

# Sustainable Resource Management Plan

## Biodiversity Chapter for Railroad Landscape Unit

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## 1.0 Introduction

This report provides background information used during the preparation of the Sustainable Resource Management Plan and associated proposed legal objectives for the Railroad Landscape Unit (LU). Specifically, this report forms the biodiversity conservation chapter of the plan. A description of the landscape unit, discussion on significant resource values, and an old growth management area (OGMA) summary and rationale are provided.

Biological diversity or biodiversity is defined as: *‘the diversity of plants, animals and other living organisms in all their forms and levels of organisation, and includes the diversity of genes, species and ecosystems as well as the evolutionary and functional processes that link them’*<sup>1</sup>. British Columbia is the most biologically diverse province in Canada. In British Columbia, 115 species or subspecies of known vertebrates and 364 vascular plants are listed for legal designation as threatened or endangered<sup>2</sup>. The continuing loss of biological diversity will have a major impact on the health and functions of ecosystems and the quality of life in the province (Resources Inventory Committee, 1998).

Planning for OGMA and Wildlife Tree Patch (WTP) biodiversity values is recognized as a high priority for the province. LU Planning is an important component of the *Forest Practices Code of British Columbia Act* (FPC) which allows legal establishment of objectives to address landscape level biodiversity values. Implementation of this initiative is intended to help sustain certain biodiversity values. Managing for biodiversity through retention of old growth forests is not only important for wildlife, but can also provide important benefits to ecosystem management, protection of water quality and preservation of other natural resources. Although not all elements of biodiversity can be, or need to be, maintained on every hectare, a broad geographic distribution of old growth ecosystems is intended to help sustain the genetic and functional diversity of native species across their historic ranges.

The Squamish Forest District has completed draft LU boundaries and assigned draft Biodiversity Emphasis Options (BEO) in accordance with the direction provided by government. There are 20 LUs within this district. Through a ranking process the Railroad LU was rated as a High BEO. Current government direction requires that priority biodiversity provisions, including the delineation of Old Growth Management Areas and wildlife tree retention (WTR), be undertaken immediately. This work was completed by the Ministry of Sustainable Resource Management (MSRM) with input provided by Ministry of Forests and Ministry of Water, Land and Air Protection as well as from forest licensees. Funding was primarily provided by MSRM.

Input from First Nations was gathered during consultation between MSRM and individual First Nations. Comment from the public and other agencies was sought during the 60 day public review and comment period. A summary of comments from the 60 day public review and comment period is included in Appendix II. Refer to the attached map for location of OGMAs.

Supporting documentation regarding government policy, planning processes and biodiversity concepts are provided in the 1995 *Biodiversity Guidebook*, the 1999 *Landscape Unit Planning Guide* (LUPG), the *Vancouver Forest Region Landscape Unit Planning Strategy (1999)*, as well

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<sup>1</sup> Definition of biodiversity is from page 2 of the Forest Practices Code *Biodiversity Guidebook* (September, 1995).

<sup>2</sup> BC Species and Ecosystems Explorer. 2003. Victoria, British Columbia. Available at: <http://srmapps.gov.bc.ca/apps/eswp/>

as *Sustainable Resource Management Planning Framework: A Landscape-level Strategy for Resource Development*.

## 2.0 Landscape Unit Objectives

Landscape Unit objectives are legally established within the framework of the FPC and as such become Higher Level Plan objectives. Other operational plans must be consistent with these objectives.

The Railroad LU received a High BEO through the biodiversity value ranking and BEO assignment processes completed earlier (see Appendix I). Table 1 lists the percentages of the LUs productive forest area by natural disturbance type (NDT) required for old seral representation. The target figures listed in Table 1 are derived from Appendix 2 of the *Landscape Unit Planning Guide* (LUPG). The percentages of cutblock area required for WTR for each BEC subzone are shown in Table A of the *Legal Objectives*.

**Table 1. Required Levels for Old Seral Representation**

BEC Variant <sup>1</sup>	NDT <sup>2</sup>	LUPG Old Seral Representation Target <sup>3</sup>	
		%	ha
CWHds1	NDT 2	>13	>629
CWHms1	NDT 2	>13	>520
ESSFmw	NDT 2	>13	>195
IDFww	NDT 4	>19	>734
MHmm2	NDT 1	>28	>154

- 1 CWHds1: Coastal Western Hemlock biogeoclimatic zone, southern dry subarctic variant.  
 CWHms1: Coastal Western Hemlock biogeoclimatic zone, southern moist subarctic variant  
 ESSFmw: Engelmann Spruce Sub-alpine Fir biogeoclimatic zone, moist warm subzone  
 IDFww: Interior Douglas-fir biogeoclimatic zone, wet warm subzone.  
 MHmm2: Mountain Hemlock biogeoclimatic zone, moist maritime (leeward) variant.
- 2 NDT = Natural Disturbance Type. Refer to LUPG, Appendix 2.
- 3 % of total productive forest area within BEC variant, as per LUPG.

Old seral representation targets listed above have been met through the delineation of OGMAs throughout the Railroad LU. Refer to the attached Railroad LU map for the location of OGMAs, to Appendix IV for OGMA statistics and attributes, and to Table 2 for a breakdown of non-contributing (NC), constrained Timber Harvesting Land base (THLB) and unconstrained THLB components.

**Table 2. Non-contributing, Constrained THLB and Unconstrained THLB Components of Railroad LU OGMAs**

BEC Variant	Total Old Seral Representation <sup>1</sup>	Non-Contributing <sup>2</sup> Area in OGMA		Constrained THLB <sup>3</sup> in OGMA		Unconstrained THLB in OGMA <sup>4</sup>	
	Ha	Ha	%	Ha	%	Ha	%
CWHds1	629.4	505.0	80.2	81.4	12.9	43.1	6.8
CWHms1	524.4	474.6	90.5	29.3	5.6	20.6	3.9
ESSFmw	200.8	194.6	96.9	6.3	3.1	0	0
IDFww	735.2	568.7	77.4	153.8	20.9	12.8	1.7
MHmm2	159.5	159.5	100	0	0	0	0
<b>TOTALS</b>	<b>2249.4</b>	<b>1902.3</b>	<b>84.6</b>	<b>270.7</b>	<b>12.0</b>	<b>76.4</b>	<b>3.4</b>

Note: any differences in totals are due to rounding  
 19 ha of the total 128 ha in PC are part of the THLB. The remaining 109 ha are considered NC.

- 1 This represents the actual amount established based on targets from Table 1.
- 2 **Non-Contributing Area in OGMA** = productive forest land that does not contribute to the AAC.
- 3 **Constrained THLB in OGMA** = Timber Harvesting Land Base that cannot fully contribute to the AAC due to site sensitivity or the need to manage for other resource values. 33 ha of the total 270 ha in PC are part of the THLB. The remaining 237 ha are considered NC.
- 4 **Unconstrained THLB in OGMA** = THLB area (productive forest land) that is available for harvesting

### 3.0 Landscape Unit Description

#### 3.1 Biophysical Description

The Railroad LU covers a total area of 32936 ha, encompassing watersheds flowing into the eastern side of the Lillooet River north-west of Lillooet Lake. Major watersheds within this LU include North Creek, Sampson Creek, Railroad Creek and Wolverine Creek. Smaller named watersheds include Johnny Sandy Creek, Gingerbread Creek and Gamelin Creek. Of this total LU area, 14818 ha (45%) is within the Crown forest land base, and 4656 ha of Crown forest is within the THLB. The remaining 18118 ha (55%) are non-forested or non-Crown (rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The Railroad LU lies mostly within the Pacific Ranges Ecoregion, Eastern Pacific Ranges ecosection; only the stream headwaters along the north-eastern boundary are located in the Interior Transition Ranges Ecoregion – Leeward Pacific Ranges ecosection. Its climate is best characterized by elevational gradients. At lower elevations summers are warm and dry, while winters are cool and relatively moist, with moderate snowfall. At mid elevations climate is characterized by moist, cool winters with relatively heavy snowfall and cool but relatively dry summers. Higher elevation climate has short, cool, moist summers and long, cold, moist winters with heavy snowfall (moisture is reduced in the ESSFmw).

