Squamish Forest District
Sustainable Resource Management Plan

Rogers Landscape Unit Plan

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1.0 Introduction

This report provides background information used during the preparation of the Sustainable Resource Management Plan and associated legal objectives for the Rogers Landscape Unit (LU). Specifically, this report will form the biodiversity conservation chapter of the plan. A description of the landscape unit, discussion on significant resource values, and an 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'*[1]. 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[2]. 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 LU Planning is intended to help sustain certain biodiversity values. Managing for biodiversity through retention of old growth forests is important not only 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. Approval of this LU plan will allow legal establishment of the Rogers LU boundaries and legal objectives. Through a ranking process the Rogers LU was rated as an Intermediate 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 (MOF) and Ministry of Water, Land and Air Protection (MWLAP) as well as from forest licensees. Funding was primarily provided by MSRM.

Input from First Nations was gathered during consultation (prior to going public) between MSRM and individual First Nations. Comment from the public and other agencies was gathered 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 the location of OGMAs and old growth representation from protected areas.

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[1] Definition of biodiversity is from page 2 of the Forest Practices Code *Biodiversity Guidebook* (September, 1995).
[2] BC Species and Ecosystems Explorer. 2003. Victoria, British Columbia. Available at: http://srmapps.gov.bc.ca/apps/eswp/

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 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 are Higher Level Plan objectives. In part of the Rogers LU the Spotted Owl Management Plan has been approved and is also being considered for Higher Level Plan status with legal objectives. Objectives from both processes are intended to be compatible to the greatest extent possible. Other operational plans must be consistent with these objectives.

The Rogers LU received an Intermediate 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*. 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[1]	NDT[2]	LUPG Old Seral Representation Target[3]	
		%	ha
CWHds1	**NDT 2**	>9	>809
CWHms1	**NDT 2**	>9	>897
IDFww	**NDT 4**	>13	>139
MHmm2	**NDT 1**	>19	>988

1 CWHds1: Coastal Western Hemlock biogeoclimatic zone, southern dry submaritime variant.
CWHms1: Coastal Western Hemlock biogeoclimatic zone, southern moist submaritime variant
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 Rogers LU. Refer to the attached Rogers 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 Rogers LU OGMAs

BEC Variant	Total Old Seral Representation[1]	Non–Contributing[2] Area in OGMA (NC)		Constrained THLB[3] in OGMA (PC)		Unconstrained THLB (C) in OGMA[4]	
	Ha	Ha	%	Ha	%	Ha	%
CWHds1	**810.2**	183.2	22.6	404.1	49.9	222.9	27.5
CWHms1	**901.8**	731.0	81.1	73.2	8.1	97.6	10.8
IDFww	**140.2**	53.3	38.0	51.0	36.4	36.0	25.7
MHmm2	**991.1**	934.4	94.3	5.7	0.6	50.9	5.1
TOTAL	**2843.2**	1901.9	**66.9**	534.0	**18.8**	407.3	**14.3**

Note: any differences in totals are due to rounding

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. After applying constraints, 87 ha from PC are actually in the THLB and 447 ha are in 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 Rogers LU covers a total area of 54,978 ha, encompassing watersheds flowing into the eastern side of the Lillooet River just north of Harrison Lake. Major watersheds within this LU include Douglas Creek, Gowan Creek and Rogers Creek. Smaller watersheds include Franks Creek and Livingston Creek. Of this total LU area, 25,743 ha (47%) is within the Crown forest land base, and 12,723 ha of Crown forest is within the THLB. The remaining 29,235 ha (53%) are non-forested or non-Crown (rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The Rogers LU lies within the Pacific Ranges Ecoregion, Eastern Pacific Ranges ecosection. Its climate is best described by elevational gradients. At low elevations summers are warm and dry, while winters are cool and relatively moist, with moderate snowfall. Mid elevations are characterized by moist, cool winters with relatively heavy snowfall and cool but relatively dry summers. Higher elevation climate is characterized by long, moist, cold winters with high snowfall and short, cool, moist summers.

The LU is comprised of the following 5 BEC subzones/variants: Coastal Western Hemlock southern dry submaritime (CWHds1); Coastal Western Hemlock southern moist submaritime (CWHms1); Interior Douglas-fir wet warm subzone (IDFww); Mountain Hemlock leeward moist maritime (MHmm2); and Alpine Tundra (ATp). These 5 BEC subzones/variants represent 4 different Natural Disturbance Types, with MHmm2 in NDT 1 (rare stand initiating events), CWHds1 and CWHms1 in NDT 2 (infrequent stand-initiating events), IDFww in NDT4 (frequent stand maintaining fires) and ATp 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 21% of the productive forest area of the Rogers 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 73% of the productive forest area in Rogers LU is within NDT 2. The remaining 4% 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 (although the map base shows 498 ha or 2% as forested) 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 Rogers 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 Rogers 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. A variety of ownership and tenure types are present, including: small areas of private land, Indian reserve, and Crown forest (International Forest Products Limited, Squamish Mills chart). 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, spotted owl and mountain goat are important. These factors increase the complexity of resource management within the Rogers LU.

