrity of grizzly bear travel corridors.	6.1 Incidence of development activities impeding or displacing grizzly bear travel.	Zero	

#### 4.2.2 Nadina/Owen (Including the Nadina Petition)

The Nadina/Owen area surrounds the Nadina Mountain Protected Area (Section 5.3.3) and stretches from Morice River in the north to Peter Alec Creek in the south, and from Fenton Creek in the west to Owen Creek and Owen Lake in the east. The ecology in this area provides linkages for plant communities and wildlife populations between the core mountain and lower elevation areas. The forested habitats surrounding Nadina Mountain are some of the only remaining areas of contiguous mature and old forest in the SBS dk and SBS mc2 subzones in the plan area. The area has high timber values and supports guide outfitting, hunting, trapping, and recreation opportunities.

The area is of great cultural importance to First Nations, with a high concentration of cultural and traditional sites. The “Nadina Petition” refers to the Nadina Mountain area, which the Office of the Wet’suwet’en sought for several years to have set aside from logging. Ultimately, the Office of the Wet’suwet’en and the forest licensee operating in the area reached an agreement to address the interests of the Wet’suwet’en. As a result, forest management in the Nadina Petition Area has been a cooperative effort between the Office of the Wet’suwet’en and the forest licensee. There is an interest in continuing current cooperative management agreements into the future to protect the cultural integrity, and wildlife and biodiversity values of the area.

Owen Lookout lies in the northern portion of the area and provides a unique and easily accessible family hiking opportunity to observe surrounding vistas and landscapes.

**Issues:**

- ◆ Impacts to cultural heritage values, including traditional botanical harvest.
- ◆ Impacts to forested ecosystems from forest health factors.
- ◆ Impacts to the non-motorized recreational experience at Owen Lookout.

**Goals:**

- ◆ Maintenance of high cultural, botanical, ecological, and recreational values.
- ◆ Forest management that is respectful of cultural and ecological values.

**Management Intent:**

Area to be managed to respect Office of the Wet’suwet’en cultural values consistent with the intent of the cooperative management agreement for the Nadina Petition area.

<b>Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>	<b>Implementation Direction</b>
<i>1. Manage the Owen Lookout trail for non-motorized recreation.</i>	1.1 Incidence of motorized access on Owen Lookout trail.	Zero	Allow motorized access for the physically disabled.
<i>2. Manage forest resources in a manner that is respectful of cultural and ecological values.</i>	2.1 Percent of forest development activities that respect cultural and ecological values.	100	Harvesting activities are limited to forest health management (e.g. fall and burn, single tree removal, small patch harvest).  No new permanent roads unless agreed to by licensee and the Office of the Wet’suwet’en.
	2.2 Percent of forested area retained as mature and old forest.	70	Consider Peter Alec portion of the Nadina Petition Area for designation as an old growth management area.
<i>3. Maintain cultural heritage features and values.</i>	3.1 Incidence of impacts or loss to cultural features and values.	Zero	Consider potential impacts from range use.

### 4.2.3 Friday Lake-Nakinilerak Lake-Hautête Lake

Friday, Nakinilerak and Hautête Lakes are located on the east side of Babine Lake, in the north east corner of the plan area. The three lakes lie in a northwest to southeast direction and contain high value habitat for resident trout populations. Habitat connectivity along the lake chain is maintained through a network of wetlands, creeks and riparian ecosystems. The area surrounding Friday Lake and Nakinilerak Lake is distinct within the plan area in that much of it was burnt in the 1920s and 1930s, providing a large tract of naturally regenerated forest. This complex of ecosystems supports numerous wildlife species, particularly grizzly bear and caribou.

Friday, Nakinilerak and Hautête Lakes are accessed by a private<sup>57</sup> barge system across Babine Lake and a network of all weather gravel roads. There are no roads or trails directly accessing Friday Lake and only a trail to Nakinilerak Lake. It is intended that these lakes remain without developed access. Hautête Lake is further south and road networks are more extensive in the area. The lake chain, with its limited access and high value fish and wildlife habitat support a variety of mid and backcountry experiences, including canoeing, angling and hunting.

#### Issues:

- ◆ Impacts to the wilderness experience of Friday and Nakinilerak Lakes.
- ◆ Impacts to the natural succession of the fire-generated forest ecosystem.
- ◆ Impacts to resident trout populations.
- ◆ Impacts to the recreational and ecological values of the riparian system.

#### Goals:

- ◆ Maintenance of ecosystem integrity around the lakes, including the fire-regenerated forest.
- ◆ Opportunities for trophy fishing.
- ◆ Opportunities for a wilderness experience on Friday and Nakinilerak Lakes.
- ◆ Opportunities for a range of recreational experiences.

#### Management Intent:

Area to be managed to maintain high recreational and ecological values, with access limitations, no livestock grazing and recruitment of fire-originated forests for future old growth.

Objective	Measures/Indicators	Targets	Implementation Direction
1. <i>Maintain ecological structure and function.</i>	1.1 Proportion of the area managed for high biodiversity emphasis.	100%	Refer to Section 3.4.1, Biodiversity, for high biodiversity emphasis targets.  Consider fire-originated, naturally regenerated areas around Friday and Nakinilerak Lakes for recruitment of future old growth management area.  No range tenures allowed around Nakinilerak Lake.

<sup>57</sup> Owned and operated by the major forest tenure holders but available for public use during operating season.

Objective	Measures/Indicators	Targets	Implementation Direction
	1.2 Percent of fire-originated stands over which natural succession occurs.	100	Refer to Biodiversity GMD (Section 3.4.1), Objective 7 for management direction.
2. <i>Minimize human impact on and around Friday Lake.</i>	2.1 Number of new permanent roads within 2 kilometres of Friday Lake.	Zero	<p>Fly-in access to the lake is permitted.</p> <p>Motorized access to Friday Lake is restricted throughout the year.</p> <p>If temporary roads are built they will be deactivated.</p> <p>No concentrated settlements allowed around the lake (lodges and cabins are allowed).</p> <p>Maintain existing point of snowmobile / ATV / foot access to Nakinilerak Lake.</p>
3. <i>Maintain access to Hautête Lake at existing levels.</i>	3.1 Level of access to Hautête Lake.	No change from 2004 levels.	

#### 4.2.4 Morrison Lake

Morrison Lake lies north of the east arm of Babine Lake. The lake is fed from the north by Tahlo creek, with Morrison creek flowing out from the south end of Morrison Lake and into Babine Lake. This area supports the threatened Tahlo sockeye salmon run. Additional fisheries values include high concentrations of coho salmon, cutthroat and bull trout. The upland lakeshore ecosystems support abundant wildlife, including grizzly bear, black bear, and moose.

Morrison Lake is a destination for boating and fishing enthusiasts seeking a diversity of recreational experiences. Morrison Lake cannot be accessed by water from Babine Lake as the creek is too shallow for the passage of watercraft; access by land is gained using the Babine Lake barge and a network of logging roads.

The area is very important to the Nedo'ats Hereditary Chiefs with respect to its salmon resources, cultural heritage value and its visual landscape.

#### Issues:

- ◆ Impacts to riparian ecosystems and high fisheries values.
- ◆ Impacts to the structural and functional integrity of forested ecosystems and associated wildlife habitat.
- ◆ Impacts to cultural heritage values.
- ◆ Impacts to recreational experiences and visual quality.



**Goals:**

- ◆ Maintained or enhanced recreational and tourism opportunities.
- ◆ Respect and conservation of cultural heritage sites and First Nations traditional use of the lake system for sustenance.
- ◆ Representation of ecosystems.
- ◆ Conservation of critical fish and wildlife habitat.

**Management Intent:**

Area to be managed to maintain high riparian, ecological and wildlife values, with limitations on timber harvesting and high biodiversity emphasis.

Objective	Measures/Indicators	Targets	Implementation Direction
<p><i>1. Maintain riparian function and integrity.</i></p>	<p><b>Intent:</b> Riparian function and integrity will be maintained through implementation of a 500 metre riparian management zone (measured from the Morrison lakeshore, Morrison Creek and Tahlo Creek stream bank), within which riparian function and integrity is to be maintained. Within this management zone is a 30 metre no harvest reserve, measured from the lakeshore or stream bank. A 100 metre zone adjacent to the reserve will serve to maintain the windfirmness of the reserve, as well as conserving values associated with wet ecosystems.</p>		
	<p>1.1 Area of timber harvest within the 30 metre reserve zone.</p>	<p>Zero</p>	<p>Single tree treatment acceptable for forest health.</p>
	<p>1.2 Structural integrity of the 30 metre reserve zone.</p>	<p>No loss</p>	<p>Within 100 metres of the reserve zone apply alternative harvesting strategies, such as small patch harvesting and edge feathering, to protect the reserve zone from threats of windthrow.</p>
<p>1.3 Functional integrity of the 500 metre management zone.</p>	<p>No loss</p>		
<p><i>2. Maintain the structure and function of forested ecosystems.</i></p>	<p>2.1 Proportion of the area managed for high biodiversity emphasis.</p>	<p>100%</p>	<p>Refer to Section 3.4.1, Biodiversity, for high biodiversity emphasis targets.</p> <p>Retention of mature and old forest will give priority to the conservation of hygric sites and riparian ecosystems.</p>

#### 4.2.5 Babine Lake East Arm

The Babine Lake East Arm is located between the main body of Babine Lake and the Morrison Lake area specific RMZ. As with Morrison Lake, this area supports the threatened Tahlo sockeye salmon run. Additional fisheries values include high concentrations of coho salmon, cutthroat and bull trout. The upland lakeshore ecosystems support abundant wildlife, including grizzly bear, black bear, and moose. Consistent with the values across Babine Lake, the East Arm is a destination for boating and fishing enthusiasts seeking a diversity of recreational experiences.

The area is very important to the Nedo'ats Hereditary Chiefs with respect to its salmon resources, cultural heritage value and its visual landscape.

##### Issues:

- ◆ Impacts to riparian ecosystems and high fisheries values.
- ◆ Impacts to cultural heritage values.
- ◆ Impacts to the recreational experience and visual quality.

##### Goals:

- ◆ Opportunities for a range of recreation and tourism experiences.
- ◆ Respect for, and conservation of, cultural heritage sites and First Nations traditional use of the lake system for sustenance.
- ◆ Conservation of critical fish and wildlife habitat.

##### Management Intent:

Area to be managed to maintain high riparian, ecological and wildlife values, with limitations on timber harvesting.

Objective	Measures/Indicators	Targets	Implementation Direction
1. Maintain riparian function and integrity.	<i><b>Intent:</b> Riparian function and integrity will be maintained through implementation of a 500 metre riparian management zone, measured from the lakeshore, within which riparian function and integrity is to be maintained. Within this management zone is a 30 metre no harvest reserve, measured from the lakeshore. A 100 metre zone adjacent to the reserve will serve to maintain the windfirmness of the reserve, as well as conserving values associated with wet ecosystems.</i>		
	1.1 Area of timber harvest within the 30 metre reserve zone.	Zero	Single tree treatment acceptable for forest health.
	1.2 Structural integrity of the 30 metre reserve zone.	No loss	Within 100 metres of the reserve zone apply alternative harvesting strategies, such as small patch harvesting and edge feathering, to protect the reserve zone from threats of windthrow.

Objective	Measures/Indicators	Targets	Implementation Direction
	1.3 Functional integrity of the 500 metre management zone.	No loss	

#### 4.2.6 Grease Trail

The Grease Trail runs east-west through the northern portion of the plan area. The trail is of current and historical significance to First Nations as a travel and trade route, connecting Takla Landing in the east and Old Hazelton in the west. As a result, the trail is protected under the *Heritage Conservation Act*. The trail and associated connected forested ecosystems form a unique travel corridor for wildlife species. Recreational opportunities supported by the trail system and associated wildlife habitat include hiking, camping, skiing, wildlife viewing, photography and hunting.

##### Issues:

- ◆ Impacts to cultural heritage values.
- ◆ Impacts to the functional integrity of the trail.
- ◆ Loss of habitat connectivity.

##### Goals:

- ◆ Conservation of cultural heritage values.
- ◆ Opportunities for recreational use.
- ◆ A functional connectivity corridor.

##### Management Intent:

Area to be managed to maintain the unique First Nation cultural and recreational values associated with the trail.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Maintain the integrity and functionality of the trail for cultural and recreational values.</i>	1.1 Incidence of loss of cultural values adjacent to the trail.	Zero	Industrial operators to obtain information about locations of First Nations archaeological sites prior to development.
	1.2 Area of timber harvested within the 100 metre no-harvest zone on either side of trail	Zero	

Objective	Measures/Indicators	Targets	Implementation Direction
	1.3 Incidence of human caused damage to the trail.	Zero	General recreational motorized access in summer is prohibited.  Motorized access is allowed for tenure holders and First Nations throughout the year.
2. <i>Maintain ecological structure and function adjacent to the trail.</i>	2.1 Percent of forested area retained as mature and old forest in the area beyond 100 metres and within 500 metres adjacent the trail.	70	Ensure connectivity is maintained within the forest matrix.  BC Hydro right-of-way to be excluded from calculation.

#### 4.2.7 Matzehtzel Mountain-Nez Lake

Matzehtzel Mountain and Nez Lake is an upland area located east of the Granisle Highway and north of Topley. The area consists of rolling sub-alpine wetlands interspersed with pine and balsam covered eskers, Nez Lake and numerous small lakes. Three gently sloped mountains (Matzehtzel, Tachek and McCrea) rise out of the rolling wetlands, with Nez Lake nestled under the eastern slopes of Mt McCrea. The Matzehtzel Mountain and Nez Lake area is semi-remote and can only be accessed by way of a single, narrow, hard surfaced mining road which leaves the Granisle Highway 5km north of Topley. The trail ends at the old Bishop Mine site and from there it branches into several off road trails. The small lakes or ponds for the most part contain fish. Old mining exploration trails provide access from east of the plan area. Several guide outfitter cabins are located within the area which has high value moose summer range. The area is popular for hunting, guide outfitting, trapping and motorized recreation. Snowmobiling is the prime recreational activity. The area is also important to the Wet'suwet'en for hunting.

##### Issues:

- ◆ Impacts of motorized access on wetland complexes.
- ◆ Loss of recreation opportunities.

##### Goals:

- ◆ Enhancement of recreational opportunities.
- ◆ Functional integrity of the wetland complexes.

**Management Intent:**

Area to be managed to maintain the integrity of wetland complexes and alpine habitats.

Objective	Measures/Indicators	Targets	Implementation Direction
1. Avoid impacts to wetland complexes resulting from human use.	1.1 Incidence of summer motorized use off hard surface trails and roads.	Zero	Provide signage to advise users of access restrictions.
	1.2 Incidence of human caused adverse impacts to wetland complexes.	Zero	

**4.2.8 Morice River**

The Morice River flows from the east end of Morice Lake and meanders east and north to its confluence with the Bulkley River near Houston. The Morice River's unique and dynamic floodplain system and side channels provide valuable spawning and rearing habitat for salmonid species (coho, pink, Chinook, sockeye). The river also supports steelhead and resident populations of rainbow trout, bull trout and Dolly Varden. Terrestrial ecosystems include important riparian habitat, rare ecosystems and high value ungulate winter range for moose and deer. The extensive floodplain ecosystems contain rare cottonwood-red osier dogwood plant communities that provide important habitat for grizzly bear and fisher.

A small portion of the river flows through an area that burned during the 1983 Swiss Fire. Within the burnt area and adjacent to the river is a small ecological reserve that was established before the fire. It allows researchers to study natural succession of forests through time. The ecological reserve is not managed as part of the Morice River Area Specific zone.

The Morice River has a history of cultural and local significance, especially as a travel corridor. The river is world renowned for sport fishing, particularly steelhead. It also provides high tourism and recreational values for wildlife viewing, sightseeing, camping, kayaking, canoeing and jet boating. The Morice River Forest Service road runs parallel to the river for most of its length and provides easy access to the numerous walk-in access points, fishing spots and recreation sites along the river. Maintenance of visual quality, with consideration for a 360 degree view from the river, is an important aspect of the recreational experience and will be addressed through the Visual Resource GMD (Section 3.2.5).

**Issues:**

- ◆ Impacts to the floodplain ecosystems.
- ◆ Loss of aquatic and terrestrial habitat.
- ◆ Loss of river-based recreational opportunities.

**Goals:**

- ◆ Conservation of riparian and floodplain ecosystems.
- ◆ Conservation of high value fish and wildlife habitat.
- ◆ Opportunities for river-based recreation.

**Management Intent:**

Area to be managed to conserve aquatic and riparian values, with no timber harvesting or settlement within the 100-year floodplain and limited activities within 1000 metres of the floodplain.

<b>Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>	<b>Implementation Direction</b>
<i>1. Conserve the natural composition, structure and function of the 100-year floodplain.</i>	1.1 Area of timber harvest or new development.	Zero	Single tree management for forest health is acceptable; biomass must be retained onsite.  It is recognized that mineral exploration and development may occur.  No new roads in floodplain. Where possible utilize existing road networks.
<i>2. Maintain ecological structure and function within the 1000 metre buffer beyond the 100-year floodplain.</i>	2.1 Proportion of the area managed for high biodiversity emphasis (with the exception of mature and old seral representation).	100%	Where possible utilize existing road networks.  Refer to Section 3.4.1, Biodiversity, for high biodiversity emphasis targets.  Utilize small patch harvesting or single tree management.
	2.2 Percent of forested area retained as mature and old forest.	50% in lower Morice River (below Thautil-Gosnell confluence);  70% in upper Morice River.	Consider designation of high value moose and deer winter habitats as ungulate winter range.
<i>3. Maintain the quality of the river-based recreation experience.</i>	3.1 Change in access for recreation use.	No net change	Retain historic access for fishing sites.  Future access management planning processes may further define access points to Morice River and issues around water-based access.
	3.2 New infrastructure or facilities within the viewscape of the river corridor.	Zero	Visual management should consider the 360 degree view from the river.

#### **4.2.9 Bulkley River**

The Bulkley River is the largest river in the plan area. The river originates in the east (beyond the plan area boundary) and flows through Topley to its confluence with the Morice River near Houston. The main stem Bulkley River flows from its confluence with the Morice River westward, joining the Skeena River at Hazelton. The river has a salmon population which is of historical significance as a First Nations food source.

The Bulkley River RMZ comprises a band of Crown land to either side of the river as it traverses the plan area (Map 14). The RMZ includes the lower reaches of the main tributaries flowing into the river. The upper and lower portions of the river are subject to the same values and issues but unlike the upper river, the lower Bulkley is not temperature sensitive due to the large volume of cold water supplied by the Morice River. The confluence of the Bulkley and Morice Rivers is within the Morice River RMZ.

The Bulkley River valley is the main access corridor to northwestern British Columbia for BC Rail and Highway 16. It is a traditional route of the First Nations. There is extensive settlement activity in the valley, including considerable private land ownership along the river. The low elevation areas adjacent to the river provide some of the most productive land in the plan area. As a result, many riparian ecosystems have been converted to hayfields and pastures, however remaining riparian ecosystems along the river provide high value ungulate winter range. Numerous water licences have been granted along the river and its tributaries, resulting in a potential over-allocation during periods of low flow.

The extensive conversion of riparian ecosystems and the volume of domestic water withdrawal are of concern in this area, as these practices have resulted in loss of fish and aquatic habitat, ungulate winter range and rare cottonwood-red osier dogwood riparian ecosystems.

##### **Issues:**

- ◆ Lack of water flow to support fish habitat and aquatic and riparian ecosystems.
- ◆ Damage to structural integrity of aquatic habitat and ecosystems.
- ◆ Loss of riparian ecosystems, especially cottonwood-dogwood ecosystems.
- ◆ Ecological impacts of increases in water temperature in the upper Bulkley River.
- ◆ Loss of ungulate winter range.
- ◆ Availability and quality of water for domestic uses.
- ◆ Impacts of contaminated sites at Topley on aquatic values.

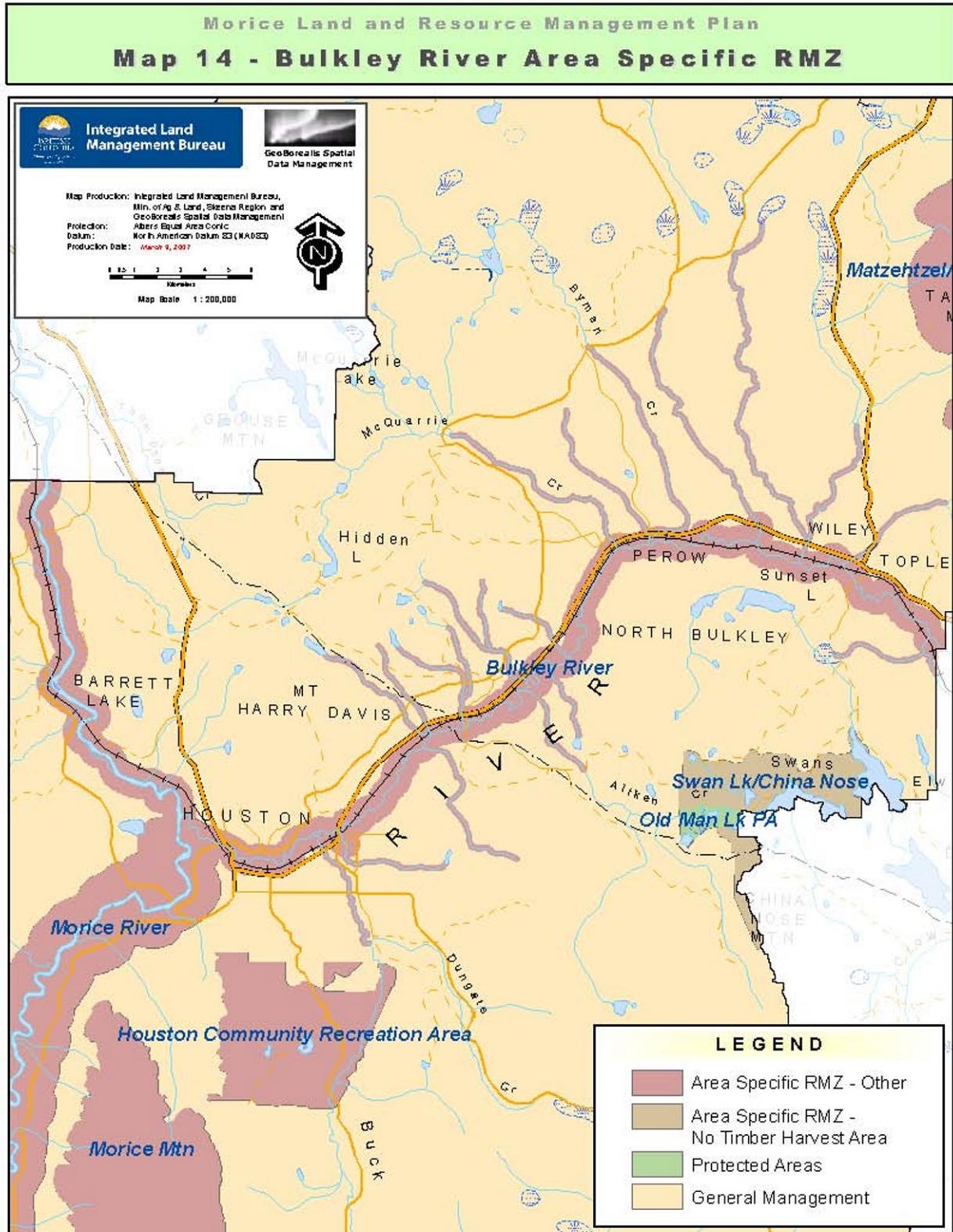
##### **Goals:**

- ◆ Sufficient water flow to support domestic use and healthy aquatic ecosystems.
- ◆ Restoration of aquatic habitat and riparian ecosystems.

##### **Management Intent:**

Area to be managed to restore function and minimize future impacts to this highly developed waterway and associated riparian ecosystems.

Map 14. Bulkley River Area Specific RMZ





Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Minimize the negative effects<sup>58</sup> to water quantity resulting from human use.</i>	1.1 Number of additional withdrawals contributing to negative impacts <sup>59</sup> to flow regimes and aquatic biology.	Zero	Where current licenses have resulted in negative impacts to water flow and aquatic habitat, take measures to reverse these impacts and avoid future impacts.
<i>2. Avoid impacts to the function and integrity of the 100 year floodplain.</i>	2.1 Incidence of new settlement on unallocated Crown land.	Zero	Identify potential areas for ungulate winter range. Refer to Fish, Fish Habitat and Aquatic Ecosystems GMD (Section 3.4.2), Objective 3.
	2.2 Area of timber harvest	Zero	
	2.3 Number of new facilities and infrastructure.	Zero	
<i>3. Manage for aquatic habitat and fish passage.</i>	Refer to Fish, Fish Habitat and Aquatic Ecosystems GMD (Section 3.4.2), Objective 8, 9 and 11.		Sites for rehabilitation and fish passage restoration have been identified through Watershed Restoration Program (see Appendix 8). This list is not considered complete.  Promote rehabilitation of habitat and fish passage on private lands through public education and outreach.
<i>4. Rehabilitate the functional integrity of riparian zones.</i>	4.1 Area of riparian ecosystems rehabilitated over five year period.	Target to be developed by the Watershed Advisory Committee <sup>60</sup> and/or the Watershed-based Fish Sustainability Program.	Develop a rehabilitation plan to direct riparian rehabilitation activities.  Promote rehabilitation of habitat on private lands through public education and outreach.

<sup>58</sup> The benchmark for water quantity is the historic low flow regime.

<sup>59</sup> Examples of “negative impacts” include fish or aquatic organism die-offs, temperatures exceeding critical levels for fish during low flows, year round streams drying up — restricting or preventing spawning salmon from migrating upstream, inadequate water depths and water velocities for spawning fish, increased prevalence of algae blooms — cyanobacteria (blue-green algae) are of particular concern and a reduction in the waterbody’s ability to assimilate and dilute wastes.

<sup>60</sup> Refer to Water (Section 3.4.3), Objective 1.

Objective	Measures/Indicators	Targets	Implementation Direction
	4.2 Number of riparian rehabilitation projects	Target to be developed by the Watershed Advisory Committee and/or the Watershed-based Fish Sustainability Program.	

**4.2.10 Community Recreation Areas**

“Community Recreation Area” within the plan area consist of two areas known locally as the Houston Community Recreation Area and the Granisle Community Recreation Area. It should be noted that, although these areas were previously referred to as “community forests,” they are not equivalent to areas formally designated as community forests under the Community Forest Agreement Regulation (2000). For this reason, they are described as “community recreation areas” within the LRMP.

The Houston Community Recreation Area consists of two tracts of land:

- ◆ the Silverthorne Lake unit, located south of Houston on the Buck Flats Road (approximately 3500 hectares); and
- ◆ the Lund Road unit, located within the District of Houston.

The Granisle Community Recreation Area (approximately 4500 hectares) is located around Granisle in the vicinity of Babine Lake and the Fulton River.

Both areas were recognized in the early 1990’s to provide direct benefits to the local communities through integrated resource management, with a focus on recreation. Public planning processes were carried out in the mid-1990’s to develop management plans and establish planning committees for each area. Planning for timber harvesting and other forestry activities is carried out with consideration of objectives and guidelines developed for each area in consultation with the public.

The Houston and Granisle Community Recreation Areas provide trails for horseback riding, mountain biking, walking, hiking, and cross country skiing. The Morice Mountain Ski Trails, located in the Silverthorne Lake area of the Houston Community Recreation Area, consist of approximately 40 km of well-marked and track-set cross-country trails maintained by the Morice Mountain Nordic Ski Club. The Morice Mountain Ski Trails have been recognized as being some of the best trails in the province. Additionally, the ski trails are the access point for alpine touring on Morice Mountain, where the ski club maintains an overnight cabin with a wood stove and propane cook stove.

Interpretive trails in both areas provide hikers with nature viewing and photography opportunities and information on the natural features of the area. The extensive logging road network within the Granisle Community Recreation Area provides opportunities for snowmobiling. Lakes are used for fishing, picnicking, swimming, canoeing and overnight camping. Infrastructure development has been made

possible through donations of materials, funds and labour by local government agencies, industry, businesses and the community as a whole.

**Issues:**

- ◆ Loss of recreation opportunities.

**Goals:**

- ◆ Enhancement of recreational opportunities.