The LU is comprised of the following 6 BEC subzones/variants: Coastal Western Hemlock *southern* dry subarctic (CWHds1); Coastal Western Hemlock *southern* moist subarctic (CWHms1); Engelmann Spruce Sub-alpine Fir moist warm (ESSFmw); Interior Douglas-fir wet warm subzone (IDFww); Mountain Hemlock *leeward* moist maritime (MHmm2); and Alpine Tundra interior (ATi).

These 6 BEC subzones/variants represent 4 different Natural Disturbance Types, with MHmm2 in NDT 1 (rare stand initiating events), CWHds1, CWHms1 and ESSFmw in NDT 2 (infrequent stand-initiating events), IDFww in NDT4 (frequent stand maintaining fires) and ATi in NDT 5 (alpine tundra and subalpine parkland).

Forest ecosystems in NDT 1 are influenced by rare stand-initiating events and historically were generally uneven-aged or multi-storied uneven aged, with regeneration occurring in gaps created by the death of individual trees or small patches of trees. Approximately 4% of the productive forest area of the Railroad LU is within NDT 1. NDT 2 forest ecosystems are influenced by infrequent stand-initiating events and historically were usually even-aged, but extended post-fire regeneration periods produced some stands with uneven-aged characteristics. Approximately 70% of the productive forest area in Railroad LU is within NDT 2. The remaining 26% of forest ecosystems are within NDT4 which are described as forested communities that normally experience frequent low intensity fires (considered to be stand-maintaining fires). The varied intensity and frequency of fires across the landscape has created a natural mosaic of mostly uneven-aged forests interspersed with grassy and shrubby openings. Ecosystems in NDT 5 are not considered productive forest since they occur above or immediately below the alpine treeline and are characterised by short and harsh growing seasons.

At lower elevations, within NDTs 2 and 4, the Railroad LU has sustained substantial levels of disturbance. Forested stands on lower elevation productive sites (typically on slopes with low to moderate gradients within the CWH and IDF) have been disturbed by past timber harvesting, mining, fire and other factors. The relatively low levels of old seral forest remaining within the lower elevation BEC variants reflects this disturbance history. Despite these factors, the Railroad LU can meet most of the old growth representation targets within productive forests predominantly from the non-contributing (NC) land base.

### 3.2 Significant Resource Values

The LU supports a range of natural resource values and features, and a diversity of social and cultural values and influences. Land ownership and tenure types are more simplified than other settled areas and include small areas of private land, mineral tenures and Crown forest. This LU is located away from large urban settlements with access provided by forest road located along the Lillooet River and its tributaries. Since the LU remains unsettled, wildlife management for sensitive species like grizzly bear, wolverine and mountain goat is important. These factors increase the complexity of resource management within the Railroad LU.

**Fish, Wildlife and Biodiversity:** Eighteen wildlife species of specific management concern are known or suspected to be present with the Railroad LU. These include RED-listed, BLUE-listed or Yellow-listed and regionally important species; or other species at risk called Identified Wildlife under the Forest Practice Code. Table 3 provides a summary of these wildlife species.

**Table 3. Wildlife Species of Specific Management Concern**

Species	Status <sup>1</sup>	Additional Comments	Likelihood of Presence <sup>2</sup>
Rubber Boa	Yellow-listed	Identified Wildlife	High
Tailed frog	BLUE-listed	Identified Wildlife	Confirmed present
American bittern	BLUE-listed	Identified Wildlife	Low to Moderate

Great blue heron	BLUE-listed	---	Confirmed present
Green heron	BLUE-listed	---	High
Trumpeter swan	BLUE-listed	Regionally important	Confirmed present
Harlequin duck	Yellow-listed	Regionally important	Confirmed present
Bald eagle	Yellow-listed	Regionally important	Confirmed present
Peregrine falcon	RED- and BLUE-listed subspecies	---	Confirmed present
Northern goshawk	RED- and BLUE-listed subspecies	Identified Wildlife	Confirmed present
Keen's long-eared myotis	RED-listed	Identified Wildlife	Moderate
Townsend's big-eared bat	RED-listed	Identified Wildlife	Moderate
Pacific water shrew	RED-listed	Identified Wildlife	Low
Trowbridge shrew	BLUE-listed	Identified Wildlife	Moderate
Mountain goat	Yellow-listed	Regionally important	Confirmed present
Black-tailed deer	Yellow-listed	Regionally important	Confirmed present
Grizzly bear	BLUE-listed	Identified Wildlife	Confirmed present
Wolverine	Yellow-listed	Regionally important	Confirmed present

- 1 Status from the British Columbia Conservation Data Centre (CDC). Yellow-listed species is any indigenous species or subspecies (taxa) which is not at risk in British Columbia. The CDC tracks some Yellow listed taxa which are vulnerable during times of seasonal concentration (e.g. breeding colonies). BLUE-listed species includes any indigenous species or subspecies considered to be Vulnerable in British Columbia. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened. RED-listed species is any indigenous species or subspecies considered to be Extirpated, Endangered, or Threatened in British Columbia. Extirpated taxa no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed. Red-listed taxa include those that have been, or are being, evaluated for these designations.
- 2 Professional judgement regarding likelihood of presence, based on species distribution and habitat requirements.

Of these 18 wildlife species, 4 species were given specific consideration during the OGMA delineation process. This included mountain goats, black-tailed deer, grizzly bears and bald eagles.

Grizzly bears in the Railroad LU are within the threatened Squamish-Lillooet grizzly bear population unit for which a Recovery plan has yet to be drafted. In general, the Recovery plan once completed will include objectives and strategies to maintain and/or enhance grizzly bear habitat values. Grizzly bears are also an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA). Designation of WHAs may occur as necessary or as part of the Recovery Plan to protect additional grizzly bear habitat in the Railroad LU. Grizzly bear habitat was an important part of the OGMA selection process in Railroad LU.

Mountain goat and black-tailed deer winter range habitat has been previously identified by the Ministry of Environment, Lands and Parks (MELP, now called MWLAP) throughout the Railroad LU, based upon inventory work conducted in the 1990s. Legal designation of these areas as Ungulate Winter Range (UWR) is currently being pursued under Section 69 of the FPC Operational Planning Regulation (the mountain goat plan is approved). Mountain goat and deer winter range habitat polygons, spatially defined on 1:20000 reference maps, were given specific consideration during OGMA delineation, to pursue overlap of OGMAs with constrained areas. A substantial amount of older age class UWR was captured in OGMAs.

Overwintering concentrations of bald eagles are known to occur within the Lillooet River floodplain, in association with mature riparian forest and salmon streams. Although specific habitats have not been mapped, bald eagle nest, perch and roost sites were considered during OGMA delineation.

In addition to these wildlife species, streams and rivers within the Railroad LU also support resident and migratory salmonid populations. Salmonid species associated with this LU include: rainbow trout (including the migratory form – steelhead), cutthroat trout, Dolly Varden char, bull trout (Identified Wildlife), pink salmon, coho salmon, sockeye salmon, chum salmon and chinook salmon. The highest freshwater fisheries values are associated with Sampson Creek and Lillooet River and the lower reaches of its major tributaries.

**Protected Areas:** There are no provincial Parks or Protected Areas within the Railroad LU.

**Timber Resources:** Commercially valuable tree species in the Railroad LU are best described by elevations. Lower elevation forests are dominated by Douglas-fir, with lesser amounts of western red cedar, lodgepole pine and western hemlock. Mid elevation forests are dominated by Douglas-fir and amabilis fir. Less abundant are Engelmann spruce, lodgepole pine, and western red cedar. High elevation forests are comprised of mountain hemlock, amabilis fir and subalpine fir. Douglas-fir and lodgepole pine occur in smaller amounts.

