

## **Appendix 3**

Excerpts from  
**Revelstoke and Area Land Use Planning**  
**Recommendations**  
**(MAC Plan)**

## Appendix 3

### Excerpts from Revelstoke and Area Land Use Planning Recommendations (MAC Plan)

*This appendix contains the portions of the MAC Plan that are most relevant to RCFC's landbase. The full report can be viewed at the Ministry of Forests district office or at RCFC's office. A combined Table of Contents for the MAC Plan is provided below and the portions included in this appendix are highlighted in gray.*

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Note: The format of the *Kootenay-Boundary Land Use Plan Implementation Strategy* (Chapter 2, June, 1997) has been adopted and incorporated as much as possible in this chapter, with key revisions, additions and deletions that are appropriate to the Revelstoke area. **Key revisions and additions are highlighted for easy reference.**

## B. 1.1 Overview

Chapter B outlines the resource management recommendations for the Revelstoke area. These recommendations build on the Revelstoke Land Use Planning Negotiating Committee report and map (March 1995). The format of the *Kootenay-Boundary Land Use Plan Implementation Strategy* (June 1997) has been adopted and incorporated as much as possible, with key revisions, additions and deletions that are appropriate to the Revelstoke area. The components that are key to the recommendations for Revelstoke are highlighted for easy reference.

The three subsections contain information at increasing levels of detail and geographic precision as follows:

- **General Direction (Section 2)**

This section includes broad objectives and strategies for each of the industrial, conservation and social resources and industries.

- **Guidelines (Section 3)**

Management practices for specific resource values and the area where these practices are to be applied are included in this section. The Revelstoke and Area Land Use Planning Recommendations map shows the location of the key values at a more detailed scale than the maps in the text of this section. This map is available from the Columbia Forest District of the Ministry of Forests (250-837-7611).

- **Landscape Unit Values, Objectives and Strategies (Section 4)**

This section begins with a landscape unit map which shows the location of each landscape unit and its number. For each landscape unit there is a brief description of the resource values in the unit as well as a listing of the resource management objectives and strategies that apply in the unit.

This section was initially developed for the polygons identified by the Community Negotiating Committee. As the next level of planning under the Forest Practice Code will be carried out on 'landscape units', which differ from the defined polygon areas mainly because they include whole drainages, the Advisory Committee decided to recompile this information according to this new planning unit to facilitate implementation of the recommendations. Every effort has been made to retain the information that was provided for the polygons.

## **B. 2.1 Explanation of General Direction**

The following objectives and strategies apply to all Crown land and natural resources, as well as private land within Tree Farm Licenses, in the Revelstoke area (defined by the boundaries of the Revelstoke Forest District before the recent amalgamation with the Golden Forest District) unless otherwise indicated. Given that certain resource activities (e.g., logging and mining) are not permitted in provincial and national parks, some of the objectives and strategies will only apply to Crown land outside of parks. However, it is necessary to cooperatively manage values both within the parks and the adjacent areas to ensure that parks can effectively protect the sensitive values contained within them. Therefore, appropriate objectives and strategies from this plan, particularly those associated with environmental, recreation and tourism values, will be incorporated in the management of provincial parks.

The objectives and strategies are intended to provide broad, corporate guidance to agencies and resource users for managing the environmental, social and economic resources in the area and to guide agencies in the development of their individual and inter-agency program priorities.

Within some of the strategies, a target is provided, indicating a desirable or plausible resource production output, resource allocation amount, or a timeline within which the strategy is intended to be initiated or completed. Targets, where provided, represent approximate outcomes which are considered feasible. They should not, however, be interpreted as binding on the authority of statutory decision-makers to exercise their discretion in making resource management and administrative decisions for which they are responsible. Where targets are not provided within individual resource strategy statements, it is intended that the strategy will be implemented in an integrated manner, recognizing and considering the stated objectives, strategies and targets for other resource values.

Some of the terminology used to describe objectives and strategies is relatively subjective and open to interpretation. Definitions of key terms are, therefore, provided in the glossary located at the end of the strategy to promote consistent interpretation of the intent of strategies and objectives. It is recognized that a technical working glossary will need to evolve over time as issues surface in delivering this strategy.

Implementation of the objectives and strategies is intended to occur over time, in general conformance with the action plan developed annually by the local government agencies.

## B. 2.2 Economic Values

A. TIMBER RESOURCES	
1. Maintain a sustainable, secure, long-term timber supply.	<p><b>1.1</b> The Provincial Forest Land Commission will maintain and manage the Forest Land Reserve designation over an area covering approximately 340,000 hectares of productive forest land in the Revelstoke area, in accordance with the provisions of the <i>Forest Land Reserve Act</i>.</p> <p><b>1.2</b> Subject to the range of objectives and strategies identified in this plan, specific strategies will be identified within the Forest Land Reserve, and especially within the Enhanced Resource Development Zone (Timber) for maintaining and increasing the land base that is available for timber management and supply.</p> <p><b>1.3</b> Timber management activities will be recognized as appropriate land uses in all resource zones, outside of protected areas.</p>
2. Ensure the availability of the short term timber supply.	<p><b>2.1</b> Strive to achieve a minimum of two years of approved wood under cutting permits for all forest licensee and tree farm license tenure holders every year following plan approval. Develop a monitoring plan that facilitates corrective action if needed to ensure adequate approvals.</p> <p><b>2.2</b> Forest licensees and the Small Business Forest Enterprise Program will develop spatially explicit long term (20 year) harvesting plans.</p>
3. Consistent with the objectives and strategies within this plan, maximize the sustainable supply of timber for harvesting.	<p><b>3.1</b> An inventory of timber resources will be improved and coordinated with other resource value inventories, consistent with evolving Ministry of Forests inventory standards.</p>



	<p><b>3.2</b> A timber management strategy will be developed and implemented to mitigate the predicted falldown in the annual timber harvest levels that will occur over the short to midterm. The timber management strategy will be delivered through a combination of administrative structures, and will focus on:</p> <ul style="list-style-type: none"><li>• silviculture systems and activities</li><li>• restoration of damaged watersheds</li><li>• rehabilitation of previously disturbed forest land (i.e., roads and landings)</li><li>• research into harvesting techniques, estate modelling, non-recoverable losses, etc.</li><li>• forest inventories</li></ul> <p><b>3.3</b> The timber management strategy will provide guidance to future funding allocation by Forest Renewal BC.</p> <p><b>3.4</b> Timber management activities will be emphasized through use of the Timber Enhanced Resource Development Guidelines in appropriate areas initially within Enhanced Timber Resource Development Zones (Timber) <i>Resource Management Guidelines Chapter B Section 3.9</i>), with a view to increasing the allowable annual timber harvests while meeting the biodiversity emphasis assigned for that landscape unit. Further work will be undertaken to finalize suitable criteria, candidate areas and Enhanced Resource Development Zones (Timber) boundaries.</p> <p><b>3.5</b> Reasonable and attainable maximum acceptable annual fire loss objectives and reasonable and attainable annual pest damage objectives will be established.</p> <p><b>3.6</b> <i>In the short term (5-10 years) the final strategy will deliver 462,000 cubic metres of timber annually based on the analysis results available.</i> This timber target may need to be modified due to implementation of related initiatives in the Jobs and Timber Accord. Also, the timber target may not equate to future Allowable Annual Cuts as the Chief Forester retains the sole responsibility for such determinations and may choose a different allowable harvest level.</p>
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<p>4. Increase value-added employment in the timber sector.</p>	<p>4.1 The long-term potential of value-added manufacturing will be promoted through the development and implementation of proven timber quality objectives and strategies for specific ecosystem types.</p> <p>4.2 The value-added wood manufacturing sector will be expanded through a variety of initiatives, including ongoing revisions to the Small Business Bid Proposal sale criteria and the small scale salvage program.</p> <p>4.3 Revelstoke will continue to support the appointment of a director from this area to the Kootenay WoodVine, an organization that encourages communication among value-added producers and promotes cooperative marketing, training and business support.</p> <p>4.4 Efforts will be made to promote capturing the highest value from forest stands for all timber products (plywood, clear lumber, pulp, fine grained material, etc.).</p>
<p>5. Manage the timber resources in accordance with integrated resource management principles and practices.</p>	<p>5.1 The responsible agencies will implement and administer the provisions of the <i>Forest Practices Code of British Columbia Act</i>, and associated regulations and guidebooks, as a primary means of ensuring the sustainable management of all forest resource values and ecosystems.</p> <p><b><i>5.2 To facilitate Forest Practices Code implementation, a landscape unit planning strategy, which identifies a schedule for finalization of landscape unit boundaries and objectives, will be prepared within a year after the plan has been approved by government.</i></b></p>
<p>6. Increase opportunities for alternative forestry operations.</p>	<p>6.1 Where economically feasible and ecologically appropriate, sensitive, innovative and labour-intensive approaches to timber harvesting and silviculture will be promoted.</p> <p>6.2 The number of woodlots within the area will be increased from 2 to 3. Location and management of all woodlots will consider the range of objectives and strategies in this plan.</p>

	<p><b>6.3</b> Opportunities for reducing, reusing or recycling wood residue and/or utilizing its energy value will be explored.</p> <p><b>6.4</b> Where necessary, existing woodlots (established prior to June 1997) may be exempted from the seral requirements of the Forest Practices Code Biodiversity Guidebook. Where exemptions have been granted and old growth must be conserved, consider partial cutting of old growth (i.e., no requirement for interior conditions).</p> <p><b>6.5</b> <i>On all woodlots, innovative approaches to implement the resource management guidelines in this plan, while achieving the resource management objectives, will be encouraged in order to minimize negative economic impacts.</i></p>
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<b>B. ENERGY RESOURCES</b>	
<p><b>7.</b> Maintain opportunities for access to Crown land for potential development of oil and gas, geothermal resources and other energy-related projects.</p>	<p><b>7.1</b> Opportunities for energy resource exploration and development will be made available on all lands outside of protected areas, subject to standard regulatory approval processes and conditions and in accordance with the range of resource management objectives and strategies.</p> <p><b>7.2</b> Access to Crown land for energy exploration and development will be undertaken in conformance with the Oil and Gas Handbook and Guidelines, with a requirement for access development to demonstrate sensitivity to environmental, visual and recreational values, where these have been identified.</p> <p><b>7.3</b> Local level strategic planning will be provided with appropriate information on oil and gas and geothermal resource values, and other energy related projects, to ensure the integration of energy resource interests into the planning results.</p>
<p><b>8.</b> Encourage development of energy resources to provide local employment and investment.</p>	<p><b>8.1</b> The Ministries of Employment and Investment and Energy and Mines will support appropriate surveys and research, by industry, government and academic institutions, on energy resources.</p>

<b>C. MINERAL AND COAL RESOURCES</b>	
<p><b>9. Maintain a healthy investment climate to promote exploration and development of new mining opportunities.</b></p>	<p><b>9.1</b> Opportunities for mineral and coal tenure acquisition, exploration, development and mining, including access development to those tenures, will be maintained on all lands outside of protected areas.</p> <p><b>9.1.1</b> These same opportunities will be maintained for placer resources on all Designated Placer lands.</p> <p><b>9.2</b> Prior to road deactivation, consultation with affected mineral and placer tenure holders will continue and, where feasible, will be enhanced. In the case of watershed restoration projects which currently utilize FRBC funding, consultation will be based on protocols developed by MEM, MOF and FRBC.</p> <p><b>9.3</b> Existing “no staking” and “conditional” mineral, coal and placer reserves will be reviewed with the Kootenay Inter-Agency Management Committee with a view to amending or canceling unnecessary or redundant reserves.</p> <p><b>9.4</b> The coal, mineral and placer exploration and development permitting process will be streamlined through multi-agency protocols and memorandums of understanding.</p> <p><b>9.5</b> Technical data and information will be provided to the exploration industry to promote new mineral and coal opportunities (e.g., industrial minerals and value-added technology).</p> <p><b>9.6</b> The Ministry Energy and Mines will support geological surveys and research, by industry, government and academic institutions, on mineral resources.</p>
<p><b>10. Ensure sound, responsible management of mineral, coal and placer resources.</b></p>	<p><b>10.1</b> All mineral, coal and placer activities will be subject to standard regulatory approval procedures and conditions, including, in the case of major mining proposals, the <i>Environmental Assessment Act</i>.</p> <p><b>10.1.1</b> Approval conditions, including bonding, will ensure required reclamation of disturbed sites is completed.</p>

<b>D. AGRICULTURE</b>	
<p><b>11. Maintain or enhance the current level of grazing activity.</b></p>	<p><b>11.1</b> Grazing will be considered an appropriate Crown land use, subject to the terms and conditions identified in approved grazing tenures and range use plans and consistent with resource management objectives and strategies.</p> <p><b>11.2</b> Livestock Animal Unit Months on Crown land in the area will be maintained at approximately 320. Livestock increases may occur when forage enhancements increase the sustainable carrying capacity, wildlife interests are met, and Rangeland Ecosystems principles are adhered to.</p> <p><b>11.3</b> Sites with high forage production potential within the Crown Agricultural Land Reserve will be considered a priority for forage production enhancement and livestock use, while maintaining habitat and natural grassland integrity.</p> <p><b>11.4</b> Ensure integrated and coordinated resource management planning at the local operational level.</p>
<p><b>12. Integrate grazing objectives with operational timber management activities.</b></p>	<p><b>12.1.</b> A process will be developed for contacting range tenure holders operating within the area to ensure optimum integration of timber harvesting and grazing objectives as stated in Range Use Plans, Silviculture Prescriptions and Forest Development Plans. Where appropriate, Silviculture Prescriptions and Forest Development Plans will detail specific measures to avoid livestock-related plantation damage and the breaching of natural or manmade barriers to livestock movement. Range Use Plans that encompass timber harvesting areas must also detail methods to minimize livestock damage to tree seedlings.</p>
<p><b>13. Provide opportunities for existing farmers to improve the viability of agricultural operations through expansion onto arable Crown land.</b></p>	<p><b>13.1</b> Arable lands within the Agriculture Land Reserve (ALR) will continue to be available through application under the <i>Land Act</i> in accordance with extensive agriculture and intensive agriculture policies administered by BC Lands. In accordance with government direction, agriculture use will receive priority emphasis for those lands within the ALR.</p>

	<p><b>13.1.1</b> The policy guidelines of BC Lands relating to land alienation for agriculture will be reviewed with a view to ensuring appropriate agriculture opportunities result. Criteria will be established for:</p> <ul style="list-style-type: none"> <li>• defining agricultural land suitability</li> <li>• conservation and mitigation strategies</li> <li>• referral processes</li> <li>• approval mechanisms</li> <li>• multi-agency involvement in development plans</li> </ul>
<b>14.</b> Maintain opportunities for water allocation for agricultural uses.	<b>14.1</b> Local level strategic planning will be provided with appropriate information on agricultural uses of water to ensure such needs are integrated with other land and resource activities.
<b>15.</b> Reduce agriculture/wildlife conflicts.	<p><b>15.1</b> Partnerships aimed at benefiting both wildlife and agriculture will be promoted between the agriculture industry and wildlife managers.</p> <p><b>15.2</b> The province will continue to support wildlife-agriculture conflict resolution forums.</p> <p><b>15.3</b> Wildlife population and habitat enhancement proposals will consider potential impacts on the agricultural sector. Similarly, livestock Animal Unit Month increase and forage enhancement proposals will consider potential impacts on the wildlife resource.</p>
<b>16.</b> Provide increased economic opportunities within the agricultural sector.	<b>16.1</b> A niche agricultural study will be undertaken regionally to evaluate potential opportunities for expansion of economic benefits from the agriculture sector. Similar studies for new agricultural opportunities will be promoted.

<b>E. FISH and WILDLIFE RESOURCES</b>	
<b>17.</b> Maintain sustainable and harvestable populations of fish and wildlife to provide long term and sustainable economic benefits to the region.	<p><b>17.1</b> An annual harvest of big game species and sport fish species will be maintained sufficient to provide fishing and hunting opportunities first for residents and secondly for non-residents. The Provincial Wildlife Harvest Strategy will guide the regulation setting process.</p> <p><b>17.2</b> Maintain inventories of fish and wildlife sufficient to calculate annual allowable harvests that are ecologically sustainable and will not threaten harvest species.</p>

	<p><b>17.3</b> Encourage service industries that support fishing and hunting and provide them with input to and information about regulations.</p> <p><b>17.4</b> Encourage economic return from hunting/fishing activities by maintaining these activities over as large a percentage of the Crown land base as possible in order to provide a quality wilderness hunting/fishing experience and avoid overcrowding and associated problems.</p>
<b>18.</b> Maintain a viable guide outfitting industry to service both resident and non-resident hunters.	<p><b>18.1</b> Maintain populations of big game animals sufficient to provide ecologically sustainable populations and to maintain a commercial harvest.</p> <p><b>18.2</b> Maintain the largest percentage of the annual allowable harvest (AAH) for resident hunters.</p> <p><b>18.3</b> Maintain a percentage of the AAH for commercial use consistent with ensuring the viability of the industry.</p> <p><b>18.4</b> Maintain the present tenure system for licensing of guide outfitters to both provide certainty for the industry and ensure sustainable distribution of activity across the land base.</p> <p><b>18.5</b> Provide the industry with sufficient information in a timely fashion to allow planning.</p>
<b>19.</b> Ensure a viable angling guide industry to service both resident and non-resident anglers.	<p><b>19.1</b> Maintain populations of popular sport fish species and age classes to provide for a viable angling guide industry consistent with the Fisheries Program Strategic Plan.</p> <p><b>19.2</b> Classify and allocate fishing demand on those water bodies that become overcrowded and require regulation.</p> <p><b>19.3</b> Encourage industries that service sport fishing.</p>
<b>F. COMMERCIAL TOURISM</b>	
<b>20.</b> Planning and design of timber harvesting, forest management, and mineral exploration should consider affected tourism businesses and the resource needs of those businesses.	<b>20.1</b> Planning and resource allocation decisions should consider tourism uses of Crown land and resources. These uses include visible landscape, tenures and licenses, and recreational infrastructure such as trails, campsites and roads.