**Management Intent:**

Areas to be managed with priority given to a variety of high value recreational opportunities while allowing for integrated resource management.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Maintain the quality of the recreational experience.</i>	1.1 Incidence of winter motorized recreation in areas designated for non-motorized use.	Zero	Refer to Section 3.2.6 (Recreation) for the motorized and seasonal access restrictions and area boundaries.
	1.2 Incidence of summer motorized recreation in areas designated for non-motorized use.	Zero	Respect existing use by Morice Mountain Nordic Ski Club.
	1.3 Incidence of human activities negatively impacting recreation values.	Zero	Refer to the Recreation GMD (Section 3.2.6) for direction on the management of features, facilities and trails.

**4.2.11 Morice Mountain**

Morice Mountain is situated approximately 15 kilometres south of Houston and lies between Buck Creek/ Buck Flats Road and Morice River/ Morice Forest Service road. Most of the south and west slopes of the mountain were burned by the Swiss Fire in 1983 and while the lower slopes have been logged and planted, the upper slopes have been left to regenerate naturally, resulting in a landscape of high ecological significance. The topography and ecology of the area, including steep hillsides, immature forest and alpine slopes, contribute to important goat and grizzly bear habitats. The area was historically used by caribou.

The location and proximity of Morice Mountain to Houston result in the area being well used by local residents for many forms of motorized and non-motorized recreation. The gently sloped eastern side of the mountain can be accessed by Buck Flats road and the Morice Mountain Cross Country Ski Trail system which starts at Silverthorne Lake. Local residents have respected this route as non-motorized for several years. The western side of the mountain can only be accessed using old mining and logging trails or through private property. Access can also be gained from the Carrier logging road that connects Buck Flats road and the Morice River road, 28 km south of Houston. From there, a forestry road climbs the southern slopes of the mountain to the base of the alpine area. This route provides easy access to the alpine for ATVs and snowmobiles.

**Issues:**

- ◆ Impacts to the natural succession of fire-originated forested ecosystems.
- ◆ Impacts to alpine ecosystems and subalpine wetlands.
- ◆ Loss of mountain goat and grizzly bear habitat.
- ◆ Reduction in recreation opportunities.

**Goals:**

- ◆ Fire-originated forested ecosystems contributing to seral stage distribution.
- ◆ Functional wildlife habitats and ecosystems.
- ◆ Opportunities for motorized and non-motorized recreation.

**Management Intent:**

Area to be managed for high value recreation opportunities for a variety of users and to conserve ecosystem function, through limitations on motorized recreation and limitations on stand tending treatments in fire-originated stands.

<b>Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>	<b>Implementation Direction</b>
<i>1. Maintain the function and integrity of ecosystems.</i>	1.1 Incidence of summer motorized recreation above 1500 metres elevation.	Zero	Provide signage to advise users of access restrictions.
	1.2 Proportion of early seral fire-originated stands allowed to proceed through natural succession to mature and old.	70%	Avoid silviculture treatments that impact the natural succession of the early seral fire-originated stands.
<i>2. Maintain integrity and functionality of the trail system.</i>	2.1 Incidence of human caused damage to the trail system.	Zero	
<i>3. Manage the east side of Morice Mountain to maintain a non-motorized wilderness experience.</i>	3.1 Incidence of motorized recreation on the east side of Morice Mountain.	Zero	Refer to Section 3.2.6 (Recreation) for the motorized access restrictions and area boundaries.

#### 4.2.12 Twinkle-Horseshoe Lake Chain

The Twinkle-Horseshoe Lake Chain is a series of six small lakes linked by small creeks. The lake chain is located in the south end of the plan area and lies between Nadina Lake and Tahtsa Reach. Twinkle Lake is of high importance for rainbow trout due to its abundance of freshwater shrimp. The shrimp rely on the still waters that result from a lack of outflow in the northeast arm of the lake. The aquatic and riparian ecosystems also support healthy moose populations.

Forestry was active in the east end of the lake chain in the 1970s and 1980s. The resultant plantations are now over twenty years old and forests are re-establishing. The chain is accessed by way of the main road from Houston to Huckleberry Mine (approx 120km from Houston) or through a network of all weather roads from Francois Lake and the Wisteria Highway. The easy access and short distance between lakes support recreational canoeing, camping and fishing.

##### Issues:

- ◆ Reduced opportunities for mid-country non-motorized family recreation.
- ◆ Impacts to fish habitats.

##### Goals:

- ◆ Functional fish habitats.
- ◆ Opportunities for a mid-country non-motorized family recreation experience.

##### Management Intent:

Area to be managed to maintain family-oriented recreation as its highest value through opportunities for non-motorized boat use on a chain of small lakes.

Objective	Measures/Indicators	Targets	Implementation Direction
1. <i>Maintain the non-motorized recreational experience of the canoe chain.</i>	1.1 Incidence of motorized use on the lake chain (Twinkle through Horseshoe Lakes).	Zero	Applies to gas powered boats only.  Consider current motorized use on Twinkle Lake and how to manage for the transition to non-motorized use.
2. <i>Maintain the functional integrity of aquatic habitats.</i>	2.1 Incidence of motorized use on the lake chain (Twinkle through Horseshoe Lakes).	Zero	Establish signage to indicate non-motorized designation.

#### 4.2.13 Nadina River

The Nadina River flows out of Nadina Lake and meanders its way eastwards, emptying into the west end of Francois Lake. The management zone includes the portion of the Nadina River between Newcombe Lake and Nadina Lake. The Nadina River provides the main source of water for Francois Lake. The river has a moderate flow regime and its floodplain system provides valuable salmonid spawning and rearing habitat. Its associated terrestrial ecosystems provide wildlife habitat connectivity between Nadina and Francois Lakes and contain extremely high value ungulate winter range for moose, especially in the lower reaches close to Francois Lake.

The Nadina River valley has high First Nations cultural significance with numerous burial sites along its banks. Due to the high wildlife values, the area also sees extensive trapping, hunting and guide outfitting activity. The river corridor is not an area of high recreational value; shallow waters make it poorly suited for consistent kayaking or canoeing.

**Issues:**

- ◆ Impacts to water quantity and quality.
- ◆ Impacts to aquatic ecosystems from increases in water temperature.
- ◆ Impacts to the functional integrity of the floodplain ecosystems and ungulate winter range.
- ◆ Loss of old forest representation.
- ◆ Loss of access to First Nations traditional areas and wildlife habitat due to fencing.

**Goals:**

- ◆ Water quality and quantity that supports domestic use and healthy aquatic ecosystems.
- ◆ Structurally intact floodplains.
- ◆ Functional floodplain ecosystems.
- ◆ Functional ungulate winter range.
- ◆ Representation of old and mature forested ecosystems.

**Management Intent:**

Area to be managed to conserve aquatic ecosystems and fish populations for their ecological and cultural heritage values, with limitations on timber harvest, settlement and infrastructure development.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Avoid impacts to the function and integrity of the 100 year floodplain.</i>	1.1 Area of new settlement.	Zero	
	1.2 Area of timber harvest.	Zero	Single tree management for forest health is acceptable; biomass must be retained on site.
	1.3 Number of new facilities and infrastructure.	Zero	Recognize that mineral exploration and development are allowed.
<i>2. Maintain ecological structure and function within the 500 metre buffer beyond the 100-year floodplain.</i>	2.1 Percent of forested area retained as mature and old forest.	50	Distribute mature and old forest within both the operable and inoperable landbase.  Consider area as a potential ungulate winter range.
	2.2 Number of new permanent roads within the corridor.	Zero	Upon completion of harvesting activities, new roads are to be decommissioned to only allow ATV access.

#### 4.2.14 Thautil-Gosnell

The Thautil River flows south from the Telkwa Mountain Range and joins Gosnell Creek which flows east from the Morice Range. Together they flow into Morice River approximately 10 kilometres east of Morice Lake. Gosnell Creek meanders its way through an extensive, high value wetland system and provides high value fish habitat. Gosnell Creek is particularly important for coho salmon spawning habitat. Areas of unstable terrain increase the risk of sedimentation, which could have a significant impact to spawning success. The management area extends from the valley bottoms up to the upper elevation limit of the sub-boreal spruce biogeoclimatic zone and provides valuable wildlife habitat, particularly for moose and grizzly bears. As with other river corridors, the area is of First Nations cultural and spiritual significance.

#### Issues:

- ◆ Loss of high value wildlife habitat.
- ◆ Impacts to function and integrity of ecosystems.
- ◆ Impacts to fish habitat from sedimentation.

#### Goals:

- ◆ Functional ecosystems and associated wildlife habitats.
- ◆ Water quality that supports aquatic life.

#### Management Intent:

Area to be managed to maintain high biodiversity, fish, grizzly bear and water quality values.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Maintain ecological structure and function.</i>	1.1 Proportion of area managed for high biodiversity emphasis.	100%	Refer to Section 3.4.1, Biodiversity, for high biodiversity emphasis targets.
	1.2 Proportion of mature and old forest retention (from Measure 1.1) located within the contributing forest landbase.	>=50%	Target non pine-leading stands for mature and old forest retention.  Distribute mature and old forest within both the operable and inoperable landbase.
	1.3 Incidence of adverse impacts to the Gosnell wetland complex.	Zero	Manage area as a priority area for grizzly bear management; (see Section 3.4.4 Wildlife and Wildlife Habitat for management direction).  Complete a grizzly bear management plan for the Thautil-Gosnell RMZ.

#### 4.2.15 Le Talh Giz (Old Fort Mountain)

The Le Talh Giz Area Specific RMZ lies on the southerly aspects of Babine Lake, surrounding the settlement of Old Fort. The ecology of this area is modified by its southerly exposure, with extensive deciduous and mixed forests. The vegetation of area reflects a frequent disturbance history from burning, wood cutting and past farm clearing. Much of the shoreline is Indian Reserve. The area supports guide outfitting, hunting, trapping, and recreation opportunities.

The area is of great cultural importance to the Nedo'ats Hereditary Chiefs and contains a high concentration of cultural and traditional sites. Nedo'ats people farmed portions of the area in the past, with evidence of cultivation and buildings across the area. The southerly aspects of Le Talh Giz produce a wide variety of plant products for food, medicine, tools building and cultural uses. Shoreline areas were, and continue to be, particularly important for harvesting of plants, travel and settlement.

##### Issues:

- ◆ Impacts to cultural heritage values, including traditional botanical harvest.
- ◆ Impacts to forested ecosystems from forest management.

##### Goals:

- ◆ Maintenance of high cultural, botanical, ecological, and recreational values.
- ◆ Forest management that is respectful of cultural and ecological values.

##### Management Intent:

Area to be managed consistent with First Nation cultural values.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Manage forest resources in a manner that is respectful of cultural and ecological values.</i>	1.1 Percent of forest development activities that respect cultural and ecological values.	100	Harvesting activities are limited to forest health management (e.g. fall and burn, single tree removal, small patch harvest).
<i>2. Maintain cultural heritage features and values.</i>	2.1 Percent of forested area retained as mature and old forest.	50	Consider portion of the area for designation as an old growth management area.
	2.2 Incidence of impacts or loss to cultural features and values.	Zero	Consider management methods that will maintain the diversity and abundance of culturally important plants



## 5. Protected Areas

### 5.1 Introduction

Protected areas are managed for their significant natural, recreational and cultural heritage values. The Morice LRMP area has four protected areas that existed prior to the LRMP: Red Bluff, Topley Landing and Little Andrews Bay Provincial Parks and the Morice River Ecological Reserve. The three provincial parks focus on recreational use; the Morice River Ecological Reserve is the only pre-existing protected area with a conservation focus. The following is a brief description of these protected areas:

- ◆ Red Bluff Park (148 hectares): On Babine Lake near the community of Granisle, this park is named for the iron-stained cliffs that drop into the lake. Activities include swimming, angling or taking in the salmon enhancement projects at nearby Fulton River and Pinkut Creek. The area is also a popular stopover for boaters on Babine Lake.
- ◆ Topley Landing (Babine Lake Marine) Park (12 ha): On Babine Lake 12 kilometres east of Granisle, immediately west of the community of Topley Landing. The park, adjacent to the spawning channel on the Fulton River, has a large natural beach.
- ◆ Little Andrews Bay Marine Park (45 ha): Located on the north shore of Ootsa Lake, the park provides camping and boat access to North Tweedsmuir Park. The park protects part of the Nechako Upland ecosection and the Ootsa Lake reservoir system.
- ◆ Morice River Ecological Reserve (358 ha): This ecological reserve was established to preserve, for research purposes, forest ecosystems representative of the western edge of the sub-boreal spruce biogeoclimatic zone.

Collaborative management agreements are to be considered between First Nations and the Province for management of new parks/conservancies.

The planning and management of new protected areas is carried out in a cooperative manner, encouraging the involvement of First Nations and parties with a key interest or stake in each area. While commercial logging, mining and energy exploration and development are not allowed in protected areas, many other existing activities can continue, subject to the management plan for each protected area.

### 5.2 General Management Direction for Protected Areas

The table below contains a set of general objectives and implementation direction that applies to all protected areas that are created as a result of this plan. Specific management direction for each protected area follows in Section 5.3. Overall, this direction will guide management of these protected areas until such time as a management plan of some form is developed for each protected area. Any subsequent management plans will be consistent with the initial management direction provided by the LRMP.

Prior to the development of these management plans, the protected area boundaries must be confirmed at an operational scale. This exercise typically involves adjustment to the boundaries that were proposed at the strategic scale during the planning process. Boundary adjustments may be the result of terrain or ecological considerations, adjacency concerns or access issues. Protected area boundaries will be established in a manner that does not constrain access to known resources or utility corridors.

**Issues:**

- ◆ Loss of ecological integrity, recreational opportunities and cultural heritage values.
- ◆ Reduced opportunities for compatible economic development.
- ◆ Incremental constraints to pre-existing tenure holders.
- ◆ Decrease in quotas for pre-existing tenure holders.

**Goals:**

- ◆ Maintenance of ecological integrity, recreational opportunities and cultural heritage values.
- ◆ Continuation of First Nations social, cultural and ceremonial activities.
- ◆ Opportunities for compatible economic development.
- ◆ Maintenance of existing tenure conditions.

Protected Areas Objectives	Measures/Indicators	Targets
<p><i>1. Maintain conservation, recreation and cultural heritage values and features within protected areas.</i></p>	<p>1.1 Completion of management plans (includes a range of planning products) for protected areas.</p>	<p>By 2012</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Prioritize management planning with respect to the priority resource values at risk.</li> <li>• Comprehensive management plans shall define management objectives specific to each protected areas as well as acceptable uses and acceptable levels of use, zoning and other strategies to minimize conflicts and help ensure the integrity of important protected area values.</li> <li>• Develop management plans collaboratively with the benefit of public (i.e. Morice LRMP Monitoring Committee), First Nations and inter-agency participation; incorporate direction and consider advice from the approved LRMP.</li> <li>• Encourage economic opportunities for small, locally based commercial recreation.</li> </ul>	

Protected Areas Objectives	Measures/Indicators	Targets
<p>2. <i>Recognize the rights and interests of existing eligible tenures and landowners within newly established protected areas.</i></p>	<p>2.1 Percent of existing tenures that are retained that are:</p> <ul style="list-style-type: none"> <li>• eligible uses under the <i>Park Act</i>; and</li> <li>• compatible with the new protected area.</li> </ul>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Existing tenures that are eligible to continue under the <i>Park Act</i> will be grandfathered into newly established protected areas where consistent with the management direction for each protected area.</li> <li>• Trapping, guiding and commercial recreation will be considered acceptable uses.</li> <li>• Issue 10-year tenures for trapping, guiding and commercial recreation.</li> <li>• Tenures are to be eligible for transfer.</li> <li>• Guide outfitter and trapping tenures to be re-issued under existing conditions when an area changes hands.</li> <li>• No loss of species quotas for guide outfitters will occur, except for reasons based on biological or habitat science and in consultation with the guide outfitter.</li> <li>• Retain over time, all existing and future access routes (including new trails) and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations. Management plans for protected areas will incorporate provisions for maintenance of access (e.g. trails and traditional trail locations) to trap line areas. Recognize the existing Memorandum of Understanding between the BC Trappers Association and BC Parks.</li> <li>• Existing tenure holders should be able to perform maintenance on their existing trails and cabins if necessary.</li> <li>• Existing tenure holders should be able to build a new cabin if necessary when expanding their operations with due consideration for the conservation, recreation and cultural heritage values of the protected area.</li> </ul>	

Protected Areas Objectives	Measures/Indicators	Targets
<p>3. <i>Maintain ecosystem representation, abundance and integrity and protect key resource values and natural features.</i></p>	<p>3.1 Incidence of human recreation or management practices that impact negatively on the natural resource values of the protected area.</p>	<p>Zero</p>
	<p>3.2 Number of identified red and blue-listed plants, animals and communities that are lost or are negatively affected by human disturbance.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Management emphasis will be placed on maintaining the ecosystems, resource values and natural features for which the protected areas were established.</li> <li>• Management interventions will not significantly alter natural ecological, hydrological and geomorphic processes, except for express management purposes as defined in a protected area management plan.</li> <li>• Consider forest health issues in the management of parks.</li> <li>• Where any alleged conflicts involving wildlife or environmental impacts occur between recreation users (both motorized and non-motorized), First Nations, local clubs or representatives must be involved in any process leading to the resolution to the issue, and issues must be supported by documented evidence and/or verifiable science before any proposed restrictions are applied.</li> <li>• Subject to Map 7 (Motorized and Non-Motorized Recreation Access — see Section 3.2.6, Recreation) snowmobiling is permitted in these protected areas, with due consideration for the conservation, cultural and recreation values of the areas.</li> <li>• Facilities will be designed and managed to have the lightest “footprint” possible.</li> <li>• Manage natural processes / occurrences (e.g. fires, insects, forest disease) within park boundaries relative to their impact, both on the ecosystem within the boundaries of the protected area and on the broader ecosystem values of which the protected area is a part.</li> </ul> <p>To prevent impact to red- and blue-listed species and other habitat values:</p> <ul style="list-style-type: none"> <li>• Maintain functional habitat, cover and site-specific features for fish and wildlife species.</li> <li>• Encourage human use patterns that minimize impacts on the environment (e.g. trails, boardwalks, facilities).</li> </ul>	
<p>4. <i>Protect cultural heritage values.</i></p>	<p>4.1 Incidence of damage to, or loss of, cultural heritage values.</p>	<p>Zero</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Identify and protect archaeological sites, special sites, traditional use (past and present) and heritage trails (First Nations and pioneer).</li> </ul>	

Protected Areas Objectives	Measures/Indicators	Targets
<p>5. Recognize hunting and angling as an acceptable use within protected areas.</p>	<p>5.1 Percent of sustainable hunting and angling opportunities maintained.</p>	<p>100</p>
	<p><b>Implementation Direction</b></p> <ul style="list-style-type: none"> <li>• Continue to provide hunting and angling opportunities for First Nations, local and resident hunters, anglers and guide outfitters in protected areas, subject to hunting and fishing regulations, provincial conservation priorities and public safety.</li> <li>• No loss of species quotas for resident hunters, except for reasons based on biological or habitat science and in consultation with the Hunter Advisory Committee.</li> </ul>	

### 5.3 Protected Area Specific Management Direction

#### 5.3.1 Kidprice Lake Chain Protected Area

The Kidprice Lake chain lies within a deep valley between the Sibola Range to the south and east, and an un-named ridge to the northwest. The lake chain consists of four lakes, with the canoe route starting from Lamprey Lake (outside of the protected area) and continuing through Anzac, Stepp, and Kidprice Lake. This area has long been recognized for its beauty and remoteness as a portage and canoe route. While Lamprey Lake is accessible by road, access into the protected area is limited to canoe and portage or fly-in.

Present uses in the area include backcountry canoeing, snowmobiling, camping, fishing, wildlife viewing, hunting, trapping and guide outfitting. The pristine wilderness, natural beauty and abundant fish and wildlife support and contribute to these activities. The topography and ecology of the area, including steep timbered hillsides, alpine slopes, riparian and wetland ecosystems, contribute to important goat, grizzly and fish habitats.

While Lamprey Lake is not within the protected area, the intent is that general management direction for the visual resource (Section 3.2.5), lakeshore management (Section 3.4.2: Fish, Fish Habitat and Aquatic Ecosystems), and trail management (Section 3.2.6: Recreation) will adequately address its function and values as the start of the Kidprice canoe route.

#### Issues:

- ◆ Impacts to the integrity of the ecosystems and fish and wildlife habitat.
- ◆ Impacts to the wilderness recreation experience.

#### Goals:

- ◆ Opportunities for an unroaded wilderness experience.
- ◆ Recognition and management of the Kidprice lake chain as a regionally significant wilderness recreation feature.

**Management Intent:**

Area to be managed for a wilderness recreation experience through protection of ecological values and motorized access restrictions.

Objective	Measures/Indicators	Targets	Implementation Direction
<p>1. Minimize the impacts on wilderness recreation from motorized activities.<sup>61</sup></p>	<p><b>Intent:</b> The primary goal for this area is to maintain a wilderness recreation experience. Summer motorized access, with the exception of existing eligible tenure holders, will not be allowed outside of designated areas. While winter motorized access is allowed throughout the area, a fair process must be developed to address future tenure applications, with due consideration of the existing recreational and tenured uses.</p>		
	<p>1.1 Number of total daily helicopter flights within the immediate vicinity of the Kidprice lake chain.</p>	<p>Aim for &lt; 6 per day</p>	<p>Encourage helicopter use (flights and landings) away from lake chain.</p>
	<p>1.2 Incidence of motorized recreation on identified non-motorized lakes.</p>	<p>Zero</p>	<p>Applies to gas powered boats only. Refer to Section 3.2.6 (Recreation) for the list of non-motorized lakes and associated management direction.</p>
	<p>1.3 Incidence of summer motorized recreation in designated non-motorized areas.</p>	<p>Zero</p>	<p>Motorized access restrictions do not apply to aircraft. Refer to Section 3.2.6 (Recreation) for the motorized and seasonal access restrictions, and area boundaries.</p>

**5.3.2 Tazdli Wiyez Bin (Burnie-Shea Lakes) Protected Area**

Located in the Howson Range, north of Morice Lake, the landscape in this area is steeper and more rugged than the areas to the south west. Burnie Lakes are two small lakes which lie in a narrow valley, out of which the Burnie River flows to the southwest. Shea Lake lies in a wetland complex southeast of the Burnie Lakes, on the eastern slope of the Howson Range.

This tract of wilderness, extending from mountain peaks to riparian valley bottoms, is an important source of ecosystem representation for the plan area. Located adjacent to the Telkwa Caribou Recovery Area, the rugged landscape and lack of road development allow populations of caribou, mountain goat and grizzly bear to thrive. Associated with the steep terrain are numerous avalanche chutes, providing valuable

<sup>61</sup> Retain over time, all existing and future access routes and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holders access to trap line areas and guide territories.

grizzly bear forage. The lakes, rivers and streams support populations of kokanee, mountain whitefish and cutthroat trout.

Historical use by First Nations is evidenced by numerous trails and a traditional cabin at Shea Lake. First Nations continue to take advantage of this wilderness area to educate future generations. The wilderness of Burnie-Shea Lakes is a destination for both winter and summer wilderness experiences, including mountaineering, hiking, skiing and snowmobiling. The abundance of wildlife also provides opportunities for hunting, trapping and guide outfitting.

**Issues:**

- ◆ Impacts to First Nations settlement areas and the trail network.
- ◆ Availability of wilderness recreation and tourism opportunities.
- ◆ Impact to the integrity of the ecosystems and fish and wildlife habitat.

**Goals:**

- ◆ Opportunity for an unroaded wilderness experience.
- ◆ Representation of ecosystems.
- ◆ Protection of critical fish and wildlife habitat.

**Management Intent:**

Area to be managed for a wilderness recreation experience, with priority on protection of ecological values and motorized access restrictions.

Objective	Measures/Indicators	Targets	Implementation Direction
<p><i>1. Minimize the impacts to wilderness recreation from motorized activities.</i></p>	<p>1.1 Incidence of winter motorized recreation in areas designated for all season non-motorized use.</p>	<p>Maximum one weekend per year</p>	<p>Motorized access to be consistent with the Telkwa caribou recovery strategy.</p> <p>Refer to Section 3.2.6 (Recreation) and Map 7 for motorized and seasonal access restrictions and area boundaries.</p> <p>Area to be made available to snowmobiling for one weekend a year by mutual agreement between commercial recreation tenure holder and local snowmobile clubs.</p>
	<p>1.2 Incidence of summer motorized recreation.</p>	<p>Zero</p>	<p>Refer to Section 3.2.6 (Recreation) and Map 7 for motorized and seasonal access restrictions and area boundaries.</p>

### 5.3.3 Nadina Mountain Protected Area

Nadina Mountain lies in the south central portion of the plan area west of Owen Lake and about 35 kilometres southwest of Houston. It is a unique and dominant feature on the landscape and can be seen from many miles away. It is described as an alpland on a granitic intrusion, isolated and rounded by glaciation.

Nadina Mountain is a highly important area, both spiritually and culturally, to the Wet'suwet'en. It has long been recognized as a central landmark within the traditional territories of the First Nation and to local residents. Nadina Mountain contains habitats for a variety of wildlife, including mountain goats and grizzly bears. The area also supports unique subalpine plant communities and wetlands, and nutrient-poor soils in the alpine result in a diverse lichen community. The mountain is a popular destination for hikers.

#### Issues:

- ◆ Impacts to First Nations spiritual and cultural values.
- ◆ Impacts to unique ecosystems and mountain goat habitat.
- ◆ Loss of recreation opportunities.

#### Goals:

- ◆ Conservation of ecosystem integrity, rare plant communities and wildlife habitat.
- ◆ Conservation of First Nations' cultural, spiritual and heritage values.
- ◆ Opportunities for a range of recreation uses.
- ◆ Opportunities for education and interpretation of natural and cultural features.

#### Management Intent:

Area to be managed to conserve unique ecological values and highly important cultural and spiritual values through education and interpretation and compatible non-motorized recreational uses.

Objective	Measures/Indicators	Targets	Implementation Direction
1. Maintain cultural and heritage features and values.	1.1 Incidence of loss of cultural heritage features and values.	Zero	Manage as per the Office of the Wet'suwet'en values and intent.
2. Maintain natural and ecological features.	2.1 Incidence of impacts to ecosystem integrity.	Zero	Includes impacts to plant communities and wildlife habitat.
	2.2 Incidence of motorized recreation.	Zero	Existing helicopter access permissible for maintenance of the telecommunications tower.
3. Maintain recreation opportunities.	3.1 Incidence of impacts to recreational features.	Zero	Recreational features and facilities should be compatible with the cultural and ecological values of the area.



### 5.3.4 Old Man Lake Protected Area

The protected area includes Old Man Lake, Beaver Lake and part of McBreirie Lake. It lies at the foot of China Nose Mountain and is adjacent to the Swan Lake-China Nose Area Specific RMZ. The area is located approximately 25 kilometres east of Houston and 12 kilometres south of Topley. It is an ecologically significant complex of small lakes, marshy shorelines and wetlands. Old Man Lake contains abundant aquatic vegetation, including extensive fields of emergent marsh cinquefoil. The area is routinely used as a stopover by migratory birds and contains locally rare breeding populations of black tern and yellow-headed blackbirds.

Of particular ecological value are the natural grasslands located on the south facing slopes, some of which are red-listed. The Old Man Lake area is of importance to First Nations as a historic settlement area. Contributing to its cultural significance is the abundance of Saskatoon on the south facing natural grasslands. This rare plant community is of conservation importance, both from an ecological and a cultural perspective.

#### Issues:

- ◆ Impacts to the function and integrity of the grassland and aquatic ecosystems and associated avian breeding habitats.
- ◆ Impacts to First Nations traditional settlement areas and cultural activities.

#### Goals:

- ◆ Protection of high value breeding and migratory bird habitat.
- ◆ Protection of grassland and aquatic ecosystems.
- ◆ Conservation of First Nations' cultural and heritage values.

#### Management Intent:

Area to be managed to conserve riparian and rare grassland ecosystems, wildlife habitats and cultural heritage values, with no motorized access allowed.