According to the latest data base, approximately 73% of the total 4656 ha in THLB is considered early seral or immature forest. Mature forests (>80-250 years old in CWH, >120-250 years in MH and ESSF, >100-250 years for IDF) occupy about 19% of the THLB, and old forests (>250 years old) occupy about 8% of the THLB area. The actual area remaining in mature and old forest in the THLB is less than that shown by mapping due to recent disturbances that have not been incorporated into the data set. Continued access to commercially valuable timber, including future second growth, is a notable concern.

The Railroad LU is within the Soo Timber Supply Area (TSA). Four forest licensees operate in the landscape unit. Squamish Mills has a large chart in the northern half of the LU, the BC Timber Sales Program has chart at the north and south end of the LU. Halray Logging has chart in the southern portion of the LU. Weyerhaeuser has some small chart areas in Timber License that are managed by others.

**Community Water Systems:** There are no Community Water systems within the Railroad Landscape Unit.

**First Nations:** The Railroad LU is located within the traditional territory of the Mt. Currie First Nation. There is evidence of traditional use in several areas within this LU, especially the Lillooet River mainstem and its larger tributary streams. Culturally modified trees (CMTs) have also been previously identified in some areas.

Between 1996 and 1997, an Archaeological Overview Assessment model was developed by Millennia Research on behalf of MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the potential location (i.e. high or moderate potential) of habitation sites, trails and Culturally Modified Trees (CMTs).



The maps produced from the model were reviewed to determine if potential archaeological sites or travel routes were captured in OGMAs. In the Railroad LU, there is considerable overlap between OGMAs and old forest stands that exhibit a moderate to high potential for habitation sites, these are located near small lakes or on valley bottom areas all along the Lillooet River. Several OGMAs also overlap with forest stands showing moderate to high potential for CMTs. Only one OGMA overlaps with a potential trail along the Lillooet River.

**Private Land:** Only small portions of private land occur within the Railroad LU. These parcels are located adjacent to the Lillooet River. Private land is in an important consideration when establishing OGMAs. Some of the private land has been altered from its natural state and this change may influence the ecology of adjacent Crown forest lands. Where private and Crown land interfaced, these factors were considered during OGMA delineation.

**Mining and Mineral Exploration:** Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are valuable to the province, but are difficult to characterise due to their hidden nature. Ministry of Energy and Mines (MEM) has rated the industrial mineral potential as low in the southern two-thirds and moderate in the northern third of the LU. Metallic mineral potential has been rated as high in the southern two-thirds of the LU and moderate in the northern third. These rankings are based on a qualitative analysis which takes into account the values of known resources, past exploration and production as well as the number of known mineral occurrences and a subjective probability estimate of value by industry experts.

In this LU there are only a few mineral tenures situated adjacent to Mowich Creek, although two are quite large. OGMA delineation was unable to avoid these tenures, three OGMAs overlap substantially with the larger mineral tenures and one OGMA overlaps a small amount. The establishment of OGMAs will not have an impact on the status of existing aggregate, geothermal, oil and gas, and mineral permits or tenures. Exploration and development activities are permitted in OGMAs. The preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA; however, if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be moved.

**Recreation:** The forest road network and recreational resource values within this LU result in high recreational use, particularly during the summer and fall months. Winter activities are also increasing despite limited road access.

Important recreational activities include nature/wildlife viewing, stream angling and hunting. Berry picking and particularly mushroom picking are also common activities in the fall. Motorized activities would include All Terrain Vehicle, motorcycle and four wheel drive use where active road networks provide access. Winter recreational opportunities via road access are fairly limited (except for snowmobile use) due to the road being closed for avalanche safety concerns. Overall, recreational use in the Railroad LU would be rated as high. There are no Forest Service Recreation Sites in the Railroad LU, nor are there any future development plans.

Commercial back-country recreation activities (e.g. heli skiing, horseback riding, ATVs, snowmobiles, and guided angling) are becoming more popular within this LU, with more development expected in the future.

## **4.0 Biodiversity Management Goals and Strategies**

### **4.1 General Biodiversity Management Goals**

Biodiversity management goals and strategies describe, in specific terms, the outcomes that legal LU Objectives are to achieve. They also describe the rationale for selection of OGMA, some of the ecological features that OGMA are to include, and some decisions made to balance management of all values present in the LU. While LU Objectives are legally binding, management goals and strategies are not. Goals and strategies must remain flexible to incorporate future direction and new methods in order to ensure continued compliance with the corresponding LU Objectives.

The biodiversity ranking process identified important biodiversity values within the Railroad LU that must be managed for (see Appendix I). The delineation of OGMA cannot be undertaken without recognition of these significant values because OGMA delineation is the most effective provision of the FPC LU planning initiative for managing biodiversity. The previous section (Section 3) describes the resource values considered in the LU planning process.

The development of biodiversity management goals and strategies is important not only for conservation of biodiversity, but also to allow development of strategies to mitigate short and long-term LU planning impacts on timber supply. For example, OGMA delineation was not guided strictly by age class or Allowable Annual Cut contributions, as this approach could result in including stands of marginal biodiversity value and significant timber supply impact within OGMA. As a result, old forest stands that were proposed or approved for harvesting were avoided as OGMA candidates. Individual forested polygons were assessed according to their specific attributes during the OGMA delineation process.

As per the LUPG, OGMA were established first in areas within the NC land base, according to the last Timber Supply Review (TSR). Some contributing land base (or NC areas of interest) were included within OGMA, either because there were no other suitable areas available or due to constraints (e.g. riparian, wildlife, terrain). In general, more heavily constrained areas were chosen to minimize impacts. Licensees were made aware of all areas selected. Any potential impacts to the THLB are expected to be offset by areas of NC land base that were specifically avoided during OGMA delineation, to maintain potential for future harvesting opportunities and mitigate timber supply impacts.

To pursue representation of old growth stands in each BEC variant, efforts were made to delineate OGMA that included a diversity of stand types, by species composition and geographic/topographic locations. OGMA were aggregated when possible, both within and across BEC variants, to pursue connectivity and to create larger patch sizes with forest interior habitat characteristics. Efforts were made to ensure OGMA were distributed throughout the LU and not concentrated in a particular drainage. This is consistent with the “coarse filter” approach of biodiversity management whereby representative old growth stands are protected to maintain ecosystem processes and specific wildlife habitat requirements that may be poorly understood. In addition, ensuring OGMA placement is distributed throughout the LU helps ensure that any operational impacts are shared by all licensees operating in the area.

Attempts were made to maximise OGMA overlap with high value wildlife habitats such as mountain goat winter range, riparian areas and other unique or biologically valuable areas (e.g. near wetlands and slide-tracks). Riparian reserve zones (RRZs) established in accordance with the FPC, will help maintain some fish and wildlife habitat values associated with riparian areas and adjacent riparian forests. OGMAs delineated within and adjacent to existing RRZs can be expected to build upon these fish and wildlife habitat values. Narrow or isolated riparian fringes were not included in OGMAs, as such areas are more appropriate for stand level management and do not meet the “coarse filter” approach outlined in the Biodiversity Guidebook.

In all cases, detailed air photo review was performed to confirm forest cover attributes and suitability of a given stand for OGMA. In addition, all OGMAs were reviewed via helicopter survey work to verify the presence of desirable old forest characteristics.