	<b>20.2</b> In the absence of local level strategic plans, tourism-related tenure holders will develop statements of concern and interest, with the assistance of appropriate resource agencies if necessary.
<b>21.</b> Planning and resource allocation decisions should regard commercial recreation as a valid and appropriate use of Crown land, subject to conformance with legislation and policy.	<p><b>21.1</b> Plans should identify areas with substantial potential to support commercial recreation on Crown land.</p> <p><b>21.2</b> Substantial proposals to allocate tenure or title to Crown land for commercial recreation will be referred to affected agencies and and resource tenure holders for evaluation with consideration to issues including the following:</p> <ul style="list-style-type: none"> <li>• regional biodiversity connectivity corridors</li> <li>• wildlife habitat and conservation</li> <li>• public recreation</li> <li>• other existing and potential resource uses</li> <li>• other provincial, regional, and municipal plans</li> </ul>
<b>22.</b> Where consistent with laws, policy and plans, provincial parks should provide opportunities for commercial tourism.	<p><b>22.1</b> Existing commercial recreation uses (including heli-ski, heli-hiking and cat skiing operations) in provincial parks are acceptable, subject to compliance with management direction statements and park master plans.</p> <p><b>22.2</b> Provincial park planning processes should examine potential commercial recreation opportunities within provincial parks.</p>
<b>G. SETTLEMENT, UTILITY &amp; COMMUNICATION USES OF CROWN LAND</b>	
<b>23.</b> Maintain opportunities for settlement, utility, communication, and other site-specific uses of Crown land.	<b>23.1</b> In response to individual proposals, or through proactive marketing methods, suitable Crown land parcels will continue to be allocated for settlement, utility, communication, access, cultivation, industrial uses, aggregate resource extraction, etc. Allocation of lands for settlement use should take into consideration the objectives defined in the Regional section 942.11 (Subsection 2) of the <i>Growth Strategy Act</i> (see Appendix B – 2.1) as well as regional district land use bylaws and official community plans and municipal plans.



	<p><b>23.2</b> The allocation of Crown Land for settlement purposes will primarily, although not exclusively, be delivered from Crown lands within municipal boundaries, regional district official community plan areas and settlement corridors (<i>Resource Management Guidelines, Chapter B Section 3.11</i>).</p> <p><b>23.3</b> Provincial agencies will, as appropriate, participate in official community planning processes and regional growth management strategies initiated by local governments, to ensure that appropriate information on Crown land suitability for settlement and settlement-related purposes is incorporated.</p> <p><b>23.3.1</b> Participation in growth management strategies, official community plans and rural land use bylaws will emphasize a proactive approach for integrating settlement with the full range of land use activities.</p> <p><b>23.4</b> Local level strategic planning may, where appropriate, also identify areas capable and suitable for settlement opportunities.</p>
<p><b>24.</b> Recognize environmental conservation and other land use and resource management objectives when making decisions on the disposition of Crown land for settlement and other purposes.</p>	<p><b>24.1</b> Proposals for allocating Crown land for settlement purposes will be reviewed on an integrated coordinated basis with other interested agencies. Where possible, allocations will be directed away from regionally significant environmental or resource values, such as biodiversity connectivity corridors, key wildlife habitats and high capability agricultural lands or forest lands and areas of high mineral values or interests.</p> <p><b>24.1.1</b> A coordinated approach to designing and siting utility/transportation corridors will be promoted, particularly within regional biodiversity connectivity corridors, to minimize linear barriers to ecological values.</p> <p><b>24.2</b> The siting of new landfills will respect the management requirements for wildlife (particularly wide ranging carnivores such as black and grizzly bears), water quality protection and the need to minimize the impacts of scavenger species in critical winter ranges and marshes.</p>

<b>H. ACCESS PLANNING AND MANAGEMENT</b>	
<b>25.</b> Provide access, including roads, to accommodate commercial resource assessment, exploration and development.	<b>25.1</b> Access for resource uses will be accommodated on all lands outside of national parks, subject to resource management objectives and strategies and other applicable government statutes and policies.
<b>26.</b> Prevent or reduce conflicts between resource access developments and sensitive environmental, recreational and cultural heritage resource values and areas.	<p><b>26.1</b> Access for commercial resource exploration, development and use activities will be subject to the identification and implementation of management measures to mitigate undesirable effects of such activities on other sensitive resource values and areas.</p> <p><b>26.2</b> An access map will be produced over time to identify access opportunities and restrictions for both public and industry uses of the provincial land base.</p> <p><b>26.3</b> Legislative and policy tools will be developed to manage both economic and recreational use of roads and bridges.</p>
<b>27.</b> Address area-specific access related issues.	<p><b>27.1</b> In the absence of local level strategic planning, the level of acceptable access will be assessed via a joint inter-agency process. Where no inter-agency consensus is attained, the regional dispute resolution process will be enacted.</p> <p><b>27.2.1</b> <i>The list of priority areas for addressing access requirements will be reviewed annually and amended as necessary.</i></p> <p><b>27.2.2</b> <i>Priority areas that are recognized as requiring an enhanced referral process and needing greater consideration for meeting resource management objectives and strategies, are identified in the Chapter B.4 Resource Management – Landscape Unit Objectives and Strategies and summarized in Chapter D.3 – Resource Management Projects. The process for addressing access requirements in such areas is summarized in the Resource Management Guidelines Chapter B Section 3.10.</i></p>

	<p><b>27.2.3</b> Future priority areas to address access management issues will be evaluated and determined on the basis of screening criteria, including:</p> <ul style="list-style-type: none"> <li>• public expectations</li> <li>• degree of resource and conservation sensitivity and potential conflict</li> <li>• existing access</li> <li>• level of past investment into resource assessment/exploration/development</li> <li>• imminent or urgent resource development</li> <li>• availability/accuracy of information/inventory on resource values</li> </ul> <p><b>27.3</b> A database will be maintained for all roads to enable the calculation of existing and future road densities.</p> <p><b>27.4</b> <i>Local level strategic planning that addresses access management issues will be conducted on a cooperative, inter-agency basis and be based on the Access Management Guidelines (Resource Management Guidelines Chapter B Section 3.10).</i></p>
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## B. 2.3 Social Values

<b>A. CULTURAL HERITAGE RESOURCES</b>	
<b>28.</b> Conserve select cultural heritage resources.	<p><b>28.1</b> Archaeological and cultural heritage resource assessments will be undertaken in accordance with legislation and policy respecting the management of such resources. (i.e., a new protocol agreement between Ministry of Small Business Tourism and Culture and Ministry of Forests respecting cultural heritage resource management, the BC Archaeological Impact Assessment Guidelines - 2395, the <i>Heritage Conservation Act</i>, the <i>Environmental Assessment Act</i>, and the <i>Forest Practices Code of British Columbia Act</i>, especially the <i>Operational Planning Regulation</i>).</p> <p><b>28.2</b> Archaeological overview assessments will be conducted, where appropriate, to assess cultural resource potential, in order to provide input into subsequent planning, at the strategic, local and operational levels.</p>

	<p><b>28.3</b> Archaeological impact assessments will be undertaken and appropriate impact management measures (i.e., buffering, avoidance, access controls, signage, mitigation) will be applied as required, in response to requirements identified through Archaeological Overview Assessments, archeological potential analyses, land/resource planning processes, implementation of the provincial <i>Environmental Assessment Act</i>, and to development proposals referred to the Archaeology Branch, Ministry of Small Business Tourism and Culture, by the public or private sectors. In the interim, Archaeological Impact Assessments will focus on high potential sites as defined by Archaeological Overview Assessments.</p> <p><b>28.4</b> Government will continue to support the Traditional Use Site Inventory study process. Archaeological Overview Assessments and archeological potential analyses will be complemented by the results of the Traditional Use Inventory.</p> <p><b>28.5</b> Aboriginal traditional use sites will, as appropriate, be designated as provincial heritage sites under the <i>Heritage Conservation Act</i>.</p> <p><b>28.6</b> The Heritage Branch, Ministry of Small Business, Tourism and Culture, will cooperate with appropriate municipal governments, agencies and interest groups to identify and conserve appropriate historic sites, trails, buildings and other structures through designation under the <i>Heritage Conservation Act</i>.</p> <p><b>28.7</b> The locations of known cultural heritage sites will be identified on appropriate government reference maps as map notations except those recognized as confidential.</p>
<p><b>29.</b> Ensure aboriginal rights are not unjustifiably infringed upon by resource development activities of the Crown or its licensees.</p>	<p><b>29.1</b> Consultation with First Nations, as per government policy, will be undertaken for resource management activities which directly affect traditional territories.</p>
<p><b>30.</b> Encourage development of cultural heritage interpretative facilities and programs.</p>	<p><b>30.1</b> Opportunities for the development of interpretative facilities and programs will be assessed in cooperation with First Nations and local governments.</p>

	<b>30.2</b> Local level strategic planning will consider signage to identify sites as significant cultural heritage features, and to guide visitor use.
<b>B. COMMUNITIES</b>	
<b>31.</b> Integrate community objectives into Crown land and natural resources planning and decision-making.	<p><b>31.1</b> Crown land and resource planning and decision-making processes will identify measures to minimize and mitigate impacts on the community that may be potentially affected by land and resource allocation and management decisions. Economic diversification and community support initiatives will be emphasized where the community is experiencing impacts requiring a transition strategy to be implemented.</p> <p><b>31.2</b> Community stability will be enhanced over the next decade through adoption of landscape level plans which will contribute to the certainty of the timber supply and will address site-specific issues for access for a range of resource activities and development.</p> <p><b>31.3</b> Development of solid and liquid waste management plans will be promoted as part of watershed management planning processes for community and domestic watersheds.</p>
<b>32.</b> Maintain or enhance employment opportunities and provide economic and social transition measures to maintain community stability.	<p><b>32.1</b> Appropriate government agencies will collaborate with the community and private industry in planning and delivering economic and social development programs and initiatives (e.g., Forest Renewal BC, the Grazing Enhancement Fund, the Canada/BC Infrastructure Program, and the BC 21 program).</p> <p><b>32.2</b> <i>As part of the BC Skills Now program, the Revelstoke Community Skills Center will be maintained.</i></p>
<b>33.</b> Minimize risk to lives and property from flooding, erosion and wildfires.	<p><b>33.1</b> Alluvial and debris torrent fan hazards will be identified. Where appropriate, mitigation techniques to reduce hazards will be implemented and settlement will be directed away from these areas.</p> <p><b>33.2</b> Watershed assessments will be performed on a priority basis on watersheds upstream of settlement areas in high hazard flood zones.</p>

	<b>33.3</b> Alternative methods of fuel management will be promoted to assist in the prevention of wildfire and reduce associated damage.
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<b>C. OUTDOOR RECREATION</b>	
<b>34.</b> Maintain a range of outdoor recreation settings on Crown land.	<p><b>34.1</b> Recreational settings will be defined using the Ministry of Forests Recreation Opportunities Spectrum. All strategies refer to long-term management; they do not preclude roads and extractive resource development, though they should guide post-operation access management and restoration.</p> <p><b>34.2</b> Alpine and sub-alpine areas should be managed to achieve an Recreation Opportunity Spectrum classification of Semi-Primitive Non-Motorized. Mechanized uses including snowmobiling, heli-ski and cat-ski may be acceptable subject to existing tenure, local level strategic planning and agreements, and wildlife habitat concerns.</p> <p><b>34.3</b> Inoperable terrain below the sub-alpine should be managed to achieve a Recreation Opportunity Spectrum classification of Semi-Primitive.</p> <p><b>34.4</b> Most operable Crown land outside national parks will be managed to a Recreation Opportunity Spectrum classification of Roaded Resource Land or Semi-Primitive Motorized. Some areas of high recreational value, named in the Resource Management Landscape Unit Objectives and Strategies, should be managed such that portions of those areas achieve an Recreation Opportunity Spectrum classification of Semi-Primitive Non-Motorized.</p>
<b>35.</b> Maintain existing recreation features and provide new trails, campsites and related infrastructure.	<p><b>35.1</b> Backcountry recreation corridors, sites and use areas should be managed according to Backcountry Recreation Management Guidelines (<i>Resource Management Guidelines Chapter B Section 3.8</i>) of this strategy.</p> <p><b>35.2</b> Strategies and plans should be developed to address management of specific recreation resources and facilities. Priority should be given to strategies for long distance snowmobile trails, recreational river corridors and hiking trails.</p>

<b>D. VISIBLE AREAS</b>	
<p><b>36.</b> Design of timber harvesting, forest management and mineral exploration should reflect the importance of front country landscapes to communities, recreation and tourism.</p>	<p><b>36.1</b> <i>Areas visible from defined viewpoints along Highway 1, Highway 23S and the City of Revelstoke should be designated as “known scenic areas” under the Forest Practices Code during landscape unit planning.</i></p> <p><b>36.2</b> <i>Guidelines for management of front country visual areas (Resource Management Guidelines Chapter B Section 3.7) establish design intent for timber harvesting, forest management and mineral exploration in known scenic areas.</i></p> <p><b>36.3</b> In consultation with the community and affected businesses, Ministry of Forests District Managers should establish Visual Quality Objectives (VQOs) for known scenic areas. Standards for these VQOs should be consistent with the management guidelines identified above.</p> <p><b>36.4</b> Alternative silvicultural systems, (e.g., selection harvesting, shelterwood, seed trees), should be applied, where possible and appropriate, in known scenic areas to achieve visual quality objectives.</p> <p><b>36.5</b> Circumstances such as fire and insect or disease outbreak may necessitate logging in known scenic areas which does not conform to the guidelines (<i>Resource Management Guidelines Chapter B Section 3.7</i>). Good visual design will, however, be required for all work under these circumstances.</p> <p><b>36.6</b> Mineral exploration and mine development may result in visual disturbance that does not conform to the guidelines. Good visual design should be applied to such work.</p> <p><b>36.7</b> <i>Further timber harvesting adjacent to existing cutblocks – rehabilitation cutting – should be promoted as a means to improve visual design within some known scenic areas.</i></p> <p><b>36.8</b> The tree height required to achieve visually effective greenup in known scenic areas will be determined through an assessment of local biophysical conditions.</p>

<p><b>37.</b> Planning and design of timber harvesting, forest management and mineral exploration in backcountry areas should consider visual landscape quality.</p>	<p><b>37.1</b> The Backcountry Recreation Management Guidelines (<i>Resource Management Guidelines Chapter B Section 3.8</i>) include provisions for visual management of resource development activities. Design and planning for timber harvesting, forest management and mineral exploration should be consistent with these guidelines where appropriate.</p> <p><b>37.2</b> Where possible, design of cutblocks and roads outside scenic areas and other areas explicitly managed for visuals should reflect principles of good visual design.</p>
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## B. 2.4 Conservation Values

<p><b>A. GENERAL ECOSYSTEM HEALTH</b></p>	
<p><b>38.</b> Maintain healthy, functioning ecosystems that are essential to the diversity, abundance, distribution and life histories of fish, wildlife, vegetation and aquatic resources.</p>	<p><b>38.1</b> A regional biodiversity benchmark will be maintained which identifies benchmark management regimes and ranks habitats that are critically important to the maintenance of regional ecosystems. The regional biodiversity benchmark will be used to evaluate risk from this strategy and report on the risk to protection, conservation and restoration of critical habitats.</p> <p><b>38.1.1</b> A monitoring program will be developed and implemented to track progress (over space and time) relative to the environmental objectives identified in this strategy, and relative to the regional biodiversity benchmark. Study plots will be identified in protected and non-protected areas as a basis for researching and monitoring ecological change.</p> <p><b>38.1.2</b> A regional environmental supply review will be developed to contribute to the amendment of this strategy and policies, and to conserve and protect healthy functioning ecosystems. The environmental supply review and the timber supply review will utilize the same definition of current management.</p> <p><b>38.2</b> An ecosystem-based approach to land and resource planning and management will be applied. In addition to other resource legislation, regulations and policies, the <i>Forest Practices Code of British Columbia Act</i>, will be used as a primary means of implementing an ecological approach to land and resource planning and management.</p> <p><b>38.3</b> A regional inventory plan will be developed that</p>



	<p>identifies and ranks information and mapping needed to support planning and management of terrestrial and aquatic ecosystems, and to support the development of air and water quality objectives. The regional inventory plan will identify decision criteria for collecting information on presence/absence, abundance, distribution, life history, and meta-population dynamics of species, associations and communities.</p> <p><b><i>38.4 Landscape unit planning will be consistent with this strategy (Resource Management Guidelines Chapter B Section 3.2). A landscape unit planning strategy will be developed within a year after this plan is approved by government, which will identify the process and schedule for finalizing landscape unit specific objectives.</i></b></p> <p><b><i>38.4.1 To facilitate appropriate application of the biodiversity emphasis options in the mountainous terrain in the Revelstoke area, units have been defined along regional connectivity corridors. It is understood locally that this approach is consistent with the FPC Biodiversity Guidebook, but there is some dispute of this interpretation. Higher level plan status or resource management zone designation is required to implement this biodiversity strategy.</i></b></p> <p><b>38.5</b> Consumptive uses (i.e. hunting, angling, water allocation, waste emissions) of environmental values will be regulated within the priority to maintain healthy, functioning ecosystems and populations.</p> <p><b>38.6</b> Where private lands provide an important contribution to the maintenance of terrestrial or aquatic ecosystem values, efforts will be made to coordinate public/private land planning and management, and to encourage appropriate conservation measures on private land. A regional private land acquisition program will be initiated to identify critical areas and the means to secure them, should such lands become available.</p> <p><b><i>38.6.1 To achieve appropriate conservation measures on private land, the Forest Practices Code should apply to private forest lands classified as managed forest land for tax purposes.</i></b></p>
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	<p><b>38.6.2</b> Private land managed by the Ministry of Environment, Lands and Parks should be managed according to the overall goals for Crown land, but with a focus on conservation values</p> <p><b>38.7</b> The introduction of non-indigenous plant and animal species into ecosystems will be severely restricted. Over time, efforts will be made to eliminate identified non-indigenous species through ecosystem restoration measures.</p> <p><b>38.8</b> Communication and consultation with the general public, industry, local government agencies and environmental user groups will aim to encourage awareness and voluntary compliance with environmental regulations, and adoption of codes of conduct that are consistent with environmental conservation objectives and strategies in this plan.</p>
<p><b>39.</b> Protect, conserve, and reduce risks to rare, threatened and endangered terrestrial and aquatic species.</p>	<p><b>39.1</b> In cooperation with the provincial conservation data centre, information will be obtained on rare, threatened and endangered species. The information will be used to monitor, protect and conserve species at risk.</p> <p><b>39.2</b> Inventories of key habitat areas and populations for red and blue listed species will be prepared and maintained and will be integrated into land and resource planning and decision-making processes at all levels.</p> <p><b>39.3</b> Species recovery plans for red, blue or regionally extirpated species will be prepared and implemented. Red, blue and regionally significant or extirpated species that are affected by forest or range practices will be considered candidates for designation as identified wildlife species under the Forest Practices Code (Appendix B-2.2). Essential habitats for these species will be identified and considered for designation as either wildlife habitat areas or sensitive areas under the Forest Practices Code, and addressed in landscape unit objectives.</p> <p><b>39.4</b> Critical habitats of red and some blue listed species will be protected, conserved or restored, (for example, through Goal 2 of the Protected Areas Strategy in the West Kootenays, or provisions of the Forest Practices Code) to manage to the desired habitat condition.</p>