Objective	Measures/Indicators	Targets	Implementation Direction
<i>1. Conserve the natural composition, structure and function of the grasslands, lakes and wetlands.</i>	1.1 Incidence of loss of the natural composition, structure and function of the grasslands, lakes and wetlands.	Zero	Protected area boundaries to be fenced using wildlife-friendly methods. Range tenure holders are not responsible for fence construction.
<i>2. Conserve the functional integrity of breeding and migratory bird habitats.</i>	2.1 Incidence of loss of breeding and migratory bird habitats.	Zero	
<i>3. Conserve cultural and heritage features and values.</i>	3.1 Incidence of loss of cultural heritage features and values.	Zero	Manage as per Office of the Wet'suwet'en values and intent.

### 5.3.5 Babine Lake Marine Parks Protected Area

Babine Lake is the longest freshwater lake in British Columbia. It lies in a northwest to southeast direction across the northern part of the plan area. The Babine watershed supports the threatened Tahlo sockeye salmon run and supplies over ninety percent of the Skeena sockeye. Additional fisheries values include high concentrations of coho salmon and lake, cutthroat, rainbow and bull trout. The lake is a potential trumpeter swan nesting area and is also of importance to eagles and various waterfowl. The upland lakeshore ecosystems support abundant wildlife, including grizzly bear, black bear and moose.

With its convenient access and fish and wildlife values, Babine Lake is a destination for boating and fishing enthusiasts seeking a diversity of recreational experiences. The Babine Lake Marine Parks, shown on Map 15: Babine Lake Parks, include a number of anchorages, beaches and other recreational sites around Babine Lake. Specific sites are North Spit, Sanctuary Bay, Bear Island, Port Arthur, Sand Point, Long Island/Cottonwood Point and Wrights Bay/Wilkinson Bay.

These parks contain areas of high cultural value that the Nedo'ats Hereditary Chiefs wish to have protected.

#### Issues:

- ◆ Loss of sheltered anchorages.
- ◆ Impacts to the recreational experience, including visual quality.

#### Goals:

- ◆ Opportunities for recreation and tourism.
- ◆ Opportunities for sheltered anchorage.

#### Management Intent:

Areas to be managed as a marine park system, emphasizing a quality recreation and tourism experience that includes ecological appreciation and safe anchorages. Park boundaries are to exclude active mineral tenures.

Objective	Measures/Indicators	Targets	Implementation Direction
1. <i>Maintain the quality of the recreational experience.</i>	1.1 Incidence of loss of values.	Zero	
2. <i>Maintain cultural values</i>	2.1 Incidence of cultural values impacted.	Zero	Identify values and incorporate into management plans in consultation with the Nedo'ats Hereditary Chiefs and Lake Babine First Nations

Map 15. Babine Lake Parks



### **5.3.6 Morice Lake Protected Area**

Morice Lake and Atna River are adjacent but separate protected areas. The management direction for both of these protected areas is identical (see objectives, measures and targets below). Wet'suwet'en culture is defined by the people's relationship to the land and a strong protection interest. This holistic relationship recognizes the ecological and spiritual connection of the Wet'suwet'en to the land, water plants, animals and fish, in particular. The Atna River and Morice Lake protected areas form a large wilderness area and are the headwaters to the Morice River. The Morice River supports a significant fishery for the Wet'suwet'en; the value of these fish to the Nation cannot be overstated.

A final names of these protected areas is to be determined through discussions with the Office of the Wet'suwet'en.

#### **Morice Lake**

Morice Lake is a cold, clear, high elevation lake with low organic composition and sensitivity to water quality impacts. The lake provides important rearing habitat for the Nanika River sockeye stock, as well as resident populations of rainbow and lake trout, Dolly Varden and small numbers of burbot and kokanee. The Nanika River, a key tributary to Morice Lake, supports an important sockeye spawning population as well as populations of coho, Chinook, steelhead, bull trout and resident rainbow trout. Down stream from Morice Lake, the Morice River provides spawning habitat for much of the Morice Chinook salmon population, as well as spawning for coho and steelhead and key habitat for bull trout and resident rainbow trout.

The high recreational values of the Morice Lake area offers a wilderness experience that is popular with plan area residents and draws people from throughout the region and the province. This wilderness lake, with its clear water and dramatically rising landscape of forests, cliffs and waterfalls, provides extraordinary views unique to the plan area. The high fish values associated with the lake make this area a destination for those seeking a wilderness fishing experience. Morice Lake is accessed by a forestry road from Houston — a public recreation site and campsite with a boat launch is located at the east end of the lake. Other camping locations can be found around the lake, including Atna Bay, popular for its emerald waters, sheltered islands and beaches.

### **5.3.7 Atna River Protected Area**

#### **Atna River**

The Atna River flows through a narrow valley of steep forested slopes into Atna Lake. Forest associations in the Atna valley are representative of coastal ecosystems, with a predominance of western hemlock, amabilis fir and spruce. Subalpine fir and whitebark pine forest occurs on the lower slopes and on rocky knobs and islands along the shores of Atna Lake.

Coastal old growth and riparian ecosystems near Atna Lake are of ecological significance. The focus of this protected area is on conserving the old coastal western hemlock (CWH) forest and riparian types adjacent to the south shore of Atna Lake and Atna Bay, up to the tree line. There are a number of recreation features, including a portage trail and campsites, adjacent to the lake and river.

#### **Issues:**

- ◆ Impacts to First Nations spiritual and cultural values.
- ◆ Impacts to unique ecosystems and mountain goat habitat.

**Goals:**

- ◆ Protect as a pristine wilderness area.
- ◆ Conservation of ecosystem integrity, rare plant communities and wildlife habitat.
- ◆ Conservation of First Nations' cultural, spiritual and heritage values.
- ◆ Opportunities for education and interpretation of natural and cultural features.

**Management Intent:**

Area to be managed to conserve the wilderness condition, unique ecological values and highly important cultural and spiritual values through education and compatible recreational and tourism uses.

<b>Objective</b>	<b>Measures/Indicators</b>	<b>Targets</b>	<b>Implementation Direction</b>
<i>1. Maintain cultural and heritage features and values.</i>	1.1 Incidence of loss of cultural heritage features and values.	Zero	Manage as per the Office of the Wet'suwet'en values and intent.
<i>2. Maintain natural and ecological features.</i>	2.1 Incidence of impacts to ecosystem integrity.	Zero	Includes impacts to plant communities and wildlife habitat.

## 6. Implementation, Monitoring and Amendment

Once the LRMP is approved by the provincial government, the objectives are implemented through the application of LRMP objectives to the on-the-ground management of land and resources. The implementation process is largely the responsibility of provincial government agencies, whose role it is to complete LRMP-directed projects and to ensure compliance practices are carried out, within the agency and by holders of Crown tenure, in accordance with their legislative responsibility.

The public has a role in monitoring the results of LRMP implementation and the extent to which the stated management direction is being achieved. As part of the implementation process, a Plan Implementation and Monitoring Committee (PIMC) will be established to provide advice on an ongoing basis. A terms of reference document will be prepared, with the participation of members of the PIMC, that defines the role and responsibilities of the Committee.

### 6.1 Implementation

Implementation of the Morice LRMP will be undertaken in a manner that optimizes benefits and minimizes costs and impacts for all resource values. Best available knowledge and information and innovative practices will be used to implement the plan.

The Morice LRMP will be implemented by regional representatives of provincial government agencies. Implementation of the LRMP may occur through a number of processes:

- ◆ More detailed plans, such as sustainable resource management plans, forest stewardship plans, range use plans and access management plans;
- ◆ Approval processes such as the Environmental Assessment Process;
- ◆ Resource development permits;
- ◆ Land dispositions; and
- ◆ Incremental activities implemented as specific LRMP projects.

Approved LRMP management direction will guide more detailed planning, project review and approval processes related to uses and activities on Crown lands under provincial jurisdiction. In the absence of more detailed and operational plans, all resource-specific development plans or permits will take guidance from the general management direction and area specific objectives in the LRMP.

As one of the first tasks in LRMP implementation, the Integrated Land Management Bureau (ILMB) will prepare an Implementation Plan and Progress Report (IPPR) to detail the tasks and responsibilities associated with plan implementation. This report will include project descriptions, estimated timelines and priorities for completion of LRMP-related projects (e.g. protected area management plans). and the IPPR will promote compliance with LRMP-directed practices. While it is expected that all elements of the LRMP will be implemented over time, various components of the LRMP (e.g. inventory and/or mapping) are subject to funding availability.

### 6.2 Monitoring

The monitoring phase of the LRMP involves on-going assessment of:

- a) The progress towards the completion of LRMP-related projects (i.e. implementation monitoring); and
- b) The state of the plan area resources relative to the desired outcomes of the LRMP. If the management direction is not achieving the desired outcomes of the LRMP, it may be necessary to consider revisions or amendments to the plan.

The public, including the PIMC, have an important role to play in monitoring the LRMP.

### **6.2.1 Adaptive Management**

The management direction in the Morice LRMP has been developed using the best information and knowledge available at the time. There is inevitably some uncertainty as to the utility of management recommendations. Therefore, the LRMP endorses a process of adaptive management (see Glossary) to allow continual improvement of management policies and practices. By monitoring management direction over time and incorporating new information and knowledge, agencies will be able to analyze the outcome of their management practices in light of the original LRMP objectives, and incorporate those results into future planning and approaches to best management practices on the land.

### **6.2.2 Monitoring Reports**

Accountability to the plan will be described in an LRMP Monitoring Report, where individual agencies report on implementation progress and the status of completion of tasks or actions identified in the Morice IPPR. The Monitoring Report will also summarize, through the evaluation of management direction, the achievement of expected outcomes for the LRMP.

ILMB will coordinate the preparation of the Monitoring Report. Ministries responsible for implementing the LRMP objectives will report on their progress with respect to the achievement of LRMP targets and activities.

The Monitoring Report will be presented to the PIMC for review to ensure that projects and programs are being implemented in accordance with the management direction and intent of the LRMP. As part of the review process, the PIMC may make recommendations on plan implementation and amendments. The Province will report back to the Committee on how the recommendations of the Committee have been addressed.

## **6.3 Plan Amendment**

Proposed revisions to the LRMP as identified by agencies, the PIMC, or through more detailed planning, will be identified in the Monitoring Report. The Skeena Region Managers Committee (SRMC) will review and approve minor revisions to the plan, but major revisions will need to be approved by the Interagency Manager's Committee (IAMC). Response to changing conditions on the ground and/or policy may require review of the LRMP.

### **6.3.1 Minor Revisions**

Recommendations for minor revisions to the plan will be made by the PIMC to the SRMC. After the SRMC's approval, minor revisions will be documented in the Progress Report.

Examples of minor revisions include:

- ◆ Administrative corrections and revisions by ILMB;
- ◆ Revised priorities for implementation;
- ◆ Small changes to boundaries of area specific management zones;
- ◆ Refinements to objectives, measures and targets as suggested by more detailed plans; and
- ◆ Required changes to make the plan conform to new laws and regulations.

### 6.3.2 Major Revisions

A major revision to the plan is called an amendment. The following are considered amendments to the plan:

- ◆ Significant changes to objectives; or
- ◆ Changes of 500 hectares or more to the boundaries of area-specific management zones, not including protected areas.

Amendments to the plan will not include boundary changes to protected areas.

Although the LRMP PIMC does not have the mandate to make land use planning decisions, it can make recommendations for revisions or amendments to the plan. Any proposed amendments will be identified in the Monitoring Report and raised for discussion at the PIMC meeting. The SRMC will then decide when an amendment process is required, and will define and coordinate the process consistent with existing legislation, regulations and policy.

## 6.4 Roles and Responsibilities

There are a number of different players involved in implementation and monitoring of the LRMP. The roles and responsibilities of the various participants in the process are as follows.

### 6.4.1 Provincial Ministries and Agencies

The role of the provincial government in implementation and monitoring occurs at the level of individual agencies and at an interagency level.

#### ***Skeena Region Managers Committee (SRMC)***

The SRMC is a group of senior managers from the resource agencies responsible for LRMP implementation. The SRMC is a sub committee of the Northern Interior Interagency Management Committee that provides overall strategic coordination of implementation of strategic land use plans throughout the Skeena region.

#### ***Ministry of Agriculture and Lands***

The ILMB within the Ministry of Agriculture and Lands will be responsible for the overall coordination of LRMP implementation. In this role, ILMB will:

- ◆ Coordinate the establishment and preliminary activities of an interagency implementation team;
- ◆ Coordinate development of an Implementation Plan and Progress Report (IPPR);
- ◆ Establish and coordinate the activities of a PIMC, including the preparation of Monitoring Reports;
- ◆ Develop a terms of reference and ground rules for the PIMC, assisted by First Nations and other members of the committee;
- ◆ Sponsor an annual PIMC meeting;
- ◆ Review recommendations from the PIMC on proposed plan amendments and provide advice on those amendments to government; and
- ◆ Advise government of specific problems regarding plan implementation.



## **Individual Agencies**

Government agencies are responsible for the implementation of the LRMP through the ongoing delivery of government programs, policies and initiatives. The relevant ministries and agencies will undertake the following for resources within their mandate:

- ◆ Carry out responsibilities under the plan;
- ◆ Prepare an IPPR detailing tasks arising from LRMP objectives, including defining priorities for implementation and more detailed planning;
- ◆ Distribute the final LRMP document to First Nations, licensed resource users, resource agency staff, stakeholders and interested public;
- ◆ Promote understanding of, and encourage consistency with, the LRMP by resource users;
- ◆ Advise the SRMC on aspects of plan interpretation and implementation;
- ◆ Prepare resource-specific summaries for the Monitoring Report; and
- ◆ Initiate, review and/or provide recommendations on proposed revisions and amendments to the plan.

### **6.4.2 First Nations**

The provincial government is committed to working with First Nations on a government-to-government basis. ILMB and other government agencies will work directly with participating First Nations to meet objectives in the LRMP. First Nations with traditional territories within the Morice plan area are encouraged to participate in monitoring and review of the plan, independently as well as representing their interests as members of the PIMC. The Office of the Wet'suwet'en, Lake Babine Nation/Nedo'ats Hereditary Chiefs, and Yekooche First Nation have stated an interest in participating in the implementation process.

The LRMP is without prejudice to aboriginal rights and treaty negotiations.

### **6.4.3 LRMP Plan Implementation and Monitoring Committee (PIMC)**

The role of the Morice PIMC will be to monitor and assess the effectiveness of activities in order to meet the intent of the Morice LRMP. The PIMC can make recommendations to ensure that the intent of the plan is achieved, but will not have the mandate to make land use planning decisions.

The PIMC will consist of representatives from First Nations, local and provincial governments, and public and industry stakeholders (local residents and community members and regional communities of interest). There should be a balanced representation of economic, social (including recreation), and environmental interests. In order to maintain continuity, it is anticipated that the composition of the PIMC will be similar to that of the LRMP planning table. Every effort will be made to ensure that the same sectors are represented, and that there is continuity in representation on behalf of the sectors. Provincial government agencies will provide advisory support to the Committee.

The PIMC will meet annually or more frequently at its discretion. The range of activities of the PIMC could include the following:

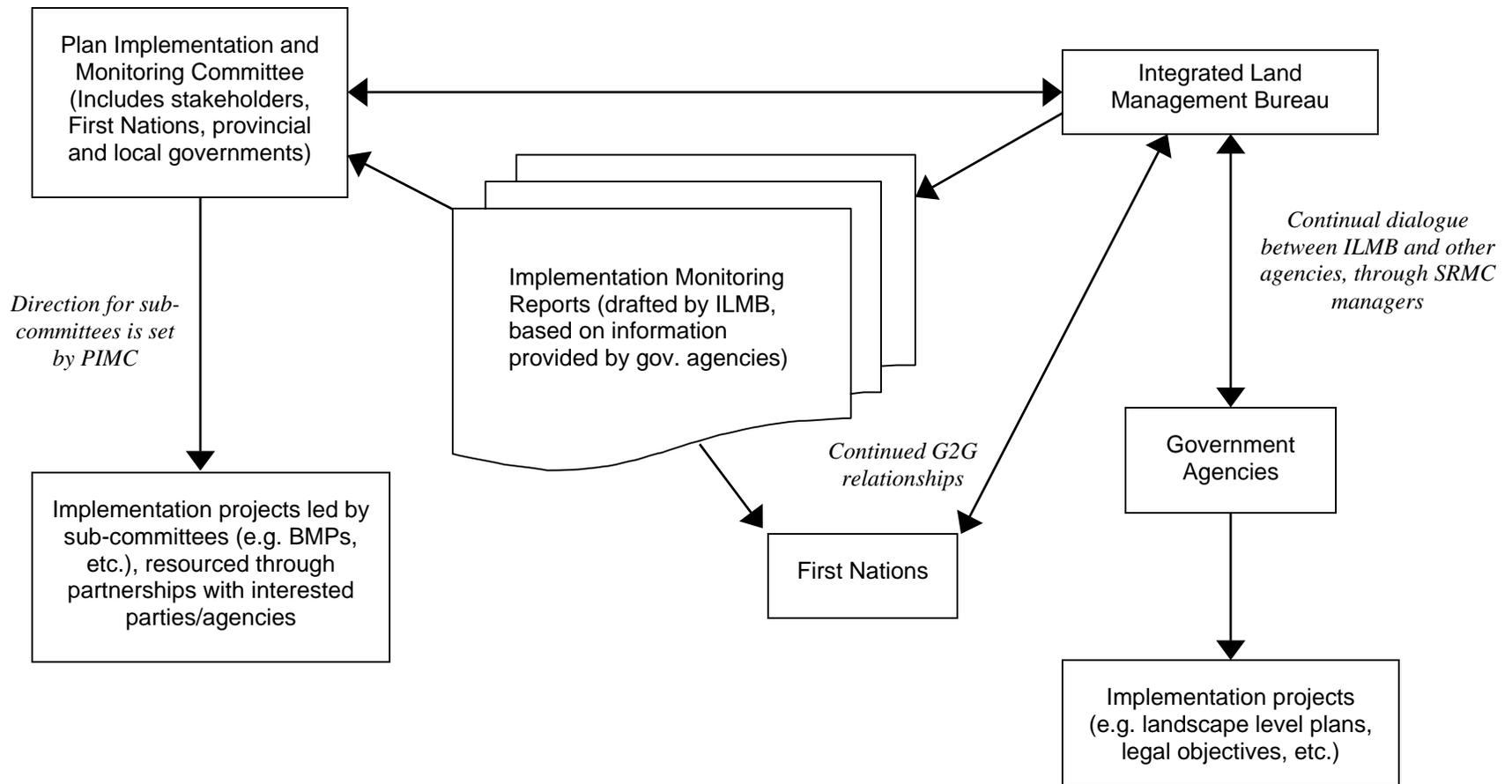
- ◆ To assist in the development of the terms of reference for the PIMC;
- ◆ To provide advice to agencies on plan interpretation and implementation, upon request of the SRMC or individual agencies;
- ◆ To review and provide input to the Monitoring Report;
- ◆ To review and provide recommendations on proposed plan amendments, based on the Monitoring Report and new information on resources in the plan area;
- ◆ To bring any concerns and new information to the attention of ILMB and the SRMC;

- ◆ To provide community liaison concerning plan implementation and monitoring;
- ◆ To provide advice, as appropriate, on strategic decisions with respect to LRMP initiatives (e.g. park management plans); and
- ◆ To communicate on a regular basis with other planning bodies.

The relationship between the PIMC, government agencies and sub-committees is shown in Figure 1. The figure describes the role of the PIMC as defined by government policy. This includes the review of monitoring reports that assess implementation progress and effectiveness results. The PIMC provides recommendations and advice to ILMB on these reports, and ILMB facilitates implementation and monitoring through communication of the PIMC recommendations to SRMC and government agencies. Monitoring reports are also communicated directly to First Nations and broadly to the public and stakeholders.

The lower left quadrant of the diagram describes additional implementation projects that may be taken on at the option of the PIMC, to assist with implementation activities defined in the LRMP. These activities include work with sub-committees and may involve partnerships with government agencies or other parties.

**Figure 1. Relationship Between the Plan Implementation and Monitoring Committee, Government Agencies and Sub-Committees**



## 7. Recommended Policy Changes

The following issues have been identified by individual table sectors and First Nations as potential constraints to meeting land use or economic interests. Because it is outside of the official mandate of the LRMP to make recommendations on these issues, they have been included as policy recommendations separate to the main body of the LRMP recommendations package. These are not considered consensus recommendations.

<b>Resource Category<sup>62</sup></b>	<b>Policy Recommendation</b>
Agriculture	<b>Recommend that the provincial government direct consultants preparing extensive agricultural lease eligibility reports on private lands to exclude uncultivated riparian areas from the total arable area.</b>
Air Quality	<b>Eliminate the sale of non-EPA approved domestic wood-burning heaters.</b>
Botanical Forest Products	<b>No pesticides will be used where culturally important plants are identified on site.</b>
Consultation	<b>Develop policy to achieve consultation and accommodation with First Nations.</b>
Energy and Minerals	<ol style="list-style-type: none"> <li><b>1. Re-engage regional Mines inspectors to provide advice with respect to results-based management.</b></li> <li><b>2. No more mineral tenures for placer mining; eliminate the existing placer tenure at Bob Creek.</b></li> </ol>
First Nations	<ol style="list-style-type: none"> <li><b>1. Recognition of aboriginal rights and title.</b></li> <li><b>2. Eliminate the pre-1846 date as the benchmark for historical significance of archaeological sites under the <i>Heritage Conservation Act</i>.</b></li> </ol>
Fish, Fish Habitat and Aquatic Ecosystems	<ol style="list-style-type: none"> <li><b>1. Increase government’s capacity to carry out monitoring and enforcement with respect to fisheries management (illegal harvest, harassment)</b></li> <li><b>2. A default buffer around all fish bearing streams should be established.</b></li> </ol>
General	<p><b>Utilize better scientific methods related to monitoring the following:</b></p> <ul style="list-style-type: none"> <li><b>• Limits of acceptable change/carrying capacity.</b></li> <li><b>• Incremental impacts to wildlife populations from habitat loss.</b></li> <li><b>• Water quality relating to non point source discharges.</b></li> </ul>
Hunting and Fishing	<ol style="list-style-type: none"> <li><b>1. Give northern British Columbia resident hunters first preference for hunting opportunities for limited entry draws.</b></li> <li><b>2. Implement an “enhanced odds system” (similar to Alberta) for limited entry hunting.</b></li> <li><b>3. Develop area specific angling use plans that allocate a range of tourism and recreational based fishing opportunities.</b></li> <li><b>4. Institute more restrictive regulations for bull trout.</b></li> <li><b>5. Increase government capacity to carry out enforcement of hunting and fishing regulations.</b></li> </ol>

<sup>62</sup> These are categories of interest and are not equivalent to sectors.

<b>Resource Category<sup>62</sup></b>	<b>Policy Recommendation</b>
Protected Areas	<b>Allow commercial country food harvest within protected areas.</b>
Recreation	<b>Improvements to remain the property of the user group. If the province wishes to obtain them, fair market value shall be paid.</b>
Timber	<ol style="list-style-type: none"> <li><b>1. Implementation of the LRMP recommendations will not result in a timber supply impact of greater than a 5% reduction from the TSR2 base case.</b></li> <li><b>2. Implementation of the LRMP recommendations will not result in incremental costs greater than those anticipated in the <i>Forest and Range Practices Act</i>.</b></li> </ol>
Tourism	<ol style="list-style-type: none"> <li><b>1. When the province decides to terminate or not renew tenure, it shall show good cause. If the province terminates the tenure and the licensee is not at fault, fair compensation shall be paid.</b></li> <li><b>2. Improvements to remain the property of the tenure holder. If the province wishes to obtain them, fair market value shall be paid.</b></li> <li><b>3. In the case of conflict over the use of the tenure (particularly recreational conflict that threatens the function and integrity of the operation), the province shall facilitate a conflict resolution process. If resolution cannot be reached, the province shall impose binding arbitration.</b></li> </ol>
Wildlife	<ol style="list-style-type: none"> <li><b>1. Increase government's capacity to carry out monitoring and enforcement with respect to wildlife management (e.g. illegal harvest, harassment, sale of animal parts).</b></li> <li><b>2. Recommend that hunting allocations consider predator/prey relationships.</b></li> </ol>

## 8. Future Research

The following is a preliminary list, put forward by the table, of desired research efforts to be conducted in support of LRMP implementation. This should not be considered a complete list.

1. Direct future research funding toward providing benchmark data as referenced in the LRMP.
2. Support experiments to develop best management practices.
3. Develop a research plan based on an assessment of knowledge gaps within the plan — includes biological, economic and social science research.
4. Look at opportunities for cooperation and partnerships with other research initiatives.
5. Monitoring Committee to recommend research that is appropriate to address current issues.

## 9. Acronyms and Glossary

### 9.1 Acronyms

<b>AAC</b>	Allowable Annual Cut
<b>ALR</b>	Agricultural Land Reserve
<b>AT</b>	Alpine Tundra
<b>ATV</b>	All-Terrain Vehicle
<b>AUM</b>	Animal Unit Month
<b>BCTS</b>	BC Timber Sales
<b>BECE</b>	Biogeoclimatic Ecosystem Classification
<b>BMP</b>	Best Management Practice
<b>CCME</b>	Canadian Council of Ministers of the Environment
<b>CDC</b>	Conservation Data Centre
<b>CHR</b>	Cultural Heritage Resources
<b>CMT</b>	Culturally Modified Trees
<b>CWD</b>	Coarse Woody Debris
<b>CWH</b>	Coastal Western Hemlock
<b>EPA</b>	Environmental Protection Agency
<b>ESA</b>	Environmentally Sensitive Area
<b>ESSF</b>	Englemann Spruce-Subalpine Fir
<b>GFA</b>	General Forested Area
<b>GIS</b>	Geographic Information System
<b>GMD</b>	General Management Direction
<b>HBEA</b>	High Biodiversity Emphasis Area
<b>ILMB</b>	Integrated Land Management Bureau
<b>IPM</b>	Integrated Pest Management
<b>IPPR</b>	Implementation Plan and Progress Report
<b>IWAP</b>	Interior Watershed Assessment Program
<b>LLT</b>	Large Live Trees
<b>LRMP</b>	Land and Resource Management Plan
<b>LRUP</b>	Local Resource Use Plan
<b>LU</b>	Landscape Unit
<b>LWD</b>	Large Woody Debris
<b>MAI</b>	Mean Annual Increment
<b>MH</b>	Mountain Hemlock
<b>MOE</b>	Ministry of Environment
<b>MOF</b>	Ministry of Forests and Range
<b>NDT</b>	Natural Disturbance Type

<b>NRL</b>	Non-Recoverable Loss
<b>NSR</b>	Not Satisfactorily Restocked
<b>OGA</b>	Old Growth Area
<b>PAS</b>	Protected Area Strategy
<b>PIMC</b>	Plan Implementation and Monitoring Committee
<b>RMA</b>	Riparian Management Area
<b>RMZ</b>	Riparian Management Zone/ Resource Management Zone (how will this be fixed?)
<b>RNV</b>	Range of Natural Variation/Variability
<b>SBS</b>	Sub-Boreal Spruce
<b>SRMC</b>	Skeena Region Managers Committee
<b>TEKW</b>	Traditional Ecological Knowledge and Wisdom
<b>THLB</b>	Timber Harvesting Landbase
<b>TSA</b>	Timber Supply Area
<b>TSR</b>	Timber Supply Review
<b>TUS</b>	Traditional Use Study
<b>UWR</b>	Ungulate Winter Range
<b>VLI</b>	Visual Landscape Inventory
<b>VQO</b>	Visual Quality Objective
<b>WFSP</b>	Watershed-based Fish Sustainability Program
<b>WHA</b>	Wildlife Habitat Areas
<b>WTP</b>	Wildlife Tree Patch



## Glossary

**Account**—In multiple accounts analysis, accounts are the broad theme areas that form the basis for examining alternatives. Typically, in the provincial government, the theme areas are economy, environment and community although in some cases First Nations issues are placed in a separate account.

**Adaptive Management**—A proactive and systematic approach to managing uncertainty about the consequences of alternative resource management actions. Experimental trials are designed, implemented and monitored as a basis for learning and applying that learning in the form of revised / improved resource management actions.

**Age Class**—An interval into which the age range of trees, forests, stands, or forest types is divided for classification. Forest inventories commonly group trees into 20-year age increments up to age 140 years, then a single class for trees between 141 and 250 years old, and a single class for those older than 250 years.

**Agricultural Land**—Land that is used for farming, including ranching, and land that has biophysical attributes that make it suitable for agricultural use. The latter includes lands identified by the Canada Land Inventory agricultural capability classes 1 to 5, as well as unique lands that have the capability to sustain agriculture.