## **4.2. Specific Biodiversity Management Goals and Strategies**

### **4.2.1 Biodiversity Management Goals**

1. Delineate old growth management areas predominantly in the non-contributing portion of the Provincial forest to maintain the full old seral representation targets for each BEC variant (CWHds1, CWHms1, ESSFmw, IDFww, and MHmm2), according to the following targets (from Table 1) and as per the attached map:
  - a) CWHds1 target of >13%, or at least 629 ha;
  - b) CWHms1 target of >13%, or at least 520 ha;
  - c) ESSFmw target of >13%, or at least 195 ha;
  - d) IDFww target of >19%, or at least 734 ha; and
  - e) MHmm2 target of >28%, or at least 154 ha.
2. Maintain areas that are representative of natural ecosystem patterns and ecosystem mosaics.
3. Maintain a wide range of ecosystem types and species composition.
4. Include rare, unique or under-represented stand types within OGMAs where possible and when compatible with other biodiversity goals.
5. Aggregate OGMAs when possible, both within and across BEC variants, to implement additional biodiversity management provisions like connectivity and forest interior habitat.
6. Place OGMAs where site location and topographic features provide the highest wildlife habitat and biodiversity value, such as UWRs, stream confluences, adjacent to slide-tracks, wetlands and other features when suitable old growth is present.

### **4.2.2 Biodiversity Management Strategies**

- A. Delineate OGMAs that include existing stands of old growth (250+ years old) or particularly high biodiversity value older mature stands (generally 140 to 250 years old) that will provide old growth attributes in as short a time frame as possible (Goals 1 and 2).

- B. Include unique stands and habitat types within OGMA (Goals 1, 2, 3 and 4).
- C. Delineate OGMA that are as large and contiguous as possible, while ensuring that they contain a wide range of sites and habitat types (Goals 2, 3, 4, 5, 6).
- D. Establish OGMA that are adjacent to biologically valuable non-forest habitats (e.g. lakes, wetlands and slide-tracks) (Goal 6).
- E. Retain veterans within harvesting areas to levels typical of densities found following natural disturbances as a focus of stand level biodiversity management, in accordance with the wildlife tree retention objective. Retention of dominants as veteran recruits is recommended where veterans are not present in the stand (Goal 2).

#### **4.3. OGMA Boundary Mapping**

OGMA boundaries were delineated to include complete forest stands (i.e. forest cover polygons) and follow natural features whenever possible to improve the ease of OGMA mapping and reduce operational uncertainty. OGMA were mapped using a 1:20000 scale TRIM base which forms the legal standard for measurement. Procedures for operating within OGMA are discussed in the OGMA Amendment policy.

#### **4.4. Auditing Wildlife Tree Retention**

The percent required for wildlife tree retention described in Table A of the *Legal Objectives* for the Railroad Landscape Unit does not have to be fully implemented on a cutblock-by-cutblock basis. Instead, the retention target may apply over a larger area (e.g. FDP or equivalent), so long as the retention target is met each 3 year period. The intent is to provide limited flexibility for retention at the cutblock level provided that the legally required percentage is met across the subzone. Since wildlife tree retention is a stand level biodiversity provision, wildlife tree patches are also to be distributed across each subzone and the landscape unit.

### **5.0 Mitigation of Timber Supply Impacts**

The Railroad LU plan has been developed to maximise the effectiveness of the FPC biodiversity management provisions while minimising impacts on the Soo TSA timber supply.

As mentioned previously there are four forest licensees with operations in the Railroad LU. OGMA were delineated based upon the biodiversity management goals and strategies with no specific effort to pursue even distribution of OGMA between these licensees. Instead, LU planning in the Squamish Forest District is intended to minimise impacts to timber supply as a whole across the entire district. Of the total 2249 ha of OGMA to be established, 1902 ha (85%) come from the NC land base; most of the 270 ha (12%) in partially contributing and 76 ha (3%) in contributing were recommended or agreed to by licensees because of constraints. Although in the CWHms1 and IDFww, suitable candidates for OGMA were limited due to previous disturbance. This resulted in the need to designate some OGMA from licensee interest areas.

Specific measures adopted to minimise impacts of Railroad LU planning to timber supply include the following:

1. As much as possible OGMA's were delineated within the NC land base or THLB areas that were agreed to or recommended by licensees.
2. OGMA selection tried to ensure that NC stands associated with Environmentally Sensitive Areas, lower productivity sites, areas of difficult access and marginal economics were included within OGMA's where possible and when compatible with biodiversity objectives.
3. Suitable old growth stands within UWR habitats were included in OGMA's whenever feasible, to reduce overall timber supply impacts and maximise overlap between constrained areas.
4. During the LU planning process, consideration was made to ensure timber access was not precluded by OGMA delineation. Known access corridors were generally left out of OGMA's and OGMA boundaries were delineated to simplify adjacent management.
5. Approved Forest Development Plans for the forest licensees within the Railroad LU were used during OGMA delineation to avoid proposed or approved developments. Direct consultation with forest licensees also occurred.
6. OGMA boundaries used natural features wherever possible to ensure they could be located on the ground. OGMA's were delineated to include complete stands of timber wherever possible to reduce operational uncertainty, increase the ease of OGMA mapping, and maximise the "coarse filter" effectiveness of OGMA's for long-term biodiversity protection.
7. Where possible, OGMA placement avoided areas within the NC land base identified by licensees as potential future harvest opportunities (e.g. helicopter access). Establishing OGMA's in the NC may still have implications to future timber supply by reducing flexibility for helicopter operations.

## **5.1 OGMA Amendment Procedure**

An MSRM Coast Region policy has been developed to give direction to proponents (forest tenure holders) when applying for amendments to OGMA legal objectives. Amendment procedures cover such things as minor or major amendments for resource development (e.g. roads, bridges, boundary issues, rock quarries & gravel pits) or relocation of OGMA's. The policy also discusses acceptable management activities and review procedures. The procedure has been approved by the Director of the Coast Region and forms an integral part of this landscape unit plan.

## **Appendix I: Biodiversity Emphasis Option Ranking Criteria**

The Railroad LU received a High BEO during the application of landscape unit ranking criteria completed earlier by the Squamish Forest District Landscape Unit Planning Team. The first set of criteria, to rank ecological values, was applied to determine an initial BEO ranking for the District's LUs. The LU with the highest ecological values score was ranked number one, the next highest, number two and so on. The timber values were scored next, with their resultant scores generally being used as tie-breakers for LUs with similar ecological scores. This approach was consistent with direction provided in the FPC *Higher Level Plans: Policy and Procedures* document.

Final determination regarding the BEO assignment, particularly when scores were close, was based upon discussions between MELP and MOF.

What follows is a series of Tables that summarize the ecological and timber scores with draft and final BEO assignments. Table Ia is a summary of general BEO ranking criteria, followed by the ecological scoring summary for the Railroad LU (Table Ib). Table Ic summarizes the ecological ranking score for the entire forest district, while Table Id shows the draft BEOs based on ecological scores. Table Ie illustrates the timber value rating criteria, while Table If shows the timber score for the Railroad LU, and Table Ig describes the timber score for all landscape units in the district. The final BEO assignment is shown in Table Ih.

### **1) Ecological Values Ranking Criteria**

The ecological values ranking criteria was used to initially assess which of the Squamish Forest District's LUs required higher levels of biodiversity provisions.