<p><b>40.</b> Maintain wildland attributes necessary for ecosystem health through coordinated access planning for resource development and associated activities.</p>	<p><b>40.1</b> Site specific access issues will be addressed through local level strategic planning in a cooperative, integrated method and consistent with the Access Management Guidelines (<i>Resource Management Guidelines Chapter B Section 3.10</i>).</p>
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<p><b>B. TERRESTRIAL ECOSYSTEM HEALTH</b></p>	
<p><b>41.</b> Maintain the diversity and a suitable abundance of native terrestrial species of plants and animals, and the ecosystems upon which they depend.</p>	<p><b>41.1</b> A network of protected areas, landscape scale connectivity corridors, old growth management areas, wildlife tree patches, riparian reserves and appropriate levels of coarse woody debris will be developed and maintained through Landscape Unit Plans and Forest Development Plans Directions to provide opportunities for the distribution of species, populations and genetic material.</p> <p><b>41.2</b> Where appropriate, resource planning objectives and strategies on lands adjacent to, and within, protected areas will be managed to objectives which are consistent with one another within the context of Biodiversity Emphasis Options, Forest Practices Code guidelines, memorandums of understanding and provincial policy.</p> <p><b>41.3</b> Fragmentation of lands suitable for landscape level connectivity corridors (i.e., under represented ecosystems and key habitat areas) will be prevented and minimized through the application of the biodiversity and connectivity guidelines (<i>Resource Management Guidelines Chapter B Section 3.2</i>).</p> <p><b>41.4</b> Old growth management areas (as per Forest Practices Code) will be identified, preferably within or in close proximity to connectivity corridors, and will be managed to maintain appropriate interior forest habitat conditions, as per the Forest Practices Code Biodiversity Guidebook.</p> <p><b>41.5</b> Corridors will be managed and used, in accordance with the biodiversity emphasis levels established for those areas (<i>Resource Management Guidelines Chapter B Section 3.2</i>), to provide interim management of connectivity requirements until landscape unit boundaries and objectives are finalized.</p>

	<p><b>41.6</b> Site-specific resource development activities will, where possible, be designed to resemble the shape and pattern of natural disturbances.. <i>Patch size distribution, as defined in the Forest Practices Code Biodiversity Guidebook, will be deployed to emulate natural disturbance patterns.</i></p> <p><b>41.6.1</b> <i>To achieve patch size distribution, the following strategies will be implemented:</i></p> <p><i>a) on the Timber Supply Area and Tree Farm License 23 the general adjacency height (outside of scenic areas and community watersheds) will be changed from 3 metres to 2 metres</i></p> <p><i>b) on Tree Farm Licenses 55 and 56 patch size distribution analysis to meet the FPC Biodiversity Guidebook distribution replaces the adjacency height</i></p> <p><i>c) flexibility surrounding the maximum clearcut size will be exercised consistent with the patch size concepts in the FPC Biodiversity Guidebook.</i></p> <p><b>41.7</b> The coverage, accuracy and resolution of terrestrial ecosystem mapping will be upgraded over time, giving priority to areas of high resource use conflict.</p> <p><b>41.8</b> Landscape unit objectives will consider management of deciduous leading stands such as cottonwoods, aspen and birch for purposes such as biodiversity management.</p> <p><b>41.9</b> Wildlife habitat areas as defined in the =Identified Wildlife Management Strategy will be established where the need is identified during landscape unit planning.</p> <p><b>41.9.1</b> Road access development in key alpine habitats will be managed with mitigation standards and procedures, as they relate to regulated closure, reclamation and rehabilitation, to be pre-determined prior to approval.</p> <p><b>41.9.2</b> Guidelines will be prepared and implemented to minimize disturbance of wildlife populations in winter habitat areas resulting from recreation and commercial tourism, in particular, snowmobiling activities.</p>
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<p><b>42. Maintain the diversity and a suitable abundance of wide ranging carnivore populations and the ecosystems upon which they depend.</b></p>	<p><b>42.1</b> The quantity and quality of wide ranging carnivore habitat capability/suitability mapping will be upgraded, with a priority on grizzly bears.</p> <p><b>42.2</b> Prey species will be maintained at levels necessary to maintain viable populations of wide ranging carnivore species.</p> <p><b>42.2.1</b> Viable populations of prey species will be maintained through the implementation of the Forest Practices Code and hunting and trapping regulations. If predation increases on mountain caribou, alternative management approaches to reduce this predation will be implemented.</p> <p><b>42.3</b> <i>Grizzly bear management plans and management areas will be established in accordance with the provincial grizzly bear conservation strategy. Consistent with provincial policy direction, grizzly bear management areas, and associated management strategies, will not result in additional constraints on the timber supply in the short term.</i></p> <p><b>42.3.1</b> Priorities for grizzly bear inventory, management and planning will be in those areas where populations are most at risk and where high quality grizzly habitat exists.</p> <p><b>42.4</b> <i>Grizzly bear management guidelines will be implemented in areas with known high grizzly densities and known high risk areas (Resource Management Guidelines Chapter B Section 3.3).</i></p> <p><b>42.5</b> Local level strategic planning will incorporate information on grizzly bear densities, habitat and movement, with a view to maintaining target road densities (Resource Management Guidelines Chapter B Section 3.3) for high density or high risk grizzly areas.</p> <p><b>42.6</b> Food production (e.g., berries) will be encouraged in silviculture prescriptions in key grizzly areas. Herbicides will not be used for forest management on key forage areas, unless the forage opportunities are maintained or enhanced.</p>
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	<p><b>42.7</b> The Kootenay problem bear translocation policy will be implemented and will identify translocation opportunities in the event that public safety issues arise</p> <p><b>42.8</b> Bear/human conflicts will be minimized in forested areas through access management and adequate trail and campground design in recreation areas.</p> <p><b>42.9</b> <i>Bear/human conflicts will be minimized in the City and rural areas by reducing bear attractants, primarily through planning and enforcement, particularly at landfills, and increased awareness and understanding amongst citizens about bear habits.</i></p>
<b>43.</b> Maintain the existing mountain caribou populations.	<p><b>43.1</b> <i>Mountain caribou guidelines will be applied in key caribou habitat (Resource Management Guidelines Chapter B Section 3.5) at the stand and landscape level. Landscape unit objectives and Forest Development Plans will reflect the intent of the caribou guidelines.</i></p> <p><b>43.2</b> <i>In areas where caribou habitat overlaps with ungulate winter range, the management for caribou, including application of the mountain caribou guidelines, will take precedence.</i></p> <p><b>43.3</b> <i>Guidelines will be prepared and implemented to minimize disturbance of mountain caribou populations in winter habitat areas with respect to recreation and commercial tourism, in particular, snowmobiling activities.</i></p> <p><b>43.4</b> <i>As the long-term viability of the Revelstoke herd depends on maintaining connectivity with the northern herds, particularly the Wells Gray herd, land use decisions for the connection routes in the Okanagan LRMP and the Kamloops LRMP must reflect the need for continued caribou habitat management in these areas.</i></p>
<b>44.</b> Maintain the diversity of viable populations of ungulate species and the critical habitats on which they depend.	<p><b>44.1</b> <i>The quality of information on species-specific habitat requirements and ungulate habitat capability will be upgraded, over time, through field research and inventory mapping, and will modify the guidelines annually for use in the District Manager Forest Development Plan directional letter.</i></p>

	<p><b>44.2</b> <i>Ungulate management guidelines will be applied to critical ungulate winter habitat areas (Resource Management Guidelines Chapter B Section 3.4). Where caribou habitat or biodiversity management guidelines also apply, management practices will meet all the requirements.</i></p> <p><b>44.3</b> Ungulate forage and habitat enhancement measures (e.g., prescribed burning) may be undertaken in critical winter range and habitats, or as determined through local level strategic planning and ongoing environmental program delivery initiatives.</p> <p><b>44.4</b> Local level strategic planning will incorporate information on ungulate habitats and movement, with a view to reducing stress and displacement of wintering ungulates and maintaining target road densities (<i>Resource Management Guidelines Chapter B Section 3.4</i>).</p> <p><b>44.5</b> <i>Road and rail kill of ungulates will be minimized through cooperation between BC Environment and the authorities responsible for design and maintenance of highways and railways, driver education, and, where appropriate, enforcement of highway speed limits.</i></p>
<p><b>45.</b> Maintain and diversify the recreational value of wildlife.</p>	<p><b>45.1</b> Quality sport hunting opportunities of ungulates will continue to be offered to residents and non-residents of British Columbia.</p> <p><b>45.2</b> Wildlife viewing will be encouraged at times and places that do not put undue stress on wildlife species and populations.</p>
<p><b>C. AQUATIC ECOSYSTEM HEALTH</b></p>	
<p><b>46.</b> Protect and conserve aquatic ecosystem functions and processes.</p>	<p><b>46.1</b> A regional aquatic conservation strategy will be developed to guide decisions on the protection, conservation, restoration and monitoring of aquatic ecosystems. This strategy will incorporate principles of integrated watershed planning and management, established protected areas, appropriate operational practices for land development (e.g., <i>Forest Practices Code</i>, <i>Mineral Exploration Code</i>,) and relevant legislation (e.g., <i>Water Act</i>, <i>Fish Protection Act</i>, <i>Land Act</i>, etc.).</p>

	<p><b>46.1.1</b> A non-point source pollution abatement strategy will be developed and adopted for non-forestry related land based activities.</p> <p><b>46.2</b> <i>Watersheds and wetlands requiring restoration will be inventoried, prioritized and rehabilitated, primarily through the watershed restoration program of Forest Renewal B.C or other appropriate funding sources. Rehabilitation in fish bearing streams will include wild stock population enhancement and measures to restore sources of large organic debris and streamside vegetative cover.</i></p> <p><b>46.3</b> <i>Riparian reserves and management areas will be managed according to Forest Practices Code regulations and the standards and guidelines established in the Forest Practices Code Riparian Management Guidebook.</i></p> <p><b>46.4</b> A regional lake classification system will be implemented as per the Forest Practices Code.</p> <p><b>46.5</b> Forest Practices Code wetland classification and management will be implemented to protect and conserve wetland riparian ecosystems.</p> <p><b>46.6</b> Selected lakes, which currently do not contain fish, will be managed to prevent fish introductions so as to maintain their ecological integrity and serve as baseline indicators of these aquatic ecosystems.</p>
<p><b>47.</b> Ensure the sustainability of fish species diversity and populations, especially wild fish stocks.</p>	<p><b>47.1</b> Implement the regional fisheries strategic plan which identifies management objectives and strategies for specific fish species.</p> <p><b>47.2</b> <i>Where appropriate, watershed analysis will be performed on locally significant fish streams using a locally developed hydrological stability assessment process to define appropriate watershed-specific strategies for maintaining/restoring in-stream flows and sediment regimes. Stream systems requiring assessments are identified in Chapter B.4 - Resource Management Landscape Units Objectives and Strategies, and are listed in Chapter D.3 – Resource Management Projects in these recommendations.</i></p>



	<p><b>47.3</b> The quality of fish habitat inventories (including non-sport species) will be upgraded over time, as a basis for identifying and ranking sensitive/critical fisheries areas (e.g., reaches, pools, rearing areas, spawning areas, migration limits) that require protection and site-specific management action.</p> <p><b>47.4</b> On the basis of inventories, and through landscape level planning, appropriate fish habitats may be designated as sensitive areas or be classified under the Forest Practices Code Identified Wildlife Guidebook as wildlife habitat areas.</p> <p><b>47.5</b> Roads that cause chronic negative impacts to fish (e.g., sedimentation) will be assessed and ranked for adequate maintenance or permanent deactivation, as part of coordinated access management planning initiatives.</p> <p><b>47.6</b> In-stream flows that are adequate to maintain fish stocks will be determined. Consideration of these requirements will be incorporated into water licensing mechanisms.</p>
<p><b>48.</b> Maintain water quality, quantity and timing of flow at appropriate levels in community and domestic use watersheds.</p>	<p><b>48.1</b> <i>Greeley, Hamilton, Bridge and Dolan Creeks are officially designated as community watersheds and will be managed in accordance with the Community Watershed Guidebook under the Forest Practices Code. There will be annual reviews of the existing provincial list of community watersheds to determine additions or deletions.</i></p> <p><b>48.2</b> Domestic Watershed Guidelines will guide timber and subsurface access and resource development activities in domestic use watersheds (i.e., non-community watersheds) (<i>Resource Management Guidelines Chapter B Section 3.6</i>).</p> <p><b>48.3</b> Contingency measures should be available for domestic or community water supplies to be remediated if damaged by resource development.</p> <p><b>48.4</b> Water quality monitoring programs will be implemented in community watersheds and other high priority areas through a process of needs identification and prioritization.</p>

	<p><b>48.4.1</b> Water quality, quantity and timing of flow objectives will be developed in selected watersheds.</p> <p><b>48.5</b> Engineering guidelines for the construction and maintenance of domestic water supply systems will be developed and promoted.</p> <p><b>48.6</b> The means to share authority with regional governments in the regulation of water use and the protection of water quality, within designated pilot areas, will be explored.</p> <p><b>48.7</b> Water management plans will be prepared in high conflict areas as a component of landscape unit plans. These plans will guide water licensing decisions, community development planning and will provide information to other resource planning processes.</p> <p><b>48.8</b> The merits of requiring all domestic water use to be licensed will be assessed and, if deemed appropriate, amendment of the <i>Water Act</i> will be proposed.</p> <p><b>48.9</b> Roads that cause chronic negative impacts to domestic water use will be assessed and ranked for maintenance or permanent deactivation as part of coordinated access management planning initiatives.</p>
<p><b>D. AIR QUALITY</b></p> <p><b>49.</b> Maintain air quality within established national and provincial criteria.</p>	<p><b>49.1</b> Airshed management plans will be initiated.</p> <p><b>49.2</b> Industrial emissions (e.g., does not include range and wildlife burns) to airsheds will be limited through pollution prevention initiatives or enforcement of the permits or approvals under the <i>Waste Management Act</i>.</p> <p><b>49.3</b> Partnerships with communities and special interest groups will be developed to assist with the development of air quality management plans, and to target actions on localized sources of air contaminants (e.g., agricultural burning and smoke emissions from residences).</p> <p><b>49.4</b> Assistance will be provided to the forest industry to phase-out the use of beehive burners and to identify alternatives for woodwaste disposal.</p>

<b>E. RANGELAND ECOSYSTEMS</b>	
<b>50. Manage rangeland ecosystems within the limits of their sustainable carrying capacity.</b>	<p><b>50.1</b> Forage production and forage removal by both livestock and wildlife will be monitored on an ongoing basis. Management of forage will be modified, as appropriate, based on the monitoring results.</p> <p><b>50.2</b> A sufficient proportion of annual forage production will be retained to ensure rangeland productivity and health. The balance of annual forage production will be appropriately allocated between wildlife and livestock.</p> <p><b>50.3</b> The distribution of rangeland habitats will be maintained over space and time.</p> <p><b>50.4</b> Management strategies and tools (e.g., range riding, salting and water availability or intercept ranges and habitat enhancement) will be applied to enhance the temporal and spatial distribution of livestock and wildlife species within rangeland ecosystems.</p>
<b>51. Maintain and restore the integrity of riparian areas.</b>	<p><b>51.1</b> Riparian management monitoring and demonstration projects will be developed and undertaken so as to provide information to the implementation processes.</p> <p><b>51.2</b> Important riparian areas that need restoration from livestock and other sources of damage will be identified, and suitable rehabilitation and alternate management strategies will be developed and implemented.</p>

## Appendix B - 2.2 Kootenay/Boundary Region Red and Blue-Listed and Key Regionally Significant (Yellow-Listed) Wildlife Species under consideration as Identified Wildlife through the Forest Practices Code