Fish, Wildlife and Biodiversity: Nineteen wildlife species of specific management concern are known or suspected to be present with the Rogers 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[1]	Additional Comments	Likelihood of Presence[2]
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
Spotted owl	RED-listed	SRMZ present	High
Bald eagle	Yellow-listed	Regionally important	Confirmed present
Peregrine falcon	RED- and BLUE-	---	High

	listed subspecies		
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 19 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 Rogers LU are within the threatened Stein-Nahatlatch 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 protect 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 Rogers LU. Grizzly bear habitat was an important part of the OGMA selection process in Rogers 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 Rogers 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 winter range plan is approved. Mountain goat and deer winter range habitat polygons, spatially defined on 1:20000 reference maps, were considered during OGMA delineation, to pursue overlap of OGMAs with constrained areas.

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.

Although a Spotted Owl SRMZ exists in this landscape unit, very little inventory effort has been done to confirm presence of the owl. However, constrained areas associated with long term owl habitat were captured in OGMAs where there was suitable old forest.

In addition to these wildlife species, streams and rivers within the Rogers 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 Lillooet River and the lower reaches of its major tributaries.

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

Timber Resources: Commercially valuable tree species in the Rogers LU are most easily described by elevation. Low elevation forests are dominated by Douglas-fir, and lodgepole pine, with western hemlock, and western red cedar occurring to a lesser extent. Mid elevation forests are dominated by Douglas-fir, amabilis fir and western hemlock. Less abundant are lodgepole pine, western red cedar and spruce. High elevation forests are dominated by amabilis fir, mountain hemlock and subalpine fir, with Douglas-fir and western hemlock being less common.

According to the latest database, approximately 41% of the total 12,723 ha in THLB are considered early seral or immature forest. Mature forests (>80-250 years old in CWH, >120-250 years in MH, >100-250 years for IDF) occupy about 32% of the THLB, and old forests (>250 years old) occupy about 27% of the THLB area. The actual area remaining in mature and old forest 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 to forest licensees.

The Rogers LU is within the Soo Timber Supply Area (TSA). Two forest licensees operate in the landscape unit. International Forest Products Limited is the main licensee with forest license tenure throughout most of the LU. Squamish Mills has a smaller forest license chart area just north-west of Rogers Creek. In addition, one small Woodlot License exists near the mouth of Gowan Creek.

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

First Nations: The Rogers LU is located within the traditional territory of the Lower Stl'atl'imx Tribal Council (Douglas, Skatin, Samahquam Bands) and the Sto:lo Nation. Two Indian Reserves are situated alongside the Lillooet River, one at Port Douglas the other near Gowan Creek. 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 archaeological potential sites were captured in OGMAs. In the Rogers LU, there is considerable overlap between OGMAs and old forest stands that exhibit a moderate to high potential for habitation sites, these are located on low gradient slopes or valley bottom areas along Rogers Creek, Douglas Creek and the Lillooet River. Several OGMAs also overlap with forest stands showing moderate to high potential for CMTs and trails. Two OGMAs overlap with known heritage sites.

Private Land: Only small portions of private land occur within the Rogers LU. These parcels are Indian Reserves located adjacent to the Lillooet River near Port Douglas and Gowan Creek. 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 and metallic mineral potential of this LU as Moderate, although the geothermal potential is High. 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 but almost 40 placer tenures. All of the tenures are located near the Lillooet River. OGMA delineation was unable to avoid all the tenures, four OGMAs have small overlaps with placer tenures near the Lillooet River floodplain and two OGMAs overlap with mineral tenures. In addition, two OGMAs overlap with both a placer and mineral tenure. It is understood that establishment of OGMAs will not have an impact on the status of existing aggregate, mineral and gas permits or tenures. Exploration and development activities are permitted in OGMAs but the preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA. If this is not possible, then a replacement OGMA will be required.

Recreation: The forest road network and recreational resource values within this LU result in some specific areas of moderate recreational use, particularly during the summer and fall months.

Important recreational activities include nature/wildlife viewing, stream angling and hunting. Motorized activities would include All Terrain Vehicle, motorcycle and four wheel drive use where active road networks provide access. Berry picking and particularly mushroom picking are also common activities. Winter recreational opportunities are fairly limited due to poor winter road access and because other areas closer to population centres provide winter recreational opportunities. Overall, recreational use in the Rogers LU would be rated as low-moderate. There are no Forest Service Recreation Sites in the Rogers LU, nor are there any future development plans.

Commercial recreation activities are not being actively promoted within this LU at the current time and, in comparison to many other areas within the Squamish Forest District, opportunities do not appear to be extensive.

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 OGMAs, some of the ecological features that OGMAs 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 Rogers LU that must be managed for (see Appendix I). The delineation of OGMAs 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 OGMAs. 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, OGMAs were established first in areas within the NC land base, according to the last Timber Supply Review (TSR). Some contributing land base was included within OGMAs, 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 OGMAs that included a diversity of stand types, by species composition and geographic/topographic locations. OGMAs 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 OGMAs 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. 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, IDFww, and MHmm2), according to the following targets (from Table 1) and as per the attached map:
    a) CWHds1 target of >9%, or at least 809 ha;
    b) CWHms1 target of >9%, or at least 897 ha;
    c) IDFww target of >13%, or at least 139 ha; and
    d) MHmm2 target of >19%, or at least 988 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 150 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 OGMAs (Goals 1, 2, 3 and 4).