**Table Ia. Ecological Values Ranking Criteria for Squamish LUs**

<b>Ecological Values</b>	<b>Criteria</b>	<b>Criteria description</b>	<b>Value</b>	<b>Rank</b>	<b>Score</b>
<b>Ecosystem Representation</b>	Representation in parks	By % of BEC variants	0.0 to 0.4%	High	5 pts
			>0.4 to 0.8%		4 pts
			>0.8 to 1.2%		3 pts
			>1.2 to 1.6%		2 pts
			>1.6 to 2.0%	1 pt	
		>2.0%	Low	0 pts	
<b>Ecosystem Complexity</b>	Diversity of BEC variants	By # of different BEC variants	7 BEC variants	High	8 pts
			6 BEC variants		6 pts
			5 BEC variants	Low	4 pts
			4 BEC variants		2 pts
			3 BEC variants		0 pts
	----- Diversity of special habitat features	----- Professional judgement regarding diversity of special habitat features (estuaries, freshwater deltas floodplains; wetlands/lakes, slidetracks)	5/5	High	5 pts
			4/5		4 pts
			3/5		3 pts
			2/5		2 pts
			1/5	1 pt	
		0/5	Low	0 pts	

Table Ia contd

<b>Fish/Wildlife Values</b>	Fish/Wildlife values	Ranked based on points for species of special concern within the Squamish Forest District (anadromous salmonids, bull trout tailed frog, marbled murrelet, spotted owl, grizzly bear, moose and black-tailed deer)	score $\geq$ 10 score 7 to 9 score 4 to 6 score $\leq$ 3	High  Low	10 pts 6 pts 2 pts 1 pt
<b>Sensitivity to Development</b>	Based on sensitivity of BEC variants	Determine NDT type which is most prevalent (exclude NDT 5)	NDT 1 >60% NDT 1 30-60% NDT 1 <30% NDT2 predomin.	High  Low	2 pts 1 pts 0 pts 0 pts
	Inherent level of protection from signif. Human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Professional judgement	Based on review and assessment by MELP staff	High  Low	3 pts 2 pt 1 pt 0 pts
<b>Connectivity</b>	Based on non-PAS connectivity	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score	>50% >40 to 50% >30 to 40% $\leq$ 30%	High  Low	3 pts 2 pts 1 pt 0 pts
	Based on connectivity associated with PASs	Determine what proportion of the gross land area is protected	>20% >10 to 20% >1 to 10% <1%	High  Low	3 pts 2 pts 1 pt 0 pts
<b>Capability</b>	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present	>60% >40 to 60% >20 to 40% 0 to 20%	High  Low	4 pts 3 pts 2 pts 1 pt
		Determine how many BEC variants currently achieve old seral targets for high BEO	>80% >70 to 80% >50 to 70% 0 to 50%	High  Low	3 pts 2 pts 1 pt 0 pts
		Determine how much AC 8 is present (for recruitment and long-term capability)	>40% >20 to 40% 0% to 20%	High Medium Low	2 pts 1 pt 0 pts
<b>Total Score</b>					<b>48 pts</b>

Table Ib. Ecological Values Scoring Summary for Railroad LU

Ecological Values	Criteria	Criteria description	Value	Score
<b>Ecosystem Representation</b>	Representation in parks	By % of BEC variants	.90%	3 pts

Table Ib contd

<b>Ecosystem Complexity</b>	Diversity of BEC variants	By # of different BEC variants	5 variants	4 pts
	Diversity of special habitat features	Professional judgement regarding diversity of special habitat features (estuaries, freshwater deltas floodplains; wetlands/lakes, slidetracks)	1/5 special habitat features	1 pt
<b>Fish/Wildlife Values</b>	Fish/Wildlife Values	Ranked based on points for species of special concern within the Squamish Forest District (anadromous salmonids, bull trout tailed frog, marbled murrelet, spotted owl, grizzly bear, moose and black-tailed deer)	Initial score of 17/21	10 pts
<b>Sensitivity to Development</b>	Based on sensitivity of BEC variants	Determine NDT type which is most prevalent (exclude NDT 5)	NDT 2 is 48% of gross land base	0 pts
	Inherent level of protection from signif. human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Professional judgement	low level of human habitation, low agricultural use and mod/high level of recreational use	2 pts
<b>Connectivity</b>	Based on non-PAS connectivity	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score	47.3% of gross area is mature/old forest	2 pts
	Based on connectivity associated with PASs	Determine what proportion of the gross land area is protected	0.0% of gross area is protected	2 pts
<b>Capability</b>	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present	21.2% of total productive forest is old growth	2 pts
		Determine how many BEC variants currently achieve old seral targets for high BEO	3 of the 5 variants can meet old seral targets	1 pt
		Determine how much AC 8 is present (for recruitment and long-term capability)	41% of age classes 1 thru 8 are age class 8	2 pts
<b>Total Score</b>				<b>29 pts</b>



**Table Ic. Ecological Values Ranking for Original 21 Squamish Forest District LUs**

LU	LU #	Total Score (x/48)	Ranking
Rogers	301	23	8 <sup>th</sup> (tied with East Howe and Upper Squamish)
Meager	302	24	7 <sup>th</sup> (tied with Lower Elaho and Tuwasus)
Upper Elaho	303	25	6 <sup>th</sup> (tied with Billygoat)
Lower Elaho	304	24	7 <sup>th</sup> (tied with Meager and Tuwasus)
Upper Squamish	305	23	8 <sup>th</sup> (tied with Rogers and East Howe)
Ryan	306	12	11 <sup>th</sup>
Lower Squamish	307	28	4 <sup>th</sup>
Billygoat	308	25	6 <sup>th</sup> (tied with Upper Elaho)
Mamquam	309	20	9 <sup>th</sup> (tied with Soo and Whistler)
Tuwasus	310	24	7 <sup>th</sup> (tied with Meager and Lower Elaho)
East Howe	311	14	10 <sup>th</sup>
Indian	312	23	8 <sup>th</sup> (tied with Rogers and Upper Squamish)
Soo	313	20	9 <sup>th</sup> (tied with Mamquam and Whistler)
Whistler	314	20	9 <sup>th</sup> (tied with Mamquam and Soo)
Callaghan	315	9	12 <sup>th</sup>
Sloquet	316	30	2 <sup>nd</sup> (tied with Gates)
Upper Lillooet	317	27	5 <sup>th</sup> (tied with Lizzie)
Railroad	318	29	3 <sup>rd</sup>
Birkenhead	319	31	1 <sup>st</sup>
Gates	320	30	2 <sup>nd</sup> (tied with Sloquet)
Lizzie	321	27	5 <sup>th</sup> (tied with Upper Lillooet)

**Table Id. Draft BEOs for Original 21 Squamish Forest District LUs Based on Ecological Values Ranking**

BEO	LU	LU #	Ranking	% of Total THLB
High	Gates	320	2 <sup>nd</sup> (tied with Sloquet)	4.1
High	Sloquet	316	2 <sup>nd</sup> (tied with Gates)	4.9
High	Birkenhead	319	1 <sup>st</sup>	1.0 (1.0/3.4)
				<b>Total = 10.0</b>
Intermediate	Birkenhead	319	1 <sup>st</sup>	2.4 (2.4/3.4)
Intermediate	Railroad	318	3 <sup>rd</sup>	3.9
Intermediate	Lower Squamish	307	4 <sup>th</sup>	2.3
Intermediate	Upper Lillooet	317	5 <sup>th</sup> (tied with Lizzie)	6.1
Intermediate	Lizzie	321	5 <sup>th</sup> (tied with Upper Lillooet)	3.8
Intermediate	Upper Elaho	303	6 <sup>th</sup> (tied with Billygoat)	5.6
Intermediate	Billygoat	308	6 <sup>th</sup> (tied with Upper Elaho)	3.8
Intermediate	Meager	302	7 <sup>th</sup> (tied with Lower Elaho and Tuwasus)	3.1
Intermediate	Lower Elaho	304	7 <sup>th</sup> (tied with Meager and Tuwasus)	5.0
Intermediate	Tuwasus	310	7 <sup>th</sup> (tied with Meager and Lower Elaho)	1.9
Intermediate	Rogers	301	8 <sup>th</sup> (tied with East Howe and Upper Squamish)	6.3
Intermediate	Indian	312	8 <sup>th</sup> (tied with Rogers and Upper Squamish)	3.9
				<b>Total = 48.1</b>
Low	Upper Squamish	305	8 <sup>th</sup> (tied with Rogers and East Howe)	12.7
Low	Whistler	314	9 <sup>th</sup> (tied with Mamquam and Soo)	2.4

Table Id contd

<b>Low</b>	<b>Mamquam</b>	<b>309</b>	9 <sup>th</sup> (tied with Soo and Whistler)	<b>10.1</b>
<b>Low</b>	<b>Soo</b>	<b>313</b>	9 <sup>th</sup> (tied with Mamquam and Whistler)	<b>5.5</b>
<b>Low</b>	<b>East Howe</b>	<b>311</b>	10 <sup>th</sup>	<b>4.1</b>
<b>Low</b>	<b>Ryan</b>	<b>306</b>	11 <sup>th</sup>	<b>3.4</b>
<b>Low</b>	<b>Callaghan</b>	<b>315</b>	12 <sup>th</sup>	<b>3.6</b>
				<b>Total = 41.8</b>

2) Timber Values Rating Criteria

Timber values rating criteria were used to assess the relative timber values of the District's LUs and consider short and long-term contributions of each LU to the TSA in terms of value and timber volume.