Key to status: R= Red-listed; B= Blue-listed, Y= Key regionally significant

COMMON NAME	SCIENTIFIC NAME	STATUS	PRESENT In REVELSTOKE
<b><u>Amphibians</u></b>			
Coeur d'Alene salamander	<i>Plethodon idahoensis</i>	R	
Tailed frog	<i>Ascaphus truei</i>	B	
Northern leopard frog	<i>Rana pipiens</i>	R	
Spotted frog	<i>Rana pretiosa</i>	Y	*
<b><u>Reptiles</u></b>			
Painted turtle	<i>Chrysemys picta</i>	B	*
Rubber boa	<i>Charina bottae</i>	B	
<b><u>Birds</u></b>			
Eared grebe	<i>Podiceps nigricollis</i>	Y	
Western grebe	<i>Aechmophorus occidentalis</i>	R	*
American white pelican	<i>Pelecanus erythrorhynchos</i>	R	*
American bittern	<i>Bautaurus lentiginosus</i>	B	*
Great blue heron	<i>Ardea herodias</i>	B	*
Trumpeter swan	<i>Cygnus buccinator</i>	B	*
Wood duck	<i>Aix sponsa</i>	Y	*
Harlequin duck	<i>Histrionicus histrionicus</i>	Y	*
American avocet	<i>Recurvirostra americana</i>	B	
Long-billed curlew	<i>Numenius americanus</i>	B	*
Common golden eye	<i>Bucephala clangula</i>	Y	*
Bufflehead	<i>Bucephala albeola</i>	Y	*
Barrow's goldeneye	<i>Bucephala islandica</i>	Y	*
Turkey vulture	<i>Cathartes aura</i>	B	
Bald eagle	<i>Haliaeetus leucocephalus</i>	Y	*
Northern harrier	<i>Circus cyaneus</i>	Y	*
Sharp-shinned hawk	<i>Accipiter striatus</i>	Y	*
Cooper's hawk	<i>Accipiter cooperii</i>	Y	*
Northern goshawk subsp. <i>atricapillus</i>	<i>Accipiter gentilis atricapillus</i>	Y	*
Broad-winged hawk	<i>Buteo platypterus</i>	B	
Swainson's hawk	<i>Buteo swainsoni</i>	B	*
Peregrine falcon subsp. <i>anatum</i>	<i>Falco peregrinus anatum</i>	R	*
Prairie falcon	<i>Falco mexicanus</i>	R	
Sharp-tailed grouse subsp. <i>columbianus</i>	<i>Tympanuchus Phasianellus columbianus</i>	B	
Sandhill crane	<i>Grus canadensis</i>	B	
Upland sandpiper	<i>Bartramia longicauda</i>	R	*
Forster's tern	<i>Stern forsteri</i>	R	*
Flammulated owl	<i>Otus flammeolus</i>	B	
Western screech owl subsp.	<i>Otus kennicottii macfarlanei</i>	B	

COMMON NAME	SCIENTIFIC NAME	STATUS	PRESENT In REVELSTOKE
<i>macfarlanei</i>			
Northern pygmy owl	<i>Glaucidium gnoma</i> +B130	Y	
Long-eared owl	<i>Asio otus</i>	Y	
Northern saw-whet owl	<i>Aegolius acadicus</i>	Y	
Short-eared owl	<i>Asio flammeus</i>	B	*
Vaux's swift	<i>Chaetura vauxi</i>	Y	*
White-throated swift	<i>Aeronautes saxatalis</i>	B	
Black-chinned hummingbird	<i>Archilochus alexandri</i>	Y	
Lewis' woodpecker	<i>Melanerpes lewis</i>	B	
Williamson's sapsucker subsp. <i>nataliae</i>	<i>Sphyrapicus throideus nataliae</i>	R	
Pileated woodpecker	<i>Dryocopus pileatus</i>	Y	*
Brown creeper	<i>Certhia americana</i>	Y	*
Canyon wren	<i>Catherpes mexicanus</i>	B	
Western bluebird	<i>Sialia mexicana</i>	Y	*
Golden-crowned kinglet	<i>Regulus satrapa</i>	Y	*
Red-eyed Vireo	<i>Vireo olivaceus</i>	Y	*
Grasshopper sparrow	<i>Ammodramus savannarum</i>	R	
Bobolink	<i>Dolichonyx oryzivorus</i>	B	
<b><u>Mammals</u></b>			
Silver-haired bat	<i>Lasionycteris noctivagans</i>	Y	
Hoary bat	<i>Lasiurus cinereus</i>	Y	
Northern long-eared myotis	<i>Myotis septentrionalis</i>	R	*
Fringed myotis	<i>Myotis thysanodes</i>	B	
Townsend's big-eared bat	<i>Plecotus townsendii</i>	B	
Southern red-backed vole subsp. <i>galei</i>	<i>Clethrionomys gapperi galei</i>	B	
Southern red-backed vole (other subsp.)	<i>Clethrionomys gapperi</i>	Y	
Northern pocket gopher subsp. <i>segregatus</i>	<i>Thomomys talpoides segregatus</i>	R	
Least chipmunk subsp. <i>oreocetes</i>	<i>Tamias minimus oreocetes</i>	B	
Least chipmunk subsp. <i>selkirki</i>	<i>Tamias minimus selkirki</i>	R	*
Red-tailed chipmunk subsp. <i>simulans</i>	<i>Tamias reficaudus simulans</i>	R	
Red-tailed chipmunk subsp. <i>ruficaudus</i>	<i>Tamias ruficaudus ruficaudus</i>	R	
Wolverine subsp. <i>luscus</i>	<i>Gulo gulo luscus</i>	B	*
Marten	<i>Martes americana</i>	Y	*
Fisher	<i>Martes pennanti</i>	B	*
Badger	<i>Taxidea taxus</i>	B	
Grizzly bear	<i>Ursus arctos</i>	B	*
Mountain goat	<i>Oreamnos americanus</i>	Y	*
Bighorn sheep subsp. <i>canadensis</i>	<i>Ovis canadensis canadensis</i>	B	
Moose	<i>Alces alces</i>	Y	*
Elk subsp. <i>nelsoni</i>	<i>Cervus elaphus nelsoni</i>	Y	*
Mule deer	<i>Odocoileus hemionus hemionus</i>	Y	*
White-tailed deer	<i>Odocoileus virginianus</i>	Y	*
Caribou (southeastern populations)	<i>Rangifer tarandus</i>	B	*

COMMON NAME	SCIENTIFIC NAME	STATUS	PRESENT In REVELSTOKE
<b><u>Fish</u></b>			
Bull trout	<i>Salvelinus confluentus</i>	B	*
Chiselmouth	<i>Acrocheilus alutaceus</i>	B	
Mottled sculpin	<i>Cottus bairdi</i>	B	
Shorthead sculpin	<i>Cottus confusus</i>	B	
Umatilla dace	<i>Rhinichthys umatilla</i>	R	
White sturgeon (Kootenay River pop.)	<i>Acipenser transmontanus</i>	R	
White sturgeon (Columbia River pop.)	<i>Acipenser transmontanus</i>	R	*



## Chapter B Resource Management

### Section 3.0 Guidelines

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**NOTE:** The format of the *Kootenay-Boundary Land Use Plan Implementation Strategy* (Chapter 3, June, 1997) has been adopted and incorporated as much as possible in this section, with key revisions, additions and deletions that are appropriate to the Revelstoke area. ***Key revisions and additions are highlighted for easy reference.***



### **B. 3.1 Explanation of Resource Management Guidelines and Resource Value Maps**

A main goal that guided development of these recommendations was to not only provide a long-range, strategic vision for land and resource management, but also to provide sufficient clarity and detail to support local level strategic planning and operational level resource management decision-making. To that end, a series of resource management guidelines and associated resource value maps (as detailed in this section) were developed for key natural resource values. The guidelines and maps work in combination to provide specific, spatially referenced resource management guidance within the context of the overall management objectives and strategies outlined in the Resource Management General Direction. The guidelines supplement other existing resource management guidelines, such as the provincial series of Forest Practices Code guidelines.

Each of the resource management guidelines describes, for a particular value, the type and level of resource management practices/standards that are recommended in order to conserve the integrity of that resource value. The resource value maps are used in tandem with the resource management guidelines to show the recommended spatial extent of guideline application. The geographic locations of the values shown on the maps indicate the areas where the resource value is considered to have provincial, regional or local significance, based on assessments of scarcity and uniqueness of the value.

The information provided in the guidelines and maps will be used to instruct and guide all subsequent land use and natural resource management planning initiatives, including landscape level planning, local level strategic planning and operational planning. The expectation is that, where resource management guidelines overlap on the ground (e.g., where a grizzly bear guideline and an ungulate management guideline apply to the same geographic area), the requirements of all applicable guidelines should be applied, and the most constraining guideline (in terms of restrictions on resource development) should be implemented for that area. This should result in resource management practices that sustain all resource values in the area. Instructions to tenure holders that are issued by agencies responsible for overseeing Forest Practices Code operational planning requirements should clearly indicate the requirement for operational plans to consider the appropriate guidelines in this plan.

The resource value maps contained in this chapter are presented at a relatively small scale and thus provide only a general indication of the recommended extent of resource management guideline application. Larger scale resource value maps (available at the Ministry of Forests Columbia Forest District office in Revelstoke) should be referenced when greater geographical accuracy of resource management guideline application is needed.

The guidelines and associated maps were prepared on the basis of best current information, and in conformance with the planning constraint to limit short-term timber supply reductions in

recognition of community stability requirements. The guidelines are intended to be applied with sufficient flexibility to allow site-specific judgments and decisions which best fit individual circumstances and characteristics, within the context of the overall management objectives and strategies identified in the Resource Management General Direction. However, it is anticipated that the guidelines and maps will evolve over time. Such changes will likely result from a variety of factors, including:

- experience gained in implementation of the guidelines;
- new or better information due to ongoing inventory or research, and;
- refinement of the management direction by moving to a more local or site-specific level which will identify opportunities which could not be addressed at this scale.

Refinements and/or interpretations of the guidelines and/or maps, which may be required to ensure effective 'on-the-ground' delivery, will result from an inter-agency process. The two main vehicles for this purpose are inter-agency agreements (memorandums of understanding) and landscape unit plans and objectives. Any interpretations or changes to the guidelines or maps will be undertaken in a manner which is consistent with the intent of the guideline and in conformance with *Resource Management General Direction (Chapter B Section 1.2)*. ***In conformance with the Kootenay Boundary Land Use Plan provisions for Plan Amendment (see Kootenay Boundary Land Use Plan Implementation Strategy, June 1997, Chapter 6, Section 6.8), substantial changes to the guidelines and/or maps must be publicly reviewed before being approved by the Kootenay Inter-Agency Management Committee.***

## **B. 3.2. Management for General Biodiversity and Connectivity**

### **B. 3.2.1 Introduction**

#### **(a) Guideline Intent**

- To provide strategic direction for the management of General Biodiversity. As per the Forest Practices Code Biodiversity Guidebook, management for general biodiversity is based on the following principles and assumptions:
  - The more that managed forests resemble the forests that were established from natural disturbances, the greater the probability that all native species and ecological processes will be maintained.
  - The habitat needs of most forest and range organisms can be provided for by:
    - modeling and maintaining an optimum variety of patch sizes, seral stages, and forest stand attributes and structures across a variety of ecosystems and landscapes
    - maintaining connectivity of ecosystems in such a manner as to ensure the continued dispersal and movement of forest- and range-dwelling organisms across the landscape
    - providing forested areas of sufficient size to maintain forest interior habitat conditions and to prevent the formation of excessive edge habitat.
  - To sustain genetic and functional diversity, a broad geographic distribution of ecosystems and species must be maintained within forest and range lands.
  - To ensure that management for biodiversity is flexible and adaptive.
  - To maintain in perpetuity all existing native species across their historic distribution.
  - To manage for biodiversity across and within Landscape Units.
  - The conservation of biodiversity depends on a coordinated strategy that includes:
    - a system of protected areas at the regional scale
    - provision for a variety of habitats at the landscape scale
    - a system of connectivity corridors to enable genetic flow and recolonization potential
    - management practices that provide important ecosystem attributes at the stand scale.
- To maintain opportunities at the regional level for genetic exchange between populations and for shifts in the distribution of whole ecosystems in the face of catastrophic events. The intent is to also use the system of regional connectivity corridors to enhance management of rare habitats, red/blue listed and other regionally significant species, and ecosystems that are under-represented in the protected areas (i.e. < 12% by ecosection, bears, wolverines, etc.)

**(b) General management approach**

**Connectivity corridors**

The above intent will be achieved by applying the following general measures:

- the viability and effectiveness of core protected areas, as has been identified through the Goal 1 process of the Protected Areas Strategy, is enhanced through support zones and regional landscape connectivity (i.e. linkage corridors) which creates a network for genetic exchange and dispersal (see Map B1)
- the connectivity corridors to provide for genetic exchange and dispersal, the seasonal migration of a variety of species which therefore requires efforts to minimize further human-development linear barriers and rehabilitate existing barriers where appropriate.

**Biodiversity emphasis options**

The three biodiversity emphasis options are designed to provide a different level of natural biodiversity and a different risk of losing elements of natural biodiversity:

- The lower biodiversity emphasis option may be appropriate for areas where other social and economic demands, such as timber supply, are the primary management objectives. This option will provide habitat for a wide range of native species, but the pattern of natural biodiversity will be significantly altered, and the risk to habitat suitability, capability and effectiveness will be high.
- The intermediate biodiversity emphasis option is a trade-off between biodiversity conservation and timber production. Compared to the lower biodiversity emphasis option, this one will provide more natural levels of biodiversity and a reduced risk of eliminating native species from the area.
- The higher biodiversity emphasis option gives a higher priority to biodiversity conservation but would have the greatest impact on timber harvest, lower risk to extirpation of species.
- Specific direction on biodiversity management practices, such as the establishment of forest ecosystem networks, wildlife tree patches, old growth management areas, seral stage distributions, and coarse woody debris requirements within the three biodiversity emphasis options is outlined in the *Landscape Unit Planning Guide* and the *Forest Practices Code Biodiversity Guidebook*.

**Mature Plus Old and Old Seral Targets**

Establishing mature plus old and old seral targets is the primary purpose in landscape unit planning. Management strategies to achieve these targets must be flexible and adaptive. The objective is to plan the landscape unit so as to meet seral targets as soon as possible. Planning design should be ecologically sound while providing opportunities to harvest timber.

Several options can be considered for designing landscapes to meet conditions for mature plus old and old seral targets while maintaining opportunities for harvesting. Some of the options appear below:

1. Setting up a problem solving forum at the district planning level that interprets and agrees to design landscapes that meet seral targets with negotiated approaches to achieving short term wood supply in an ecologically sound manner.
2. Design landscapes in a matrix of patch sizes according to the guidebook which would facilitate reducing green-up and adjacency constraints and therefore free up short-term wood. This is an ecologically appropriate approach and an example of how to work towards this patch size matrix objective would be to immediately reduce green-up in general forestry areas from 3 meters to 2 meters and have no adjacency rules applied for partial harvesting. Another approach may be to use the early seral targets in the guidebook as a planning guide to approving cutting permits rather than using green-up standards.
3. Manage old, and old plus mature seral stage requirements to ensure representation at the subzone variant level within each landscape unit.
4. Where mature plus old and old seral deficits exist in High and Intermediate Emphasis interim Landscape Units, design a recruitment strategy that will identify Old Growth Management Areas and mature areas that will meet the seral targets in the shortest time frame and incorporates the most appropriate areas to meet connectivity, ecosystem representation, and interior conditions. The general management approach is not to harvest old seral stands if the landscape unit is currently below the seral target. However there may be exceptional circumstances where it makes ecological sense to harvest a small portion of old seral if other areas can be recruited in large patches.
5. Where there currently is an excess of mature plus old or old in a landscape unit, where possible, the general management approach would be to plan harvesting in the youngest of the stands first.
6. Where no harvesting opportunities appear to exist other options could be pursued such as:
  - Old growth could be reduced to 1/3rd of the target in Low Emphasis. The amount of draw down should be based on a management unit (Tree Farm Licence/Timber Supply Area) and landscape specific circumstances and recruitment strategies should be in place to confirm that the full target can be achieved by the end of the third rotation.
  - If definitions of the desired attributes for old and mature forests can be established, managing younger forests to develop these attributes, as well as setting aside existing old and mature forests now, may be ecologically sound.
  - Silvicultural standards could be modified to achieve old attributes in a shorter time frame when recruiting from younger stands.

- Varying age definitions for certain species profiles might be a suitable option that could be used to meet targets while achieving landscape seral target objectives. Discussion of such changes will be undertaken preferably within the context of a coordinated provincial process involving Ministry of Forests, Ministry of Environment, Lands, and Parks, Industry and Environmentalists.
- Using alternative targets from the ones used in the guidebook is possibly another suitable option. Discussions of such changes will be undertaken preferably within the context of a coordinated provincial process involving Ministry of Forests, Ministry of Environment, Lands and Parks, Industry and Environmentalists. These type of changes would be backed up with data and scientific scrutiny.

Chapter 5 of the *Higher Level/ Plan Policy and Procedures* and the *Landscape Unit Planning Guide* provides direction on assigning biodiversity emphasis options and achieving seral target objectives.

### **Connectivity management**

The following principles regarding connectivity management will be refined and reflected in local level strategic planning processes. In the interim, these principles are to be used within the allocated biodiversity emphasis options to address the spirit and intent of regional connectivity during operational planning and decision-making:

- to meet habitat requirements, mixed plant species management will be promoted, with an emphasis on species which naturally occur on specific ecosystems
- within the allocated emphasis options, efforts should be made to concentrate retaining attributes in areas adjacent to protected areas
- within the allocated emphasis options, maintain existing old growth stand attributes through designation of old growth management areas and forest ecosystem networks within the connectivity corridors wherever possible
- promote a coordinated, planned approach to minimize linear barriers in low passes to accommodate movement
- when connectivity corridors overlap with other values requiring access management (e.g. priority grizzly bear habitat, ungulate winter range, sub-alpine/alpine grasslands, wildland areas or mountain caribou habitat) the priority for access planning, regulation and/or rehabilitation will be within the connectivity corridors
- a private land acquisition program (see Resource Management General Direction) will focus on critical habitats within connectivity corridors should such lands become available.