C. Delineate OGMAs 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 OGMAs that are adjacent to biologically valuable non-forest habitats (e.g. lakes, wetlands and slide-tracks) (Goal 6).

E. Retain veteran trees 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 dominant trees as veteran recruits is recommended where veteran trees 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. OGMAs were mapped using a 1:20000 scale TRIM base which forms the legal standard for measurement. Procedures for operating within OGMAs 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 Rogers Landscape Unit does not have to be fully implemented on a cutblock-by-cutblock basis (except in the MHmm subzone). Instead, the retention target may apply over a larger area (e.g. FDP or equivalent), so long as the retention target is met within the time period stated in the objective. 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 Rogers 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 two forest licensees with operations in the Rogers LU. OGMAs were delineated based upon the biodiversity management goals and strategies with no specific effort to pursue even distribution of OGMAs 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 2843 ha of OGMA being established, and after applying the constraints factors for partial contributing, 2349 ha (82.6%) come from the NC land base; while 87 ha (3.1%) from PC are in the THLB and 407 ha (14.3%) are from the contributing land base. Most of the PC and C areas were recommended or agreed to by licensees because of constraints. The overall THLB impact is 494 ha which represents 3.9% of the overall THLB (494 ha / 12723 ha).

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

1. All OGMAs were delineated within the NC land base or THLB areas that were mostly 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 OGMAs where possible and when compatible with biodiversity objectives.

3. Suitable old growth stands within UWR habitats and Spotted Owl SRMZ were included in OGMAs 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 OGMAs and OGMA boundaries were delineated to simplify adjacent management.

5. Approved year 2000 Forest Development Plans (or more recent versions) for the forest licensees within the Rogers 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. OGMAs 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 OGMAs 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 OGMAs 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 OGMAs. 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 Rogers LU received an Intermediate 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 Rogers 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 Rogers 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

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

Table Ia contd

Fish/Wildlife Values	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 ≥ 10 score 7 to 9 score 4 to 6 score ≤ 3	High Low	10 pts 6 pts 2 pts 1 pt
Sensitivity to Development	Based on sensitivity of BEC variants --- Inherent level of protection from signif. human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Determine NDT type which is most prevalent (exclude NDT 5) --- Professional judgement	NDT 1 >60% NDT 1 30-60% NDT 1 <30% NDT2 predomin. --- Based on review and assessment by MELP staff	High Low --- High Low	2 pts 1 pts 0 pts 0 pts --- 3 pts 2 pt 1 pt 0 pts
Connectivity	Based on non-PAS connectivity --- Based on connectivity associated with PASs	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score --- Determine what proportion of the gross land area is protected	>50% >40 to 50% >30 to 40% ≤30% --- >20% >10 to 20% >1 to 10% <1%	High Low --- High Low	3 pts 2 pts 1 pt 0 pts --- 3 pts 2 pts 1 pt 0 pts
Capability	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present --- Determine how many BEC variants currently achieve old seral targets for high BEO --- Determine how much AC 8 is present (for recruitment and long-term capability)	>60% >40 to 60% >20 to 40% 0 to 20% --- >80% >70 to 80% >50 to 70% 0 to 50% --- >40% >20 to 40% 0% to 20%	High Low --- High Low --- High Medium Low	4 pts 3 pts 2 pts 1 pt --- 3 pts 2 pts 1 pt 0 pts --- 2 pts 1 pt 0 pts
Total Score					**48 pts**

Table Ib. Ecological Values Scoring Summary for Rogers LU

Ecological Values	Criteria	Criteria description	Value	Score
Ecosystem Representation	Representation in parks	By % of BEC variants	1.83%	1 pt

Table Ib contd

Ecosystem Complexity	Diversity of BEC variants --- Diversity of special habitat features	By # of different BEC variants --- Professional judgement regarding diversity of special habitat features (estuaries, freshwater deltas floodplains; wetlands/lakes, slidetracks)	4 variants --- 1/5 special habitat features	2 pts --- 1 pt
Fish/Wildlife Values	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 11/21	10 pts
Sensitivity to Development	Based on sensitivity of BEC variants --- Inherent level of protection from signif. human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Determine NDT type which is most prevalent (exclude NDT 5) --- Professional judgement	NDT 2 is 44% of gross land base --- low level of human habitation, no agricultural use and moderate level of recreational use	0 pts --- 3 pts
Connectivity	Based on non-PAS connectivity --- Based on connectivity associated with PASs	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score --- Determine what proportion of the gross land area is protected	44.1% of gross area is mature/old forest --- 0.48% of gross area is protected via adjacency to Upper Stein	2 pts --- 1 pt
Capability	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present --- Determine how many BEC variants currently achieve old seral targets for high BEO --- Determine how much AC 8 is present (for recruitment and long-term capability)	34.9% of total productive forest is old growth --- 50% of the 4 variants can meet old seral targets --- 26% of age classes 1 thru 8 are age class 8	2 pts --- 0 pts --- 1 pt
Total Score				**23 pts**