**Table Ie. Timber Values Rating Criteria for Squamish LUs**

<b>Timber Values</b>	<b>Criteria</b>	<b>Criteria description</b>	<b>Value/Comments</b>	<b>Rating</b>
<b>Productivity</b>	Site Index	Proportion of THLB in LU with SI of $\geq 25$ (higher proportion of better sites resulted in a higher rating)	>35% of THLB 25 to 35% of THLB <25% of THLB	High Moderate Low
<b>Mature and harvestable Timber</b>	Mature and harvestable timber	Proportion of mature and harvestable timber in LU (higher proportion of mature and harvestable timber resulted in a higher rating)	>50% $\geq 101$ years 25 to 50% $\geq 101$ years <25% $\geq 101$ years	High Moderate Low
<b>Operability</b>	Operability	Proportion of age class 8 (141 to 250 years of age) and age class 9 (>250 years) in the productive land base that is considered operable (conventional operability data and professional judgement regarding extent to which new helicopter operability data will change operable land base)	Review of proportion of age classes 8 and 9 that are considered operable, with professional judgement applied to reach a final rating	High Moderate Low
<b>Averaged rating</b>	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1 <sup>st</sup> 3 criteria	Averaged rating of the 1 <sup>st</sup> 3 criteria, based a review of these ratings and professional judgement	High Moderate Low
<b>Constraints</b>	Constraints on harvesting	Amount of constraints to harvesting (e.g. visual quality, community watersheds, proximity to communities, recreation, high fish and wildlife values)	Professional judgement of the extent of constraints to harvesting	High Moderate Low
<b>Overall Rating</b>				Low to High*

\* Note: Unlike the ecological values rating criteria, the rating of timber values did not follow a point scoring system. The 1<sup>st</sup> three values (productivity/mature and harvestable timber/operability) were utilised by MOF planning staff to develop an “averaged” rating of low, medium or high. When constraints were high, this averaged rating was reduced by 1 level (e.g. from high to medium).

**Table If. Timber Values Rating Summary for Railroad LU**

<b>Timber Values</b>	<b>Criteria</b>	<b>Criteria description</b>	<b>Value/Comments</b>	<b>Rating</b>
<b>Productivity</b>	Site Index	Proportion of THLB in LU with SI of $\geq 25$ (higher proportion of better sites resulted in a higher rating)	28% of THLB	Moderate
<b>Mature and harvestable Timber</b>	Mature and Harvestable Timber	Proportion of mature and harvestable timber in LU (higher proportion of mature and harvestable timber resulted in a higher rating)	44.1% of THLB	Moderate
<b>Operability</b>	Operability	Proportion of age class 8 (141 to 250 years of age) and age class 9 (>250 years) in the productive land base that is considered operable (conventional operability data and professional judgement regarding extent to which new helicopter operability data will change operable land base)	Review of proportion of age classes 8 and 9 that are considered operable, with professional judgement applied to reach a final rating	High
<b>Averaged rating</b>	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1 <sup>st</sup> 3 criteria	Averaged rating of the 1 <sup>st</sup> 3 criteria, based a review of these ratings and professional judgement	Moderate
<b>Constraints</b>	Constraints on harvesting	Amount of constraints to harvesting (e.g. visual quality, community watersheds, proximity to communities, recreation, high fish and wildlife values)	Professional judgement of the extent of constraints to harvesting (East Howe LU: recreation and fisheries)	Low
<b>Overall Rating</b>				Moderate

**Table Ig. Timber Values Rating for Original 21 Squamish Forest District LUs**

<b>LU</b>	<b>LU #</b>	<b>Overall Timber Values Rating</b>
<b>Rogers</b>	<b>301</b>	<b>Moderate</b>
<b>Meager</b>	<b>302</b>	<b>Moderate</b>
<b>Upper Elaho</b>	<b>303</b>	<b>High</b>
<b>Lower Elaho</b>	<b>304</b>	<b>High</b>
<b>Upper Squamish</b>	<b>305</b>	<b>High</b>
<b>Ryan</b>	<b>306</b>	<b>Moderate</b>
<b>Lower Squamish</b>	<b>307</b>	<b>Moderate</b>
<b>Billygoat</b>	<b>308</b>	<b>Moderate</b>
<b>Mamquam</b>	<b>309</b>	<b>Moderate/High</b>
<b>Tuwasus</b>	<b>310</b>	<b>Low</b>
<b>East Howe</b>	<b>311</b>	<b>Low</b>
<b>Indian</b>	<b>312</b>	<b>Moderate</b>
<b>Soo</b>	<b>313</b>	<b>Moderate</b>
<b>Whistler</b>	<b>314</b>	<b>Low</b>
<b>Callaghan</b>	<b>315</b>	<b>Moderate</b>
<b>Sloquet</b>	<b>316</b>	<b>High</b>
<b>Upper Lillooet</b>	<b>317</b>	<b>Low</b>
<b>Railroad</b>	<b>318</b>	<b>Moderate</b>
<b>Birkenhead</b>	<b>319</b>	<b>Moderate</b>

Table 1g contd

Gates	320	Low/Moderate
Lizzie	321	Low

### 3) Final BEO Designation

Final BEO designations were based on initial consideration of the draft BEOs, which were derived from the original ecological ranking, and the timber values rating criteria. Ecological values rankings within 2 points of each other were assumed to have the same relative score and the timber values ranking was used to break any ties. Final BEO designation was based on discussions between MELP and MOF planning staff. In regards to the allocation of High, Intermediate and Low BEOs, an attempt was made to achieve a 10-45-45 percent distribution for High, Intermediate and Low BEOs respectively. The final distribution was 10% High, 46% Intermediate and 44% Low. It should be noted that THLB area reported in Table Ih is derived from the Regional Landscape Unit Plan (RLUP) data base which used PAMAP, the THLB numbers used in the body of the report used ArcInfo and are considered more accurate.