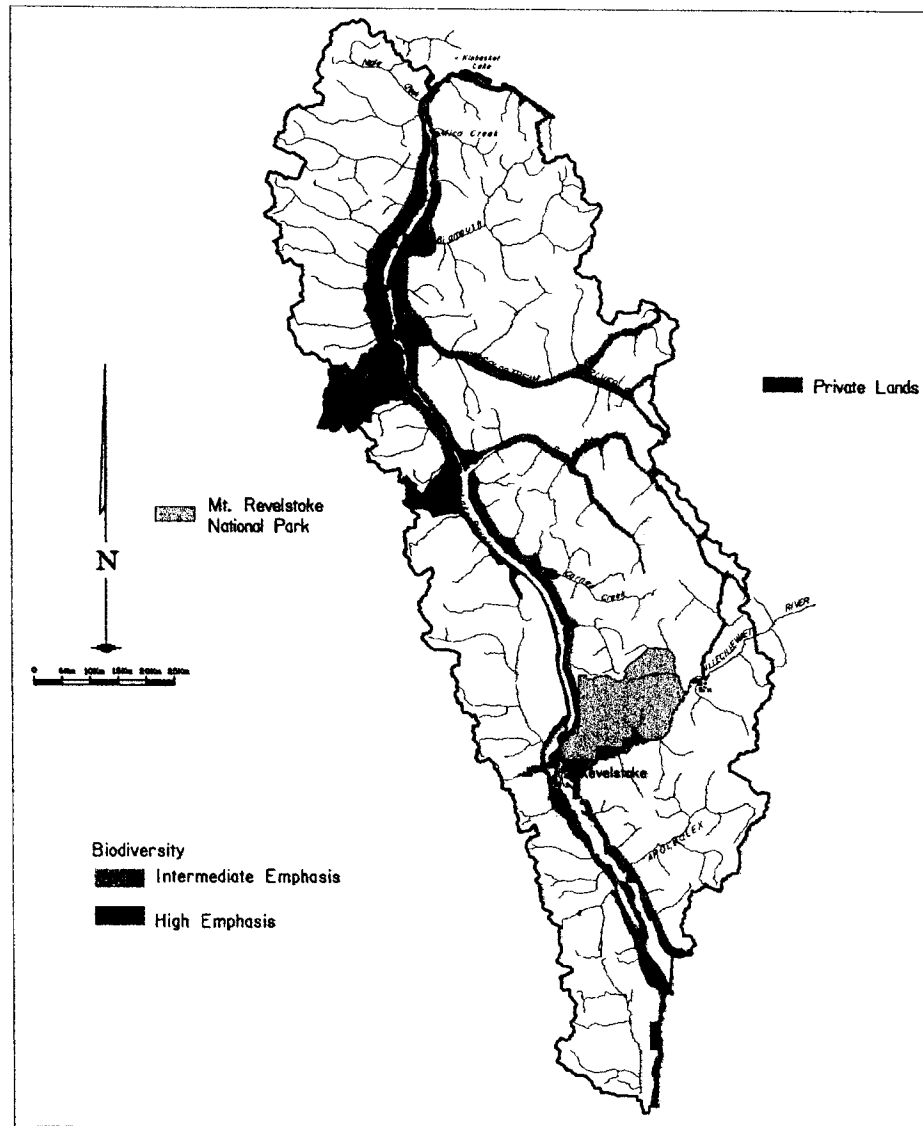
### **B. 3.2.2 Biodiversity Resource Emphasis Assignment in the Revelstoke Area**

*To facilitate appropriate application of the biodiversity emphasis options in the mountainous terrain in the Revelstoke area, units have been defined along regional connectivity corridors. While it is understood locally that this approach is consistent with the Forest Practices Code Biodiversity Guidebook, there is some dispute of this approach within government outside the local level. See Map B1 for the recommended location of high, intermediate and low biodiversity emphasis.*

*Chapter 5 of the Higher Level/ Plan Policy and Procedures recommends allocation of biodiversity emphasis options with 10 per cent of the land base in high emphasis, approximately 45 per cent in intermediate emphasis and approximately 45 per cent in low emphasis. Implementing these recommendations as well as managing for mountain caribou in high quality habitat areas would have had unacceptable timber supply and resource development impacts in the Revelstoke area.*

*To minimize these impacts, areas having the highest quality biological values and the least interaction with development values were assigned high and intermediate emphasis. Consequently, important regional connectivity corridors, underrepresented ecosystems for protection of old growth, and critical mountain caribou habitat were considered in the allocation of high and intermediate biodiversity emphasis options. As much as possible, high and intermediate biodiversity emphasis was assigned to overlap the management area for several environmental values including mountain caribou, ungulates, riparian areas and some fisheries, to minimize the collective implications to the timber supply. Also, as the management guidelines for mountain caribou (see Section B. 3.6) are very similar to the requirements for intermediate biodiversity, the area assigned to mountain caribou habitat was considered to contribute to the intermediate biodiversity target.*

*In 1996, when the biodiversity emphasis recommendations were developed, the calculation of the per cent area assigned to high and intermediate was based on the current forest inventory and operable area. This analysis indicated 9.6 per cent of the operable area was assigned to high emphasis, with 22 per cent assigned to intermediate emphasis, and 23 per cent assigned to caribou management. Since 1996, a new forest inventory has been completed, new operability lines have been developed, and the Landscape Unit Planning Guide has clarified that the 'timber harvesting landbase' (the area currently available and suitable for timber harvesting), rather than the operable area (which includes the timber harvesting land base as well as dispersed areas that are unsuitable for timber harvesting) is to be used as the basis for calculating biodiversity emphasis achievement. Table 1 shows how this new information has resulted in changes in the original percentage assignment calculations.*



**Map B1. Biodiversity emphasis options**



**Table 1. Percentage of area assigned resource management practices**

<i>Date and area</i>	<i>Percent of area assigned</i>				
	<i>High biodiversity</i>	<i>Intermediate biodiversity</i>	<i>Caribou management</i>	<i>Ungulates only</i>	<i>Low biodiversity only</i>
<i>1996 based on operable area</i>	9.5	22	23	0	45.5
<i>1996 based on timber harvesting land base</i>	8.5	22	23	0	44.5
<i>1999 based on timber harvesting land base</i>	7.5	27	19	5	41.5

*The Committee has considered whether to revise the original biodiversity recommendations in light of this new information and have decided to retain the original recommendations, primarily because the total area of high biodiversity assignment is roughly equivalent (10,300 hectares), and these calculations will continue to change as new information becomes available.*

*As the recommended assignment of biodiversity emphasis areas is not consistent with the current requirements of the Forest Practices Code, the Minister's Advisory Committee recommends that this component of the strategy be granted higher level plan status under the Code. This status provides the legal direction to implement this recommendation although it is not consistent with the current requirements.*

### **B. 3.2.3 Operational Guidelines for the Revelstoke Area**

*The seral stage requirements for low, intermediate and high biodiversity emphasis for forests within the Revelstoke area generally follow the Forest Practices Code Biodiversity Guidebook outlined in Table 2 at the end of this section, with the following exceptions:*

- *No early seral stage requirements*

*As the mature and old forests are the most important biological values in the forests of this area, reduced emphasis is warranted on the early seral stage requirements. Consistent with*

- *Patch size analysis to replace green-up and maximum block size requirements*

*The range of patch sizes provided in the Biodiversity Guidebook and Landscape Unit Planning Guide for Natural Disturbance Type 1 (30-40% of area with patches less than 40 hectares, 30-40% of the area with patches 40-80 hectares and 20-40% of the area with patches 80-250 hectares) were analyzed as an alternative for green-up requirements.*

*Patches are mapped and digitized with smaller patches in areas which naturally have smaller timbered areas such as steep, narrow valleys with frequent snow slide chutes, and larger patches on rounded landforms where large fires naturally created large openings.*

*As spatial distribution of harvesting is now driven by the desired patch size distribution, the usual green-up and maximum block size requirements are not needed. Patch size distribution analysis is required to verify achievement of the desired distribution.*

*As future timber supply reductions are forecast for the Revelstoke Timber Supply Area, and Tree Farm License 23, the above practices developed for Tree Farm Licence 55 and 56 could be considered for these areas in the future.*

*provincial policy, it is recommended that early seral stage requirements be dropped for managing these forests.*

- *Achievement of seral stage requirements within landscape units (proportionality)*

*The unique allocation of biodiversity emphasis along connectivity corridors, and the reduced total allocation below the provincial standard of 10% high/45% intermediate/45% low, makes it critical that the area within these corridors meet the full seral stage requirements as much as possible. Although provincial direction is to fulfill the seral stage requirements using inoperable areas first, this has not been implemented in the Revelstoke area because a very large portion of the forested landscape is inoperable (often as much as 75%), which would lead to little or no biodiversity management within these critical corridors. To ensure the full recommended biodiversity management within the biodiversity corridors, the seral stage requirements must be met proportionally from the operable and forested inoperable portions of each corridor within each landscape unit – areas outside the corridors cannot be counted towards fulfilling the biodiversity requirements of the corridor.*

- *Special practices for Tree Farm Licenses 55 and 56*

*The high concentration of biological values in the two northern Tree Farm Licenses (Evans Forest Products TFL 55 and Revelstoke Community Forest Corporation TFL 56) have required adjustments to provincially developed biodiversity practices, as provided for by provincial policy, to achieve acceptable timber supply impacts. Within TFL 55, 80 percent of the operable land base is assigned to management for intermediate biodiversity, mountain caribou or ungulates, while slightly over 85% of the operable area of TFL 56 is assigned to management of these values (compared to 50 percent in the TSA and 30 percent in Pope and Talbot's TFL 23). As reassigning management of these values to other units in the area was not possible because of their specific geographic location within the two TFLs, the following practices were developed to address projected timber supply impacts, without unacceptably increasing the risk to conservation values:*

- *Reduction of mature and old seral requirements*

*Low emphasis biodiversity requirements were reduced consistent with provincial policy as follows:*

- *no mature seral goals*
- *1/3 of the old seral goals required in the first rotation, with the full goal requirements achieved in three rotations.*

**Table 2. Biodiversity Emphasis Seral Stage Requirements for the Revelstoke Area**

**A. Natural Disturbance Type 1**

- all of the district except low elevation portions of the valley bottom south of town

**Interior Cedar-Hemlock**

<b>Guideline</b>	<b>Low emphasis biodiversity</b>	<b>Intermediate emphasis biodiversity</b>	<b>High emphasis biodiversity</b>
Green-up	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested
Early seral	N/A	N/A	N/A
Old and mature (proportional <sup>1)</sup> )	More than 17% older than 100 years <sup>2</sup>	More than 34% older than 100 years	More than 51% older than 100 years
Caribou (operable area with slopes less than 80%)	More than 40% older than 140 years with 10% being older than 250 years	More than 40% older than 140 years with 10% being older than 250 years	More than 40% older than 140 years with 10% being older than 250 years
Old (proportional <sup>1)</sup> )	More than 13% older than 250 years <sup>3</sup>	More than 13% older than 250 years	More than 19% older than 250 years

<sup>1)</sup> This requirement must be met on both the Crown operable forest and the Crown forested landbases, for each variant, within a landscape unit (ie. proportionality)

<sup>2)</sup> There are no mature requirements in low emphasis areas in Tree Farm Licenses 55 and 56 for three rotations.

<sup>3)</sup> One third of the old requirement must be met in low emphasis areas in Tree Farm Licenses 55 and 56 for three rotation.

### Engelmann Spruce-Subalpine Fir

Age category	Low emphasis biodiversity	Intermediate emphasis biodiversity	High emphasis biodiversity
Green-up	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested
Early seral	N/A	N/A	N/A
Mature plus old (proportional <sup>1</sup> )	More than 19% of forested area must be older than 120 years <sup>2</sup>	More than 36% of the forested area must be older than 120 years	More than 54% of the forested area must be older than 120 years
Caribou (operable area with slopes less than 80%)	More than 40% older than 140 years with 10% being older than 250 years	More than 40% older than 140 years with 10% being older than 250 years	More than 40% older than 140 years with 10% being older than 250 years
Old (proportional <sup>1</sup> )	More than 19% older than 250 years <sup>3</sup>	More than 19% older than 250 years	More than 28% older than 250 years

<sup>1</sup>) This requirement must be met on both the Crown operable forest and the Crown forested landbases, for each variant, within a landscape unit (ie. proportionality)

<sup>2</sup>) There are no mature requirements in low emphasis areas in Tree Farm Licenses 55 and 56 for three rotations.

<sup>3</sup>) One third of the old requirement must be met in low emphasis areas in Tree Farm Licenses 55 and 56 for three rotation.

## B. Natural Disturbance Type 2

- low elevation valley bottom lands south of town - Interior Cedar-Hemlock only

### Interior Cedar-Hemlock

Age category	Low emphasis biodiversity	Intermediate emphasis biodiversity	High emphasis biodiversity
Green-up	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested	Harvested areas must be regenerated with forests at least 2 metres tall before adjacent timber is harvested
Early seral	N/A	N/A	N/A
Mature plus old (proportional <sup>1</sup> )	More than 15% of the forested areas must be older than 100 years	More than 31% of the forested areas must be older than 100 years	More than 46% of the forested areas must be older than 100 years
Old (proportional <sup>1</sup> )	More than 9% older than 250 years	More than 9% older than 250 years	More than 13% older than 250 years

- <sup>1</sup>) This requirement must be met on both the Crown operable forest and the Crown forested landbases, for each variant, within a landscape unit (ie. proportionality)

## **B. 3.3 Grizzly Bear Management Guidelines**

### **B. 3.3.1 Introduction**

#### **(a) Guideline Intent**

To provide the amount and distribution of habitat required to maintain suitable population levels and distribution of grizzly bears.

To minimize bear-human interaction so as to avoid human injury and/or mortality as well as the displacement of grizzly bears either through forced relocation or mortality resulting from past human conflicts, habitat loss and excessive hunting.

#### **(b) General Management Approach**

The above intent will be achieved by applying the following general measures:

- conserving highly productive and/or critical feeding and breeding habitats, and ensuring bear access to these habitats
- setting road densities and distribution objectives by managing access in designated units (access management measures will be refined through landscape unit planning processes)
- using timber harvesting and silvicultural methods that sustain bear food production
- avoiding residential and recreational development-related conflicts
- eliminating improperly managed carnivore attractants (e.g., uncontrolled landfills)
- using landscape-level forest ecosystem networks (FENS) and regional connectivity corridors to provide dispersal corridors between areas of population concentrations (such as parks)

These guidelines will be refined through adaptive management. Their application will be reviewed to identify potential modifications which may improve the ability to meet the objective of enhancing Grizzly Bear habitat. The guidelines are intended to be applied with sufficient flexibility to allow site-specific decisions that best fit individual landscapes.

### **B. 3.3.2 Grizzly Bear Priority Habitats**

These guidelines apply to Grizzly Bear Priority habitats, identified on Map 2, which represent areas of high grizzly bear density and priority recovery areas. For the purposes of future local level strategic and operational planning, the grizzly areas have been classified into priority 1, 2 and 3 habitat management areas that are derived from habitat suitability indices, as per Fuhr and Demarchi (1994), and a qualitative ranking of draft landscape units within forest districts.

As per the provincial Grizzly Bear Conservation Strategy, grizzly bear management areas will be further defined and designated into a range of management types. These management units will provide for the management of site-specific grizzly bear habitats (e.g., denning and concentrated feeding sites) while ensuring integration with the resource management objectives and strategies.

Grizzly bear habitats will be further defined based on the landscape units and estimated population densities. Further inventory and mapping at the landscape level will identify critical habitats for operational level planning and decision-making and will be used as the basis for modeling seasonal habitat values and conducting a patch and landscape analysis.

**Note: Implementation of the Grizzly Bear Conservation Strategy within the context of the land use plan will continue and will result in refinements to these grizzly bear management guidelines and the map of priority grizzly habitats. These refinements will be reflected in subsequent local level strategic planning and operational plans. While the entire guidelines will be reviewed, the \* symbol identifies the key aspects which are priorities for discussion. In the interim, the focus on grizzly bear management will be relative to avalanche chutes, access requirements, and site specific identification of feeding sites. It is understood at this time that habitat management requirements for grizzly bears must be achieved within the biodiversity seral age requirements in each landscape unit.**

In determining critical foraging, consideration will be given to:

- The importance of the site on a landscape basis, including whether negative impacts on it could potentially limit local populations.
- Cumulative impacts (monitoring and analysis) of nearby developments and activities.

In general, critical areas are defined as those sites which are essential to a grizzly bear's life history. The life requisite variables are food, shelter, breeding habitat, and travel corridors. The following areas are suggested:

- post wildfire shrubfields
- avalanche tracks
- alpine meadows
- riparian habitats
- wet seeps
- other areas identified as critical

These critical habitats will be identified by local level strategic and operational plans. Buffers and/or access management should be maintained around critical habitats, except where greater environmental problems would be created by maintaining a complete reserve within the buffers (such as by re-routing roads into inappropriate locations).



*Note: The entire Revelstoke area has been identified at the regional level as Priority 1 or 2 habitat. A more detailed local map is to be developed to more accurately define key habitats.*

**Map B2. Grizzly Bear Priority Habitats**

### **B. 3.3.3 Operational Guidelines**

#### **(a) *Interim Direction***

To more accurately develop and apply guidelines, better information is required regarding grizzly bear densities and habitat usage. Through ongoing and future inventory and research, such information will be integrated into both local level strategic and operational planning. In the interim, management of grizzly bears will be addressed using grizzly bear management units as defined by the Provincial Grizzly Bear Strategy (see Section 3.2) and biodiversity emphasis option allocation as described in Section 3.2. Within the context of these biodiversity emphasis options, resource managers should, in the interim, seek to apply the intent of these guidelines through operational planning and decision-making with a priority focus on management of avalanche chutes and access requirements.

#### **(b) *Forest Harvesting Guidelines***

Silvicultural systems commonly used in timber management are clearcuts, seed tree, shelterwood and single or group-tree selection. In some locations, these methods can be used to enhance grizzly food and are discussed in more detail below. Specific harvesting guidelines are suggested as follows:

##### **Clearcuts**

- cutblock sizes should vary according to the patch size recommendations within the Biodiversity Guidebook and to site specific concerns that are identified at the Landscape Unit and Forest Development Plan level by BC Environment staff.
- edge can be maximized and sight distance reduced to 200m by creating an undulating cutblock boundary. If access is controlled, this guideline may be modified.
- \* cuts should be planned so that adjacent harvested units qualify as useable hiding cover as indicated by an analysis of landscape patterns. Harvesting schedules among sub-drainages should also be alternated to meet cover requirements at a Landscape Unit scale.
- clearcuts should be screened from roads by leaving a strip of trees (for example, 50m) to promote bear use of early vegetative stages and to minimize poaching from access roads where appropriate.
- \* avoid cutting areas adjoining meadows or other natural openings or foraging areas used by Grizzly Bears, as identified by BCE district staff (see buffers to foraging areas in the forage enhancement section of this guideline).