**Agricultural Land Reserve (ALR)**—Land designated and reserved for agricultural purposes under the *Agricultural Land Commission Act*. The reserve covers about five percent of the province and includes most of BC's high quality agricultural land. It includes both private and public lands, and covers land being farmed and land with agricultural potential. Non-agricultural uses on the ALR are regulated.

**Allowable Annual Cut (AAC)**—The allowable rate of timber harvest from a specified area of land. The chief forester sets AACs for timber supply areas and tree farm licences in accordance with Section 7 and/or Section 170 of the *Forest Act*. The district manager sets AACs for woodlot licences. May also refer to a portion of the total AAC for the management unit (i.e. TSA) partitioned to a single harvesting agreement (i.e. forest licence, timber sale licence).

**Amenity Migration**—Settlement of people on either a permanent, part time or intermittent basis in places that are perceived by them to be rich in environmental and/or cultural features/amenities (as opposed to settlement for reasons of economy or employment).

**Base Case**—The environmental, social and economic conditions that can be expected to occur in the future if existing policies, plans and practices are followed. The base case description is normally used as a point of comparison (benchmark) for judging the desirability of alternative land use plan scenarios.

**Best Management Practices (BMPs)**—Practices, or combinations of practices, determined by qualified persons to be the most effective and practical means of addressing issues, in conjunction with all other values, for any given site. BMPs must be feasible and economically competitive and should be tested under real world conditions. They must use the best available knowledge and are subject to change as new and better practices are discovered and evaluated. Minor differences in local conditions may result in different BMPs in order to achieve the same level of effectiveness from one site to the next. This means that today's BMP may be just a guideline and will need to be updated when better information is available. Best management practices should indicate a desired goal and some currently known ways to approach this goal, leaving the opportunity for immediate implementation of newer and better ways as they become available.

**Biogeoclimatic Ecosystem Classification**—A hierarchical classification scheme having three levels of integration: regional, local and chronological; and combining climatic, vegetation, and site factors.

**Biogeoclimatic Zone**—A geographic area with a broadly homogeneous macroclimate. Each zone is named after one or more of the dominant climax species of the ecosystems in the zone, and a geographic or climatic modifier (e.g., Interior Douglas Fir).

**Biological Diversity**—The diversity of plants, animals and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.

**Blue-Listed Species**—Sensitive or vulnerable species as identified by the Conservation Data Centre . Blue-listed species are considered to be vulnerable and “at risk” but not yet endangered or threatened. Populations of these species may not be declining but their habitat or other requirements are such that they are sensitive to disturbance. The blue list also includes species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category.

**Botanical Forest Product**—Non-timber based products gathered from forest and range land. There are currently seven recognized categories: wild edible mushrooms, floral greenery, medicinal products, fruits and berries, herbs and vegetables, landscaping products, and craft products.

**Bulk Water Exports**—Refers to large scale international exports.

**Capability (land)**—The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at given levels of management intensity. Capability also depends upon site conditions such as climate, slope, landform, soils, and geology.

**Carrying Capacity**—The average number of users (e.g. livestock, wildlife, human) that an area of land has the capability to support. See **Capability**.

**Coarse Filter Approach**—An approach to maintaining biodiversity that involves maintaining a diversity of structures within stands and a diversity of ecosystems across the landscape. The intent is to meet most of the habitat requirements of most of the native species (see also fine filter approach).

**Coarse Woody Debris (CWD)**—Sound and rotting logs and stumps that provide habitat for plants, animals, and insects and a source of nutrients for soil development.

**Communities of Interest**—Sectors of society which share common goals and interests.

**Concentrated Settlement**—Settlement that avoids urban sprawl and unorganized settlement expansion

**Consensus**—General agreement on a package of provisions to the extent that, although parties to the agreement may not agree to every aspect of the package, they do not disagree enough to warrant their opposition to the overall package.

**Consultation**—The process of seeking the opinions or advice of interested/ affected parties or experts. Requirements to consult with First Nations, stakeholders and other affected parties are set out in provincial policy and in legislation and legal jurisprudence at the provincial and federal levels.

**Country Food Harvest**—The gathering and removal of crops or produce specific to an area.

**Critical Habitat**—Areas considered to be critically important for sustaining a population and where development may cause an unacceptable decline in the population. A rating of the importance of the habitat (e.g., high, medium, low) may also be used.

**Cumulative Effects**—Effects on biota of stress imposed by more than one mechanism (e.g. stress in fish imposed by both elevated suspended sediment concentrations in the water and by high water temperature).

**Damage**—Impacts beyond changes to habitat that are acceptable in human and/or industrial activities according to best management practices.

**Deactivation**—Activities implemented to stabilize a road or trail surface, either permanently or during a period of inactivity. While deactivation is primarily intended for the maintenance of slope stability and hydrological integrity, activities are generally sufficient to make motorized access more difficult, depending on the method of access.

**Decision Support Systems**—Analytical tools (e.g., computer models) that aid decision-making by providing information on the projected implications of alternative management actions.

**Development**—The advancement of the management and use of natural resources to satisfy human needs and improve the quality of human life. For development to be sustainable it must take account of social and ecological factors, as well as economic ones, of the living and non-living resource base, and of the long-term and short-term advantages and disadvantages of alternative actions

**Diversion**—Infrastructure resulting in a change in the direction or path of water from the natural condition.

**Domestic Livestock**—These are animals raised for home use or for profit, especially on a farm. As defined under the *Range Act* (2004) the term “livestock” includes animals of the genus *Bos* (oxen and true cattle), horses, mules, asses, sheep, goats, llamas and alpacas and any prescribed animals, but does not include wildlife under the *Wildlife Act*, exotic game animals, bison, swine or poultry.

**Ecological Classification**—An approach to categorizing and delineating, at different levels of resolution, areas of land and water having similar characteristic combinations of the physical environment (such as climate, geomorphic processes, geology, soil and hydrologic function) and biological communities (plants, animals, micro-organisms and potential natural communities).

**Ecosystem-Based Management**—See **Ecosystem Management**.

**Economic Impact Analysis**—Analytical techniques that estimate the economic effects of management scenarios on income, revenues and employment within specific communities, regions or the province as a whole.

**Ecosystem**—A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size — a log, pond, field, forest or the earth's biosphere — but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation, for example, forest ecosystem, or range ecosystem.

**Ecosystem Function**—The collection of biological, physical and chemical processes that determine the flow of energy and material through an ecosystem.

**Ecosystem Integrity**—The soundness or wholeness of the processes and organisms composing the ecosystem. If an ecological system is a functioning ecosystem, it has integrity. To maintain ecosystem integrity one must maintain functioning, self-sustaining ecosystems with characteristics similar to the original ones. A particular landscape unit will retain its integrity as long as its structure, function, complexity, interactions, and its pattern and rate of change over time are consistent with the historical range in these variables.

**Ecosystem Management**—Also known as ecosystem-based management, an approach that attempts to maintain or restore ecological integrity, defined as the composition, structure and processes of forest ecosystems, by incorporating ecological, economic, social, and scientific perspectives to define a desired future condition, incorporating a range of spatial and temporal scales.

**Edge**—The outer band of a **patch** that has an environment significantly different from the interior of the **patch**.

**Edge Effect**—Habitat conditions (such as degree of humidity and exposure to light or wind) created at or near the more-or-less well-defined boundary between ecosystems, as, for example, between open areas and adjacent forest.

**Environmentally Sensitive Area (ESA)**—An area identified during a forest inventory that is sensitive to disturbance and/or is significantly valuable for fisheries, wildlife, water and recreation resources.

**Equivalent Clearcut Area (ECA)**—The area of a cutblock weighted to estimate an equivalent effect on snow hydrology as the area of a clear-cut unregenerated block. As examples, a ten-hectare clear-cut unregenerated block has an ECA of ten hectares; if a fully stocked stand has regenerated to a height of six metres, the block now has an ECA of five hectares. If, instead of being clear-cut the block was selection logged with thirty percent volume removal, the ECA is estimated to be three hectares.

**Facility**—A point defining the location of an accommodation, base headquarter or camp used for tourism and recreation activities.

**Forest Certification**—Independent verification that a forest area is being managed according to sustainable forest management standards, as set by a forest certification organization (e.g., Canadian Standards Association, Forest Stewardship Council systems of certification).

**Fine Filter Approach**—An approach to maintaining biodiversity that is directed towards particular habitats or individual species whose habitat requirements are not adequately covered by the coarse filter guidelines. These habitats may be critical in some way and the species threatened or endangered (see also coarse filter approach).

**Forest Land**—Land classified under Section 4 of the *Forest Act* that the chief forester considers will provide the greatest contribution to the social and economic welfare of the Province if predominantly maintained in successive crops of trees or forage, or both, or maintained as wilderness.

**Forest Land Reserve (FLR)**—Land designated under the *Forest Land Reserve Act*. This land includes private land within a tree farm licence and private land classed as managed forest land under the *Assessment Act*, as well as designated Crown land in the Provincial forest. Removal of land from the Reserve is restricted, as is use and subdivision of the land. The purpose of the Reserve is to maintain the commercial working forest of British Columbia.

**Forest Licence (FL)**—An agreement entered into under Part 3, Division 2 of the *Forest Act*, which grants the rights to harvest timber on Crown land. A forest licence has a term not exceeding 20 years, usually specifies an allowable annual cut (a portion of the total AAC for the timber supply area) and requires a management plan.

**Forest and Range Practices Act**—A forest and range planning and practices framework that is intended to promote a results-based management regime. The *Forest and Range Practices Act* came into force in January 2004 and fully replaced the *Forest Practices Code of BC Act* on January 1, 2006. Associated regulations to support this legislation came into force at the same time. Additional information can be obtained at:

Acts and regulations: <http://www.for.gov.bc.ca/tasb/legsregs/comptoc.htm>

Questions and Answers: <http://www.for.gov.bc.ca/code/training/frpa/>

**Forest Stewardship Plan**—The cornerstone operational plan for forest licensees under the *Forest and Range Practices Act*. The forest stewardship plan identifies the area of operation, and measurable and enforceable results or strategies to achieve the objectives set for the forest values. The forest stewardship plan must be consistent with the current provincial and federal standards to protect biodiversity and species at risk and approved land use plans.

**Functional**—In working order; mode of action or activity by which a thing fulfills its purpose.

**General Forested Area (GFA)**—The forested land base outside of high biodiversity emphasis areas (see high biodiversity emphasis areas) that is managed for a range of resource interests inclusive of, but not exclusive to, biodiversity.

**Geographic Information System (GIS)**—A computerized information system that uses a spatially referenced database to provide answers to geographic queries through a variety of manipulations.

**Habitat**—The place where an organism lives and/or the conditions of that environment including the soil, vegetation, water and food.

**Habitat Management**—Management of the forest to create environments which provide habitats that meet the needs of particular organisms.

**Habitat Rarity (scarcity, uniqueness)**—Refers to the relative abundance of the habitat type (target species or species groups).

**High Biodiversity Emphasis Area (HBEA)**—A spatially explicit portion of the forested landscape managed for high biodiversity values, particularly structural integrity. HBEAs are distributed throughout the plan area and are related to, but not limited by, landscape unit boundaries.

**Identified Wildlife**—Defined in the former *Forest Practices Code of British Columbia Act*, Operational Planning Regulation as those species at risk that the Deputy Minister of Environment, Lands and Parks or a person authorized by that deputy minister, and the chief forester, agree will be managed through a higher level plan, wildlife habitat area or general wildlife measure.

**Impact**—A strong effect on something or someone.

**Impact Assessment**—A study of the potential future effects of a resource development option on other resources and on social, economic and/or environmental conditions.

**Indicator**—A parameter that is measured / monitored to indicate progress towards a stated goal or objective.

**Industrial Operations**—On-the-ground operations such as land clearing, timber harvesting, timber processing, mechanical site preparation and other silvicultural treatments, mining, and road construction.

**Innovative Forest Practices Agreement (IFPA)**—An agreement between government and a licensee or a group of licensees designed to improve forest management, resource stewardship and employment opportunities through emphasis on innovative forestry practices.

**Inoperable Areas**—Defined in Timber Supply Analysis as areas unavailable for commercial timber harvesting for terrain-related or economic reasons. Characteristics used in defining inoperability include slope, topography (e.g., the presence of gullies or exposed rock), difficulty of road access, soil stability, elevation and timber quality. Operability can change over time as a function of changing harvesting technology and economics.

**Integrated Pest Management (IPM)**—An organized program that makes use of all available techniques to effectively suppress pest populations in an economically and environmentally safe way. The basic principles of IPM are to reduce pesticide use by refining the timing of sprays, to replace pesticides with non-toxic alternatives and good management, and to redesign the underlying management system to prevent pest problems and conserve beneficial species.

**Integrated Resource Management (IRM)**—A land management regime that identifies and considers resource values, in the context of social, economic and environmental objectives.

**Integrity**—Wholeness; a state of being complete; unbroken.

**Inter-agency Management Committee (IAMC)**—Senior regional managers of provincial government agencies with land or resource management responsibilities. The IAMC is responsible for setting priorities and overseeing land use planning in north-western BC.

**Interior Forest Conditions**—Conditions within a patch of forest where edge effects involving light intensity, temperature, wind, relative humidity, and snow accumulation and melt no longer influence environmental conditions within the patch; greater than 200m from a definable margin between patches.

**Invasive Organisms**—Include both native and non-native plant species (noxious weeds) and other organisms that cause risk to human health and the environment, such as insects and molluscs.

**Isolated Single Parcel**—Parcel of private land for which no amenities, utilities or permanent road maintenance are available and so for which there is no likelihood of planned, **concentrated settlement**.

**Known**—The value being considered is known to be present according to best available information; “Known” here is not defined as it is under provincial forest legislation.

**Lakeshore Management Zone**—The planning area directly adjacent to a lake in which a range of treatments and practices may be applied to maintain the unique combination of fish, wildlife, water, and recreation values that occur on and around lakes.

**Land and Resource Management Plan (LRMP)**—The sub-regional integrated resource planning process for BC. LRMP considers all resource values and requires public participation, inter-agency coordination and consensus-based land and resource management decisions.

**Landscape**—The fundamental traits of a specific geographic area, including its biological composition, physical environment and anthropogenic or social patterns.

**Landscape Unit**—Planning areas delineated on the basis of topographic or geographic features. Typically they cover a watershed or series of watersheds, and range in size from 5000 to 100 000 ha.

**Local Benefits**—The economic and social well-being available to the residents of a specific area.

**Local Planning**—A term describing a variety of resource planning initiatives undertaken to develop integrated approaches to resource use and development. Typically they have been undertaken to resolve potential land use conflicts in local areas smaller than LRMPs.

**Local Resource Use Plan (LRUP)**—A plan approved by the district manager for a portion of the Provincial forest that provides area-specific resource management objectives for integrating resource use in the area. These plans are prepared pursuant to Section 4(c) of the *Ministry of Forests Act*. Also referred to as local plans. These plans are to be consolidated under SRMPs

**Major Project**—An infrastructure project that requires an amount of resources and infrastructure development which is significantly greater than the routine level used for local purposes.

**Motorized Access Restrictions**—Activities implemented to limit the volume, type (e.g. 4WD, ATV), and/or season of motorized vehicle access allowed in an area.

**Multiple Accounts Analysis (MAA)**—An analytical technique that specifies a framework of evaluation accounts under which management scenarios can be systematically assessed in terms of their social, environmental and economic impacts. It is flexible and often utilizes non-monetary valuations of the likely effects.

**Natural Disturbance Regime**—See **Range of Natural Variation**

**Natural Disturbance Types**—A term used to characterize areas with different natural disturbance regimes. Five natural disturbance types are recognized as occurring in B.C.:

- ◆ NDT1 Ecosystems with rare stand-initiating events
- ◆ NDT2 Ecosystems with infrequent stand-initiating events
- ◆ NDT3 Ecosystems with frequent stand-initiating events
- ◆ NDT4 Ecosystems with frequent stand-maintaining fires
- ◆ NDT5 Alpine Tundra and Sub-alpine Parkland ecosystems.

**New Relationship**—A vision document, prepared in 2005, that sets out an initial work plan to move toward reconciliation of Aboriginal and Crown Titles and Jurisdictions within British Columbia. The New Relationship states the intent to establish a new government-to-government relationship between the Province and First Nations with the goal of achieving strong governments, social justice and economic self-sufficiency for First Nations and long term economic viability for all British Columbians (see also **Transformative Change Accord**).

**Non-Recoverable Losses**—The volume timber affected by fire, wind, insects, disease, and other forest pests that is not suitable or feasible for use by timber processing facilities.

**Objective**—An aim, goal or end to an action. Objectives and associated strategies contained in plans provide direction on land use and resource management for the plan area.

**Old Growth Attributes**—Structural attributes and other characteristics of old growth forests, which may include: large trees for the species and site; wide variation in tree sizes and spacing; accumulations of large dead standing and fallen trees; multiple canopy layers; canopy gaps and understory patchiness; elements of decay such as broken or deformed tops or trunks and root decay; and the presence of species characteristic of old growth.

**Operational Plan**—Within the context of area-specific management guidelines, operational plans detail the logistics for on-the-ground development activities. Methods, schedules, and responsibilities for accessing, harvesting, renewing, and protecting the resource are set out to enable site-specific operations to proceed.

**Patch**—An individual forested stand or group of stands that are in close proximity (i.e. no intervening edge) and are similar in structural/seral stage and elevation; dynamic.

**Permanent Access Structure**—A structure, including a road, bridge, landing, gravel pit or other similar structure, that provides access, and is identified as remaining operational after development activities on the area are completed.

**Planning Table**—The planning participants that are representing their “sectors”/constituencies in negotiations to develop a land and resource management plan for the Morice TSA.

**Pollution**—Substances or contaminants in the environment that substantially alter or impair the usefulness of the environment.

**Polygon**—A closed geometric entity used to graphically represent area features with associated attributes.

**Protected Areas Strategy (PAS)**—A Provincial government strategy to meet BC’s commitment to develop and expand the protected areas system to protect 12 percent of the province by the year 2000. The goals of the strategy are to protect viable, representative examples of natural diversity in the province, and special natural, recreational and cultural heritage features.

**Provincial Forest**—Crown forest land designated by the Lieutenant Governor in Council under Section 5 of the *Forest Act*.

**Qualitative Measures**—Measures generally expressed in non-numeric terms.

**Quantitative Measures**—Measures generally expressed numerically.

**Range**—Any land supporting vegetation suitable for wildlife or domestic livestock grazing, including grasslands, woodlands, shrublands and forest lands.

**Range Development**—In relation to the management for range purposes of range land or livestock, means:

- a) a structure,
- b) an excavation,
- c) a livestock trail indicated in a range use plan or a range stewardship plan as a range development, or
- d) an improvement to forage quality or quantity on an area that results from:
  - i) the application of seed, fertilizer or prescribed fire to the area, or
  - ii) the cultivation of the area.

**Range Land**—Crown range and land subject to an agreement under the *Forest and Range Practices Act*.

**Range of Natural Variation/Variability (RNV)**—The range of dynamic change in natural systems prior to the influence of industrial resource extraction; it includes consideration of the range of ecosystem conditions such as **seral stage** distribution, **patch** size distribution, stand structure and disturbance regimes (i.e., frequency, intensity, spatial extent and heterogeneity of disturbances); this definition includes First Nations' prehistoric management systems (e.g., burning); RNV for the Morice plan area has been established through Natural Case Analysis (Fall et al. 2003).

**Recreation / Tourism Feature**— A biophysical, cultural or historic element which supports or has the potential to support one or more recreation or tourism activities. A feature may be natural or human-made (facilities, such as recreation sites and trails, are also included as 'features' because they often represent the main reason for recreation use of adjacent features). Point features include natural features, viewpoints or sites, wildlife use sites, campsites, cultural or heritage sites, infrastructure/ structures or activity use sites that have relevance to tourism or recreation activities. Line features include maintained trails (designated or established trails), unmaintained (non-official status) trails, land, water or snow routes, or roads that have relevance to recreation and tourism. Polygon features generally consist of lakes or large rivers identified as important for one or more tourism or recreation activities.

**Recreation Feature Significance**—The quality, uniqueness, and availability of a recreation feature as classified in the recreation inventory.

**Recreation Features Inventory**—One component of the recreation inventory. The identification, classification, and recording of types and locations of biophysical recreation and cultural features, existing and potential recreation activities, recreation feature significance and feature sensitivity.

**Recreation Inventory**—The identification, classification and recording of the types and locations of amenity resources. It is the umbrella inventory that includes the recreation features inventory, visual landscape inventory and recreation opportunity spectrum inventory, and inventories of rivers, sites, trails, caves and other recreation features.

**Recreation Opportunity Spectrum (ROS)**—Types of recreational experiences, physical settings, structures and services, access, management settings and social settings that, in combination, describe the recreational opportunities in an area. The five ROS classes, based on criteria of remoteness, area size and evidence of human use, are: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded resource land and rural.

**Recreation Resource**—Defined as:

- a) a recreation feature,
- b) a scenic or wilderness feature or setting that has recreational significance or value, or



c) a recreation facility.

**Recreation Site**—A site and its ancillary facilities established under Section 56 of the *Forest and Range Practices Act*, Section 6 of the *Forest Practices Code of British Columbia Act* or designated under the *Forest Act* and developed by the Ministry of Forests for recreation or to protect a recreation resource.

**Recreation Trail**—A trail and its ancillary facilities established under Section 56 of the *Forest and Range Practices Act*, Section 6 of the *Forest Practices Code of British Columbia Act* or designated under the *Forest Act* and developed by the Ministry of Forests for recreation or to protect a recreation resource.

**Red-Listed Species**—Threatened or endangered species identified by the Conservation Data Centre. The taxa on the red list are either extirpated, endangered or threatened, or are being considered for such status. Any indigenous taxon (species or sub-species) threatened with imminent extinction or extirpation throughout all or a significant portion of its range in British Columbia is endangered. Threatened taxa are those indigenous species or sub-species that are likely to become endangered in BC if conditions are not altered.

**Resource Management Objective**—A concise, measurable statement of a desirable future condition for a resource or resource use that is attainable through management action.

**Resource Management Zone**— A geographic area within the larger planning area that is distinct from other areas with respect to biophysical characteristics, resource issues or resource management direction.

**Resource Value**—Values on Crown land that include, but are not limited, to biological diversity, fisheries, wildlife, minerals, oil and gas, energy, water quality and quantity, recreation and tourism, natural and cultural heritage, timber, forage, wilderness and aesthetic values.

**Riparian Area**—Areas of land adjacent to wetlands or bodies of water such as swamps, streams, rivers or lakes including both the area dominated by continuous high moisture content and the adjacent upland vegetation that exerts an influence on it.

**Riparian Class**—The riparian class of a stream, wetland or lake as determined Part 4 of the *Forest and Range Practices Act*, Forest Planning and Practices Regulation.

**Riparian Ecosystems**—Aquatic ecosystems and adjacent plant communities influenced by, or that exerts influence on, the aquatic ecosystem. For practical purposes this includes the area extending one and a half tree heights (of the tallest tree on a site, horizontal distance) beyond the riparian plant communities (floodplain), or beyond the high water mark for streams without floodplains or riparian plant communities. Aquatic ecosystems includes streams, lakes and wetlands.

**Riparian Management Area (RMA)**—Defined in the *Forest and Range Practices Act*, Forest Planning and Practices Regulation as an area, of width determined in accordance with Part 4 of the regulation, that is adjacent to a stream, wetland or lake with a riparian class of L2, L3 or L4; and, consists of a riparian management zone and, depending on the riparian class of the stream, wetland or lake, a riparian reserve zone.

**Riparian Management Zone**—An area described in the *Forest and Range Practices Act*, Forest Planning and Practices Regulation that:

- a) is a portion of the riparian management area, and
- b) is established to:
  - i) conserve the fish, wildlife habitat, biodiversity and the water values of the riparian management zone, and
  - ii) protect the riparian reserve zone, if any, within the riparian management area.

**Riparian Reserve Zone**—An area described in the *Forest and Range Practices Act*, Forest Planning and Practices Regulation that:

- a) is a portion of the riparian management area, and
- b) is established to protect fish, wildlife habitat, biodiversity and the water values of the riparian reserve zone.

**Risk**—The potential for loss or damage to an ecological, social or economic value as a result of a human action.

**Risk Assessment**—A procedure that aims to identify the likelihood and consequence of an undesirable impact due to a management action.

**Risk Management**—Measures that are undertaken to minimize risks.

**Scenario**—A draft statement of how lands and resources in the planning area will be managed in the future. Scenarios usually include a zoning map and associated statements of resource management objectives and strategies.

**Sensitive/Vulnerable Species**—See **Blue-Listed Species**.

**Sensitivity Analysis**—Systematic evaluation of the effects of uncertainty or changes in underlying assumptions on overall analysis results.

**Seral Stages**—The stages of ecological succession of a plant community. e.g., from young stage to old stage. The characteristic sequence of biotic communities that successively occupy and replace each other by which some components of the physical environment become altered over time.

**Socio-Economic Analysis (SEA)**—An assessment of the impacts of a course of action on the social and economic well-being of a community, region, or the province as a whole. In land and resource management planning (LRMP), when socio-economic analysis is expanded to include environmental impacts it is generally referred to as social, environmental and economic (SEE) impact assessment (see also multiple accounts analysis (MAA)).

**Stakeholder**—A person who has an interest in, or is affected by, some decision or action.

**Strategic Land Use Planning**—Under the provincial land use planning framework, a participatory style of planning for relatively extensive areas (regions or sub-regions) that focuses on defining land and resource allocation and management goals and objectives, and corresponding strategies for achieving the goals / objectives. In the hierarchy of planning, strategic land use planning precedes, and provides direction to, operational forms of planning.

**Strategy**—A means of achieving a resource objective.

**Structure**—The arrangement of the biological community, energy and material resources, and physical habitat in relationship to one another.

**Structural Integrity**—Unimpaired structure (see definition for structure).

**Sustainable Forest Management Plan**—A tactical level forest plan that outlines the process by which the land base will be managed to achieve a sustainable balance of social, economic and environmental values through time. Sustainable forest management plans are often a component of achieving and maintain certification standards.

**Sustainable Resource Management Plan (SRMP)**—Under the provincial land use planning framework, SRMPs are a comprehensive and integrative approach to planning at the landscape scale. In the hierarchy of planning, SRMPs must be consistent with LRMPs, where these exist. SRMPs are based on a technical and design-oriented process rather than a consensus-based process such as LRMPs. The objectives set by SRMPs will be site specific, results based and operationally relevant.

**Sustenance**—That which supports life; food; victuals; provisions; means of living.

**Timber**—In terms of harvesting, any trees or stands or trees that are commercially valuable.

**Timber Supply Area (TSA)**—An integrated resource management unit established in accordance with Section 6 of the *Forest Act*. TSAs were originally defined by an established pattern of wood flow from management units to the primary timber-using industries. They are the primary unit for allowable annual cut determination.

**Tourism**—Generally defined as the aggregate of all business that directly provides goods or services to facilitate business, pleasure or leisure activities greater than 80 kilometres away from the home environment.

**Tourism Capability**—The ability of a set of natural resources (such as forests, rivers, lakes, fish, wildlife) to support a particular tourism product.

**Tourism Product**—The tourism activity or experience that a tourist participates in.

**Tourism Resource**—A natural or cultural resource that is important for a specific tourism product. For example, wildlife viewing is an important activity in many parts of the province, therefore, wildlife viewing opportunities are a tourism resource.

**Traditional Use Sites**—A geographically defined site that has been traditionally used by one or more groups of people for some type of activity. These sites will often lack the physical evidence of human-made artifacts or structures, and maintain cultural significance to a living community of people. Traditional use sites are usually documented with the assistance of oral historical or written archival sources. Examples include: sacred sites, ritual bathing pools, resource gathering sites such as berry-gathering grounds and culturally modified trees, and the site of a legendary or past event of cultural significance.

**Transformative Change Accord**—A tripartite agreement signed in 2005 between BC First Nations, the Government of BC and the Government of Canada. The purpose of the Accord is to bring together the Province, First Nations and the Government of Canada to achieve the goals of closing the social and economic gap between First Nations and other British Columbians over the next 10 years, of reconciling aboriginal rights and title with those of the Crown, and of establishing a new relationship based upon mutual respect and recognition (see also **New Relationship**).