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

LU	LU #	Total Score (x/48)	Ranking
Rogers	**301**	**23**	8th (tied with Indian and Upper Squamish)
Meager	**302**	**24**	7th (tied with Lower Elaho and Tuwasus)
Upper Elaho	**303**	**25**	6th (tied with Billygoat)
Lower Elaho	**304**	**24**	7th (tied with Meager and Tuwasus)
Upper Squamish	**305**	**23**	8th (tied with Rogers and Indian)
Ryan	**306**	**12**	11th
Lower Squamish	**307**	**28**	4th
Billygoat	**308**	**25**	6th (tied with Upper Elaho)
Mamquam	**309**	**20**	9th (tied with Soo and Whistler)
Tuwasus	**310**	**24**	7th (tied with Meager and Lower Elaho)
East Howe	**311**	**14**	10th
Indian	**312**	**23**	8th (tied with Rogers and Upper Squamish)
Soo	**313**	**20**	9th (tied with Mamquam and Whistler)
Whistler	**314**	**20**	9th (tied with Mamquam and Soo)
Callaghan	**315**	**9**	12th
Sloquet	**316**	**30**	2nd (tied with Gates)
Upper Lillooet	**317**	**27**	5th (tied with Lizzie)
Railroad	**318**	**29**	3rd
Birkenhead	**319**	**31**	1st
Gates	**320**	**30**	2nd (tied with Sloquet)
Lizzie	**321**	**27**	5th (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**	2nd (tied with Sloquet)	**4.1**
High	**Sloquet**	**316**	2nd (tied with Gates)	**4.9**
High	**Birkenhead**	**319**	1st	**1.0 (1.0/3.4)**
				Total = 10.0
Intermediate	**Birkenhead**	**319**	1st	**2.4 (2.4/3.4)**
Intermediate	**Railroad**	**318**	3rd	**3.9**
Intermediate	**Lower Squamish**	**307**	4th	**2.3**
Intermediate	**Upper Lillooet**	**317**	5th (tied with Lizzie)	**6.1**
Intermediate	**Lizzie**	**321**	5th (tied with Upper Lillooet)	**3.8**
Intermediate	**Upper Elaho**	**303**	6th (tied with Billygoat)	**5.6**
Intermediate	**Billygoat**	**308**	6th (tied with Upper Elaho)	**3.8**
Intermediate	**Meager**	**302**	7th (tied with Lower Elaho and Tuwasus)	**3.1**
Intermediate	**Lower Elaho**	**304**	7th (tied with Meager and Tuwasus)	**5.0**
Intermediate	**Tuwasus**	**310**	7th (tied with Meager and Lower Elaho)	**1.9**
Intermediate	**Rogers**	**301**	8th (tied with Indian and Upper Squamish)	**6.3**
Intermediate	**Indian**	**312**	8th (tied with Rogers and Upper Squamish)	**3.9**
				Total = 48.1
Low	**Upper Squamish**	**305**	8th (tied with Rogers and Indian)	**12.7**
Low	**Whistler**	**314**	9th (tied with Mamquam and Soo)	**2.4**

Table Id contd

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

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

Timber Values	Criteria	Criteria description	Value/Comments	Rating
Productivity	Site Index	Proportion of THLB in LU with SI of ≥ 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
Mature and harvestable Timber	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% ≥ 101 years 25 to 50% ≥ 101 years <25% ≥ 101 years	High Moderate Low
Operability	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
Averaged rating	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1st 3 criteria	Averaged rating of the 1st 3 criteria, based a review of these ratings and professional judgement	High Moderate Low
Constraints	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
Overall Rating				Low to High*

* Note: Unlike the ecological values rating criteria, the rating of timber values did not follow a point scoring system. The 1st 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 Rogers LU

Timber Values	Criteria	Criteria description	Value/Comments	Rating
Productivity	Site Index	Proportion of THLB in LU with SI of ≥ 25 (higher proportion of better sites resulted in a higher rating)	28% of THLB	Moderate
Mature and harvestable Timber	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
Operability	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
Averaged rating	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1st 3 criteria	Averaged rating of the 1st 3 criteria, based a review of these ratings and professional judgement	Moderate
Constraints	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
Overall Rating				Moderate