##### **Partial Cutting**

Partial cutting is important to retain security cover adjacent to high quality feeding areas (i.e. avalanche paths and riparian areas). In general, some important herbs and fruit bearing shrubs are also benefited by selection cuts. \* A specific recommendation for partial cutting is removal of 20 - 50% of the stands basal area, dependent on wind

firmness of affected stand, where it can be accommodated as per the Forest Practice Code and biodiversity emphasis option allocation. Partial cutting may not be appropriate for shade intolerant species such as lodgepole pine when quick regeneration is needed or near clearcuts where adequate cover for travel, escape, and rest may not be available.

### **Age Structure**

Long-term grizzly habitat management should maximize vegetation diversity, approximate natural conditions and include late successional stages. Specifically, managers should work toward maintaining a mosaic of age classes consistent with Grizzly Bear habitat requirements for a particular Landscape Unit. Wherever possible, the distribution should conform to the Biodiversity Guidebook for High and Intermediate Emphasis by NDT.

### **Seral Stages**

Diversity of seral stages is generally the rule when managing forested lands for wildlife. However, some seral stages are of more value as grizzly habitat components than others. Specifically:

- early successional stages are valuable in producing grizzly foods (grasses, herbs, and fruits).
- mid-successional stages and pole-size stands of timber are of less value, particularly if they are dense, single species, even-aged stands.
- over-mature (age class 8+) and mixed aged stands should be retained for thermal cover and denning habitat.
- single entry uneven-aged management is appropriate in some locations to maintain cover..

### **Forage Enhancement**

In areas that are designated by BC Environment as being important for bear foraging, silviculture regimes should be compatible with the maintenance or enhancement of bear food production (e.g., as huckleberry, blueberry, mountain ash, horsetail).

Site preparation methods (Interagency Grizzly Bear Committee, 1986) include:

- prescribed-fire slash removal where it will enhance food production, provided that on some areas large coarse woody debris is maintained and burn intensity is regulated. The ratio of intensity will be determined at a landscape scale using a stochastic distribution process.
- promote soil disturbance that creates the establishment and growth of food plants.

Restocking prescriptions should aim for stand structure and composition similar to that present in adjacent blocks. Clumped tree distribution should be favoured over evenly-spaced stems. Existing openings or gaps in the stand should be identified prior to

harvesting and used as the basis for PHSPs aimed at creating and maintaining gaps and clusters in the managed stand (Hamilton, 1994a).

Vegetation management activities should be restricted to the area immediately surrounding individual trees or clusters of trees. Motor-manual brushing is the preferred method. Treatments should be designed to directly reduce competition with crop trees, so grizzly forage species that are not direct competitors with crop trees will be avoided (Hamilton, 1994a).

Foraging habitats (including high elevation shrubfields, berry patches, alpine meadows, avalanche paths and riparian areas), where identified and mapped by BCE district staff, are to be avoided by managing access and buffering from planned roads and cutblocks. Buffer recommendations for these habitats are 100m on flat ground and greater on steeper slopes.

#### **Timing of Activity**

Past and future activities must be put in perspective and harvest planning should consider long term consequences. Cumulative effects analysis procedures are useful for determining the impacts of proposed logging activities on bear populations. Specific suggestions for scheduling harvesting activities follow:

- logging should take place at a time of relatively little or no biological importance to bears.
- logging should be concentrated into the shortest time frame possible.
- \* logging operation should seek to concentrate the cut and associated activities, therefore providing areas of refuge for grizzly bears within other parts of the drainage. To achieve this intent, the following should be considered: operations should not take place simultaneously on adjacent areas (same or next drainage); a series of cuts at spaced periods to allow regeneration between harvest periods (i.e., 2m green up); large scale permits (>20% B.A. removal) should not be planned on adjacent watersheds (same or next drainage) within short (10-15 years) time intervals; these watersheds should be modeled to achieve optimum levels of Grizzly Bear conservation. Drainages should be alternated when accessed for resource extraction within landscape units, with one side of a watershed being utilized in order to concentrate harvesting impacts.
- timber harvest schedules should be coordinated with other land activities to reduce simultaneous impacts.
- harvesting should be scheduled to optimize vegetation responses beneficial to grizzlies.

#### **Forest Management Adjacent to Snow Avalanche Tracks**

In absence of a professional field assessment, the following provisions will apply:

- Snow avalanche tracks (i.e., slide chutes), which are recognized by BCE staff as significant habitats require establishment of Avalanche Track Management Zones

(AMZs). The primary objective of AMZs is to ensure sufficient security cover is maintained adjacent to avalanche tracks frequented by grizzly bears.

- *Timber harvesting adjacent to avalanche chutes should only be permitted on one side of a chute at any time. The area remaining unlogged on the opposite side of the avalanche track from the logged area must be large enough to be a feasible harvesting cutblock in the future. The logged area must be regenerated with new forest that is at least 10 m tall to provide security cover for bears before the forest on the unlogged side of the chute can be harvested*
- Forest harvesting within the AMZs should emphasize retention of cover through the application of partial cutting systems, such as single tree selection or group selection. In general, the objective should be to maintain the stand structure and species composition present in unmanaged stands on similar sites. Tree removal should be limited to approximately 20% of the pre-harvest basal area on one side of an avalanche track on single or widely spaced avalanche tracks. Areas between closely spaced avalanche tracks should be managed on long rotations with infrequent entries.
- Where possible snow avalanche tracks should be crossed at mid slope, and crossings on runout zones in toe slope positions should be avoided to minimize disturbance to bears. Roads which cross avalanche tracks identified as critical carnivore habitat should provide temporary access only, and be closed when not in use.

#### **Forest Management In Riparian Habitat**

Riparian zones are heavily used by grizzlies for feeding and as travel corridors. Harvesting is possible with the intent to open up the riparian management zone for forage production, except within the riparian reserve which should be avoided for the purposes of timber harvesting. Specifically:

- Using FPC riparian guidelines for riparian habitats as per guidebook. In site specific stream areas ranked as significant grizzly bear habitats by BCE staff, consideration should be given to manage these habitats as sensitive areas.
- soil disturbance should be minimized particularly on mesic or hydric sites.
- riparian vegetation should not be altered within code designated reserves .
- low intensity broadcast burning or hand piling and spot burning are recommended as site preparation methods. High intensity burns on these sites may destroy rhizomes.
- riparian areas at the base of avalanche tracks should be managed to retain connectivity to upper elevations.

**(c) Access Management**

In critical grizzly bear habitats active, open forest road density (i.e., currently accessible by motorized vehicles) are generally too high to achieve the desired management for grizzly bears. MOF District Managers must consider ways to reduce these densities. Two pilot projects have been initiated to recommend road density targets that will not significantly affect short term wood supply and safeguard grizzly bears from displacement or harassment.

Targets will vary, depending on carnivore management planning, carnivore densities and factors influencing the effect of roads on carnivores, such as the shape of valley, volume of traffic, location of roads and junctions, timing of use, and visibility.

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement or to access private property and Land Act tenures, are relatively few. In areas of concern within grizzly bear habitat, new road construction for the purpose of mineral exploration, energy development, settlement development, and access to private land will be subject to an enhanced referral (see *Access Management Guidelines Section 3.10.3*) to identify specific operating conditions. In these rare cases where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and target road densities may be temporarily exceeded. The permitting government agency must promptly notify the Ministry of Forests District Manager of the development application in cases where longer-term access is required. Operational planning will be initiated by government to determine how the targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

The process and general methodology for managing access within grizzly bear habitat, including strategies to be used to achieve the target road density, are summarized in the *Access Management Guidelines* (Section 3.10). However, specific direction for access management within and around critical grizzly bear habitat includes:

- emphasizing a concentration of resource development and active roads to small portions of a drainage at any one time, in contrast to concurrent dispersed development activities. For example, this may be achieved by limiting forest harvesting activity at any one time to certain tributaries of a valley, to one side of a valley, the upper or lower portion of a valley, or by closing off all side roads not leading directly to the areas of activity. Under this scenario, all forest harvesting roads should be closed in the portion of the drainage that was originally active before moving into the next portion of the drainage. Where necessary, roads for other resource activities will be regulated through specific permitting conditions identified through an enhanced referral (see Section 3.10.3).
- avoiding roads, where possible, in high-elevation post-wildfire shrubfields, riparian habitat, seepage areas and avalanche slopes.
- identifying specific measures through resource development plans that result in effective permanent or seasonal closures, such reclaiming road designed for short-term access to cutting

- and/or mineral exploration areas and designing main haul roads to incorporate effective physical road closures at impassable barriers, such as river crossings.
- until the Grizzly Bear Conservation Strategy has identified Conservation, Recovery, Benchmark and Sustainable Areas and associated priorities for access management, the priority for access management planning and activities will be where priority grizzly bear habitat overlaps with regional connectivity corridors (see Section 3.2).

*Priorities for access management planning, including defining road densities, and related activities, to address grizzly bear conservation in the Revelstoke area are:*

- *highest priority - Tangiers River, Woolsey Creek, Downie/Sorcerer, Akolkolex River, Carnes Creek*
- *next priority - Goldstream River and the westside of the Columbia River from Frisby Creek to Pat Creek*
- *lowest priority - Bigmouth Creek*

**(d) Attractant Management**

Locations for new sanitary landfills should avoid Conservation Management Areas (as per the Grizzly Bear Conservation Strategy). Where this is not possible, there should be a waste management plan/permit which must include plans to minimize attractants available to grizzly bears.

Existing landfills in Conservation Management Areas should be reviewed by BCE staff, and where necessary, a management plan developed to minimize attraction to the area. If landfills occur in key bear habitat and there is a history of problem bears, they should be closed or modified as bear-proof.

Bear/human conflicts will be minimized in the City and rural areas by continuing the Bear Aware program which promotes removal of bear attractants and increased awareness and understanding amongst citizens about bear habits.

All work camps in bear habitat should thoroughly incinerate garbage at least daily, or provide bear-proof garbage containers. These requirements should be included in all permits for activities involving the establishment of camps. All Ministry of Forests, BC Parks, Highways and private campsites should eliminate open barrel waste disposal containers and provide bear-proof containers or require users to independently store and remove their waste for disposal off the site.

**(e) Range Management**

Expansion of range tenures (cattle, horses or sheep) and sheep vegetation management should be avoided in grizzly bear habitats, unless it can be shown these activities will have no adverse impacts on bear populations.

If there is evidence of damage to critical habitat from domestic grazing in bear habitats, existing range tenures in those areas should be reviewed, and range management plans revised to eliminate the problem. In some cases it may be necessary to consider a temporary cessation of activities, or even cancellation, to resolve a bear-human or carnivore-livestock conflicts.

**(f)                      *Recreational Development***

Within grizzly bear habitats, environmental impact assessment for new construction or expansion of resorts, backcountry cabins, trails and other recreational developments should include an evaluation of potential impacts on carnivores. Management and development plans may include monitoring of activities and impacts on carnivore habitat and populations to ensure that limits of acceptable change are not exceeded.

**(g)                      *Predator Control and Hunting Management***

Hunting regulations for grizzly bears and prey species, including hunting access restrictions, should be coordinated with the both Provincial Grizzly Bear Strategy and the BC Environment Harvest Strategy.

**(h)                      *Inventory and Research***

In order to develop better information for refining these guidelines at the local level strategic and operational levels, licensees will be encouraged to submit proposals for FRBC funded inventory and inventory projects (minimum 3 years) using approved MOELP standards for Grizzly Bears within license areas rated as priority 1, 2 and 3 Grizzly Bear habitats by Ministry Of Environment, Lands and Parks staff. Long term inventory and research projects enable biologists and forest managers to improve both landscape and stand level guidelines.



## **B. 3.4 Ungulate Winter Range Management Guidelines**

### **B. 3.4.1 Introduction**

#### **(a) Guideline Intent**

To ensure viable populations of ungulate species including elk, white tailed deer, , mule deer and moose, are maintained. To achieve that goal, these guidelines provide direction with respect to the location, preferred type, distribution and attributes of forest cover, as well as the access management, required to maintain suitable habitat conditions which support the variety and populations of ungulate species.

*Ungulate species are managed in the following order of priority: mountain caribou, deer, elk, and moose. Specific guidelines for mountain caribou management are contained in Section 3.5; this section contains guidelines for the remaining species.*

To minimize displacement of ungulates resulting from poaching and development activities within designated winter ranges.

Within the context of the land use plan, management of ungulate species is linked to the management of predator species as healthy populations of prey species is necessary to maintain viable populations of large carnivores.

#### **(b) General Management Approach**

The above intent will be achieved by applying the following measures:

- The guidelines are intended to be applied with sufficient flexibility to facilitate management decisions which complement desired habitat characteristics over the landscape.
- Management guidelines are intended to be applied by the Biogeoclimatic Ecosystem Classification (B.E.C.) system for all identified ungulate winter ranges throughout the area.
- Improve the identification and accuracy of all ungulate winter ranges within the area.
- Utilize available information regarding specific winter range locations, the ranking of species in order of priority for each range and application of specific operational direction to develop appropriate management regimes. Decisions regarding species management priorities can be determined from existing biophysical information, however, this is not an entrenched rule and flexibility is open for interpretation by the appropriate resource managers.
- Manage the identified winter ranges for the optimal amount, quality and arrangement of security and snow interception cover and forage resources. These habitat management objectives will vary according to the target species, local climate and residual habitat conditions.
- Manage access development and use, consistent with the Access Management Guidelines (Section 3.10), to minimize ungulate displacement, habitat degradation or loss and vulnerability to over-harvesting or poaching.
- Within identified winter ranges, ensure that management of other resources is consistent with habitat management goals for ungulates.
- Consistent with provincial biodiversity guideline direction, the old growth seral age requirements will be maintained and distributed throughout all B.E.C. units in landscape units which contain identified wildlife winter ranges.

- Consistent with biophysical attributes, forest habitat cover should be arranged to maintain the most suitable connectivity, interior forest conditions and edge attributes.

**(c) Access Management**

The primary method of meeting the guideline intent of minimizing habitat loss and the displacement of ungulates from designated winter ranges will be achieved through management of road densities and active use of roads in and around high capability winter habitats. Strategically, road densities should be managed, within the mapped winter ranges, at <3km./km. squared by 250 ha. units. If this road density target cannot be met, appropriate rationale must be provided. Road density targets will be refined in conjunction with winter range status and incorporated into both local level landscape unit and operational planning and negotiation processes.

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement to access private property or Land Act tenures, are relatively few. In areas of concern within ungulate winter range, new mineral/energy/settlement road construction will be subject to an enhanced referral (see *Access Management Guidelines Section 3.10.3*) to identify specific operating conditions. In the rare cases where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and densities may be temporarily exceeded. The permitting government agency must promptly notify the Ministry of Forests District Manager of the development application in cases where longer-term access is required. Operational planning will be initiated to determine how the targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

The process and general methodology for managing access within winter ranges, including strategies to be used to achieve the target road density, are summarized in the Access Management Guidelines (Section 3.10). However, specific direction for access management within ungulate winter ranges includes:

- Through the landscape unit planning process, a comprehensive, integrated access management plan, which addresses the complete spectrum of natural resources and resource user requirements on identified winter ranges must be developed.
- Development of permanent roads should be avoided in ungulate winter ranges.
- New roads should be permanently closed to conventional vehicular use on completion of forest harvesting, silviculture or other resource development activities.
- Motorized use of roads situated within winter ranges, should be seasonally scheduled, wherever possible, to minimize harassment and displacement of ungulates from preferred habitats during the winter months. This recognizes that some roads, required for human settlement purposes (including access to private resorts and private land) and industrial activities do require winter access, but will seek to meet the intent of the guideline.
- Use of existing main line forestry related road access, which traverses through winter range areas, will be maintained. However, if these roads are not required for use on a daily basis they should be subject to seasonal use scheduling.

### **B. 3.4.2 Ungulate Winter Range Location**

These management guidelines apply to the mapped critical ungulate winter range depicted on Map 3. or re-inventoried versions. Where a particular geographic area provides habitat for more than one priority ungulate species, a “leading” ungulate species has been mapped at the 1:500,000 scale. (These maps are available for local level strategic and operational planning). Where this occurs, the intent is to apply the operational guidelines for the leading species for that geographic area. However, if necessary, more than one guideline set can be applied on a 250 ha. management unit.

*Where ungulate winter range overlaps with critical caribou habitat or high or intermediate biodiversity emphasis, the management practices will meet all of the requirements.*

## **B. 3.5 Mountain Caribou Management Guidelines**

### **B. 3.5.1 Introduction**

#### **(a) Guideline Intent**

To provide the amount and distribution of habitat required to maintain viable populations of the blue-listed mountain caribou in the Revelstoke herd.

To minimize displacement of mountain caribou resulting from development and recreational activities in critical habitat.

Within the context of the land use plan, mountain caribou are being used as an umbrella species, in that the application of the guidelines, in combination with the biodiversity emphasis option allocation (see Section 3.2) is intended to address the needs of old growth dependent species in those ecosystems, at least until further information about such species allows for more specific management direction to be developed. *In this plan, mountain caribou habitat is also seen to contribute to the intermediate biodiversity emphasis objectives.*

#### **(b) General Management Approach**

The above intent will be achieved by:

- designation of caribou habitat management areas which include a full range of seasonal habitats and movement areas between habitats. The management areas should be sufficient in size to maintain viable numbers of all populations.
- within caribou habitat management areas, ensure that a sufficient proportion of the land base is maintained in old growth forests on a continuous basis, from tree line down to the lowest elevations used by caribou.
- maintaining continuous, broad corridors of old growth and mature forest at regular intervals to connect larger pockets of old growth forest.
- managing access to and within caribou habitat management areas to minimize disturbance and illegal harvest (access management measures will be subject to review by local level strategic planning).

### **B. 3.5.2 Mountain Caribou Habitat Location**

The mountain caribou management guidelines apply to the caribou habitat areas identified in Map B4. These areas represent known, critical caribou habitats based on radio telemetry data, aerial census data, terrain analysis and known sitings. Within the areas shown on Map 4, the operational guidelines respecting maintenance of forest cover vary by seasonal caribou habitat requirements.