**Tree Farm Licence (TFL)**—An agreement entered into under Part 3, Division 5 of the *Forest Act*, which grants the rights to harvest timber. A tree farm licence has a term of 25 years and requires a management plan providing for the establishment, management, and harvesting of timber in a described area (Crown and private land) on a sustained or perpetual yield basis (see also allowable annual cut).

**Uncertainty**—Low level of confidence in available knowledge about ecological, social and economic systems, and their interactions.

**Visual Absorption Capability**—A component of the visual landscape inventory that rates the relative capacity of a landscape to absorb visual alterations while maintaining its visual integrity.

**Visual Impact Assessment**—An evaluation of the visual impact of resource development proposals on forest landscape.

**Visual Landscape Analysis**—The process of recommending visual quality objectives based on the visual landscape inventory, number of viewers, level of concern and in consideration of other values.

**Visual Landscape Inventory**—The identification, classification, and recording of the location and quality of visual resources and values.

**Visual Landscape Management**—The identification, assessment, design and manipulation of the visual features or values of a landscape, and the consideration of these values in the integrated management of Provincial forest and range lands.

**Visual Landscape Unit**—A landform or portion of a landform visible from one or more viewpoints identifying relatively homogeneous visual landscape features.

**Visual Quality**—The character, condition, and quality of a scenic landscape or other visual resource and how it is perceived, preferred, or otherwise valued by the public.

**Visual Quality Objective (VQO)**—A resource management objective established by the district manager or contained in a higher level plan that reflects the desired level of visual quality based on the physical characteristics and social concern for the area. Five categories of VQO are commonly used: preservation; retention; partial retention; modification; and, maximum modification.

**Visual Sensitivity Rating**—A component of the visual landscape inventory that estimates the sensitivity of the landscape based on biophysical characteristics and viewing factors.

**Vulnerable Species**—See **Blue-listed species**

**Watershed**—An area of land that collects and discharges water into a single main stream through a series of smaller tributaries.

**Wildlife Habitat**—Areas of land and water that support specific wildlife or groups of wildlife.

**Wildlife Habitat Area (WHA)**—Defined in the former *Forest Practices Code of British Columbia Act*, Operational Planning Regulation as a mapped area of land that the Deputy Minister of Environment, Lands and Parks, or a person authorized by that deputy minister, and the chief forester, have determined is necessary to meet the habitat requirements of one or more species of identified wildlife (see definition of Identified Wildlife above). Under the *Forest and Range Practices Act*, a wildlife habitat area is:

- a) continued under Section 180(b) of the *Forest and Range Practices Act*, or
- b) established under the *Forest and Range Practices Act*, Government Actions Regulation

**Wildlife Habitat Feature**—Defined in the former *Forest Practices Code of British Columbia Act*, Operational Planning Regulation as a significant mineral lick or wallow, an active nest of a bald eagle, osprey or great blue heron, or any other feature agreed to by the district manager and a designated environment official. Under the *Forest and Range Practices Act*, a habitat feature is identified under the Government Actions Regulation.

**Wildlife Tree**—Defined in the *Forest and Range Practices Act*, means a tree or group of trees that provide wildlife habitat and assist in the conservation of stand level biodiversity. Characteristics include large diameter and height for the site, current use by wildlife, declining or dead condition, value as a species, valuable location and relative scarcity.

**Woodlot Licence**—An agreement entered into under Section 41 of the *Forest Act*, which grants the rights to harvest timber on a small parcel of Crown and private land (less than 400 hectares on the Coast or 600 hectares in the Interior). A woodlot licence has a term not exceeding 15 years and requires a management plan (see also allowable annual cut).

## Appendix 1. Office of the Wet'suwet'en Abstention Statement

The Office of the Wet'suwet'en abstained from the planning table consensus. They submitted the following statement to explain their abstention and to raise issues to be taken forward into government-to-government discussions between themselves and the Province.

*“This letter is written to clarify an issue deriving from the Office of the Wet'suwet'en's participation in the Morice LRMP. More specifically, this letter deals with our abstentions from voting in the consensus meetings at the end of the LRMP process, and the follow-up required to resolve the issues.*

*First, to be clear, we did not abstain from voting in order to block consensus. Rather, there remain a number of outstanding issues within six of the 26 LRMP categories that can only be dealt with at the government to government forum (Forum) following close of the main LRMP table. In abstaining from voting, we wished to indicate that these six will form the focus of discussion at successive forum meetings. We remain committed to seeing the LRMP process through to completion in the months ahead.*

*Briefly, the six areas for discussion are:*

1. **Agriculture:** *new leases under the new Forest and Range Practices Act will eventually turn into private land. Selling off crown lands while simultaneously negotiating a treaty is not negotiating in good faith.*
2. **Consultation/Accommodation/Compensation:** *The current framework for consultation set in place within the draft Morice LRMP is inadequate to satisfy Wet'suwet'en needs. For example, the framework does nothing to ensure our concerns are substantially addressed, nor does the framework measure the quantity or quality of accommodation reached with consultation. And the Wet'suwet'en reserve the right to require compensation for injury to our interests, just as other sectors do.*
3. **General (Pesticides):** *The Chiefs have clearly and repeatedly expressed zero tolerance for use of pesticides & herbicides within their traditional territories. These chemicals go directly into the plants and animals used by the Wet'suwet'en and are thus both a health issue and an ecosystem protection issue.*
4. **Timber:** *Changes to forestry legislation under the new Forest and Range Practices Act continue to be of grave concern to the Wet'suwet'en. For example, the province has eliminated whole classes of land-use decisions from consultation, limiting its ability to meaningfully consult with and accommodate the Wet'suwet'en.*
5. **Mining:** *Similar to forestry, new legislation virtually guaranteeing mining interests free and unfettered access to Wet'suwet'en traditional territories places the province in a conflict of interest. The province has a legal obligation to uphold the honour of the Crown when consulting with the Wet'suwet'en about mining.*
6. **Cultural Heritage/Archaeology:** *The Wet'suwet'en have several concerns regarding the manner in which our cultural heritage is managed by the government. In brief these are:*
  - a. *Critical Protection Date of 1846;*
  - b. *Archaeology Overview Assessments (AOAs); and*
  - c. *Cultural Heritage Education and Training.*

*Related to the issue of effective, meaningful consultation and accommodation is the anticipated completion date for the government-to-government forum. The Wet'suwet'en were originally promised by written contract until the end of June, 2004 to complete this process. Recent discussions with provincial representatives now show an intention on the part of the province to force early closure of this process, at the end of April.*

*This is insufficient time to properly negotiate this stage, particularly because all decisions made by government representatives will have to be vetted by the provincial Attorney General's office anyway, which will take considerably longer than the end of April. To require the Wet'suwet'en to adhere to an early deadline of consultation and negotiation, but to permit itself time after closure of the process is not negotiating in good faith. In fact, it strongly suggests that the provincial mind is already made up, no matter what is negotiated at this Forum. If true, this is unacceptable, and does not uphold the honour of the Crown.*

*The Wet'suwet'en remain committed to the ideal that a negotiated outcome is preferable to a court-directed outcome, and will participate in the Forum with respect and in good faith."*

## Appendix 2. Overview of the LRMP Planning Process

In September 2001, the Government of British Columbia made a public commitment to initiate a land use planning process in the Morice in accordance with a long-standing desire of communities in the area to have a land use plan. In February 2002, government fast-tracked the process for Land and Resource Management Plans (LRMPs) and directed that land use planning be completed by March 2004.

The groundwork for the Morice Land and Resource Management Plan (LRMP) was laid during a one-year preparatory phase which continued until September 2002. During that time, a number of activities were undertaken:

- ◆ a government team was established to support the process;
- ◆ discussions occurred with First Nations about their participation in the process;
- ◆ key stakeholders were identified;
- ◆ process design was completed;
- ◆ Terms of Reference were completed; and
- ◆ a data sharing agreement was developed with the Morice/Lakes Innovative Forest Practices Agreement for the joint collection, analysis and management of data to support the LRMP process.

In May 2002, the provincial government endorsed the use of a sectoral model to structure stakeholder participation. Under this framework, individuals and organizations with similar resource interests are grouped into sectors. Sectors, rather than individuals or organizations, are represented at the planning table. This process model was introduced to the public at an LRMP orientation session in Houston on June 5, 2002.

A draft terms of reference document was prepared and distributed to the public for review during August and September 2002. The terms of reference were approved by the Minister of Sustainable Resource Management on October 3, 2002.

The public component of the planning process began in October 2002 with the first planning table meeting. The approach for developing the LRMP included two key components: general management direction (GMD), to be applied across the landbase for all values; and area specific direction, to be applied where the values warrant additional management direction beyond that provided through GMD. The planning table began by providing interests and issues to the government team to assist in the development of management direction for various resource themes. At the same time, work began on the socioeconomic base case and the environmental risk assessment for presentation to the planning table in June 2003 to assist their negotiations in the fall of 2003.

An Economic Development Action Plan (EDAP) was also prepared as a key component of the Morice LRMP. The EDAP included an assessment of economic opportunity in the Morice and strategies for promoting investment and business development based on the identified opportunities. Economic development in the Morice was further addressed through the identification of land and resource opportunities and associated management objectives in the LRMP recommendations. The EDAP was presented to the planning table in October 2003.

Public review of the final land use recommendation occurred in March 2004, with two open houses in Granisle and Houston. As well, notices were provided in the local newspaper and the LRMP document was made available on the Morice LRMP website. Comments received at the open houses and through the subsequent public review period were incorporated into the final land use recommendation. At the end of March 2004, the planning table agreed to the package of recommendations included in this report.

The following sectors' representatives participated in the planning process:

<b>Sector</b>	<b>Table representative</b>	<b>Alternate</b>
Office of the Wet'suwet'en	Andrew George	Russell Collier Stephan Schug
Lake Babine Nation	Chief Betty Patrick *	
Conservation and Environment	Glenda Ferris	Dave Stevens
Fish and Fish Habitat	Greg Tamblyn	Elmar Plate
Forest Licensees	John Brockley	Cyril Thacker Jim McCormick
Guide Outfitters and Trappers	Bob Henderson	Russell Skillen Paul James
Labour	Rob Payne	Bernie Howe
Local Government	Sharon Smith	Crissy Isabelle
Local Sustainability	Megan Wood	
Mining and Exploration	J. Paul Stevenson	Peter Ogryzlo
Motorized Recreation	Les Auston	Terry Close
Non-motorized/Wilderness Recreation	Frank McDonald	Kathy Knight Terri Stewart
Provincial Government	Brian Fuhr	
Ranching/Agriculture	Shirley Hamblin	Gerrit Keegstra Koreen Jaarsma John Groot
Small Business, Woodlot Licensees and Contractors	Miles Fuller	John Mould
Tourism	Caroll Morey	Christoph Dietzfelbinger
Wildlife and Wildlife Habitat	Laurence Turney	Judy Stratton

\* current contact



## Appendix 3. Key Characteristics of Community Resilience

1. In sustainable communities, people believe that the future of the community is in their hands. They seek out and use productively the expertise, resources, skills, and finances available to the community to address the issues and problems that are important to its citizens. They recognize the risks associated with relying on a single large employer, and emphasize economic diversification by supporting employment in smaller companies and actively promoting local ownership.

Sustainable communities demonstrate openness to alternative development approaches and are aware of their competitive position in the broader economy. They co-operate with other communities where appropriate, combining resources to address a common goal. They are aware of the external factors (economic, environmental, political and social) that will influence their longer-term viability and respond proactively to these factors.

### Indicators:

- ◆ The degree to which people believe there is an on-going structured dialogue between economic development and social service providers.
- ◆ The degree to which people perceive that the community plan address the needs of marginalized people in the community.
- ◆ Number of organizations and groups in the community that address the economic interests of low-income people.
- ◆ Niche markets have been identified in the community that takes advantage of the community strengths.
- ◆ The degree to which there is a perception in the community that economic development is being realized.

2. In sustainable communities local resources and skills are balanced with external information and resources to address local gaps and achieve local goals. Communities invest in the process of developing a common vision and a strategic plan that maximizes the allocation of resources to gain the greatest community impact. Such communities use information and connections to access outside resources.

### Indicators:

- ◆ Analysis of local labour market
- ◆ Percent of total working population employed in top 5 private sector employer companies.
- ◆ Degree to which people perceive that the community is open to alternative forms of economic diversification.
- ◆ The amount of economic leakage out of the community had been identified and analyzed.
- ◆ Number of economic development initiatives pursued in the last twelve months.

3. Sustainable communities are those that take a long term, comprehensive approach to building active public participation in the development and implementation of community plans. This approach increases the knowledge of the individuals and organizations and their capacity for strategic decision-making and activities within the community. The connection between education, unemployment, poverty and the economic stability of the community is understood and integrated into strengthening the economic and social well being of all aspects of their community.

**Indicators:**

- ◆ Public input into decisions has been actively sought and encouraged.
- ◆ Degree to which people perceive that public input has influenced major decisions in the community.
- ◆ Number of community generated solutions to local problems.
- ◆ Number of local celebrations in the last year.
- ◆ Relative level of optimism expressed by community members.

4. Sustainable communities demonstrate that visible results generate optimism and a sense of self-reliance. They focus on both short and long term goals and objectives. Implementation in these communities is coordinated and there is support for the organizations or groups involved. People feel a sense of pride in their community and demonstrate this through the energy and commitment they give to events and community projects. They have a sense that the future of the community is bright and that there is great potential to develop and change.

**Indicators:**

- ◆ Number of events supported in the last year.
- ◆ Level of volunteering in the community.
- ◆ Number of complaints/number of complements to local council/newspaper relating to community issues.
- ◆ Community response to emergency events.
- ◆ The existence of contingency plans for local industries.

5. In sustainable communities, community leaders are able to provide focus and opportunity for organizing and mobilizing internal resources to access external support and expertise to help achieve local goals. In times of crisis, emergency or opportunity, the sustainable community is able to resolve divisions and conflicts and mobilize united efforts through active participation and processes in the community has confidence.

**Indicators:**

- ◆ Degree to which people believe the community is able to respond to local emergencies/events.
- ◆ Degree to which people perceive that outside resources have been accessed in order to address gaps or achieve goals.
- ◆ Degree to which community organizations have accessed outside resources in the past twelve months.
- ◆ Degree to which businesses have accessed outside resources in the past twelve months.
- ◆ Degree to which government resources have been directed to the community to achieve its goals.

6. Sustainable communities recognize the importance of a range of strong organizations in the community to support and encourage local initiatives and provide a full range of services. In these organizations, there is recognition that conflict is costly. Collaborative working relationships result in efficient use of limited resources and more effective and creative effort towards accomplishing common goals.

**Indicators:**

- ◆ Existence of professional organizations within the community.

- ◆ Existence of mechanisms for cooperation between organizations.
- ◆ Degree to which people perceive there are good working relationships between organizations and businesses.
- ◆ Degree to which people believe that conflict between organizations is well managed.

7. In sustainable communities local leadership represents all citizens in the community — taking into account the needs, aspirations and values of all people in the community in a fair and balanced way. Leaders understand the importance of sharing responsibility and power. They use techniques that ensure community initiatives have the support of community members — minimizing the potential for and the negative consequences of conflict. Leaders encourage participation from all segments of the community and use this input as a guide for their decisions. Community decisions are therefore more reflective of the wide variety of views and opinions of those who live here.

**Indicators:**

- ◆ Breakdown of formal and informal leaders by gender, age and culture and compared to representation in the community.
- ◆ Degree to which people perceive formal leadership to be diversified and representative of the population.
- ◆ Degree to which informal leadership is representative of the community.
- ◆ Degree to which people perceive that the community has been successful in involving all sections of the community in decision-making.
- ◆ Degree to which people perceive that formal, elected leadership understands the issues that affect the community and works to find consensus on these issues.

8. People make an effort in sustainable communities to work together and support each other in times of difficulty. There is a spirit of mutual assistance of cooperation. The community owns local issues and problems, and people take it upon themselves to do something about them. People perceive that they have a sense of attachment to their community and are therefore ready to invest their time, energy and money in improving the community.

**Indicators:**

- ◆ Meetings are advertised, open to the public and well attended.
- ◆ Number of participants attending community meetings.
- ◆ Number of mechanisms/opportunities for public input into planning.
- ◆ Degree to which people perceive that the public is involved in the creation and implementation of the plans goals/objectives.
- ◆ Number of volunteers who participate in groups/committees etc. that are implementing initiatives in the community.

9. In sustainable communities education at all levels and all forms is valued and supported. There is strong investment in education from pre-school years to adult education. Community learning and participation in organizations where skills can be learned is encouraged. Adults are provided with a range of services to support lifelong learning, career changes and skills upgrading. Education is used to strengthen the degree of local control over social and economic activities and resources, and these resources are used to improve all aspects of community life.

**Indicators:**

- ◆ Percent of population by education level.

- ◆ High school retentions rate.
- ◆ Number of enrolments in adult and community education programs.
- ◆ Number of new skills training programs developed in response to local needs in the last twelve months.
- ◆ Level of support from business for employment and training programs.

10. In sustainable communities people are able to gain access to the information they need to make informed decisions about the community's future. The community, to examine options, possibilities and future strategies and to evaluate the effectiveness of local initiatives, can share this information. Local leaders ensure that this information is available in a range of formats, easily accessible, is positive, accurate and reflects the views of all sections of the community.

**Indicators:**

- ◆ Degree to which people perceive they have access to the information they need to make decisions.
- ◆ Degree to which the community believes the local media reporting is accurate and positive in its reporting of community events and issues.
- ◆ The degree to which the local newspaper is regarded as an integral part of the community.
- ◆ The use of technologies to provide community access to information on important issues.
- ◆ The extent to which industry and forecasts are understood within the community.

**Other Potential Objectives and Indicators:**

**Foster Commitment to Place** — actions that strengthen the reasons why residents feel strong affinity to their community.

- ◆ There are historic celebrations, festivals, fairs and community projects that build a sense of commitment to the community and its landscape.
- ◆ Forums exist where diverse members of the community can come together to develop a common vision, resolve conflicts and advance mutual goals.
- ◆ Living wage jobs are available for members of the community within a reasonable distance from home.
- ◆ Education and training is available locally that provides residents with skills they need to gain, keep or create living wage jobs.
- ◆ Adequate affordable housing is available for the more economically vulnerable members of the community.
- ◆ Residents, including businesses and landowners are committed to the well being of the community, its residents and the environment that sustains them.

**Promote Vitality** — actions that promote a state of dynamic, healthy progress and change that can be sustained over time.

- ◆ Residents purchase goods and services within the community whenever possible.
- ◆ Local businesses are innovative, keeping pace with changing market demands and technologies, ensuring their continued vitality.
- ◆ Businesses 'add value' locally to renewable natural resources to increase the local economic benefits from sustainable harvest levels.
- ◆ The natural systems that enrich the community are ecologically healthy.
- ◆ Citizens from all segments of the community are welcomed and encourage to participate in organizations and activities that help strengthen the community and make it a better place to live.

**Build Resilience** — actions that strengthen the ability of communities to cope with change, and withstand and recover from crises, e.g., economic diversification, local ownership, biological diversity, strong local knowledge and networking etc.

- ◆ There is sufficient diversity in the local economy to help it weather downturns in individual businesses or economic sectors.
- ◆ Natural resource management practices maintain and promote native biological diversity, helping to maintain economic and ecological productivity over the long term.
- ◆ There is adequate infrastructure to promote public health and the environment and to support desired social and economic development.

**Act as Stewards** — actions that nourish the natural environment to improve its health and productivity, thus provide long term benefits for current and future generations, e.g. maintaining healthy ecosystems, waste management etc.

- ◆ Homes and businesses practice energy conservation to reduce the economic costs and environmental impacts of energy production.
- ◆ Productive natural resource lands are protected from development to ensure continued economic and environmental benefits for future generations.
- ◆ Critical wildlife habitats and other sensitive lands have been identified, protected and where necessary restored.
- ◆ Community members (both residences and businesses) are taking steps to reduce, reuse and recycle solid waste.

**Forge Connections** — actions that encourage collaborative planning and action, and networking among residents, organizations, businesses and communities.

- ◆ The community is involved in regional, watershed or ecosystem based initiatives where such efforts are useful in addressing concerns that cross multiple jurisdictions.
- ◆ The community has built positive relationship with outside agencies and organizations that allow it to gain access to information and technical and financial assistance.
- ◆ Local businesses are aware and take advantage of markets beyond the community, and of outside sources of marketing assistance, technical assistance and financing.
- ◆ Businesses work together when it is mutually beneficial to do so.
- ◆ Schools, health care providers, and other local public organizations cooperate with one another to improve services, create new programs or acquire infrastructure for the community.

**Promote Equity** — actions that promote fairness among people within a community: between the community and the environment it inhabits; between the community and other communities; and between the present generation and future generations. Equal access to and opportunity to participate in community decision making processes is fundamental.

- ◆ Each resident has similar access to an opportunity to participate in community decision-making processes.
- ◆ Social, economic and political burdens and benefits are equitably distributed among all members of the community.
- ◆ Activities within the community do not impose unfair burdens on people in other communities within the region, state, country and other parts of the world.
- ◆ Community activities and decisions consider, and seek not to jeopardize the well being of future generations.
- ◆ The community practices equity in relationships to the environment by respecting other forms of life and passing on a healthy environmental legacy to the future.

**Equity Indicators:**

- ◆ per capita income
- ◆ percent of persons below the poverty line
- ◆ median household income
- ◆ income distribution
- ◆ total industry earnings
- ◆ poverty rate
- ◆ income distribution across gender
- ◆ distribution of economic activity not just net benefits

**Resilience Indicators:**

- ◆ employment rate
- ◆ female labour force participation rate
- ◆ total labour force
- ◆ total employed labour force
- ◆ unemployment rate
- ◆ timber and non-timber employment
- ◆ economic diversity
- ◆ work days (seasonal workers)
- ◆ employment diversity
- ◆ percent of people with full and part time employment
- ◆ housing prices

**Other Indicators of Importance:**

- ◆ population turnover (in-out migration)
- ◆ teen pregnancy rate
- ◆ infant mortality
- ◆ crime rate
- ◆ per capita value added from manufacturing
- ◆ bankruptcy rate
- ◆ school violence
- ◆ library loans
- ◆ population density
- ◆ air pollution
- ◆ emission of green house gases
- ◆ net enrolment in primary education
- ◆ completion of 4th grade literacy rate
- ◆ per capita water consumption
- ◆ ratio of forested land area planted to harvested
- ◆ total area of cropland
- ◆ divorce rate
- ◆ elderly population
- ◆ home ownership
- ◆ literacy levels
- ◆ the presence of young people in government and volunteer activities
- ◆ the out-migration of youth. Youth do not see much opportunity in the current local labour market.
- ◆ high degree of entrepreneurial spirit among the local population
- ◆ number of people willing to take over leadership positions within the community

- ◆ presence of an active subsistence economy — subsistence activities act as an important safety net for the community especially for those people less suited to the wage economy. Subsistence is also critical to the cultural identity of a community.

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## Appendix 4. “Space between Place” and Traditional Ecological Knowledge

### Space between place in terms of the space between TUS sites as important places too

Geographers and philosophers have long noted the difference between ‘space’ and ‘place.’ Space is understood to be an identifiable location or a site. In contrast, place represents space imbued with experience.<sup>63</sup> Space is transformed into a place by experiencing that space in some way. In terms of the locations used traditionally by native people to collect food, hunt, or pursue other aspects of their lives, all traditional use sites are places in that they have been experienced by members of a group and used for particular purposes. And, thus, it may be possible for two groups of people to perceive the same space and, yet, understand that space to be two completely different places. This happens, for example, when loggers perceive a treed hillside as a source of capital and when an aboriginal group perceives the same hillside as a source of ritual hunting preparation.

Traditional use studies tend to identify places on maps without reference to the greater context of their use. They don’t always consider how one place relates to another. In many traditional use studies, dots, polygons, and lines on maps mark the specific places in which native people exploit the resources of a traditional territory. These maps convey a sense of action occurring at neatly delineated spots or along trails. They also offer the impression that the spaces between the places in which traditional uses occur are empty, devoid of use, and thus meaningless to native people. The emptiness or non-use of spaces between places on TUS maps is a falsehood perpetuated by the focus on ‘sites on maps.’

Instead of thinking of empty space on maps as unused and unknown, consider that the space is inevitably a ‘place’ in the minds of native people who must travel through those areas to get to the places marked with dots, polygons, and lines. Likewise, the entire traditional territory is conceived of as a place – as a homeland, for example – and as a result native people have connections, experience with, and knowledge of all of the land within the territorial boundary even if there are areas without specific traditional use notations. Traditional territories are not porous; they are not full of places where people go and spaces about which people know nothing. Rather, the locations between the places are simply unmarked on TUS maps. People are aware of these areas when they consider the totality of their traditional lands.

### Utilizing Traditional Ecological Knowledge

Definitions of Traditional Ecological Knowledge (TEK) note that it is a system of knowledge and practices about the relationships of humans and their environment. They state that this knowledge is shared orally within and between generations.<sup>64</sup> Traditional ecological knowledge is traditional in both in terms of antiquity and as far as the uses to which such knowledge is put. Because of this, traditional knowledge about the environment can be used to confront decidedly contemporary concerns like conservation or climate change because it is founded on generations of experience and because it contains the perspective of applying knowledge to solving problems.

Traditional ecological knowledge is like science, in that it is a system of knowledge based on empirical observation, but it is not exactly the same as science. TEK reflects generations of experience with animals and plants and is connected holistically to all aspects of the aboriginal culture in which it is known. TEK

<sup>63</sup> Tuan, Yi-Fu. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press, 1977.

<sup>64</sup> Berkes, Fikret. *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Philadelphia, PA: Taylor & Francis, 1999, 8.



may include, for example, understandings of the world gained through mythology particularly if those expressions guide everyday lives and activities.

Traditional ecological knowledge, then, provides native people a basis for understanding and working within the world around them. It provides people with knowledge about animal migrations, the seasonality of plants, and the locations of fish within lakes. In practical terms, TEK can be used to generate resource management principles that are consistent with local cultural values and biological information. It can help set limits for individual consumption of food resources and quotas for commercial harvesting of plants, animals, and fish. And, TEK can be used to prepare locally-relevant curriculum materials for native schools. In all cases, TEK research and documentation offers the possibility of infusing local studies of wildlife with traditional values and knowledge.

More broadly, the documentation of traditional ecological knowledge offers both the chance to record culturally-specific ideas about the world and to make cross-cultural comparisons about how people understand ecological phenomena. The comparative perspective makes TEK useful to conservation biologists and other scientists because it can provide supporting evidence for scientific observations. TEK does not always offer the same answers as science and, as such, should be understood as a culturally-specific way of seeing, knowing, and experiencing the world. Likewise, efforts to understand or interpret TEK outside of the contexts in which it is generated and used by aboriginal people can lead to misunderstandings about its significance and meaning.

## **Appendix 5. Morice LRMP Forest Ecosystem Management Strategy**

### **Executive Summary**

The Morice Forest Ecosystem Management Strategy (MFEMS) provides expanded management direction on the development and application of objectives, measures and targets for forest biodiversity conservation within the Biodiversity section of the Morice LRMP (Section 3.4.1). General Management Directions for other related ecological values were also considered in the development of the FEMS. A multi-scale framework was developed for application of the MFEMS to the biogeoclimatic variants and landscape units within the Morice Timber Supply Area. Analytical approaches and tools for the development of the Ecosystem Management Category (EMC) framework are presented for consideration. The concepts of Range of Natural Variability and Historic Disturbance Regime were used to establish the ecological desired future condition (DFC) for the plan area. Coarse and fine filter biodiversity objectives and measures were developed and targets set based on expert opinion and best available science. The MFEMS will be implemented in an adaptive management context, as per the Morice LRMP Monitoring Strategy.

### **Purpose of the Strategy**

The goal of the Morice Forest Ecosystem Management Strategy (MFEMS), and its associated biodiversity conservation strategy, is to maintain forest dynamics representative of the ecological range of natural variability and the range of historic natural disturbance regimes across the forested area of the plan at multiple scales over time. The MFEMS will provide direction for how to set and meet the ecological desired future conditions (DFC) of the forested land base required to address the maintenance or restoration of ecological integrity and conserve forest biodiversity within the Morice Land and Resources Management Plan (LRMP) area, inclusive of managed and unmanaged lands. The DFC is described by General Management Directions (GMD's) identified within the larger plan (LRMP) for biodiversity, wildlife and wildlife habitat, fish, fish habitat and aquatic ecosystems, water, and protected areas, as well as by area-specific management zones. The MFEMS supports objectives, measures and targets set within the GMD's for the aforementioned values.