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

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

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

* 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: **Rogers Landscape Unit OGMA Summary**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
2	MH mm 2	N	0.6	0.0	shows as ATp on map, avalanche chutes adj.		grizzly bear values, headwater riparian
2	MH mm 2	N	17.8	0.0	avalanche chutes adj., combines with 4		grizzly bear values, headwater riparian
3	MH mm 2	N	1.1	0.0	shows as ATp on map, avalanche chutes adj.		grizzly bear values, headwater riparian
3	MH mm 2	N	12.7	0.0	avalanche chutes adj., combines with 7		grizzly bear values, headwater riparian
4	MH mm 2	N	4.6	0.0	combines with 2, avalanche chutes adj.		grizzly bear values, headwater riparian
7	MH mm 2	N	5.6	0.0	combines with 3, avalanche chutes adj.		
11	MH mm 2	N	4.9	0.0			
21	CWH ms 1	N	0.9	0.0	avalanche chutes adj.		grizzly bear values, MGWR
21	MH mm 2	N	8.2	0.0	avalanche chutes adj.		grizzly bear values, MGWR
22	MH mm 2	N	0.1	0.0	shows as AT on map, part of larger complex		some bear values
22	MH mm 2	N	6.8	0.0	part of larger complex		some bear values
23	CWH ms 1	C	0.3	0.3	part of large patch with 25, forest interior		some bear values
23	MH mm 2	C	18.9	18.9	part of large patch with 25, forest interior		some bear values
25	CWH ms 1	N	0.3	0.0	part of large patch with 23, forest interior		
25	MH mm 2	N	22.9	0.0	part of large patch with 23, forest interior		
30	CWH ms 1	N	6.6	0.0	avalanche chutes adj.		mostly MGWR, some grizzly bear values
30	MH mm 2	N	0.5	0.0	avalanche chutes adj.		mostly MGWR, some grizzly bear values
32	CWH ms 1	N	6.2	0.0	avalanche chutes adj.		some grizzly bear values
32	MH mm 2	N	4.3	0.0	avalanche chutes adj.		some grizzly bear values
33	CWH ds 1	C	0.1	0.1	large patch, upslope linkage		
33	CWH ds 1	N	7.1	0.0	large patch, upslope linkage		
33	CWH ms 1	N	56.6	0.0	large patch, upslope linkage		
33	MH mm 2	N	22.2	0.0	large patch, upslope linkage		
36	MH mm 2	N	0.1	0.0	shows as AT on map, large patch, for. Interior		
36	CWH ms 1	N	16.6	0.0	large patch, forest interior		
36	MH mm 2	N	49.2	0.0	large patch, forest interior		
37	CWH ms 1	C	3.0	3.0	combines with 33, same comments		
39	CWH ds 1	C	15.1	15.1	patch may extend into adj. LU		DWR
46	CWH ds 1	N	6.1	0.0	riparian gully		upper half is DWR, bald eagle roost/nest
46	IDF ww	C	7.4	7.4	riparian gully		upper half is DWR, bald eagle roost/nest
46	IDF ww	N	0.8	0.0	riparian gully		upper half is DWR, bald eagle, roost nest
47	CWH ms 1	N	9.9	0.0	avalanche chutes adj.		
47	MH mm 2	N	3.1	0.0	avalanche chutes adj.		
48	CWH ms 1	C	25.7	25.7	part of lrg riparian to upland complex		provides wildlife movement corridor
48	CWH ms 1	N	9.0	0.0	part of lrg riparian to upland complex		provides wildlife movement corridor
48	MH mm 2	C	0.2	0.2	part of lrg riparian to upland complex		provides wildlife movement corridor
52	CWH ds 1	C	31.9	31.9	lrg patch, forest interior, upslope connectivity		
52	CWH ds 1	N	19.5	0.0	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR

Appendix II: **Rogers Landscape Unit OGMA Summary**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
52	CWH ds 1	P	20.4	2.0	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR
52	CWH ms 1	C	4.9	4.9	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR
52	CWH ms 1	N	72.2	0.0	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR
52	CWH ms 1	P	0.3	0.0	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR
52	IDF ww	C	0.2	0.2	lrg patch, forest interior, upslope connectivity		lower half of patch is DWR
54	CWH ms 1	C	7.0	7.0	part of lrg riparian to upland complex		provides wildlife movement corridor
54	CWH ms 1	N	27.5	0.0	part of lrg riparian to upland complex		provides wildlife movement corridor
54	MH mm 2	C	0.3	0.3	part of lrg riparian to upland complex		provides wildlife movement corridor
54	MH mm 2	N	0.5	0.0	part of lrg riparian to upland complex		provides wildlife movement corridor
55	CWH ds 1	C	27.6	27.6	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	CWH ds 1	N	9.6	0.0	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	CWH ds 1	P	106.7	10.7	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	CWH ms 1	N	22.7	0.0	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	CWH ms 1	P	0.3	0.0	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	IDF ww	C	8.5	8.5	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
55	IDF ww	P	27.9	2.8	critical riparian/upslope link, lrg patch		DWR on upslope parts at South end
56	CWH ms 1	C	6.3	6.3		cutblock adjacent	
56	CWH ms 1	N	3.0	0.0		cutblock adjacent	
56	CWH ms 1	P	0.7	0.3		cutblock adjacent	
56	MH mm 2	N	28.8	0.0		cutblock adjacent	
56	MH mm 2	P	0.4	0.2		cutblock adjacent	
63	CWH ms 1	N	39.4	0.0	large patch, forest interior		MGWR immediately to North
63	MH mm 2	N	65.1	0.0	large patch, forest interior		MGWR immediately to North
66	CWH ds 1	P	0.2	0.0	adj. to Hydro R/W		DWR, bald eagle roost/nest values
66	IDF ww	C	4.6	4.6	adj. to Hydro R/W		DWR, bald eagle roost/nest values
66	IDF ww	P	12.8	1.3	adj. to Hydro R/W		DWR, bald eagle roost/nest values
67	MH mm 2	N	3.5	0.0	shown as AT on map, large patch		MGWR
67	CWH ms 1	N	11.1	0.0	large patch, patchy stocking		MGWR
67	MH mm 2	N	49.3	0.0	large patch, patchy stocking		MGWR
68	CWH ms 1	N	7.5	0.0	avalanche chutes adj.		upper 1/4 is MGWR
68	MH mm 2	N	22.8	0.0	avalanche chutes adj.		upper 1/4 is MGWR
70	MH mm 2	N	1.3	0.0	combines with 72, 76 for larger complex		
71	CWH ds 1	P	6.8	0.7			DWR
72	CWH ms 1	N	0.2	0.0	combines with 70, 76 for larger complex		some grizzly bear values
72	MH mm 2	N	18.5	0.0	combines with 70, 76 for larger complex		some grizzly bear values
76	MH mm 2	N	4.3	0.0	combines with 72, 70 for larger complex		some grizzly bear values
78	CWH ds 1	C	1.1	1.1	lrg patch, forest interior, upslope connectivity		mostly DWR
78	CWH ds 1	N	48.9	0.0	lrg patch, forest interior, upslope connectivity		mostly DWR