### B. 3.4.3 Operational Guidelines

Within the areas indicated on the ungulate winter range map, management regimes will vary according to B.E.C. sub-zone, variant and priority species as indicated in the following table.

**Table 1: Forest Cover Guidelines**

Species	Guide-line Set	Biogeoclimatic Ecosystem Classification	Minimum Amount of Mature Forest Cover Retention Over the Managed Forest Land Base	Habitat Management Objectives	Rationale/Comments
<i>Mule deer</i>	1	ICHmw2 & 3 ICHvk1, ICHwk1	40% forest cover comprised of 120+ yr. old trees with a minimum crown closure of 60%. in units >20 ha. Every 250 ha. or suitable multiples up to planning cell scale	- Maintain snow interception, security cover and litterfall - Maintain mature forest cover in close proximity to early spring forage sites	Deep snow is often prevalent on these winter ranges. Dense mature stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities. Fd preferred where present.
<i>Moose</i>	2	ICHvk1, ICHwk1, ICHmw2 & 3	In Revelstoke TSA, and TFL 23: 40% forest cover comprised of 120+ year old trees,  In TFL 55 and TFL 56: 34% forest cover comprised of 100+ year old trees  In all units retained forest cover must provide a minimum crown closure of 70% in units >20 ha. Every 500 ha. or suitable multiples up to planning cell scale or as otherwise acceptable to the MOE Forest Ecosystem Specialist	- Maintain snow interception, security cover, and connectivity - Maintain mature forest cover in close proximity to forage sites.	Deep snow is often prevalent in these subzones. Dense, mature stands with interlocking crowns provide the required attributes to facilitate foraging and movement opportunities

## Definitions

### Forest Cover Distribution

- Spatial distribution of forest cover should be established in 250 hectare units for most species, and 500 hectare units for moose. To facilitate planning or analysis requirements, these units can be amalgamated into multiples or nested within current interim planning cells, landscape units or watersheds.

### Forest Cover Location

- The most suitable locations to maintain and connect forest cover, would be along distinct topographic breaks and on ridges or knolls. Mature forest cover components located in these areas can function in the capacity of security, thermal and snow interception cover and will also facilitate secure diurnal and seasonal ungulate movement requirements.

### Optimum Cover

- The optimum dimensional characteristic of a patch of cover could range from 183 meters to 366 meters.

### Optimum Forage Area

- For maximum use by ungulates forage areas should have no point in excess of 183 meters from the cover edge.

### Mature and Old Growth Structural Characteristics

- As opposed to younger forests, the structural attributes associated with mature or old growth forest stands often contribute to a higher habitat suitability factor on ungulate winter ranges, especially where Douglas fir is present. The principle attribute contributions include; increased forage opportunities associated with needle and lichen litterfall (F.d needles have a higher inherent nutrient value than needles from immature trees), fewer numbers of stems per hectare and a predominately wide crown radius of individual trees. The latter attribute, particularly if the crowns interlock, accommodate ease of movement and enhance foraging opportunities beneath the forest canopy through enhanced snow interception capability.

Lower age class surrogates may provide some of the preferred requirements, however, not having the same structural characteristics, that are associated with mature stands, they do not usually have the capacity to fulfill all the essential habitat elements to the same degree as mature forest cover stands.

### Mature forest cover retention

- As stated in the forest cover guideline matrix, mature cover is the minimum percentage of mature forest habitat determined to be the most appropriate for a specific ungulate species by B.E.C. unit by distribution unit. The recommended forest cover percentages relate to 100% forest cover by area. The preferred species and desired characteristics are also expressed in Table 1 of these guidelines.

### **Preferred Forest Cover Species**

- As expressed in the guideline matrix, Douglas fir is the species on which the emphasis of retention will be focused where this species is present. In relation to other species, Douglas fir has the most suitable inherent structural attributes which contribute to increased foraging opportunities, ungulate mobility high snow interception, thermal cover and security cover capability.

## **Forest Cover Components**

### **Security cover**

- Security cover is defined as vegetative habitat or topographic attributes which have the capability to enable ungulates to conceal themselves. Forest stand attributes which provide this cover characteristic should be at least 5ha. in size with a minimum stem height of 2 meters. Stem density is also an influential factor, however, the number of stems per ha. will vary in conjunction with ecosystem component designation and management objectives. On a site specific basis, cover provided by shrubs (height > 2m) may also be considered as security cover. Where required on steep slopes (>70%), greenup should exceed 3 meters in height to provide adequate security cover for ungulates.

### **Snow interception cover**

- Snow interception cover is defined as tree crown attributes which have the capability to intercept snow. As this capacity will often vary in conjunction with the size, shape, stem density and species of tree, it is important to retain species which have the structural attributes which will have a distinct influence on snow interception capability. In this regard mature Douglas fir or dense intermediate age Douglas fir are preferred where this species is present. As snow interception often is the limiting factor for winter survival in areas with moderate to high snow accumulation, the selection and location of suitable structural characteristics is extremely important.

### **Thermal cover**

- Thermal cover is defined as forest habitat which has the capability to assist ungulates in maintaining a constant body temperature. Stand attributes which have the potential to provide this cover characteristic are comprised of multi-layered stands, a height class of 2+, a crown closure class of 6+, are at least 20 ha. in size and have a minimum width of 400 m.

### **Connective cover**

- Residual forest cover components should be interconnected through retention of corridors of mature forest (age class #5+) at least 200m. in width. This characteristic should occur in all landscape units to ensure suitable forest cover linkages are maintained within the identified winter ranges and between summer and winter use areas.

### **Special habitat protection cover**

- Special habitat features such as identified mineral licks, wallows, calving grounds or exceptional foraging areas should have a designated forest management zone, which precludes permanent access, maintained around the perimeter of the site.

### **Forest harvesting**

- In an effort to reduce physiological stress, at a time when over wintering ungulates are at their lowest energy level, forest harvesting activity should be concluded by mid winter.

## **B. 3.5 Mountain Caribou Management Guidelines**

### **B. 3.5.1 Introduction**

#### **(a) Guideline Intent**

To provide the amount and distribution of habitat required to maintain viable populations of the blue-listed mountain caribou in the Revelstoke herd.

To minimize displacement of mountain caribou resulting from development and recreational activities in critical habitat.

Within the context of the land use plan, mountain caribou are being used as an umbrella species, in that the application of the guidelines, in combination with the biodiversity emphasis option allocation (see Section 3.2) is intended to address the needs of old growth dependent species in those ecosystems, at least until further information about such species allows for more specific management direction to be developed. *In this plan, mountain caribou habitat is also seen to contribute to the intermediate biodiversity emphasis objectives.*

#### **(b) General Management Approach**

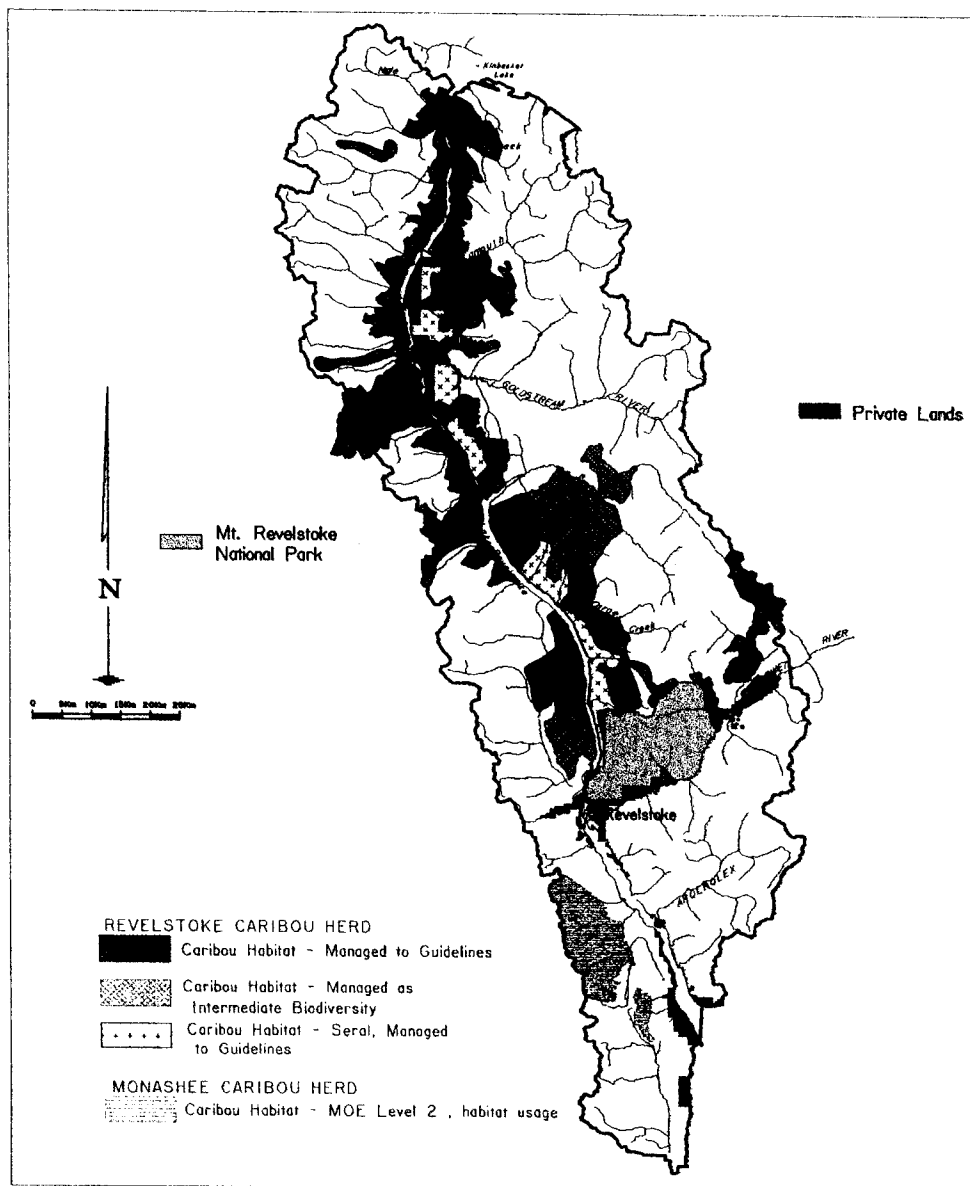
The above intent will be achieved by:

- designation of caribou habitat management areas which include a full range of seasonal habitats and movement areas between habitats. The management areas should be sufficient in size to maintain viable numbers of all populations.
- within caribou habitat management areas, ensure that a sufficient proportion of the land base is maintained in old growth forests on a continuous basis, from tree line down to the lowest elevations used by caribou.
- maintaining continuous, broad corridors of old growth and mature forest at regular intervals to connect larger pockets of old growth forest.
- managing access to and within caribou habitat management areas to minimize disturbance and illegal harvest (access management measures will be subject to review by local level strategic planning).

### **B. 3.5.2 Mountain Caribou Habitat Location**

The mountain caribou management guidelines apply to the caribou habitat areas identified in Map B4. These areas represent known, critical caribou habitats based on radio telemetry data, aerial census data, terrain analysis and known sitings. Within the areas shown on Map 4, the operational guidelines respecting maintenance of forest cover vary by seasonal caribou habitat requirements.





**Map B4. Mountain Caribou Habitat**

### **B. 3.5.3      Operational Guidelines**

#### **(a)              Forest Management**

##### **General**

*The following guidelines apply to the area designated for mountain caribou management in Revelstoke:*

- *Timber harvesting will be confined to the landbase outside upland parkland areas.*
- *These guideline apply to the operable area of each landscape unit.*
- *Only areas with slopes less than 80% are considered suitable caribou habitat which contribute to the habitat retention requirements.*
- *Within the Interior Cedar-Hemlock (ICH) zone, a minimum of 40% of the landbase below the 1994 operability line will be in age classes 8 or older (>140 years), with 1/4 of this area having age class 9 (>250 years) forests.*
- *Within the Engelmann Spruce – Subalpine Fir (ESSF) zone two options exist:*
  1. *A minimum of 30% of the landbase below the 1994 operability line must have forests in age classes 8 or older (>140 years), with at least 1/3 of this area having age class 9 (>250 years) forests. On an additional 20% of the landbase below the 1994 operability line, partial cutting is acceptable so long as the removal of timber will not exceed 35% total, with green-up defined as age class 7 or greater (>120 years)*
  2. *A minimum of 40% of the landbase below the 1994 operability line must have forests in age classes 8 or older (>140 years), with at least 1/4 of this area having age class 9 (>250 years) forests*

*In both options balsam leading and older forests will be preferred for retention.*

- *Timber harvesting guidelines need to be developed for the ESSF area between the 1994 operability line and the ESSF parkland. In the interim, 70% of the productive area between the 1994 operability line and the upland (ESSF) parkland zone must have forests in age class 8 or older (>140 years), retained on areas with slopes less than 80%.*

Ongoing discussions within the scientific community and within the context of the emerging Provincial Caribou Strategy will result in refinement to these guidelines.

The following objectives and strategies are intended to provide guidance to forest management operations -they are not required practices.

**Stand-level management objectives and silvicultural strategies for winter habitat \*\***

Habitat management objective	Applicable season/zone <sup>1</sup>			Rationale/comments	Suggested silvicultural objectives	Silvicultural strategy
	EW-ICH	EW-ESSF	LW-ESSF			
windfirm habitat	•	•	•	• natural sporadic blowdown is a source of forage, but the stand as a whole should be windfirm	•windfirm stand	• maximum volume removal approximately 30% (excluding roads and landings)
contiguous future habitat	•	•	•	• maintain habitat contiguity in space and time; minimize susceptibility to catastrophes	•basically healthy stand	• 1. careful logging including: • direction falling • placing bunches to minimize bole and branch damage • skidding to minimize bole damage • 2. post-harvest sanitation cutting if necessary
maintain preharvest species composition	•	•	•	• caribou prefer B and BS forest types to S and SB	• maintain pre-harvest species composition and size class distribution	• marked to cut to retain specified mixture of species
abundant aboreal forage lichens available on standing trees	•	•	•	• adequate forage abundance is necessary to maintain use by caribou • snag retention may be necessary if a high proportion of lichen biomass is on snags • lichen abundance is low on trees with few branches or dense, tangled branches; dense branches hinder access to lichen (<50% of lower tree branches covered)	• significant component of trees = Class 3, including some of Classes 4 and 5 • moderate branchiness below 4.5m • a range of diameter classes retained	• maximum volume removal approximately 30% (excluding roads and landings) • spread volume removal over appropriate classes • to retain snags use feller-buncher and grapple skidders (WCB variance is necessary)

1. EW = Early Winter, LW = Late Winter, ICH = Interior Cedar Hemlock, ESSF= Engelmann Spruce – Subalpine Fir

Habitat management objective	Applicable season/zone <sup>1</sup>			Rationale/comments	Suggested silvicultural objectives	Silvicultural strategy
	EW-ICH	EW-ESSF	LW-ESSF			
Abundant arboreal forage lichens available as litterfall	•	•		<ul style="list-style-type: none"> <li>adequate forage abundance is necessary to maintain use by caribou</li> <li>lichen-bearing snags produce litterfall as the branches break and bark sloughs off</li> </ul>	<ul style="list-style-type: none"> <li>significant component of mature, lichen-bearing trees</li> <li>a component of declining trees/snags (Wildlife Tree Classes 2-4)</li> </ul>	<ul style="list-style-type: none"> <li>maximum volume removal approximately 30% (excluding roads and landings)</li> <li>spread volume removal over appropriate classes</li> <li>to retain snags use feller-buncher and grapple skidders (WCB variance is necessary)</li> </ul>
Snow interception	•	•		<ul style="list-style-type: none"> <li>fresh soft snow covers ground forage and litterfall, and makes movement difficult</li> </ul>	<ul style="list-style-type: none"> <li>manage for snow interception in all or part of stand</li> <li>high canopy closure</li> <li>dense, wide, long crowns</li> <li>multilayered structure</li> </ul>	<ul style="list-style-type: none"> <li>low volume removal</li> <li>group selection better than single tree selection</li> <li>unlogged reserves may be left within stand</li> </ul>
Maintain low evergreen shrubs where they occur; avoid enhancing forage for moose and deer	•	•		<ul style="list-style-type: none"> <li>low evergreen shrubs important before snow is deep, especially in the ICH</li> <li>enhancing habitat for moose and deer may increase wolf and cougar populations or attract them to caribou ranges</li> </ul>	<ul style="list-style-type: none"> <li>minimize disturbance of soil and vegetation</li> </ul>	<ul style="list-style-type: none"> <li>keep harvesting or site preparation activities that disturb the forest floor to an absolute minimum (e.g., winter log on snowpack, spot scarify, or plant without scarifying)</li> </ul>
minimize visual obstructions	•	•	•	<ul style="list-style-type: none"> <li>caribou seem to prefer areas where they can see around them; there is evidence that they avoid areas where tall shrubs, conifer regeneration, or obstructions restrict visibility</li> <li>applies also to stands used by caribou during snow-free seasons</li> </ul>	<ul style="list-style-type: none"> <li>regeneration density control to lower limits of silvicultural acceptability - see silvicultural standards as per FPC.</li> </ul>	<ul style="list-style-type: none"> <li>regeneration may be widely dispersed, as in single tree selection for uneven-aged management under low q values (&lt;1.5); or</li> <li>regeneration may be concentrated into patches providing visibility is good in adjacent areas</li> </ul>
maintain stand level connectivity	•	•	•	<ul style="list-style-type: none"> <li>caribou seems to prefer areas where movement is not obstructed by debris or vegetation</li> <li>applies also to stands used by caribou during snow-free seasons</li> </ul>	<ul style="list-style-type: none"> <li>avoid excessive physical obstructions (e.g., windthrown slash, many down trees)</li> </ul>	<ul style="list-style-type: none"> <li>thorough slashing of logging debris, especially if in large quantity.</li> </ul>

**Interim prescriptions for selection silvicultural systems in mountain caribou habitat with reference to effective pre-harvest stand structure**