The purpose of this document is to:

1. Provide a multi-scale land management framework within which to establish and implement the Morice Forest Ecosystem Management Strategy, inclusive of coarse and fine filter biodiversity objectives.
2. Document the principles behind, rationale for and selection of ecological desired future conditions and the biodiversity objectives, measures and targets designed to create the DFC.

### **Introduction to Forest Ecosystem Management**

#### ***Biodiversity Conservation Throughout the Working Forest***

Forest biodiversity conservation is best pursued within a practical ecosystem management strategy that integrates forest dynamics into forest planning. Forest ecosystem management (FEM) (also known as ecosystem-based management) is generally defined as an approach that attempts to maintain or restore ecological integrity, defined as the composition, structure and processes of forest ecosystems (Meffe and Caroll 1997). It reflects the desired future forest conditions (DFC) in the community by incorporating ecological, economic and scientific perspectives (Moreau et al. 2002). It incorporates a range of spatial

and temporal scales, recognizes the hierarchy of ecological patterns and processes, and is based on science and research (Nantel 2002). For the purposes of developing a forest ecosystem management strategy for the Morice Timber Supply Area (TSA), the larger and more comprehensive LRMP planning process will project economic and social interests onto the landscape. This strategy will specifically address how to set and meet the ecological desired future conditions established under that plan, expressed through general management direction and objectives for biodiversity, wildlife and wildlife habitat, fish, fish habitat and aquatic ecosystems, water, and protected areas. For the purpose of the MFEMS the term ‘biodiversity conservation’ will be equated to the maintenance or restoration of biodiversity values. Biodiversity conservation in FEM involves concepts of protected areas and reserves, but is not limited to those practices.

An ecosystem management strategy requires an understanding of the natural ecological setting of the forest and forested landscape; i.e. the variable range of ecological conditions through natural succession within a disturbance regime. This ecological setting is described through scientific research and analysis designed to provide an understanding of the range of natural variability for a number of structural and compositional attributes of the forest across a range of spatial and temporal scales in response to natural processes and disturbance regimes. This ecological setting is then evaluated relative to the management demands (economic and social) placed on the plan area. It is inescapable that management to remove harvested volume from any forested area will draw forest dynamics away from the natural range of variability and towards some modified ecosystem management setting. The key to ecosystem management is to conserve biodiversity and maintain ecological processes in the context of an altered management-induced ecological setting that allows for the removal of biomass from the forest.

To achieve FEM successfully, all managed and unmanaged portions of the forested plan area must contribute structurally and compositionally, and ergo functionally, to an ecosystem management strategy. Formal reserves, informal set-asides and deferred areas are recognized as critical components of forest ecosystem management, and their identification and location are critical and precautionary contributions to maintaining biodiversity. The Morice LRMP has identified candidate areas for protection and special management, and this FEM takes its direction from that process. However, FEM cannot be achieved through systems of reserves and protected areas alone (Hansen et al 1991). Every hectare of ground in a working forest comprised of multi-scale set-asides and actively managed areas must contribute to ecosystem and biodiversity objectives. Large-scale plantation forestry is inconsistent with ecosystem management. Intensive management for wood production alone removes significant portions of the land base from ecological productivity. Alternatively, designating large portions of forested land bases into protection often results in the counter-establishment of intensive plantations to offset the losses to timber supply (Lindenmayer and Franklin 2002). This approach ignores the middle ground of forests managed for both ecological and economic objectives. Harris (1984) recommended that reserves be complemented with a matrix of “semi natural” lands where ecological principles are used to manage both for commodity production and conservation of species diversity. Franklin et al. (1986) and Hunter (1990) set the challenge to design and manage multipurpose landscapes. Twenty years later, the scientific and management communities are still striving to accomplish this.

Managing more of the land base for both biodiversity objectives and wood production results in many options for varying structural retention objectives and rotation lengths at landscape and stand scales. This offers more flexibility and less risk of compromising future management choices in the face of catastrophic events such as fire and bark beetle infestations. Shortened economic rotation lengths are reflective of the rate of cut (Annual Allowable Cut (AAC)) set provincially. Early and old seral forests, where the highest biodiversity tends to reside, will generally be present in lower proportions across managed land bases as compared to similar unmanaged landscapes in northern interior British Columbia. Middle-aged forests will predominate, tying up the bulk of the productive biomass on the landscape in shortened management rotations that will not age sufficiently to contribute the greater structural legacy

that comes from the disturbance of old growth. FEM will require aggressive structural retention within managed stands to ensure that mid-seral forests contribute structural complexity and heterogeneity to stand and landscape biodiversity, as well as to the successional dynamics of managed landscapes. Portions of the managed landbase will also need to reflect ecological rotation lengths to provide future old growth recruitment.

Carey (2003a, 2003b) has suggested that creating a dynamic mosaic by managing for spatial heterogeneity at multiple scales promotes high biocomplexity and high biodiversity. This is in contrast to current “narrow-focus” approaches that maximize wood value, set aside reserves for threatened species and biodiversity maintenance, and magnify concerns over ecosystem health due to simplification of ecological systems (Carey 2003b). Managing for heterogeneity in landscape pattern has long since been considered to be a critical objective for forest management (Franklin and Forman 1987, Forman and Godron 1986, Risser et al. 1984). However, concerns regarding habitat fragmentation arose creating concern that spatial heterogeneity would lead to fragmented landscapes with negative implications for biodiversity (e.g. Habin et al. 1993). In her comprehensive review of the literature on habitat fragmentation, Fahrig (2003) has reported that habitat fragmentation appears to be of less concern than total habitat loss. Recent research and analysis has indicated that intentional management disturbance can produce spatial complexity at multiples scales, including the fine scale, important for maintaining or restoring biodiversity beyond the first rotation and into second-growth temperate, boreal and tropical forests (Carey 2003a, 2003b, Lindenmayer and Franklin 2002).

Successful forest ecosystem management must extract ecological value from all portions of a working forest at a range of scales ... from its protected areas and formal reserves; from its informal reserves and deferred areas; from its special areas managed primarily for ecological and biodiversity values; and from all areas managed primarily for timber production. Landscapes and stands throughout all portions of the planning area must be managed to produce spatially heterogeneous and complex mosaics of pattern and structure through the establishment of representative seral stage distributions, and structural and compositional retention objectives. FEM must be pursued in an adaptive management framework in which short-term targets do not compromise future options as better science becomes available to refine and redefine biodiversity objectives.

## **Multi-Scale Framework for Forest Ecosystem Management**

Ecosystem Management Categories (EMC) will provide the framework for forest ecosystem management and biodiversity conservation in the plan area (Figure 2) (Todd in prep). Measures and targets for seral distribution will vary by EMC. Measures and targets for structural complexity will also vary by EMC. This MFEMS framework is independent of and will be balanced relative to provincial policy regarding Landscape Unit Planning.

### ***Purpose of the Framework***

Four planning categories (EMC) are applied at a range of scales across the forested area under FEM:

- ◆ Reserve
- ◆ Old Growth Area (OGA)
- ◆ High Biodiversity Emphasis Area (HBEA)
- ◆ General Forested Area (GFA)

The EMCs are intended to capture the full range of use and protection on the land base (industrial forest to protected areas) within which biodiversity objectives will be set for and managed to. All four EMCs are intended to work together to meet the requirements of the FEM to maintain or restore ecological integrity and conserve biodiversity on the forested land base. The first three categories in which biodiversity and

ecological concerns are either protected or set as the over-riding management objective can be considered areas of biodiversity focus, intended to collectively possess a range of attributes critical to the maintenance of biodiversity within FEM.

The plan area in which EMC's are identified and biodiversity objectives applied includes both the contributing Timber Harvesting Land Base (THLB) as well as non-contributing forested area. Targets will be met using both operable and inoperable forest within the THLB.

### ***Ecosystem Management Category Aspects***

Each ecosystem management category has a set of aspects, or characteristics, that describe the required content and general nature of the category.

#### **Reserve**

Spatially located; distributed throughout the forested plan area; includes formal reserves, such as candidate protected areas identified through the LRMP, and informal reserves such as core ecosystems and other spatially constrained set asides agreed to by the LRMP table or identified during operational forest planning (e.g. critical wildlife species habitats), unmanaged for a minimum of one rotation, possibly more; monitored by BEC and LU.

#### **Old Growth Areas (OGA)**

Spatially located; distributed throughout the forested plan area within both the HBEA and the GFA; unmanaged for at least one rotation; may be recruited for next rotation from the overall forested plan area; related to but not limited by Landscape Unit boundaries; monitored by BEC, HBEA and LU.

#### **High Biodiversity Emphasis Area (HBEA)**

Spatially located; distributed throughout the forested plan area independent of LU boundaries; managed; biodiversity interests drive objectives for seral stage distribution and structural complexity; may overlap with Area Specific Zones identified by the LRMP table; monitored by BEC and LU.

#### **General Forested Area (GFA)**

Remainder of plan area; managed for a range of resource interests inclusive of, but not exclusive to, biodiversity; aspatial old growth targets incremental to OGAs applied; managed rotation lengths; measures and targets for structural complexity are applied throughout.

### ***Criteria for Selecting Areas of Biodiversity Focus***

Ten (10) criteria will be applied step-wise when considering the selection and conservation priority of an area of biodiversity focus. LRMP table recommendations identify candidate Protected Areas and Area Specific Zones that may have high biodiversity values. The more criteria satisfied by an area, the higher priority it is, and it will receive preferential consideration for increased protection (e.g. reserve or OGA). Reserves, Old Growth Areas and High Biodiversity Emphasis Areas are primarily intended to work together to address the conservation of biodiversity across the TSA by providing:

1. ecosystem representation
2. successional representation

In addition to their objective of ensuring adequate ecological representativeness in order to contribute as effectively as possible to the natural forest dynamic of the land base, areas of biodiversity focus will preferentially contain and/or represent the following incremental criteria:

3. Rare, sensitive, threatened, or endangered ecosystems
4. Regionally significant features and ecosystems

5. Culturally significant ecosystems of concern
6. Large patches of unharvested forest supporting most or all naturally occurring species
7. Species or species habitats of special concern (threatened or endangered)

Also considered will be:

8. ecological sensitivity to forest development,
9. existing land use zonation (e.g. area specific zones, existing protected areas), and
10. additional biological or social values identified through LRMP GMD's other than Biodiversity.

(Sources: BCSC 1996; MOF 1995, FSC 2000)

### ***Process for Selecting Areas of Biodiversity Focus and Evaluating Effectiveness***

An effective forest ecosystem management strategy requires the systematic design and evaluation of retention areas and areas intended to focus on biodiversity objectives. Many protected areas (PA) are inadequately planned or their size and location are constrained by social considerations (Dudley and Pressey 2001). This can result in reserves that are isolated from other suitable habitats, too small, missing key components, or simply in the wrong place for the purpose of biodiversity conservation.

The basic role of protection, area specific management, or biodiversity emphasis management is to separate out ecological and social values from processes that threaten their existence and manage them for their representativeness and persistence (Dudley and Pressey 2001). Other jurisdictions have used areas of formal and informal protection to create reserve systems that are comprehensive, adequate and representative (CAR) (JANIS 1997). The Wet'suwet'en People have expressed an interest in maintaining the abundance of representative ecosystems through management for biodiversity conservation.

The LRMP public planning table has identified candidate Protected Areas and Area Specific Zones (ASZ) in the Morice TSA. While this has not been a systematic attempt to address biodiversity concerns, table members have given consideration to the conservation values contained within these areas. The regional recommendations from the provincial Protected Areas Strategy (1998) were considered during PA identification. However, PAs and ASZs in the Morice TSA are not necessarily ecologically representative, comprehensive nor adequate to manage for biodiversity in the plan area; hence the need to create a system of ecosystem management categories that bring the entire TSA under management for biodiversity.

The process for identifying effective areas of biodiversity focus should be step-wise, evaluating the contribution of fixed and pre-determined set-asides and special management areas first, to determine if they contribute to biodiversity conservation values.

#### **1. Protected Area Evaluation**

Proposed PA's identified by the LRMP planning table will be evaluated with regards to their effectiveness for achieving biodiversity objectives as per the ten (10) criteria detailed above. The efficiency of a PA will be the % contribution to conservation targets calculated by determining the proportional number of criteria met within the PA (must contribute at a minimum to at least one of the first 2 criteria). PA's considered to be successfully contributing to biodiversity will be hard-wired as Reserves into the next stage of systematic assessment.

#### **2. Area Specific Zone Evaluation**

Proposed area-specific management zones identified by the LRMP planning table will be evaluated by a similar process to that of PAs. A technical analysis will be undertaken after the completion of the LRMP

to assess the conservation value of those ASZs recommended by the table as candidate high biodiversity emphasis areas (HBEA) and evaluate their functionality in the FEM framework.

### **3. Systematic Analysis for Biodiversity Focus Site Selection**

A systematic analysis will evaluate available TSA datasets relevant to the criteria identified above to determine the optimal number, distribution, scale, and location of spatial OGAs and HBEAs given the pre-existing constraints of PA's and area-specific management zones deemed as contributing to biodiversity. There are targets set for the maximum proportional area to be contained within OGAs and HBEAs. Old growth targets, of which a proportion must occur in representative and spatially located OGAs, will be set through the seral stage objective with consideration to the Range of Natural Variability. The proportion of the General Forested Area (GFA) targeted for HBEA (10 to 20%) considers that at least twice the 10% proportion of area originally proposed to be High Biodiversity Emphasis under the Biodiversity Guidebook (1995) should be considered for high biodiversity management.

The actual amount and comprehensiveness of the areas of biodiversity focus within the TSA will come from a combination of Reserves, OGAs and HBEAs combined. Informal reserves at range of scales may also contribute to biodiversity targets for periods of time within and between rotations (e.g. amalgamations of aspatial OG, critical wildlife habitats, etc.).

There are no clear guidelines as to adequate thresholds of retention and special management required to address the conservation of biodiversity in landscapes. Suggested thresholds such as 30% habitat loss are often cited in the literature on the suspected impacts of habitat fragmentation on birds (e.g. Andren 1994, Fahrig 1998, Flather and Bevers 2002), but this hypothesis has never been adequately tested, let alone proven (Fahrig 2003). It is therefore important that all biodiversity objectives set in this plan, including those defining upper area limits for ecosystem management categories, be time-limited and open to review as adaptive management research continues and more ecologically meaningful targets become available.

The actual mechanism for performing the systematic analysis of the land base to identify and select the spatial locations and sizes and shapes of various biodiversity focal areas (EMCs where protection or conservation are the priorities) will be selected by the LRMP monitoring committee. A simple hierarchical set of decision rules can be used. There are several types of reserve selection algorithms currently in use that can be modified to accommodate the Morice requirements to locate OGAs and HBEAs (Pressey et al. 1996, Possingham et al. 2000, McDonnell et al. 2002). These include optimization algorithms, heuristic step-wise approaches, and simulated annealing. These algorithms use one or more spatial or aspatial conservation design criteria to propose optimal or sub-optimal solutions to site selection i.e. the smallest set of sites (total area) needed to represent the criteria identified. Criteria can include ecosystem representation, rarity, single-species critical habitats, or minimum habitat thresholds from population viability analyses (PVA). A priori fixed polygons, such as PAs and ASZs, can be factored in and a series of scenarios can be run to compare iterations and different criteria. Algorithms can work towards complementarity, wherein after ecosystem representation is fulfilled, analysis proceeds to select sites with no overlap in conservation values, resulting in a more comprehensive biodiversity conservation design. Spatial contagion can be factored into automated designs for identifying areas of biodiversity focus.

There are several reserve system selection tools currently available free from various academic institutions such as the University of California at Santa Barbara (Sites: SPEXAN in ArcView) and the University of Queensland (MARXAN). These examples can be viewed on-line at the following web-sites:

<http://www.biogeog.ucsb.edu/projects/tnc/toolbox.html>  
<http://www.ecology.uq.edu.au/marxan.htm>

Post-analysis field verification of the biodiversity conservation value of sites, including a ground-truthing of age and structural attributes, will be conducted prior to final selection of OGAs and HBEAs.

## **Principles and Rationale for Ecological Desired Future Condition (DFC)**

### ***Range of Natural Variability and Historic Disturbance Regime***

Natural disturbances are defined as relatively distinct events in time that disrupt ecosystem, community or population structure and that change resources, the availability of suitable habitat, and/or the physical environment. These events occur at varying intensities across various space and time scales and have contributed, along with climate, soils and geomorphology, to produce diverse landscape patterns (Parminter 1998). Natural disturbance drives patterns in forest structure at various spatial and temporal scales. It is intuitive to use historic disturbance to set the managed landscape DFC based on the Range of Natural Variability (RNV) for spatial pattern and complexity.

Wong et al. (2003) recommend that when incorporating natural disturbance knowledge into forest planning, variability in disturbance attributes be considered as important if not more important than the means. It was this variability in natural disturbance regimes that led to the concept of managing within the RNV (Morgan et al. 1994). To conserve biodiversity, landscape scale management should be kept within the historical range of variability that existed as the current ecosystems and landscapes developed. This concept is central to designing managed landscapes because it provides a reference point for the ecological setting from which to evaluate the success of FEM (Parminter and Daigle 1997). RNV can be used to identify the range of desired future conditions and establish the limits of acceptable change (Morgan et al. 1994).

Knowledge of historic variability of natural disturbance is an important prerequisite to modeling management actions based on the temporal and spatial dynamics of natural process (Wong et al 2003). Biodiversity Guidebook (1995) Natural Disturbance Types (NDTs) were based on expert opinion, with fire return intervals and patch size targets based on limited information (Wong et al 2003). Improved and more accurate knowledge was required for the Morice plan area.

RNV as per Fall et al. (2003) was used to set seral stage distribution targets. RNV was established by Natural Case Analysis through the Morice Landscape Model, a set of spatial simulation models implemented using the Spatially Explicit Landscape Event Simulator (SELES) (Fall and Fall 2001). Natural Case Analysis projected patterns of forest structure on the LRMP plan area as a result of natural disturbance in the absence of industrial forestry (Edie 2003).

Steventon (2002) described historic disturbance regimes for biogeoclimatic subzones of the Morice and Lakes Timber Supply Areas. Steventon's analysis estimated stand-replacing disturbance rates and patch size distributions within Morice biogeoclimatic subzones using forest inventory data as a time-since-disturbance map and used the analytical methods of Reed et al. (1998). The historic variability of natural disturbance as per Steventon (2002) was used in the Natural Case Analysis and is used to define patch size distributions as a part of structural complexity.

### ***Coarse Filter Biodiversity***

Seral composition and structural complexity can be used as surrogates for processes associated with forest dynamics and the maintenance of functioning ecosystems. Two primary coarse filter objectives will be set to manage for:

- 1) the age or seral composition of the plan area (as a surrogate for successional stages), and



- 2) the structural complexity of the plan area in terms of patch size, interior forest and retention of stand level habitat elements.

Targets for coarse filter biodiversity objectives are based on expert opinion and ‘best guess’ formulated using best available knowledge and scientific literature. Unfortunately, there is a large gap in the current science regarding targets and thresholds for coarse filter attributes. Until the science improves, management for biodiversity is precautionary by setting targets that generally exceed current Forest Practices Code guidelines, applying targets to larger portions of the land base using a land management framework of EMCs in which different target levels are applied, and setting time limits within which the targets must be reviewed and revised, if possible, by the LRMP monitoring committee. Time limits are such that biodiversity values are not anticipated to be compromised while best available knowledge improves.

The concepts of connectivity and connectedness across landscapes are poorly understood. Connectivity will be considered and evaluated in the MFEMS as an output of managed landscape pattern (seral and patch size distributions) as opposed to planning input. Steventon (2002) found no general tendency in the Morice TSA for either young or older forest to exist preferentially adjacent to non-forest riparian features such as wetlands, rivers and lakes. He postulates that fixed-location linear connections of similar age forest would have rarely existed in more disturbance prone forests. In general, he concluded that connectivity related to the distribution of seral stages would likely be related to stand initiating return intervals; i.e. long intervals would have stable mature and old forest, more connected than young forest; while short intervals would jump around between high and low periods of connectivity in both young and old, depending on the pattern of disturbance. Given the highly variable nature of connectedness in the plan landscapes, management for a heterogenous range of seral stages and patch sizes over time will be presumed to provide for connectivity.

### **Seral Stage Distribution (Biodiversity Objective 1)**

Applying the concept of RNV will set seral stage targets. As Steventon (2002) points out, RNV can conflict with other stakeholder objectives, and may result in unacceptable timber costs. Within the MFEMS, RNV as a concept will be applied differently within different EMCs. RNV seral and patch targets will be applied within areas managed primarily for biodiversity conservation (HBEAs). Outside of HBEAs, RNV is relaxed to provide a broader range of variation so as not to impact heavily on other resource interests.

#### **Issues:**

- ◆ Need to distribute biodiversity, as represented by mature and old seral forest, across the plan area, throughout LUs. Areas of high biodiversity emphasis should appear throughout all LUs where appropriate.
- ◆ Need to reflect the RNV across the plan area while still managing for other resources; recognition that the managed plan area may not achieve RNV throughout, but will require the establishment of an acceptable ecological desired future condition.
- ◆ Need to recognize lack of knowledge in setting targets and commit to adaptive management process in which targets are time-limited and require review based on continuing research and analysis.
- ◆ Need to maintain some “natural” early successional herb/shrub seral forests as their diversity is substantially different from all older forest stages.
- ◆ Age thresholds for old growth will be defined by the Order Establishing Provincial Non-Spatial Old Growth Objectives (2003) unless otherwise indicated, or until replaced with more ecologically accurate thresholds (NDT2 ESSF 250 years; NDT3 SBS 140 years).

## Approach:

**High Biodiversity Emphasis Areas (HBEA)** are identified throughout LUs in the plan area and spatially delineated. Old Growth Areas (OGA), in combination with aspatial old growth management, are a tool to achieve old seral targets in HBEAs.

- ◆ The target for old seral is set by RNV by BEC variant (Table 12, Section 3.4.1, Biodiversity GMD) and is achieved through existing spatial reserves, spatial OGAs and aspatial old growth management.
- ◆ The target for mature plus old seral is set by RNV by BEC variant (Table 12, Section 3.4.1, Biodiversity GMD) and is achieved through aspatial management.

The **General Forested Area (GFA)** has seral targets set by a modified RNV where the limits of the natural range are doubled to reflect a suggested managed seral distribution in line with, but not identical to, RNV. OGAs are a tool to achieve old seral targets in the GFA.

- ◆ The target for old seral is set by 2xRNV by BEC variant (Table 13, Section 3.4.1, Biodiversity GMD) and is achieved through existing spatial reserves, spatial OGAs and aspatial old growth management.
- ◆ The target for mature plus old seral is set by 2xRNV by BEC variant (Table 13, Section 3.4.1, Biodiversity GMD) and is achieved through aspatial management.

## Targets:

RNV as per Fall et al. (2003) is used to set seral stage distribution targets (Tables 12 and 13). The table has chosen to target RNV within HBEA to reflect the most constraining target one could logically apply to areas targeted for biodiversity conservation. The choice to apply targets reflective of 2xRNV outside of HBEAs represents a social choice to improve on projected seral stage distribution under current forest management regimes while considering impacts to other resources such as timber. The results of base case management analysis indicated that some landscapes departed up to 3xRNV in their seral composition. 2xRNV was proposed as a middle ground to minimize timber impacts while altering seral expectations on the general forested area (GFA) (A. Edie, pers. comm.).

For the purpose of RNV target calculation, old seral forest is described by stand age derived from forest inventory. It has been set at stands > 140 years for all BEC variants regardless of actual old growth thresholds. This reflects suspected limitations in the forest inventory, wherein stands > 250 years appear to be under-represented in the managed scenario model as compared to the natural disturbance model; it was therefore considered prudent to combine the two age classes (140-250 and >250) and set old seral targets for anything greater than 140 years across the land base (A. Edie, pers. comm.). This is inconsistent with provincial Old Growth Objectives setting BEC zone old growth thresholds. Both the lower analytical old growth age threshold and higher provincial value will be replaced by more ecologically accurate values when they become available.

Seral stage targets in Tables 12 and 13 result from analysis of Natural Base Case with medians around which there are percentile ranges (Edie 2003, Steventon 2002). The ranges were generated from multiple natural landscape simulations and were adopted as the simplest interpretation of RNV. From these resulting ranges, targets were selected for the minimum percent of old and the maximum percent of young for each BEC variant. The lowest (old) or highest (young) value produced from all the natural landscape simulations was adopted as the target. Targets in Tables 12 and 13 are, therefore, considered to be the relevant extremes of the range of values generated during natural case simulations. This was an attempt to decrease the impact of RNV to other resources (A. Edie, Pers. Comm.).

Targets are time-limited, and require review by 2010 based on continuing research and analysis.

## Structural Complexity (Biodiversity Objective 2)

Objectives will be based on characteristics of historic landscapes in combination with specific resources objectives (e.g. single species habitat requirements) to produce recommendations for landscape level pattern and stand level structural retention. Objectives must be multi-scale and reflective of natural successional processes to ensure the spatial heterogeneity and biocomplexity required to maintain biodiversity.

Trees, snags and downed logs surviving a serious disturbance are incorporated into the subsequent stand, which retains structural complexity (Franklin et al. 1985; Hansen 1991). The structural legacy of all unmanaged forest seral stages provide the resources and habitats required by many species. The maintenance in managed stands and landscapes of this dynamic flow of structural legacy and recruitment through forest succession is critical to FEM. Young forests contain a legacy of snags and fallen trees representative of the type of disturbance that created them, and whatever structural complexity was present in the stand on that site just prior to disturbance. For an unmanaged stand, the pre-disturbance structural legacy will be related to stand age. For a managed stand, it will be related to the structural retention objectives applied at stand initiation (harvest) and throughout the managed rotation (stand tending).

### Issues:

- ◆ Need to define patch size distributions through analysis of historic natural disturbance regime by natural disturbance type (NDT) and biogeoclimatic (BEC) variant.
- ◆ Retention of large patches with interior forest conditions must be addressed (interior forest defined as greater than 200m from an edge).
- ◆ Need to link landscape level pattern (patch size distribution) with stand level structural diversity (habitat element / attribute retention and recruitment into the regenerating stand), recognizing that management for structural complexity at these two scales is inter-dependant.
- ◆ Structural retention and recruitment at the stand level must be applied over the entire managed and unmanaged plan area, and to all openings regardless of size.
- ◆ Structural retention and recruitment at managed stand initiation must be sufficient to persist through mid-seral successional stages, recognizing that at any given time, the bulk of the plan area will be neither old nor young, but middle aged.
- ◆ Retention of mature and old seral stage stand level reserves in harvested areas must increase for large patch sizes as compared to small patches.
- ◆ A proportion of harvested patches needs to be managed on an ecological rather than a managed stand rotation length to ensure appropriate recruitment of structural complexity in the plan area.
- ◆ Patch retention within harvested areas across the plan area needs to be assessed for ecosystem representation and abundance to ensure that rich productive sites are not under-represented in the plan area.
- ◆ Portions of the land base need to proceed through natural successional pathways to enhance early seral characteristics immediate after harvest and to facilitate the long term ability to relocate OGAs in future rotations.

### Approach:

**Patch size distribution** is based on an analysis of historic disturbance regime and fire return intervals (Steventon 2002) and is applied to the entire plan area by NDT and BEC variant. Target ranges are set for small (< 40 ha) and large (>250 ha) patch sizes by BEC variant (Table 14, Section 3.4.1, Biodiversity GMD). Patch size target ranges will be applied by BEC variant, but will be monitored and evaluated by landscape unit.

A **patch** is dynamic and consists of an individual stand, or a group of stands that are in close proximity (i.e. no intervening edge) and are similar in structural/seral stage and elevation. For the purposes of his disturbance analysis, Steventon (2002) defined a patch as an area consisting of forest inventory polygons in the same 20-year age class, less than 100m apart and greater than one hectare in size. This objective will use the same patch definition as Steventon.