Appendix II: **Rogers Landscape Unit OGMA Summary**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
78	CWH ds 1	P	4.6	0.5	lrg patch, forest interior, upslope connectivity		mostly DWR
78	IDF ww	C	15.2	15.2	lrg patch, forest interior, upslope connectivity		mostly DWR
78	IDF ww	N	21.3	0.0	lrg patch, forest interior, upslope connectivity		mostly DWR
78	IDF ww	P	8.9	0.9	lrg patch, forest interior, upslope connectivity		mostly DWR
80	CWH ms 1	N	10.2	0.0	larger patch, some forest interior		
80	MH mm 2	N	43.2	0.0	larger patch, some forest interior		
84	MH mm 2	N	0.2	0.0	shows as AT on map, avalanche chutes adj.		grizzly bear values
84	CWH ms 1	N	19.4	0.0	avalanche chutes adj, upslope connectivity		grizzly bear values
84	MH mm 2	N	25.4	0.0	avalanche chutes adj, upslope connectivity		grizzly bear values
87	IDF ww	N	15.5	0.0	comb with 78, lrg patch, upslope connectivity		DWR
87	IDF ww	P	1.3	0.1	comb with 78, lrg patch, upslope connectivity		DWR
89	IDF ww	N	15.7	0.0	riparian to upslope link, adj to 87, 78		high riparian value, bald eagles, fish
92	CWH ds 1	C	0.6	0.6	combines with 55, lrg patch		combines with DWR from 55 for lrgr DWR
92	CWH ds 1	P	47.4	4.7	combines with 55, lrg patch		combines with DWR from 55 for lrgr DWR
94	CWH ms 1	P	40.1	4.0	lrg patch, for. interior, important spatially		
94	MH mm 2	P	5.3	0.5	lrg patch, for. interior, important spatially		
101	CWH ms 1	N	45.5	0.0	large patch		mostly MGWR
101	MH mm 2	N	9.4	0.0	large patch		mostly MGWR
104	MH mm 2	N	0.1	0.0	shows as AT on map, riparian headwaters		high elevation wetlands adjacent
104	MH mm 2	N	46.7	0.0	riparian headwaters, large patch		high elevation wetlands adjacent
106	MH mm 2	C	31.5	31.5	lrg patch, forest interior, wetlands adj.		high elevation wetlands adjacent
106	MH mm 2	N	63.3	0.0	lrg patch, forest interior, wetlands adj.		
107	CWH ds 1	N	4.3	0.0		road allowance made btwn 107 & 109	easterly half is DWR
107	CWH ds 1	P	6.8	1.5		road allowance made btwn 107 & 109	easterly half is DWR
107	CWH ms 1	N	5.8	0.0		road allowance made btwn 107 & 109	easterly half is DWR
107	CWH ms 1	P	8.9	3.0		road allowance made btwn 107 & 109	easterly half is DWR
108	CWH ds 1	N	8.2	0.0	large patch, some forest interior, riparian	cutblocks adjacent	DWR west of X patch
108	CWH ds 1	P	76.0	9.3	large patch, some forest interior, riparian	cutblocks adjacent	DWR west of X patch
108	CWH ds 1	X	8.7	0.0	shows as excluded but is forested	cutblocks adjacent	
109	CWH ds 1	C	18.9	18.9		road allowance made btwn 107 & 109	
109	CWH ds 1	P	0.2	0.1		road allowance made btwn 107 & 109	
113	CWH ms 1	N	90.0	0.0	lrg patch, some for. Int, headwaters riparian		mostly Spotted Owl SRMZ
113	MH mm 2	N	16.1	0.0	lrg patch, some for. Int, headwaters riparian		mostly Spotted Owl SRMZ
117	CWH ds 1	P	20.7	2.1	riparian gully at S end		mostly DWR
118	CWH ds 1	N	7.8	0.0	high value riparian		fish, bald eagle roost/nest values
118	CWH ds 1	P	11.5	1.2	high value riparian		fish, bald eagle roost/nest values
120	CWH ms 1	N	27.0	0.0	larger patch adj to 125, 126		
125	CWH ds 1	C	21.9	21.9	combines with 126 for lrg patch		