**Table Ih. Final BEO for 20\* Squamish Forest District LUs Based on Ecological and Timber Values**

Final BEO	LU	LU #	Original Ecological Ranking	Draft BEO	Timber Values Rating	THLB Area (ha)	% of Total THLB**
High	Birkenhead	319	1 <sup>st</sup>	High/Int.	Moderate	6,768.0	4.19
High	Railroad	318	3 <sup>rd</sup>	Intermediate	Moderate	5,816.8	3.60
High	Sloquet (portion)	316	2 <sup>nd</sup>	High	High	3,574.8	2.21 (2.21/6.39)
							<b>Total = 10.00</b>
Intermediate	Gates	320	2 <sup>nd</sup>	High	Low/Mod.	7,330.7	4.54
Intermediate	Sloquet (portion)	316	2 <sup>nd</sup>	High	High	6743.1	4.18 (4.18/6.39)
Intermediate	Lower Squamish	307	4 <sup>th</sup>	Intermediate	Moderate	3,875.4	2.40
Intermediate	Upper Lillooet	317	5 <sup>th</sup>	Intermediate	Low	2,305.5	1.43
Intermediate	Lizzie	321	5 <sup>th</sup>	Intermediate	Low	7,004.1	4.34
Intermediate	Billygoat	308	6 <sup>th</sup>	Intermediate	Moderate	8,386.7	5.20
Intermediate	Elaho	303	6 <sup>th</sup> /7 <sup>th</sup>	Intermediate	High	16,691.9	10.34
Intermediate	Meager	302	7 <sup>th</sup>	Intermediate	Moderate	4,847.7	3.00
Intermediate	Tuwasus	310	7 <sup>th</sup>	Intermediate	Low	4,793.6	2.97
Intermediate	Rogers	301	8 <sup>th</sup>	Intermediate	Moderate	12,230.7	7.58
							<b>Total = 45.98</b>
Low	Indian	312	8 <sup>th</sup>	Intermediate	Moderate	5,802.3	3.59
Low	Upper Squamish	305	8 <sup>th</sup>	Low	High	19,922.2	12.34
Low	Whistler	314	9 <sup>th</sup>	Low	Low	4,255.1	2.64
Low	Mamquam	309	9 <sup>th</sup>	Low	Mod./High	14,420.3	8.95
Low	Soo	313	9 <sup>th</sup>	Low	Moderate	8,454.7	5.24
Low	East Howe	311	10 <sup>th</sup>	Low	Low	5,953.3	3.69
Low	Ryan	306	11 <sup>th</sup>	Low	Moderate	5,462.7	3.38
Low	Callaghan	315	12 <sup>th</sup>	Low	Moderate	6,761.7	4.19
							<b>Total = 44.02</b>

- \* Note: In conjunction with final BEO determinations and in response to concerns regarding timber impacts, the Upper Elaho and Lower Elaho LUs were merged into 1 landscape unit (Elaho LU). This reduced the total number of LUs within the District from 21 to 20.
- \*\* Note: The THLB areas were based on updated data available in 1999. THLB areas differed from the original information utilised for the initial BEO, which resulted in changes to the overall THLB and the proportion within each LU.

## Appendix II: Railroad Landscape Unit OGMA Summary

OGMA #	BEC VARIANT	CONTRIB CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
1	CWH ms 1	N	16.5	0.0			adjacent to MGWR
2	CWH ds 1	C	6.1	6.1	high value riparian		moose value
2	CWH ds 1	P	5.0	0.5	high value riparian		moose value
3	CWH ds 1	C	14.8	14.8	high value riparian		moose value
3	CWH ds 1	N	10.0	0.0	high value riparian		moose value
4	CWH ds 1	N	20.9	0.0	high value riparian		moose value, fish channels
8	CWH ds 1	C	11.2	11.2	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
8	CWH ds 1	N	19.1	0.0	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
8	CWH ds 1	P	48.1	4.8	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
8	CWH ms 1	P	4.3	0.4	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
8	IDF ww	N	6.2	0.0	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
8	IDF ww	P	13.6	1.4	high value riparian, critical upslope linkage	cutblocks adj.	deer WR on slope, moose WR at riparian
14	CWH ds 1	C	5.9	5.9	critical riparian linkage, large patch		moose WR on floodplain
14	CWH ds 1	N	51.8	0.0	critical riparian linkage, large patch		moose WR on floodplain
14	CWH ds 1	P	2.8	0.3	critical riparian linkage, large patch		moose WR on floodplain
14	IDF ww	N	121.1	0.0	critical riparian linkage, large patch	pine stands incl. at 50%, cutblocks adj.	moose WR on floodplain
14	IDF ww	P	22.3	2.2	critical riparian linkage, large patch	pine stands incl. at 50%, cutblocks adj.	moose WR on floodplain
16	CWH ms 1	N	6.4	0.0			
16	MH mm 2	N	29.4	0.0			
18	CWH ms 1	N	3.5	0.0	avalanche chutes adjacent		some grizzly bear values
18	MH mm 2	N	4.7	0.0	avalanche chutes adjacent		some grizzly bear values
19	CWH ms 1	N	3.1	0.0	large patch, avalanche chutes nearby		grizzly bear values
19	MH mm 2	N	62.0	0.0	large patch, avalanche chutes nearby		grizzly bear values
20	CWH ms 1	N	3.4	0.0	avalanche chutes adjacent		grizzly bear values
20	MH mm 2	N	1.0	0.0	avalanche chutes adjacent		grizzly bear values
21	CWH ds 1	N	4.7	0.0	avalanche chutes adjacent		MGWR adjacent upslope
21	CWH ms 1	N	11.2	0.0	avalanche chutes adjacent		MGWR adjacent upslope
21	ESSFmw	N	0.1	0.0	avalanche chutes adjacent		MGWR adjacent upslope
22	CWH ms 1	N	34.0	0.0	combines with 23, 24 for larger complex		

OGMA #	BEC VARIANT	CONTRIB CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
22	ESSFmw	N	5.3	0.0	combines with 23, 24 for larger complex		
23	CWH ms 1	N	26.7	0.0	combines with 22, 24 for larger complex		
23	ESSFmw	N	6.2	0.0	combines with 22, 24 for larger complex		
24	CWH ms 1	N	5.5	0.0	combines with 22, 23 for larger complex		
24	ESSFmw	N	7.8	0.0	combines with 22, 23 for larger complex		
26	IDF ww	N	9.6	0.0			DWR migration corridor
27	IDF ww	P	6.5	0.7			DWR migration corridor
28	CWH ds 1	N	0.3	0.0	marginal stocking		included due to moose WR value
28	IDF ww	N	9.2	0.0	marginal stocking		included due to moose WR value
29	CWH ds 1	P	7.8	0.8	upslope linkage		DWR values
29	IDF ww	P	54.1	5.4	upslope linkage		DWR values
30	CWH ms 1	N	73.0	0.0	large patch, forest interior		
30	ESSFmw	N	25.0	0.0	large patch, forest interior		
31	CWH ms 1	C	20.6	20.6	large patch, forest interior, riparian corridor	cutblock adj. to S end	
31	CWH ms 1	N	71.7	0.0	large patch, forest interior, riparian corridor	cutblock adj. to S end	
31	CWH ms 1	P	3.1	1.3	large patch, forest interior, riparian corridor	cutblock adj. to S end	
31	ESSFmw	N	56.8	0.0	large patch, forest interior, riparian corridor		
33	CWH ds 1	N	2.5	0.0	riparian gully		E half is MGWR
33	CWH ms 1	N	12.2	0.0	riparian gully		E half is MGWR
34	CWH ds 1	N	74.5	0.0	large patch, forest interior, fairly open		MGWR & DWR
34	CWH ds 1	P	3.0	0.3	large patch, forest interior, fairly open		MGWR & DWR
34	IDF ww	N	24.9	0.0	large patch, forest interior, fairly open		MGWR & DWR
34	IDF ww	P	0.1	0.0	large patch, forest interior, fairly open		MGWR & DWR
35	IDF ww	N	11.1	0.0	fairly open and rocky site		MGWR
36	CWH ds 1	N	76.3	0.0	large patch, forest interior		DWR
36	CWH ms 1	N	3.6	0.0	large patch, forest interior		DWR
36	IDF ww	N	50.8	0.0	large patch, forest interior		DWR
37	CWH ds 1	N	126.4	0.0	large patch, forest interior, upslope linkage		DWR
37	CWH ms 1	N	17.9	0.0	large patch, forest interior, upslope linkage		DWR
37	ESSFmw	N	41.1	0.0	large patch, forest interior, upslope linkage		