**Interior forest** targets are embedded in patch size distribution targets, expressed as a proportion of large patches in interior forest condition. The objective is to ensure that some large patches of interior forest are present at all times across the forested landbase. In the absence of relevant data, approximately one third of large patches should offer interior forest conditions. Interior forest is defined as being greater than 200 metres from a definable margin between patches (P. Burton, Pers. Comm., 2003). This requirement will involve not just an evaluation of patch size, but of patch shape as well. Patches of suitable size and shape will be required at time zero of the plan. Future suitable large patches will be created through appropriate design of harvest openings.

The **structural retention** harvest strategy is applied to the entire plan area and addresses the retention of patches of mature and old seral forest, as well as the habitat elements relevant to the old stands and dead wood cycle: coarse woody debris (CWD), snags, large live trees (LLT), and immature stems. All openings, regardless of size, will have structural retention targets applied. The structural and ecosystem composition of stand level patch retention within Landscape Units should be monitored to assess representativeness of the retention. Stand level retention should address ecosystem representation at the level of the site series to ensure that rich and productive sites continue to contribute to biodiversity conservation as well as timber production. Retention targets for habitat elements (CWD, snags, LLT, and immature stems) will be generally applied to all harvesting across the plan area, as will best management practices developed for these types of stand structures.

**Large harvested patches** are intended to reflect large burns created under a natural disturbance regime. However, it is accepted that the intensity, expressed in biomass removal, of harvesting generally exceeds that of burns. Large burns (>250 ha) in the plan area (n = 3) appear to end up with approximately 5% of their area left unburned in mature residual patches (Brochez et al. 2001). However, the bulk of the structural legacy left after fire for recruitment into the regenerating stand is outside of fire skips, dispersed across the burn in significant densities (snags and residual live trees). Harvesting in large patches removes the bulk of the timber from the site (either to the mill or to the burn piles), leaving little to no dispersed live and dead stems. In order to compensate for this net loss of structure across large openings, a dispersed tree and snag retention system has to be developed and implemented in combination with increased patch retention levels distributed across the harvest area.

The Biodiversity Guidebook (Tables 20 a and b) has established Wildlife Tree Patch (WTP) **retention guidelines** for Landscape Units. These targets are intuitively presumed to fall short of the retention required to meet large disturbance recruitment requirements for structure. Limited information is available in the plan area to determine the actual retention requirements in large harvested patches. However, other jurisdictions provincially have attempted to describe the combined contribution of dispersed and patch structural retention to various sized openings (Weyerhauser 2002). Based on best available information, a large patch retention range of 10 to 30% has been established, with 15% as the median target within large harvested patches in the General Forested Area (GFA) and 25% as the median target in large harvested patches in the High Biodiversity Emphasis Areas (HBEA). These targets are based on the untested assumption that in a large fire disturbance, at least twice the amount of biomass remains distributed across the burn area as is captured in fire skips and remnant patches. The logical extension of this assumption is that large harvested openings need to capture the entire retention biomass in patches, unless a dispersed retention strategy is used.

Targets will be achieved while minimizing impacts to AAC using a step-wise retention strategy of short-term and long-term retention. A “take now, take later, don’t take” approach will be applied, in which “don’t take” WTP target percentages, set aside for the full rotation, will be determined as per the Biodiversity Guidebook targets for a particular landscape. The difference between the 15% or 30% large patch retention target (depending on what EMC the large patch is in) and the guidebook retention % will be established as “take later” set asides, identified for removal at the end of the rotation when the harvested area surrounding the take later patches is mid-seral. Harvesting within the take later patches will involve aggressive retention of structural attributes within the patch which will provide structural legacy to the surrounding mid-seral stand and to the regenerating forest within the patch itself. Prior harvesting around all retention patches is assumed to have aggressive structural retention targets set for live and dead wood within the harvested area.

There is some concern that “take later” patches will come out too early — at the end of the shortened managed rotation rather than the **ecological rotation** — for them to offer any structural recruitment into stands and landscapes. There is also a general need to place portions of the managed land base on ecological rotations to accommodate the need for future OGA recruitment. To meet these concerns, a proportion of patches throughout the plan area will be managed on ecological rotations. The ecological rotation age is the period of time between stand replacement natural events (as opposed to economic rotation age that represents the culmination of mean annual increment). While insects, disease and wind are all recognized to cause stand replacement, mean fire return interval will be used to establish ecological rotation ages for the MFEMS. Site series and leading species can affect the successional disturbance rate of a stand (Beukema and Pinkham 2001). Where this level of detail is currently unavailable, means for BEC variants are used, as calculated by Steventon (2002).

There is insufficient information to establish an informed target for the proportion of the landbase that should be subject to ecological rotations. An interim target range of 5 to 10% of the large harvested patches created throughout the plan area will be placed on ecological rotations. This assumes an approximate average of 50% of all patches in the primary BEC variants of the plan area will be large, and 5 to 10% of that proportion affects approximately 2.5 to 5.0% of the THLB. This target is low and should intuitively be increased. The long term structural attribute and timber supply implications of this and alternative sensitivities will be evaluated and the target refined to better reflect a balance between ecology and economics.

### **Targets:**

The historic variability of natural disturbance as per Steventon (2002) was used in the Natural Case Analysis and is used to define patch size distributions as a part of structural complexity (Table 14, Section 3.4.1, Biodiversity GMD). Targets were calculated using a beta probability function as per Steventon (2002).

Targets for CWD, snags, LLT, and immature stems are under development based on assessments of pre- and post-harvest CWD characteristics (Lloyd 2001) and evaluations of live and dead standing tree information from cruise data analysis. Best Management practices for CWD retention have been developed and are currently in operational trials.

Targets are time-limited, and require review by 2010 based on continuing research and analysis. As improved information becomes available, targets may be replaced at anytime during the life of the plan with approval from the LRMP Monitoring Committee.

### ***Fine Filter Biodiversity***

Fine filter ecosystem objectives will be set to address the maintenance of:

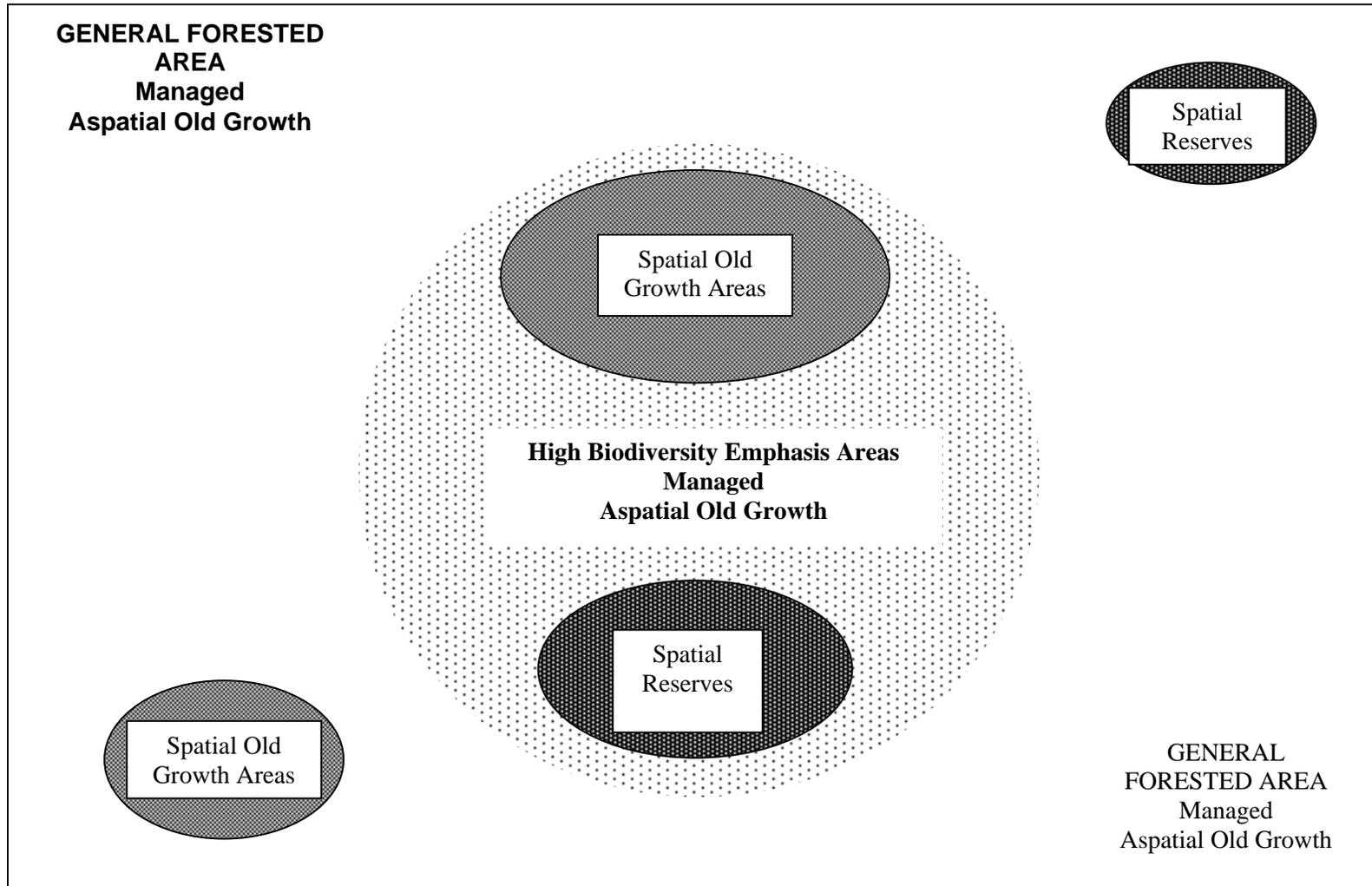
- ◆ Riparian ecosystems (see Fish, Fish habitat and Aquatic Ecosystem GMD)
- ◆ Deciduous ecosystems,
- ◆ Regionally significant and sensitive ecosystems,
- ◆ Culturally significant ecosystems, and
- ◆ Ecosystems at risk (provincially red and blue listed).

Fine filter vertebrate species objectives will be considered in the Wildlife and Wildlife Habitat section of the LRMP (Section 3.4.4). The identification of critical habitats required to maintain vertebrate species at risk will be identified as per Wildlife GMD's and will be considered in biodiversity conservation planning. As with the biodiversity conservation strategy for the Cariboo-Chilcotin Land Use Plan (BCSC 1996), conservation of biodiversity within the MFEMS will be met to some degree within the management strategies for fine filter wildlife species. Conversely, management for wildlife species not targeted for concern relies wholly on the objectives of the biodiversity conservation strategy. Vertebrate species for which LRMP management objectives were developed were selected for fine filter management based on their risk status (provincial and federal) and/or sensitivity to changing forest seral distribution, structural composition and road density due to development (i.e. Grizzly Bear, Woodland Caribou, Mountain Goat, Northern Goshawk, Moose, Mule and White-Tailed Deer, Fisher, and Black Bear). Other species at risk or species of interest considered as part of the fine filter will be addressed through the future development of appropriate management strategies (see Wildlife and Wildlife Habitat GMD).

The relationship of fine filter species responses to coarse filter management objectives have yet to be established, and is an area requiring further study. Empirical studies to date have indicated that habitat loss has large, consistently negative effects on biodiversity (Fahrig 2003). Fahrig (2003) concludes that the most important question for biodiversity conservation is "How much habitat is enough?" Different species use different kinds of habitat and require different amounts for persistence. Conservation of all species requires identifying which species are most vulnerable to habitat loss (Fahrig 2001, With and King 1999) and estimating the minimum habitat required for the persistence of each of these most vulnerable species. To successfully implement coarse and fine filter biodiversity conservation management in FEM, this type of species population viability analysis should be strongly considered. In addition, the current knowledge base regarding plant and invertebrate species is limited to non-existent, and coarse filter management is assumed to address their conservation concerns. Effort should be made to fill this knowledge gap and incorporate consideration for the full range of floral and faunal species in the establishment and evaluation of biodiversity conservation objectives.

**Figure 2. General Forested Area – Managed Aspatial Old Growth** (modified from Todd in prep)

Application of ecosystem management categories (EMC) assumes a broad distribution across the plan area of spatially located High Biodiversity Emphasis Areas (HBEA) related to, but independent of, Landscape Unit (LU) boundaries. HBEAs may overlap with spatial reserves resulting from other plan initiatives; however, reserves are distributed within both the HBEA and the General Forested Area (GFA). Old Growth Areas (OGA) are spatially located across the plan area related to, but independent of, LU boundaries, and recruited from the plan area over multiple rotations. OGA's may be preferentially located within HBEAs. The GFA is common to a number of resource uses inclusive of, but not exclusive to, biodiversity. Aspatial old growth management across the entire plan area (HBEA plus GFA) combines with spatial set asides to deliver old seral targets. Structural retention targets are applied across the managed plan area and vary by EMC.



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## Appendix 6. Potential Morice Water Quality Monitoring Sites

Note that this is a preliminary list to guide monitoring at the TSA scale, and will require further update and clarification.

SITE #	NAME	VALUE	MONITORING CONCERN
1	Tahlo Watershed	Non-enhanced sockeye run	Upstream influences on downstream spawning areas; temperature
2	Booker Mine		Acid drainage, heavy metals — downstream impacts
3	Morrison Main Stem	Spawning/rearing habitat; non-enhanced sockeye; coho; pink	Temperature
4	Hautete Creek	Rainbow; char; kokanee	Temperature
5	9-Mile/Wilkinson Ck	Babine Lake rainbow spawning	
6	Tachet Ck	Spawning — sockeye; coho	Temperature
7	Sockeye Ck	Sockeye; coho; rainbow	
8	Upper Bulkley, upstream of Buck Ck		Needs a full monitoring strategy developed throughout.
9	Upper Bulkley - Morice confluence		
10	Buck Creek	Drinking water; steelhead; largest tributary and fish producer for Upper Bulkley	
11	Goosly outlet/Klo Ck		Monitoring due to mine influences
12	Mouth of Morice R.	Coho; sockeye; pink; Chinook; steelhead; resident fish	Needs a full monitoring strategy developed
13	Mouth of Houston-Tommy	Spawning — coho	Sediment due to terrain stability issues
14	Owen Ck	Coho; steelhead; resident	Temperature; beaver
15	Lamprey Ck	Coho; steelhead; resident	Temperature
16	Mouth of Thautil	Coho; steelhead; bull trout; natural bedload and erosion	Erosion in excess of natural; temperature (bull trout)
17	Denys Ck	Bedload	Terrain Stability
18	Starr Creek	Bedload; bull trout	Terrain Stability
19	Mouth of Gosnell	Wetlands; steelhead; coho; bull trout; (pinks?)	Water flow/hydrologic regime; temperature

<b>SITE #</b>	<b>NAME</b>	<b>VALUE</b>	<b>MONITORING CONCERN</b>
20	Confluence of Shea and Gosnell	Steelhead; bull trout; coho	Temperature; terrain stability
21	Major confluence downstream of Shea Lake	Steelhead; bull trout; coho	Temperature; terrain stability
22	McBride	Coho	Temperature
23	Nanika R.	Spawning — sockeye; (steelhead; bull trout)	
24	Above Red Slide confluence on Nanika R.	Sockeye	Terrain Stability
25	Atna Ck	Coho; wetlands	Important benchmark site
26	Nadina/Peter Aleck Ck	Spawning — late run sockeye; chinook; rainbow; bull trout	Temperature (refer to LRUP)

## Appendix 7. A Framework and Direction for the Development of a Lakeshore Management Strategy

The lakes within the plan area contain many values and features that provide opportunities for a variety of uses and interests, ranging from recreational experience to ecological conservation. It is recognized that there is a need to manage lakes to maintain both the human and ecological values which they provide. Given this, *goals* for management of lakes in the plan area and a *framework* for developing a lakeshore management strategy are provided. An interim strategy is provided to ensure that the values are adequately managed prior to the development of the lakeshore strategy.

### Goals for a Lakeshore Management Strategy

The plan area will be managed to provide lakes or groups of lakes that achieve the following goals:

#### ***Ecologically sensitive lakes***

The goal is to provide and maintain lakes with high ecological values or where ecological values are sensitive to human use and development activities. The following activities, values and experiences will be considered in the development of suitable management practices in the adjacent areas for candidate lakes:

- ◆ Lakes with fish spawning along shorelines
- ◆ Lakes sensitive to sediment loading
- ◆ Lakes with juvenile sockeye fry rearing habitat along shores
- ◆ Lakes with rare or endangered species or habitats, unique ecological processes or physiographic associations
- ◆ Lakes sensitive to over-fishing
- ◆ Lakes with high wildlife values (e.g. moose, loons)

#### ***Wilderness Lakes***

The goal is to provide for lakes with natural features in undisturbed areas. The following activities, values and experiences will be considered in the development of suitable management practices in the adjacent areas for candidate lakes:

- ◆ Distance from roads and access
- ◆ Hiking, canoeing, primitive camping and other non-motorized recreational experiences
- ◆ Wilderness setting
- ◆ Natural environment
- ◆ Remote recreation experience is emphasized

#### ***Quality lakes***

The goal is to provide for lakes with quality natural or cultural features, where limited development that may impact these features is allowed to occur. The following activities, values and experiences will be considered in the development of suitable management practices in the adjacent areas for candidate lakes:

- ◆ Natural appearing environment
- ◆ Unique or high value natural features
- ◆ Cultural heritage values
- ◆ Unique oligotrophic lakes

### **General Lakes**

The goal is to provide for lakes primarily used for public recreation, with good access and in a predominantly rural and natural setting. The following activities, values and experiences will be considered in the development of suitable management practices in the adjacent areas for candidate lakes:

- ◆ Access is generally two wheel drive
- ◆ Land and resource development is acceptable
- ◆ Family recreation experience (e.g. fishing, swimming, boating) and safety is emphasized

### **Interim Strategy for Lakeshore Management**

The following interim management direction for lakeshore areas is recommended until such time as a lakeshore management strategy is completed.

Modification and development within the lakeshore management area, defined as 500 metres from the high water mark on identified lakes (Table on page 243) and 200 metres on all other lakes, to be subordinate to the functional integrity of cultural heritage values, visual quality, environmental values, fish and aquatic habitat and public recreation values, including wilderness recreation experience as applicable (see Table on page 243).

Evidence must be shown in new or amended plans that any modification and/or development activities within the management area will not result in unacceptable risks to cultural, ecological and recreational values of concern.

Approaches to be used to achieve this outcome may include, but are not limited to, the use of the following tools:

- ◆ Non motorized boat designation
- ◆ Restricted settlement in the vicinity of lakes and/or foreshore
- ◆ Visual management
- ◆ Alternative silviculture systems and block layout
- ◆ Promotion of vegetation diversity
- ◆ Minimize permanent access structures

### **Framework for Developing a Lakeshore Management Strategy**

It is recommended that the lakeshore management strategy include the following:

1. A literature review of other appropriate information and similar processes that have been completed both within British Columbia and other jurisdictions.
2. A process to allow linkage between the Lakeshore Development Guidelines being developed by Regional District, and other lakeshore management strategies.
3. An assessment process which identifies the lake values and basin morphology.
4. An assessment process for determining the carrying capacity (human settlement) and suitability of the lakes for the identified management goal.

5. A process, which may include a classification system for recommending a lakeshore management and reserve zone.
6. Recommended best management practices that will consider the following management tools in lakeshore management zones:
  - ◆ Non motorized boat designation
  - ◆ Restricted settlement in the vicinity of lakes and/or foreshore
  - ◆ Visual management
  - ◆ Alternative silviculture systems and block layout
  - ◆ Promotion of vegetation diversity
  - ◆ Minimize permanent access structures

## Candidate Lakes for Application of the Lakeshore Management Strategy

- ◆ All lakes greater than 1000 ha, excluding reservoirs
- ◆ Identified lakes listed in Table below.

**Table. Identified Lakes**

Lake	Management Goals				Significance or concern
	Ecological	Wilderness	Quality	General	
Atna	X				populations of sockeye that spawn along the shore or have sockeye rearing, lake trout
Babine	X				populations of sockeye that spawn along the shore or have sockeye rearing, lake trout
Big loon	X				
Bittern	X				Bittern nesting area. High fish values with inadequate flushing
Boomerang	X				Sedimentation concerns
Chisolm	X				Sedimentation concerns
Doris	X				Sedimentation concerns
Doris,	X				Lake trout
Erickson (Silverthorne)	X			X	High fish values, Significant enhancement work done by the Steelhead Society. Associated with Community Forest. Trails that are non-motorized
Fission				X	
Friday	X	X			Lake trout
Fulton	X				Spawning channels downstream, Lake trout

Lake	Management Goals				Significance or concern
	Ecological	Wilderness	Quality	General	
Helen	X			X	Small shallow lake with high fish values. Ospreys and waterfowl nesting. Inadequate flushing
Horseshoe	X				Sedimentation concerns
Johnson (Vallee)	X				Small, diverse and sensitive ecosystem. High fish values, raptors and waterfowl nesting
Klinger (Fuljames)	X				Extremely high fish values with no flushing
Lamprey				X	
McBride	X			X	Lake trout
Morice	X				populations of sockeye that spawn along the shore or have sockeye rearing, Lake trout
Morrison	X				populations of sockeye that spawn along the shore or have sockeye rearing
Nadina	X				populations of sockeye that spawn along the shore or have sockeye rearing
Nakinilerak	X				Lake trout
Newcombe	X				Sedimentation concerns
Owen	X				Lake trout
Parrott			X		
Paul				X	
Pine Tree	X				Sedimentation concerns
Silver				X	
Sunset				X	Family recreation area with safety issues
Tagetochlain	X				Lake trout
Tahlo	X				populations of sockeye that spawn along the shore or have sockeye rearing
Tanglechain,	X				Lake trout
Timber lake				X	
Tom George				X	



Lake	Management Goals				Significance or concern
	Ecological	Wilderness	Quality	General	
Twinkle-Horseshoe Lake chain	X			X	

## Appendix 8. Priority Sites for Watershed Restoration

The Watershed Restoration Program (WRP) used two contrasting systems for selecting restoration candidate sites. Near the end of the program sites were selected as part of a sub-basin ranking system where the relative value of fisheries and domestic water use were used to prioritize watersheds for restoration. The goal was to reach restoration “completion” of pre-code watershed impacts in as many sub-basins as possible. The second approach was to rank by severity all the individual sites that were identified during the assessment phase of WRP. The goal here was to find and restore sites or groups of sites that were deemed to have the greatest resource impacts and were likely to have the greatest return on investment. This tended to put priority on sites like fish passage restoration because of the large upstream habitat gains from restoration. The following descriptions will describe the status of both approaches starting with the watershed ranking process and finishing with the site level rankings.

### Watershed Ranking

In March 2001, Ecofor Consulting completed its interim restoration plans for the Buck, Houston Tommy, Kidprice, Morice Lake, Nadina and Owen watershed units within the Morice Forest District. The results of several years of watershed restoration assessments and planning were used to prioritize the Watershed Units (WU) of the District according to their regional priority for water use, fisheries resources and their projected restoration success. The WU’s were ranked according to the following criteria.

#### Moderate Priority Watershed Units:

Based on the program objectives, watershed units with lower fisheries resources and domestic water use are ranked as Moderate Priority Watershed Units.

#### Key Watershed Units:

These are regionally significant watershed units that contain high or very high values of targeted fish species/stock or are important domestic water supply sources but are not considered category I or II (**Category I:** *Watersheds that have known impacts from pre-Code forestry but are still functional watersheds that will potentially benefit from restoration activities.* **Category II:** *Watersheds with impacts from pre-Code forestry as well as other land uses (including private land) and where there is a coordinated restoration plan in place. The watershed must still be functional and able to benefit from coordinated activity.*)

#### Priority Key (PK) Watershed Units:

These are Category I and II watersheds that:

- ◆ have known impacts from Pre-Code forestry, and
- ◆ have been estimated to have a high likelihood of restoration success.

#### Target Watershed Units:

These are a subset of the PK Watersheds that had interim restoration plans completed in 2000/2001. This produced the following rankings.

#### Moderate Priority Watershed Units:

- ◆ Babine Lake-Granisle
- ◆ Babine Lake-Topley
- ◆ Tachek Creek
- ◆ Starr Creek
- ◆ Thautil River

- ◆ Shea Creek
- ◆ Gosnell Creek
- ◆ Clore
- ◆ Chisolm

**Key Watershed Sub-units:**

- ◆ Hautete Creek
- ◆ Natowite Lake
- ◆ Tochicha Lake
- ◆ Gloyazikul Creek
- ◆ Burnie
- ◆ Parrot Creek
- ◆ Tahtsa
- ◆ Whitesail
- ◆ Sibola
- ◆ Troitsa

**Priority Key Watershed Sub-units (PK):**

- ◆ Morrison Lake
- ◆ Babine Lake-Morrison
- ◆ Babine Lake-North Babine
- ◆ Big Loon Creek
- ◆ Tanglechain Creek
- ◆ Fulton River
- ◆ Guess Creek
- ◆ Byman Creek
- ◆ Richfield Creek
- ◆ McQuarrie Creek
- ◆ Bulkley River
- ◆ Barren Creek
- ◆ Emerson Creek
- ◆ Tagetochlain Lake
- ◆ Nadina Lake
- ◆ Kidprice Lake
- ◆ Nanika Lake

**Target Watershed Sub-units:**

- ◆ Aitken Creek
- ◆ Dungen Creek
- ◆ Buck Creek
- ◆ Peacock Creek-Morice River
- ◆ Houston Tommy Creek
- ◆ Morice River (lower, middle and upper)
- ◆ Fenton Creek
- ◆ Nadina River
- ◆ Lamprey
- ◆ Nado / Cedric
- ◆ Nanika River
- ◆ Morice Lake
- ◆ Atna Lake / Creek

Of the Target Watershed Sub-units, detailed Restoration Plans were produced for the following :

- ◆ Owen Creek
- ◆ Peacock Creek-Morice River
- ◆ Fenton Creek
- ◆ Buck Creek
- ◆ Aitken Creek
- ◆ Dungate Creek

## **Proposed Activities for Target Watershed Sub-units with Restoration Plans**

Target Watershed Sub-units with Restoration Plans were prescribed with a variety of restorative activities. A summary of the prescribed activities is included below.

### ***Owen Creek: Proposed Restoration Activities***

- ◆ Approximately 1.2 km. of road deactivation;
- ◆ 2 fish access restoration sites;
- ◆ approximately 0.2 km of instream rehabilitation and restoration;
- ◆ approximately 2.9 km of side-channel rehabilitation and restoration.

*Estimated cost: \$523,500.00*

### ***Peacock Creek-Morice River: Proposed Restoration Activities***

- ◆ Approximately 2.4 km of road deactivation;
- ◆ Approximately 23.8 ha. of riparian restoration;
- ◆ 1 fish access restoration site;
- ◆ approximately 0.8 km. of instream rehabilitation and restoration; and
- ◆ approximately 0.8 km. of side-channel rehabilitation and restoration.

*Estimated cost: \$165,000.00*

### ***Fenton Creek: Proposed Restoration Activities:***

- ◆ Approximately 2.9 km. of road deactivation;
- ◆ Approximately 0.3 km. of road rehabilitation;
- ◆ Approximately 6.7 ha. of riparian restoration; 2 fish access restoration sites; and
- ◆ Approximately 0.1 km. of instream rehabilitation and restoration.

*Estimated cost: \$248,500.00*

### ***Buck Creek: Proposed Restoration Activities:***

- ◆ Approximately 0.4 km. of road deactivation;
- ◆ approximately 3.75 km. of road rehabilitation;
- ◆ approximately 2 ha. of hillside rehabilitation and restoration;
- ◆ approximately 1.1 ha. of riparian prescriptions;
- ◆ approximately 0.2 km. of instream rehabilitation and restoration; and
- ◆ 4 fish access sites.

*Estimated cost: \$293,500.00*

**Aitken Creek: Proposed Restoration Activities:**

- ◆ Approximately 0.45 km. of road rehabilitation.

*Estimated cost: \$24,000.00*

**Dungate Creek: Proposed Restoration Activities:**

- ◆ Approximately 2.3 km. of road deactivation;
- ◆ Approximately 1.25 km. of road rehabilitation; and
- ◆ Approximately 1 ha. of riparian rehabilitation.

*Estimated cost: \$38,500.00*

## **Summary of Targeted Watershed Sub-units**

The projects described above are the highest value (fisheries and domestic water) priority sub-units that have completed.