Appendix II: **Rogers Landscape Unit OGMA Summary**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
125	CWH ms 1	C	0.8	0.8	combines with 126 for lrg patch		
126	CWH ds 1	N	4.2	0.0	combines with 125 for lrg patch		
126	CWH ms 1	N	10.6	0.0	combines with 125 for lrg patch		
129	MH mm 2	N	27.8	0.0			
139	CWH ds 1	N	7.6	0.0	combines with 144, 149 for lrg patch	cutblocks adjacent	DWR
139	CWH ds 1	P	0.1	0.0	combines with 144, 149 for lrg patch	cutblocks adjacent	DWR
139	CWH ms 1	N	9.3	0.0	combines with 144, 149 for lrg patch	cutblocks adjacent	DWR
140	CWH ms 1	N	41.2	0.0	part of large complex, riparian headwaters		westerly 2/3 is Spotted owl SRMZ
140	MH mm 2	N	22.4	0.0	part of large complex, riparian headwaters		westerly 2/3 is Spotted owl SRMZ
141	CWH ms 1	N	36.1	0.0	comb. with 147 for lrg patch, forest interior		Spotted Owl SRMZ
141	MH mm 2	N	9.9	0.0	comb. with 147 for lrg patch, forest interior		Spotted Owl SRMZ
142	MH mm 2	N	10.2	0.0	part of large complex, riparian headwaters		grizzly bear values
143	CWH ds 1	C	4.0	4.0	lrg riparian patch		mostly DWR, bald eagle roost/nest values
143	CWH ds 1	N	33.4	0.0	lrg riparian patch		mostly DWR, bald eagle roost/nest values
144	CWH ds 1	C	37.6	37.6	combines with 139, 149 for lrg patch	cutblocks adjacent	DWR
144	CWH ds 1	P	37.4	3.7	combines with 139, 149 for lrg patch	cutblocks adjacent	DWR
145	MH mm 2	N	5.8	0.0	part of large complex, riparian headwaters		grizzly bear vlaues
146	MH mm 2	N	9.3	0.0	part of large complex, riparian headwaters		grizzly bear vlaues
147	CWH ms 1	N	8.0	0.0	comb. with 141 for lrg patch, forest interior		Spotted Owl SRMZ
148	MH mm 2	N	2.8	0.0	part of large complex, riparian headwaters		W half is Spotted Owl SRMZ, grizzly bear value
149	CWH ds 1	N	17.6	0.0	combines with 139, 144 for lrg patch	cutblocks adjacent	DWR
149	CWH ms 1	N	2.1	0.0	combines with 139, 144 for lrg patch	cutblocks adjacent	DWR
152	MH mm 2	N	3.4	0.0	shows as AT on map, lrg patch, forest interior		S 1/3 is Spotted Owl SRMZ, some griz value
152	MH mm 2	N	105.4	0.0	lrg patch, forest interior		S 1/3 is Spotted Owl SRMZ, some griz value
160	CWH ms 1	N	1.2	0.0	comb with 161, 162 for lrgr complex, aval. chute		grizzly bear value, Spotted Owl SRMZ
160	MH mm 2	N	3.6	0.0	comb with 161, 162 for lrgr complex, aval. chute		grizzly bear value, Spotted Owl SRMZ
161	MH mm 2	N	0.5	0.0	shows as AT on map, part of lrgr complex		grizzly bear value, mostly Spotted Owl SRMZ
161	CWH ms 1	N	6.9	0.0	comb with 160, 162 for lrgr complex, aval. chute		grizzly bear value, mostly Spotted Owl SRMZ
161	MH mm 2	N	16.1	0.0	comb with 160, 162 for lrgr complex, aval. chute		grizzly bear value, mostly Spotted Owl SRMZ
162	CWH ms 1	N	0.8	0.0	comb with 160, 161 for lrgr complex, aval. chute		grizzly bear value, Spotted Owl SRMZ
162	MH mm 2	N	0.8	0.0	comb with 160, 161 for lrgr complex, aval. chute		grizzly bear value, Spotted Owl SRMZ
163	CWH ms 1	N	39.1	0.0	comb with 165, 166, rip. upslope link, lrg patch		almost all Spotted Owl SRMZ
163	MH mm 2	N	33.6	0.0	comb with 165, 166, rip. upslope link, lrg patch		almost all Spotted Owl SRMZ
165	CWH ds 1	P	8.4	8.4	comb with 163, 166, rip. upslope link, lrg patch		Spotted Owl SRMZ
165	CWH ms 1	P	22.9	22.9	comb with 163, 166, rip. upslope link, lrg patch		Spotted Owl SRMZ
166	CWH ms 1	N	5.1	0.0	comb with 165, 163, rip. upslope link, lrg patch		Spotted Owl SRMZ
167	CWH ms 1	C	0.2	0.2	large patch		Spotted Owl SRMZ
167	CWH ms 1	N	23.1	0.0	large patch		Spotted Owl SRMZ