OGMA #	BEC VARIANT	CONTRIB CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
37	IDF ww	N	90.5	0.0	large patch, forest interior, upslope linkage		DWR
39	CWH ds 1	N	4.9	0.0			DWR
40	CWH ds 1	N	1.6	0.0			DWR
40	CWH ds 1	P	3.6	0.4			DWR
40	IDF ww	N	15.4	0.0			DWR
40	IDF ww	P	1.5	0.1			DWR
41	CWH ds 1	N	0.1	0.0	shown as excluded, photo check-forested		DWR
41	IDF ww	N	26.2	0.0			DWR
41	IDF ww	P	0.2	0.0			DWR
42	CWH ds 1	N	0.2	0.0	upland riparian linkage		
42	CWH ms 1	N	25.9	0.0	upland riparian linkage		
42	ESSFmw	N	1.9	0.0	upland riparian linkage		
43	CWH ms 1	N	6.3	0.0			
43	ESSFmw	N	22.4	0.0			small overlap with MGWR
45	IDF ww	N	4.8	0.0	combines with 46, some riparian value, open		
46	CWH ds 1	N	4.9	0.0	combines with 45, riparian and wetland		
46	IDF ww	N	6.2	0.0	combines with 45, riparian and wetland		
47	CWH ds 1	N	50.2	0.0	large patch, some forest interior, upslope link		south half is DWR
47	CWH ds 1	P	4.4	1.8	large patch, some forest interior, upslope link		south half is DWR
47	CWH ms 1	N	43.6	0.0	large patch, some forest interior, upslope link		south half is DWR
47	CWH ms 1	P	5.1	2.0	large patch, some forest interior, upslope link		south half is DWR
47	ESSFmw	N	5.6	0.0	large patch, some forest interior, upslope link		
47	IDF ww	N	37.0	0.0	large patch, some forest interior, upslope link		south half is DWR
48	CWH ds 1	N	8.0	0.0	large patch, forest interior, upslope linkage		DWR, steep and rocky
48	CWH ds 1	P	5.8	2.3	large patch, forest interior, upslope linkage		DWR, steep and rocky
48	IDF ww	N	78.6	0.0	large patch, forest interior, upslope linkage		DWR, steep and rocky
48	IDF ww	P	2.9	1.2	large patch, forest interior, upslope linkage		DWR, steep and rocky
49	CWH ds 1	N	1.0	0.0	wetland adj. to east		deer & moose WR value
49	IDF ww	N	16.3	0.0	wetland adj. to east		deer & moose WR value
49	IDF ww	P	4.3	0.4	wetland adj. to east		deer & moose WR value



OGMA #	BEC VARIANT	CONTRIB CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
50	IDF ww	N	7.4	0.0			deer & moose WR value
51	CWH ds 1	N	28.4	0.0			lower 3/4 is DWR
51	CWH ds 1	P	0.1	0.0			lower 3/4 is DWR
51	IDF ww	N	5.5	0.0			lower 3/4 is DWR
52	CWH ds 1	N	0.1	0.0			some DWR value
52	IDF ww	N	32.7	0.0			some DWR value
55	CWH ds 1	C	5.1	5.1	high value riparian		moose and fish values
55	CWH ds 1	N	2.7	0.0	high value riparian		moose and fish values
56	MH mm 2	N	4.6	0.0	avalanche chutes adj, part of larger complex		grizzly bear values
57	CWH ms 1	N	10.6	0.0	avalanche chutes adjacent		
57	MH mm 2	N	11.0	0.0	avalanche chutes adjacent		upper portion is MGWR
58	MH mm 2	N	12.2	0.0	avalanche chutes adjacent		south half is MGWR
59	CWH ms 1	N	9.3	0.0	avalanche chutes adjacent		grizzly bear values
60	CWH ms 1	N	15.2	0.0	avalanche chutes adjacent		grizzly bear values
60	ESSFmw	N	2.0	0.0	avalanche chutes adjacent		grizzly bear values
61	IDF ww	C	8.0	8.0	highly constrained	licensee suggested	DWR migration corridor
62	IDF ww	C	4.8	4.8	highly constrained	licensee suggested	DWR migration corridor
63	CWH ds 1	N	10.5	0.0	vets present, riparian, marginal		included due to moose WR values
63	IDF ww	N	5.2	0.0	vets present, riparian, marginal		included due to moose WR values
64	CWH ds 1	N	6.1	0.0	riparian, fish channels		moose WR value
64	IDF ww	N	10.3	0.0	riparian, fish channels		moose WR value
65	CWH ms 1	N	11.4	0.0	larger patch, forest interior		
65	ESSFmw	N	14.3	0.0	larger patch, forest interior		
66	IDF ww	P	13.0	1.3	combines with 49 for larger complex		deer and moose WR value
67	CWH ms 1	N	6.6	0.0	combines with 19 for larger complex		
67	ESSFmw	N	6.1	0.0	combines with 19 for larger complex		
67	MH mm 2	N	4.1	0.0	combines with 19 for larger complex		
68	MH mm2	N	1.0	0.0	shown on map as AT, avalanche chutes adj.		grizzly bear values
68	CWH ms 1	N	3.6	0.0	avalanche chutes adjacent		grizzly bear values
68	MH mm 2	N	7.9	0.0	avalanche chutes adjacent		grizzly bear values
69	CWH ms 1	N	39.4	0.0	larger patch, forest interior		MGWR
69	CWH ms 1	P	16.8	1.7	larger patch, forest interior		MGWR
69	ESSFmw	P	6.3	0.6	larger patch, forest interior		MGWR

OGMA #	BEC VARIANT	CONTRIB CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
70	MH mm 2	N	7.2	0.0	shown as excluded, photo check-forested		
71	MH mm 2	N	4.6	0.0	part of larger complex, avalanche chutes adj.		
72	MH mm 2	N	6.7	0.0	part of larger complex, avalanche chutes adj.		
73	CWH ms 1	N	14.2	0.0	riparian gully		MGWR
74	MH mm 2	N	3.2	0.0	part of larger complex, avalanche chutes adj.		
76	CWH ds 1	P	0.8	0.1	important spatial patch		DWR
76	IDF ww	P	35.3	3.5	important spatial patch		DWR

### **Appendix III: Acronyms**

AAC	Allowable Annual Cut
BCTS	BC Timber Sales Program
BEC	Biogeoclimatic Ecosystem Classification
BEO	Biodiversity Emphasis Option
C	Contributing
CMT	Culturally Modified Tree
CWS	Community Watershed
DDM	Delegated Decision Maker
FPC	Forest Practices Code of British Columbia Act
GBPU	Grizzly Bear Population Unit
IWMS	Identified Wildlife Management Strategy
LU	Landscape Unit
LUPG	Landscape Unit Planning Guide
MELP	Ministry of Environment, Lands and Parks, now called MWLAP
MEM	Ministry of Energy and Mines
MOF	Ministry of Forests
MSRM	Ministry of Sustainable Resource Management
MWLAP	Ministry of Water, Land and Air Protection
NC	Non-contributing
NDT	Natural Disturbance Type, see Biodiversity Guidebook
OGMA	Old Growth Management Area
PC	Partially Contributing
RRZ	Riparian Reserve Zone
THLB	Timber Harvesting Land Base
UWR	Ungulate Winter Range
WHA	Wildlife Habitat Area
WTP	Wildlife Tree Patch
WTR	Wildlife Tree Retention

## **Appendix IV: Public Consultation Summary**

This Landscape Unit was advertised for public review and comment for 60 days from April 1, 2004 to June 1, 2004.

Prior to the public consultation period, MSRM met with the local forest licensees and consulted with First Nations. Meetings or conversations were also held with Ministry of Forests and Ministry of Water, Land and Air Protection during the development of the LU plan. Mineral tenure holders were advised of OGMA placement.

During the review and comment period, the Ministry of Forests informed MSRM that there were overlaps between some OGMAs and logged or Category A cutblocks. Consistent with LU planning policy, changes to OGMA locations were made to remove conflicts.