**Site Level Rankings:**

Site level rankings are based on impact types rather than on a watershed based approach. The advantage of this approach is that it identifies the most serious site level impacts regardless of the condition of surrounding areas. The WRP assembled a list of the highest priority individual sites from the completed assessments. The following is a list of those proposed works:

- ◆ Buck Creek: Fish passage (Ecofor site ID: P7)
- ◆ Buck Creek: Fish passage (Ecofor site ID: P10)
- ◆ Buck Creek: Fish passage (Ecofor site ID: P11)
- ◆ Buck Creek: Fish passage (Ecofor site ID: P12)
- ◆ Buck Creek: Fish passage (Ecofor site ID: P13)
- ◆ Buck Creek: Fish passage (Ecofor site ID: P14)
- ◆ Kidprice / Nanika River: Riparian restoration at crossing (Ecofor site ID : P18)
- ◆ Owen / Fenton: Collapsing bridge, survey, design and replace (Ecofor site ID: P19)
- ◆ Kidprice / Lamprey: Fish passage / failing crossing (Ecofor site ID: P23)
- ◆ Owen / Fenton: Fish Passage (Ecofor site ID: P24)
- ◆ Owen / Fenton: Fish passage (Ecofor site ID: P25)
- ◆ Owen / Fenton: Collapsing bridge (Ecofor site ID: P26)
- ◆ Owen / Owen Creek: Fish passage (Ecofor site ID: P28)
- ◆ Owen / Owen Creek: Fish passage (Ecofor site ID: P29)
- ◆ Owen / Fenton Creek: Fish passage (Ecofor site ID: P34)
- ◆ Kidprice / Nanika: Fish passage (Ecofor site ID: P39)
- ◆ Kidprice / Nanika: Fish passage (Ecofor site ID: P40)
- ◆ Kidprice / Nanika: Channel / Instream assessment and works (Ecofor site ID: P41)
- ◆ Kidprice / Nanika: Fish passage (Ecofor site ID: P50)
- ◆ Nadina / Nadina River: Fish passage (Ecofor site ID: P60)
- ◆ Nadina / Nadina River: Fish passage (Ecofor site ID: P64)
- ◆ Nadina / Nadina River: Fish passage (Ecofor site ID: P65)
- ◆ Kidprice / Lamprey: Watershed Assessment (Ecofor site ID: P66)
- ◆ Owen: Instream work (Ecofor site ID: P67)

## Summary

The WRP proposed works described are taken from the following documents:

- ◆ Interim Restoration Plans for the Buck, Houston Tommy, Kidprice, Morice Lake, Nadina and Owen Watershed Units within the Morice Forest District. Final Report, March 30 2001. Prepared by: Ecofor Consulting Ltd. 2001 Watershed Restoration Program.
- ◆ Restoration Plan for the Buck Landscape Unit within the Morice Forest District, February 2002. Prepared by: Ecofor Consulting. 2002 Watershed Restoration Program.
- ◆ Restoration Plan for the Owen Landscape Unit within the Morice Forest District. Prepared by: Ecofor Consulting Ltd. 2002 Watershed Restoration Program.

This is not a complete list of potential sites as some sites identified in earlier assessments were not confirmed at the time the report was assembled. Potential sites from the northern half of the district are not included as the focus was on the watershed units described above.

The two approaches (watershed and site level prioritization) both have their merits but also their problems. The watershed level approach tends to prioritize the watersheds with fish and domestic water use issues but tends to be relatively insensitive to high priority sites in watersheds without domestic water use. Conversely, the site level approach identifies individual works but doesn't attempt to identify clusters of sites that can be more efficiently restored as a group. A combination of the two approaches is probably the most efficient and effective approach.

All of the sites described above were found to be WRP eligible. Sites exist that were not considered FRBC eligible (not pre-code impacts, tenure issues, etc) but were not included in the program.

## Appendix 9. Interim Harvesting Guidelines for the Telkwa Caribou Herd Recovery Program Area

The table below is a condensed decision matrix for harvesting operations within the Telkwa Caribou Herd Recovery Plan Area (TCHRP). Jan.27/99. Refer to the “Interim Harvesting Guidelines for the Telkwa Caribou Herd Recovery Program Area (March 1999)” for complete directions regarding Telkwa caribou management.

**Table: A Matrix Guide for Harvesting Strategies for the Morice Portion of the TCHRP**

CHARACTERISTICS:	ZONES:			COMMENTS:
	SBS	ESSF (general)	ESSF and SBS (Key Forested Caribou Habitat -KFCH)	
1) Opening Size	<ul style="list-style-type: none"> <li>Distance to cover as per BGB</li> </ul>	<ul style="list-style-type: none"> <li>small (3-15 ha)</li> <li>uneven aged management preferred in - multi-layered stands</li> </ul>	<ul style="list-style-type: none"> <li>small opening (1-3 ha)</li> </ul>	<ul style="list-style-type: none"> <li>Follow DM policy in patch size distribution.</li> </ul>
2) Access	<ul style="list-style-type: none"> <li>access management in identified areas and cut blocks of mutual concern.</li> <li>Identify short term harvesting strategies where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>access management in identified areas and cut blocks of mutual concern.</li> <li>Identify short term harvesting strategies close to high use caribou habitat or where human access may lead to displacement of caribou.</li> </ul>	<ul style="list-style-type: none"> <li>emphasis on temporary roads</li> <li>planned road layout to facilitate access control points.</li> <li>establish access restrictions at suitable locations.</li> </ul>	<ul style="list-style-type: none"> <li>Access to “core areas” non-existent.</li> <li>Effective forested buffers must be maintained adjacent to blocks and roads, to restrict ATV and snowmobile access to the nonmotorized areas.</li> </ul>
3)Connectivity	<ul style="list-style-type: none"> <li>maintain matured and old forest cover connectivity between wetland complexes and slopes &lt;30% going up to alpine by ensuring a continuum of 70% structure and function over the connectivity area.</li> </ul>	<ul style="list-style-type: none"> <li>forested slopes &lt;30% shall have enough mature and old forest cover that maintains canopy closure to allow for unimpeded caribou movement within and between elevation bands.</li> </ul>	<ul style="list-style-type: none"> <li>maintain connectivity within and outside the polygon, by ensuring a continuum of mature and old forest cover that maintains canopy closure.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of broad connectivity corridors, fixed or replaceable is envisioned over time.</li> </ul>
4) Landscape Objectives	<ul style="list-style-type: none"> <li>Seral stage objectives done when detailed LU planning commences.</li> </ul>	<ul style="list-style-type: none"> <li>Seral stage objectives detailed LU planning commences.</li> </ul>	<ul style="list-style-type: none"> <li>Max 50% area &lt;90 years or identify longer rotations.*</li> </ul>	<ul style="list-style-type: none"> <li>Seral stage objectives to be considered after detail analysis completed.</li> </ul>
5) Stand Level Characteristics	<ul style="list-style-type: none"> <li>locate WTP s in areas that have lichens (e.g., swamps, etc.)</li> <li>minimum preferred retention level is 20%.</li> </ul>	<ul style="list-style-type: none"> <li>maintain lichen growth</li> <li>leave snags/leaning trees</li> <li>small clearcuts and forest reserves/leave areas ranging from 30% to 50% retention</li> <li>retain poles and saplings for security cover where feasible (also ‘older’ lichen bearing trees should be left)</li> <li>target wetland areas</li> </ul>	<ul style="list-style-type: none"> <li>maintain lichen growth</li> <li>leave snags/leaning trees</li> <li>preferred 50% retention level within Silviculture prescription area.</li> <li>retain poles and saplings for security cover where feasible (also ‘older’ lichen bearing trees should be left)</li> <li>target wetland areas</li> <li>Overall,70% structure and function for an entire KFCH polygon.*</li> </ul>	<ul style="list-style-type: none"> <li>Consult inventories of “known areas” of high lichen growth. See consultant’s report</li> <li>Where high lichen loads areas are noted, apply strategies similar to KFCH.</li> </ul>
6) Silviculture System	<ul style="list-style-type: none"> <li>clearcuts with WTP and forest reserves/leave areas.</li> </ul>	<ul style="list-style-type: none"> <li>uneven aged management preferred in - multi-layered stands</li> <li>small clearcuts</li> </ul>	<ul style="list-style-type: none"> <li>single tree selection</li> <li>patch cutting/group selection on slopes &lt;30%</li> <li>maintain stand structure by utilizing uneven aged stands with high lichen loads and or multilayered stands to maintain KFCH.</li> </ul>	<ul style="list-style-type: none"> <li>Practice adaptive management</li> <li>Uneven aged management systems are acceptable and even preferred in multi-layer and or high lichen load stands in the ESSF.</li> </ul>
7) Logging Seasons	<ul style="list-style-type: none"> <li>east side of the TCHRP - summer harvesting.</li> <li>southern part of the TCHRP - winter harvesting.</li> <li>Preferred road construction window is July 15 to Nov. 1<sup>st</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>preferred summer harvesting - is July 15 to November 1<sup>st</sup>.</li> <li>early winter harvesting scenario (finished by Christmas) to avoid the creation of packed trails.</li> </ul>	<ul style="list-style-type: none"> <li>preferred summer harvesting is July 15 to November 1<sup>st</sup>.</li> <li>early winter harvesting scenario (finished by Christmas) to avoid the creation of packed trails.</li> </ul>	<ul style="list-style-type: none"> <li>An alternative to summer harvesting is to have one active development area in key caribou habitat at any one time, with the emphasis on getting in and out quickly.</li> </ul>

Open for testing based on expected timber supply modeling impacts; will be revisited after first year of modeling completion

## Appendix 10. Takla (Sidney Williams) Caribou Proposed Management Guidelines

The following guidelines are found in the “Northern Caribou Ungulate Winter Range Proposal – Takla Herd (December 2003)” prepared by the Ministry of Water, Land and Air Protection, Omineca Region. In areas identified as Takla (Sidney Williams) Caribou Winter High, maintain old forests that provide arboreal lichens for forage by:

- 1) prohibiting forest harvesting, except Category A approved cut blocks and associated roads authorized at the time of the LRMP completion,
- 2) maintaining contiguous, un-fragmented forests that provide habitat types that minimize predation; human access and disturbances which can lead to mortality or displacement to less favourable habitats by following management practices to:
  - a) control access and human disturbance:
    - i) plan the location and design of major/secondary access routes to avoid the Caribou Winter High areas unless there are no other practicable alternatives for required access;
    - ii) where road/trails are constructed within this winter range, reclaim or plant road/trails after use to limit access;
    - iii) limit permanent road access within 2 km of the Caribou Winter High by access restrictions or road deactivation (to reduce human disturbance and illegal caribou harvest).
  - b) manage forest health through single tree management retaining the biomass on site.
  - c) limit fire suppression within the Caribou Winter High areas which do not pose a significant risk to adjacent forest lands.

In areas identified as Takla (Sidney Williams) Caribou Winter Medium, maintain Caribou habitat values through the following silvicultural practices:

- 1) manage for <30% volume removal on a cut block area every 80 years.
- 2) limit openings to a mean opening size < 1.5 ha. (recommended range from 1 to 3 ha),
- 3) incorporate natural clumps of trees in the openings within the stand while allowing efficient skidding.
- 4) distribute openings throughout the block and keeping openings at least 2 tree lengths apart where practicable.
- 5) maintain caribou winter range by managing access and human disturbance by:
  - a) planning the location and design of major/secondary access routes to minimize permanent roads in caribou habitat;
  - b) limit permanent road access within 2 km of Caribou Winter High.
- 6) manage forest health to reduce conflicts between caribou and bark beetle management. In the event of a bark beetle outbreak, limit harvesting to forest health sanitation activities that maintain the habitat attributes of Caribou winter habitat.
- 7) encourage fire suppression within Caribou winter habitat to maintain age class distribution and contiguous functions of the Caribou Winter Habitat area.



## Appendix 11. Noxious Weed Categories

Excerpt from *Northwest Weed Committee Invasive Plant Plan and Profile*

<p style="text-align: center;"><b>Category 1, extremely invasive.</b></p>	<p style="text-align: center;"><b>Category 2, very invasive.</b></p>
<p>Category 1 weeds invade even undisturbed habitats and dominate them. Domination implies the weed becomes the most abundant species across the entire site or area of the plant community being invaded. Abundance can be the number of plants or the % cover the plant occupies. The invasion can progress slowly for some species and rapidly for others.</p> <ul style="list-style-type: none"> <li>• The knapweeds, <u>Centaurea jacea</u>, brown knapweed; <u>C. maculosa</u>, spotted knapweed; and <u>C. nigra</u>, black knapweed.</li> <li>• Chara sp., Eurasian milfoil</li> <li>• <u>Cirsium palustre</u>, Marsh plume thistle</li> <li>• <u>Cytisus scoparius</u>, broom</li> <li>• Elodea canadensis</li> <li>• <u>Euphorbia esula</u>, leafy spurge</li> <li>• <u>Iris pseudacorus</u>, yellow flag</li> <li>• <u>Knautia arvensis</u>, blue buttons, field scabious</li> <li>• <u>Linaria dalmatica</u>, Dalmation toadflax</li> <li>• <u>Tanacetum vulgare</u>, common tansy</li> <li>• <u>Ulex europaeus</u>, gorse</li> <li>• There is also a ‘lumped’ grouping containing weeds present in the province but not in the northwest and weeds that not a lot is known about. These weeds are potential threats whose category may change with additional information or when they arrive in the northwest. At this time velvetleaf, jointed goatgrass, rush skeletonweed, dodder, yellow nutsedge and purple nutsedge are in this group.</li> </ul>	<p>Category 2 weeds invade even undisturbed habitats. They become very prevalent and may form dense patches but usually do not dominate the entire site or area of the plant community being invaded. If category 2 weeds invade the entire site or plant community they tend not to dominate the site. Some category 2 weeds such as hounds tongue can cause significant degradation or damage at lower levels of infestation.</p> <ul style="list-style-type: none"> <li>• <u>Arctium minus</u>, common burdock</li> <li>• <u>Carduus acanthoides</u>, plumeless thistle, (not yet recorded in the region)</li> <li>• <u>Centaurea diffusa</u>, diffuse knapweed</li> <li>• <u>Chrysanthemum leucanthemum</u>, oxeye daisy</li> <li>• <u>Cynoglossum officinale</u>, hounds tongue, (not reported in the region but expected to show up soon).</li> <li>• <u>Cirsium arvense</u>, Canada thistle</li> <li>• <u>Echium vulgare</u>, blueweed</li> <li>• <u>Hieracium spp.</u>, hawkweeds</li> <li>• <u>Lythrum spp.</u>, loosestrife</li> <li>• <u>Matricaria maritima</u>, scentless chamomile</li> <li>• <u>Senecio jacobaeae</u>, tansy ragwort, (not yet recorded in the region)</li> </ul>

### Category 3, invasive.

Category 3 weeds can invade undisturbed habitats but they usually require some disturbance to gain entry. Once in a habitat they usually do not dominate the site unless management problems are occurring.

- Artemisia absinthium, wormwood or absinthium
- Cirsium vulgare, bull thistle
- Linaria vulgaris, common toadflax Silene noctiflora, night-flowering catchfly
- Sonchus arvensis, and other Sonchus spp., perennial sow thistle
- Tragopogon dubious, goat's-beard or oyster plant

### Category 4, aggressive or under biological control.

Category 4 weeds can invade even undisturbed habitats but they do so at a slow pace and usually do not dominate the site. Some Category 4 weeds go through large population fluctuations increasing and decreasing over time. This may be the result of the fluctuation in biocontrol agent populations or cyclic patterns the plant displays. Some native plants that behave in a weedy like manner have been included in this category.

- Agrimonia striata, agrimony, native
- Carduus nutans, nodding thistle
- Centaurea cyanus, corn flower, blue buttons
- Centaurea montana, Mountain bluet
- Chenopodium spp., lamb's-quarters
- Cichorium intybus, chicory
- Cicuta douglasii, western water hemlock, native
- Crepis tectorum, narrowleaf hawksbeard
- Conyza canadensis, horseweed, Canadian fleabane (native at least in parts of range)
- Dracocephalum parviflorum, American dragon head, native
- Eruscastrum gallicum, dog mustard
- Galeopsis tetrahit, hemp nettle
- Hordeum jubatum, foxtail barley (native)
- Hypericum perforatum, goat weed or St. John's-wort
- Lappula echinata, western bluebur, bluebur, stickseed, blueweed or burweed
- Lychnis alba, white cockle, white campion
- Lycopsis arvensis, small bugloss
- Madia glomerata, tarweed, native

<p><b>Category 3, invasive.</b></p>	<p><b>Category 4, aggressive or under biological control.</b></p> <ul style="list-style-type: none"> <li>• <u>Matricaria matricarioides</u>, pineapple weed.</li> <li>• <u>Medicago lupulina</u>, black medic, hop clover</li> <li>• <u>Oenothera biennis</u>, evening primrose</li> <li>• <u>Polygonum convolvulus</u>, wild buckwheat</li> <li>• <u>Rumex crispus</u> (curled dock) and <u>R. acetosella</u> (sheep sorrel) are the most common introduced species in northern region; we also have several native species</li> <li>• <u>Senecio vulgaris</u>, common groundsel</li> <li>• <u>Silene cucubalus</u>, bladder campion</li> <li>• <u>Sinapis arvensis</u>, wild mustard</li> <li>• <u>Sisymbrium</u> spp., tumble mustards</li> <li>• <u>Sisymbrium officinale</u>, <i>hedge mustard</i></li> <li>• <u>Thlaspi arvense</u>, stinkweed or pennycress</li> <li>• <u>Trifolium agrarium</u>, hop-clover</li> <li>• <u>Verbascum thapsus</u>, mullein</li> <li>• <u>Vicia cracca</u>, tufted vetch</li> </ul>
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## Appendix 12. Sector Submissions on Pesticide Use

### A. Conservation and Environment Sector

- 1) There seems to be a misunderstanding regarding the inclusion of Objectives regarding chemical (pesticide, herbicide, and fertilizer) use into our LRMP document. Consensus should be reviewed regarding this question.
- 2) In the current and past BC LRMP policy framework, the Morice LRMP does not retain the mandate for “Licensing or Permitting” pesticides. The Table may choose to address Best Practice Guidelines in the policy recommendations section of our LRMP document.
- 3) The LRMP may choose to indicate areas, as Land Use Designations/Area Specific, where chemicals should not be used/applied as polygons or as “categories of BEC” due to risk assessments (ours) and/or environmental/ecological/human values and functions’ disruption.
- 4) The CECaucus, through the Co-Chairs, does not agree that all chemical use should be constrained or eliminated throughout the Morice LRMP plan area due to the need of protecting and maintaining ‘native’ species from intrusive/non-native species’ persistence. Our opinion is that we do need to keep the “tool box” available for site-specific cases. \*Please note that CEC means “intrusive” to cover introduced and noxious species that damage natural ecosystems...not the natural ebb and flow of species through time that occurs...as in the case of moose.
- 5) The CECaucus does not support the continuous and/or broadcast use (this is an issue of scale/hectares) of chemical pesticides, herbicides or fertilizers, due to the hazard and risk that wide-spread application, in-situ chemical release/degradation and contamination... of soils and water that could result in serious adverse impacts to biodiversity, wildlife and local human populations.
- 6) That said, there could be many conditions where chemical applications are appropriate, for small scale site-specific “problems”.
- 7) MSMA is a tool that has been used to create wildlife trees within landscapes that retain few large snags due to beetle harvest. This use, at scale of small patch retention (not harvest at a later date), should be supported and continued since it is preferable to the Fall and Burn ‘approach’ that leaves no snags for biodiversity/wildlife.

### B. Tourism Sector

The Tourism sector believes that the vast majority of pest problems can be addressed without the use of chemical pesticides. In both agriculture and forestry, numerous alternatives to pesticides exist. Unfortunately, they receive only lip service in most cases when proponents are required to evaluate alternatives to the use of chemical pesticides. Since there are a great many unknowns about the long term effects of many pesticides, and since recent experience shows that pesticides are sometimes administered in places where they are unnecessary and where they may seriously endanger peoples' health, we suggest the following guidelines for pesticide use in the Morice district:

1. Chemical pesticides are generally only to be used to combat invasive species in places and at times where alternatives have been tried and found unsuccessful.
2. Proponents who wish to use pesticides on public land are required to show that they have seriously considered alternative methods (planting larger stock, various manual brushing methods, lowering stocking standards, accepting longer periods to free growing, consideration of the value of earlier seral stages). Cost and convenience are not to be considered as the main rationales for using pesticides.

3. Proponents who wish to use pesticides on public lands are required to map all proposed treatment sites on a scale no smaller than 1:5,000, and to prove that they have conducted a thorough walk-through on a 100 m grid. Previous experience shows that water bodies are frequently missed and subsequently sprayed.
4. Notice of proposed pesticide use on public lands is to exceed the required legal minimum (NIT). Notice should be given for three consecutive weeks in both local papers in a format double the size of the usual one-inch column. The exact location, purpose of treatment, time of treatment, type of pesticide proposed, and method of application shall be clearly identified. The advertisement shall be between three months and one month before the date of treatment. The proponents shall prove that they have diligently tried to accommodate the public's concerns.
5. MSMA is not an acceptable pesticide in the Morice district.
6. No pesticides shall be used in a 1000 m buffer zone around tourism and recreation features and facilities, and within the areas of interest identified by tourism operators and recreation associations as per Table 6 of the Section 3.2.6, Recreation GMD.

### **C. Local Government**

When it comes to pesticide use it's really important that the RDBN Weed Control Program is not precluded from operations within the Morice. I spoke with the Director of Environmental Services this morning and she said that for the most part, all of the weed control that the RDBN does is on private land, however, the RDBN is often asked to assist MOT in spraying right of ways. She also suggested that wording in the LRMP include something like "application of pesticide use must be conducted under the procedures of an integrated pest management plan." In addition, in many circumstances using pesticides is the most effective way of controlling invasive / noxious weeds. We need to keep this tool in the tool box with the caveat that pesticides are applied according to pesticide use requirements.

### **D. Wildlife and Wildlife Habitat Sector Statement Regarding Pesticides**

The wildlife and wildlife habitat sector is concerned with the use of all chemicals in the environment that may affect wildlife and wildlife habitats and insist that the use of pesticides be stopped except under very limited circumstances. The use of pesticides for the control of insects (i.e. insecticides) and plants (i.e. herbicides) can affect wildlife populations and wildlife habitats through bioaccumulation of toxins or reduction of important forage species. We recognize that the use of pesticides to control insects for human health reasons (e.g. West Nile virus) and noxious weeds may be required, but only if all other alternatives have been exhausted and only in site-specific applications.

Although pesticides are both federally and provincially regulated, we feel that the regulatory process is significantly flawed due to the inability of the regulatory agencies to react to new scientific knowledge. We are especially concerned about the use of pesticides such as MSMA (monosodium methyl-arsenate), that have recently been shown to have increased toxicity and carcinogenic properties, not understood when originally licensed. It is essential that the precautionary principle be used when pesticides are being considered for use and that uncertainty about both the short and long-term effects are taken into account.

If pesticides are to be used in the Morice LRMP area, the following principles and guidelines need to be followed:

- ◆ All stakeholders that could be affected by the use of pesticides in an area need to be involved from the start in the development of a pesticide use plan. This involvement would include input into the timing of use, type of pesticide and area of use.
- ◆ Pesticide use needs to be considered under the precautionary principle, where it is only used when all other methods of pest control have been considered and that the use of pesticides does not impact

current or future ecosystem and wildlife health. Where there is uncertainty in the short or long-term effects, the precautionary approach suggests that alternatives be used. In all cases, the short-term economic benefits of using a pesticide should not outweigh the short or long-term or unknown costs to wildlife or ecosystem health.

- ◆ Further research, funded by proponents interested in the use of pesticides, needs to be conducted on the short and long-term effects of the use of pesticides on wildlife species and habitats. These studies are to be designed using the best available science to determine the effects of pesticides such as MSMA on wildlife physiology, populations, and habitats; and need to be designed to detect potential long-term effects.

## ***E. First Nations***

### **Office of the Wet'suwet'en**

The Wet'suwet'en are firmly opposed to any pesticide application on their traditional territories. The Wet'suwet'en consider especially the application of herbicides, for the purpose of eliminating or reducing the abundance of culturally important native plant species, as a serious infringement on their aboriginal rights. Wet'suwet'en House Members have an interest in collecting culturally important plant species throughout their House Territories and consuming them without worrying about potential toxic residues. Since there is limited knowledge but enough evidence of toxic by-products that are generated during the breakdown process of some pesticides, the Wet'suwet'en are not willing to take any health risks. Pharmaceutical markets that provide future economic opportunities also demand pesticide free plant products.

### **Nedo'ats Hereditary Chiefs**

The Nedo'ats Hereditary Chiefs take the same position as the Wet'suwet'en with regard to pesticide use.

### **Yekooche First Nation**

The Yekooche First Nation also state that the use of chemicals conflicts with their cultural interests. The Yekooche First Nation consultation protocol requests that proponents must consult with the Yekooche First Nation with regards to proposed use of chemicals in their territory.

## ***F. Open Chair Statement by: Judy Stratton, President Northern Ecology Watch***

Re: On the use of MSMA (monosodium methanearsonate) within the Morice Forest District  
The pesticide MSMA has been and still is considered a "tool" for beetle management by both industry and the Ministry of Forests (MoF). Despite the knowledge that MSMA is not **effective** in holding/maintaining/stopping **epidemic** infestations of Mountain Pine Beetle, the Morice Forest District has continued to promote the "excessive" use of this pesticide for MPB management.

Over the past 10 years, the District has allowed the application of MSMA to literally tens of thousands of trees. Despite the scientific evidence that now clearly shows that MSMA is a genotoxic (it changes DNA) substance, the timber industry and MoF continue to promote the prolific use of MSMA as part of their Forest Health Strategy. In addition, they declare their intention of harvesting and milling these MSMA trees despite the overwhelming health risks to workers handling the MSMA trees. (See Draft Morice DFAM Forest Health Strategy 2003/04 report).

At the May 9, 2003 LRMP meeting I gave a presentation on MSMA and announced that a Lakes District logger who was falling trees in the Morice District was severely poisoned with arsenic. At the same meeting, Dr. Josette Wier gave a presentation on the new scientific evidence that MSMA is a genotoxic.

During the course of verifying the logger's poisoning, I discovered the following:

1. The Morice Forest District Small Business Program had applied MSMA to 3 blocks of timber that were within several meters of private property and homes. In all, 6 private property owners are affected. Mine is one of them. There was never any consultation or warning of the application of MSMA so near our homes. Contrary to what the Ministry of Forests stated under oath at the Environmental Appeal Board hearing in Smithers where they declared that MSMA is only applied in "isolated and inoperable" areas, they applied MSMA next to private property and within meters of a main haul road. Upon confronting MoF staff about this application so near homes, a staff member stated "it does not say in the permit that I can't apply it near private property." It is apparent that MoF did not follow their statement that they would apply it only in isolated areas and MSMA has been applied everywhere. There is a new allegation (yet to be verified) that MSMA has been applied near the Houston cross-country ski trails.
2. The Morice Forest District had no complete mapping of MSMA sites nor did they have any of the MSMA information on the same computer system that handled the Forest Development Plans, Timber Sales, etc. They had pertinent information on two different computer systems that did not talk to each other. They had no way of cross-referencing MSMA sites with future timber sales or licensee cut blocks.
3. There was no concern at all for the health risks to workers of cutting MSMA trees. No concerns for the health risks to the general public and private property owners. The blocks that were sold and cut by the poisoned logger were treated with MSMA in August, 2001 and sold and cut in January, 2002. Only 6 months after the MSMA application, the trees were cut by the logger. This is why he received such high arsenic contamination.
4. There were no internal policies or operating procedures in place to handle MSMA activities. They are just now attempting to develop these policies and procedures as a result of their subsequent internal investigations.

The above items are no longer just allegations. The MoF "MSMA Incident Investigation" conducted by Marcel Belanger has substantiated what is written above, with the exception of the arsenic poisoning of the logger. That allegation is still under investigation by them.

MSMA should not be used as an epidemic Mountain Pine Beetle "tool." It should never be used as a "holding tool" in order to delay the cutting of treated trees. MSMA trees should never be cut. MSMA treated trees should never be designated as "wildlife trees." It is totally inappropriate to consider MSMA treated trees as a viable substitute for non-treated trees for wildlife purposes.

It is unfortunate that the Morice LRMP could not reach consensus on banning the use of MSMA as it is a dangerous chemical that we are using without regard to its effects on future generations.