Appendix II: **Rogers Landscape Unit OGMA Summary**

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
167	MH mm 2	N	19.9	0.0	large patch		Spotted Owl SRMZ
170	CWH ds 1	C	18.5	18.5		agreed to by licensee	
172	CWH ds 1	C	20.6	20.6	high value riparian		fish, bald eagle roost/nest values
172	CWH ds 1	N	8.8	0.0	high value riparian		fish, bald eagle roost/nest values
172	CWH ds 1	P	0.4	0.0	high value riparian		fish, bald eagle roost/nest values
175	CWH ms 1	N	30.3	0.0	larger patch, small amount forest interior		mostly Spotted Owl SRMZ
175	MH mm 2	N	10.8	0.0	larger patch, small amount forest interior		mostly Spotted Owl SRMZ
178	CWH ds 1	P	19.5	2.0			DWR
179	CWH ms 1	N	29.7	0.0	larger patch		almost all Spotted Owl SRMZ
179	MH mm 2	N	5.3	0.0	larger patch		almost all Spotted Owl SRMZ
182	CWH ds 1	C	25.0	25.0	surrounded by young forest		DWR
184	CWH ds 1	P	17.7	1.8	riparian		Spotted Owl SRMZ
186	CWH ds 1	P	19.2	1.9	riparian, wetland adjacent		almost all Spotted Owl SRMZ, fish, bald eagle
190	CWH ms 1	C	38.2	38.2	high riparian value, larger patch	licensee suggested, highly constrained	likely some grizzly bear value
191	CWH ms 1	C	0.8	0.8	riparian, combines with 190, 192	licensee suggested, highly constrained	likely some grizzly bear value
192	CWH ms 1	C	2.2	2.2	riparian, combines with 190, 191	licensee suggested, highly constrained	likely some grizzly bear value
193	CWH ms 1	C	8.1	8.1	riparian	licensee suggested, highly constrained	likely some grizzly bear value
195	MH mm 2	N	62.2	0.0	large patch, forest interior		
196	MH mm 2	N	0.1	0.0	shows as AT on map, avalanche chutes adj.		grizzly bear values
196	MH mm 2	N	21.2	0.0	avalanche chutes adj., part of lrgr complex		grizzly bear values

Appendix III: Acronyms

AAC	Allowable Annual Cut
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, either mountain goat, deer or moose
WHA	Wildlife Habitat Area
WTP	Wildlife Tree Patch
WTR	Wildlife Tree Retention

Appendix IV: Public Consultation Summary

The Rogers LU plan was advertised for public review and comment for 60 days from November 20, 2003 to January 19, 2004. Ads were placed in the Mission and Squamish newspapers. MSRM received two responses, one from Ministry of Forests in Squamish and one from Interfor Squamish. No other comments were received during the public review period, although during plan development MSRM received a request from the public to include a particular forest stand in OGMA.

Ministry of Forests provided information related to two OGMAs that had already been logged, so boundary adjustments were made. In addition, they were concerned about all the various planning initiatives underway in the District and how LU planning was being integrated into these plans. Generally they realized it was not practical for LU planning to wait for completion of other plans such that OGMAs could overlap with other soon to be approved constrained areas (e.g. Deer Winter Range). However, they hope that OGMAs can be moved over time to reduce timber supply impacts. In response, MSRM has developed an Amendment policy that allows for moving OGMAs across the landscape over time, provided that replacement OGMAs are equivalent or better biodiversity value. At the same time, MSRM used current draft planning information (e.g. MWLAP was able to confirm important Deer Winter Range) to determine the most appropriate areas to place OGMAs and MSRM does not anticipate wholesale changes to the LU plan.

Interfor requested that more Mountain Goat Winter Range be incorporated into OGMAs thereby freeing up other areas. In response to this recommendation MSRM determined that the vast majority of suitable goat winter range was already in OGMA (approximately 140 ha of a possible 160 ha). In addition, since OGMAs are supposed to represent a variety of forest types and be distributed across the LU it was important that OGMAs occupy other forest types instead of a few more hectares in steep slope south aspect winter range. As well, Interfor showed one OGMA that overlapped with a proposed cutblock and this change was made.

It should be noted that during plan development MSRM received information from the public related to a particular old forest stand in the southern part of the LU. This area supports several large veteran trees within a stand of old forest. This stand was not selected as an OGMA candidate only because the target had already been reached elsewhere. However, in response to the public's request MSRM did determine that the stand was suitable for OGMA and has asked Interfor to determine their harvest interest (this has to be done to meet LU planning policy of reducing timber impacts). Interfor was not able to field check the area for operability prior to plan approval, but will do this in summer 2004. Once Interfor has completed their field assessment, if the stand can be included in OGMA it will be added through amendment and a similar amount of OGMA area dropped.