Effective Pre-harvest Stand Structure	Single Tree Selection System	Group Selection System
Single-storied Stand Structure	Conversion to multi-stories stand structure requires several light stand entries. Maintain at least 75% of initial basal area per cut. Protect and maintain high-rated lichen-bearing trees. Mineral soil exposure needed to promote natural spruce regeneration. Moderate (40+ year) cutting cycle.	<p>The following applies to all partial cutting using group selection in caribou habitat (exceptions are noted):</p> <ul style="list-style-type: none"> <li>• each stand entry should remove no more than 30% of the stand by volume or area, including skid trails.</li> <li>• small opening sizes (&lt;0.5 ha) are probably best for caribou habitat and stand windfirmness.</li> </ul>
Two-storied Stand Structure	One or more moderate stand entries to release thrifty C2 (pole-sized intermediate trees), stimulate seed production in overstory, and promote understory regeneration. Maintain about 66% of initial basal area and B-level stocking. Protect high-rated lichen-bearing trees. Protect pole-sized trees during felling and skidding. Long (75+ year) cutting cycle.	<ul style="list-style-type: none"> <li>• if protection of advance regeneration within openings is desired then winter logging on snowpack will help.</li> <li>• mineral soil exposure or microsite planting may facilitate regeneration of desired species.</li> </ul>
Multi-storied Stand Structure	Stand entries must maintain and enhance existing structure, species composition, quality, and stocking. Retention of about 66% of initial basal area is acceptable depending on the wind exposure of the stand. Maintain at least 20 m <sup>2</sup> /ha (approx.) of basal area per entry. Protect and maintain high-rated lichen trees.	<ul style="list-style-type: none"> <li>• group selection must be used if snag retention using feller-buncher harvesting is a stand management objective.</li> <li>• long cutting cycles (75+ years) are necessary for long term lichen biomass retention.</li> </ul>
Irregular Stand Structure	At least one stand entry needed, possible as an improvement cut, to promote the desire multi-storied stand structure and allow basal area stocking to increase over time to acceptable minimum levels (20 m <sup>2</sup> /ha approx.) or more. An extended cutting cycle will be necessary to allow basal area stocking to recover.	<ul style="list-style-type: none"> <li>• for stands with irregular structure an extended cutting cycle will be necessary if basal area is very low initially.</li> </ul>

**(b) Access Management**

***Animal predators and access for snowmobiling have a negative affect on caribou in the Revelstoke area.***

***The process and general methodology for managing access within critical caribou habitat, including strategies to be used to set and achieve target road density, are summarized in the Access Management Guidelines (Section 3.10). However, specific direction for access management within and around critical caribou habitat includes:***

- ***an emphasis on zoning for recreational activity to restrict snowmobiling to areas outside of late winter range habitat (see Resource Management Projects Chapter D Section 3.3)***
- ***avoid road access in the upland parkland areas wherever possible.***

It is recognized that new roads built for the exclusive purpose of minerals, coal or oil and gas exploration and development, or for human settlement to access private property or Land Act tenures, are relatively few. In areas of concern within caribou habitat, new mineral/energy/settlement road construction will be subject to an enhanced referral (see *Access Management Guidelines Section 3.10.3*) to identify specific operating conditions. In the rare cases where road density is at or near limits, access in the short term will be closely monitored and managed (with possible gated or other closures) and densities may be temporarily exceeded. The permitting government agency must promptly notify the Ministry of Forest sDistrict Manager of the development application in cases where longer-term access is required. Operational planning will be initiated to determine how the targeted road density can be achieved. The siting and timing of construction and use for such roads will be subject to review within the context of these guidelines.

## **B.3.6 Watershed Management**

### **B.3.6.1 Introduction**

#### **(a) Guideline Intent**

To provide a clear definition of “community watersheds” and “domestic watersheds”. To acknowledge that community watersheds will be managed as per the Forest Practices Code Community Watershed Guidebook. To provide management guidance for forest and mineral exploration activities in domestic watersheds.

The intent of this guideline is to be consistent with provincial policy on the management for domestic watersheds. As this policy is currently just emerging, these guidelines will be reviewed at the time the policy is finalized to ensure consistency.

#### **(b) Definitions**

##### **General**

The intent of the community watershed definition is to capture watersheds which serve as important water supplies for legally organized user groups such as municipalities, regional district areas, improvement districts, utilities and water users’ communities. These user groups generally utilize water systems which are built to higher standards and service many properties.

The intent of the domestic watershed definition is to capture watersheds which support domestic licensing but where the water users have not incorporated themselves and frequently utilize individual water systems.

**Community watersheds** are defined in the *Forest Practices Code of British Columbia Act* as follows:

- 41 (8) For the purposes of subsection (6) “community watershed” means
- (a) the drainage area above the downstream point of diversion on a stream for a water use that is for human consumption and that is licensed under the *Water Act* for
    - (i) a waterworks purpose, or
    - (ii) a domestic purpose if the license is held by or is subject to the control of a water users’ community incorporated under the *Water Act* if the drainage area is not more than 500 km<sup>2</sup> and the water license was issued before June 15, 1995, or
  - (b) an area that is designated as a community watershed under subsection (10).
- 41 (9) In subsection (8) “domestic purpose” and “waterworks purpose” have the meaning given to them in the *Water Act*.

- 41 (10) The regional manager of the Ministry of Forests may designate an area as a community watershed if
- (a) in the opinion of the regional manager and a designated environmental official (regional water manager) it should be designated as a community watershed,
  - (b) the area is all or part of the drainage area above the downstream point of diversion for a water use that is for human consumption and that is licensed under the *Water Act* for domestic or a waterworks purpose, and
  - (c) the area is not referred to in subsection (8) (a).
- 41 (11) With the agreement of the designated environment official, the regional manager may by written order vary or cancel an area's status as a community watershed whether the area is defined to be a community watershed under subsection 8(a) or designated to be a community watershed under subsection 10.

A **Domestic Watershed** is defined as the drainage area above the downstream point of diversion on a stream which is:

- (a) licensed under the *Water Act* for human consumption;
- (b) not classified as a community watershed under the *Forest Practices Code of British Columbia Act*;
- (c) usually not more than 200 km<sup>2</sup> in drainage area.

Note: The area above the downstream point of diversion may include a significant proportion of private land which is not within the jurisdiction of the Forest Practices Code. It should be understood that the domestic watershed guidelines apply to the Crown land portion of the watershed although private land owners are encouraged to adopt these practices as well.

**(c) General Management Approach**

Forest development activities in **Community watersheds** will be managed according to the Forest Practices Code *Community Watershed Guidebook*.

Mineral exploration and mine development activities in **Community watersheds** will be managed according to the *Mineral Exploration Code*, the *Mines Act*, and standard project review and approval processes (i.e., inter-agency referrals, the Mine Development Review Committee process, or the Environmental Assessment Office process).

**Domestic watersheds:** These guidelines define a level of management for forest activities on Crown land in domestic watersheds which lies between standard Forest Practices Code and management in community watersheds. It does this by providing:

- a) a classification and mapping system for domestic watersheds;
- b) a basic assessment of hazard related to forest activity;
- c) a set of recommended forest practices;
- d) a strengthened opportunity for public input to the forest development plan;



- e) a contingency plan in case of damage to water supply.

The guidelines also suggest management practices for mineral exploration activities in domestic watersheds. They are intended to guide the application of the *Mineral Exploration Code* which has provisions for exploration near domestic water intakes.

Proposals for small mine developments in domestic watersheds will be subject to standard project review and approval processes (i.e., inter-agency referrals and the Mine Development Review Committee (MDRC) process). The MDRC review process has opportunities for public consultation.

Large mine developments and related activities are reviewed through a process coordinated by the Environmental Assessment Office, and subject to the *Environmental Assessment Act*. This process involves detailed socio-economic and environmental assessment of the project and considerable opportunity for public consultation.

**For forest activities**, the responsibility to implement the Domestic Watershed Guidelines rests with:

- a) Environment and Lands, to develop and maintain the classification and mapping system and to provide advice during the forest development plan process on high risk/consequence areas on a priority basis;
- b) the forest activity proponent to complete the assessment, modify the forest development plan (FDP) to address hazards, incorporate appropriate forest practices, notify water users of the opportunity for involvement, address water users concerns during the FDP process, and in general, to ensure that activities are conducted in such a manner that water quality, quantity and timing of flow will be maintained;
- c) Ministry of Forests to review, recommend modifications and approve the forest development plan if it complies with the Forest Practices Code and the objective of maintaining water quality, quantity and timing of flow in domestic watersheds;
- d) water users to attend FDP presentations, review impact assessments and plans, propose constructive technical improvements to meet stated objectives, notify agencies if problems are identified so that corrective action can be taken; to construct and maintain water works that are capable of handling natural water quality and flow levels;
- e) all parties during emergencies requiring contingency plan implementation.

**For mineral exploration activities**, the responsibility to implement the Domestic Watershed Guidelines rests with:

- a) Environment and Lands, to develop and maintain the classification and mapping system and to provide advice on high risk/consequence areas on a priority basis;

- b) the mineral exploration proponent to complete a satisfactory Mines Act permit application, to address hazards, incorporate appropriate exploration practices, notify water users of the proposed mineral exploration works, and in general, to ensure that activities are conducted in such a manner that water quality, quantity and timing of flow will be maintained;
- c) Ministry of Energy and Mines to review, recommend modifications and approve the Mines Act permit applications if it complies with the Mineral Exploration Code and the Mines Act, and is consistent with the objective of maintaining water quality, quantity and timing of flow in domestic watersheds;
- d) water users may attend pre-approval on-site inspections if required; propose constructive technical improvements to meet stated objectives; notify agencies if problems are identified so that corrective action can be taken; to construct and maintain water works that are capable of handling natural sediment and flow levels;
- e) all parties to cooperate during emergencies requiring remedial or reclamation works.

The Kootenay-Boundary region is the first area in British Columbia to implement a comprehensive forest management strategy in domestic watersheds. Soon after the implementation phase is complete, it will be necessary to begin reviewing on-the-ground applications of the guidebook to address weaknesses and strengthen overall effectiveness.

### **B. 3.6.2 Watershed Locations**

*Designated community watersheds in the Revelstoke area include the Greely, Bridge, Hamilton and Dolan watersheds. Most of Bridge and Hamilton Creeks are within Mt. Revelstoke National Park.*

*Domestic watersheds have not been mapped. The majority of domestic licenses are on tributaries to the Illecillewaet River, Napoleon, Goch, Hayes, Locks, Thomas Brook, South Griffith and ZZ creeks.*

### **B. 3.6.3 Operational Guidelines**

#### **(a) Community Watersheds**

The Forest Practices Code Community Watershed Guidebook will apply to forest development activities within all designated community watersheds, where such activities are permitted.

The *Mineral Exploration Code* will apply to mineral exploration and development activities in all designated community watersheds, where such activities are permitted.

#### **(b) Domestic Watersheds**

##### **Classification of Watersheds**

Domestic watersheds will be classified into three categories as follows:

##### **Class 1 Watersheds**

These watersheds are associated with springs and very small creeks which do not have clearly defined drainage or catchment areas. Often these small water sources are located on "face units" (populated areas between major streams). Face units may encompass many small streams and springs which support domestic licensing. Face units will often be mapped as one area because of the difficulty of defining these micro drainage areas without on-the-ground investigation. There may also be streams within the mapped face unit which are not licensed for domestic use. It will be important for the forest/mineral proponent to identify these early in the process so that unnecessary assessments and notification of water users can be avoided.

#### **Class 2 Watersheds**

These are small watersheds having drainage areas which are; definable on existing topographic mapping and, less than 500 ha (5 km<sup>2</sup>).

#### **Class 3 Watersheds**

These are watersheds with a drainage area of 500 ha (5 km<sup>2</sup>) to 200,000 ha (200 km<sup>2</sup>). To aide in the assessment procedure in these larger watersheds, it may be necessary for MELP to delineate sub-drainages as part of the mapping exercise. Sub-drainages will be established using the methodology given in the Interior Watershed Assessment Procedure (IWAP) guidebook.

#### **Mapping**

Class 1, 2 and 3 domestic watersheds (and sub-drainages where applicable) will be mapped by Environment and Lands onto a 1:20000 base. This mapping will also show community watersheds. Since water licensing is not static, this mapping will be updated periodically and distributed to Ministry of Forests district offices. For information on the status of water licensing on streams contact the Water Management Program.

#### **Assessment and Detailed Mapping for Forest Activities in Domestic Watersheds**

When forest activities are proposed within known domestic watersheds, an assessment procedure will be completed by the proponent and submitted with the forest development plan (FDP). The objective of the assessment will be to ensure that the proposed forest activities do not pose an unacceptable risk to water quality, and the quantity and timing of flow at the point of intake.

As noted under the definition of a domestic watershed, the mapped watershed area often contains private land. The following procedures are to be applied to the crown land portion of the watershed. These procedures should not be used to assess the impacts of rural land development. However, private land holders are encouraged to follow these procedures and practices when logging private land.

The assessment procedure prescribed for larger watersheds is similar in part to the procedures described in the Interior Watershed Assessment Procedure (IWAP) Guidebook and an understanding of IWAP is essential to an understanding of this section.

The proponent may request relief from the requirement for an assessment by illustrating to the MOF district manager that the proposed activity creates an insignificant impact to the watershed (i.e. large watershed with a very small amount of proposed activity). The district manager will consult Water Management staff as appropriate.

### **Class 1 Watersheds**

Areas defined as class 1 watersheds on the mapping will undergo a detailed procedure as systems described in the box below. The main objective is to maintain the integrity of recharge areas and channel.

1. Obtain the highest quality topographic map of the area that is available (this will usually be the 1:20,000 TRIM map), the largest scale air photograph pairs available, MELP map referred to in section 3, the MELP map of water intake locations and the MELP water license listing of the area in question.
2. Transfer the locations of the water intakes on the MELP water intake location map to a large scale topographic map (e.g. 1:20,000 TRIM map).
3. Confirm intake locations (by field work if necessary) and transfer to the topographic maps. If the stream courses are mapped inaccurately, indicate the correct locations on the topographic maps. In order to find the intakes, it may be necessary to interview the water licensees. It may be necessary to go on private land and appropriate permission should be obtained for doing so. The air photographs will be useful for field checking.
4. Map the streams above the water intakes on the topographic map by walking upstream of the intake. It may be possible to quickly affirm that the TRIM map is correct. If it is not correct, use compass and chain methods or GPS units to enable transfer of actual stream locations onto the topographic maps. It should be noted that many first order streams disappear and reappear as one moves upslope and a thorough search should be made of all field evidence of seepage zones and streamflow above the first disappearance of the streams. Indicate on the map where an actual channel exists (solid line) and where you infer flow (dashed line). Indicate evidence of flowing water and seepage separately. Mapping should be done during periods of high flow (e.g. shortly after snowmelt) when flow pathways are most evident.
5. Use the topographic map to outline the inferred drainage area contributing to each water source.
6. Use this map to plan the location of roads and logging activity. Roads have the potential to divert water away from areas used for water supply. Harvesting activities must be planned such that the flow remains in the natural channels. Small changes in drainage patterns can affect downslope water supplies.
7. Avoid locating roads within 50m of the water intake. If the road is constructed through a seepage area, it should be constructed in such a manner that slope seepage is maintained in its present location. Specialized road construction techniques such as a permeable road prism or use of geotextile fabrics may be necessary in selected seepage zones to maintain the natural subsurface flow patterns.
8. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name of the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
9. When the road is constructed, signs are to be placed at each water supply stream crossing which name the source and "domestic water supply".

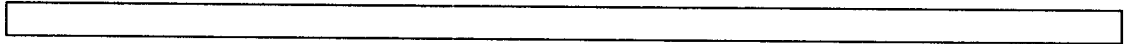
10. Road construction should be carried out in a manner which minimizes impacts to water quality.
11. The road should be designed in such a manner that road surface and ditch drainage does not directly enter a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.
12. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
13. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.

### **Class 2 Watersheds**

Areas defined as class 2 watersheds on the mapping will undergo a detailed procedure as described in the box below. The objective is to confirm channel and intake locations and to plan upstream activities such that new sediment sources are not created.

The procedure for class 2 watersheds requires less field work because these watersheds are topographically defined. A watershed report card (see Class 3 Watersheds) is required. Since results from the report card become less dependable with smaller watersheds, the report card should not be used by itself to define hazards in watersheds under 5 km<sup>2</sup>(500 ha).

1. Obtain the highest quality topographic map of the area that is available (this will usually be the 1:20,000 TRIM map), the largest scale air photograph pairs available, the MELP watershed classification map, the MELP map of water intake locations and the MELP water license information for the streams in question.
2. Transfer the locations of the water intakes on the MELP water rights map to a large scale topographic map (e.g. 1:20,000 TRIM map).
3. Walk stream courses above water intakes. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. When mapping does not appear to be correct, use compass and chain methods or GPS units to enable transfer of stream locations onto topographic maps.
4. Use the topographic map to estimate the drainage area.
5. Overlay available terrain information to plan the location of roads and logging activity.
6. Avoid locating roads within 50 m of any water intake or on unstable terrain.
7. When the road is surveyed in the field, crossings of each water source should be clearly ribboned with the name the source and "domestic water supply" written on the ribbon. The locations of the crossings are to be pointed out to those doing the road construction.
8. When the road is constructed, signs are to be placed at each water supply stream crossing which name the source and state "domestic water supply".
9. Road construction should be carried out in a manner which minimizes impacts to water quality.
10. The road should be designed in such a manner that road surface and ditch drainage does not directly enter a water supply stream. High quality surfacing material should be used immediately adjacent to stream crossings.
11. All personnel doing activity in the area should be informed that they are operating in a water supply area and that all their activities including personal hygiene should respect the maintenance of the downstream water supply.
12. In general roads in this class of watersheds should remain open only as long as they are required. When road use is complete they should be rehabilitated with special attention given to maintaining natural drainage patterns.



### **Class 3 Watersheds**

Areas defined as class 3 on the mapping will undergo an assessment utilizing a domestic watershed report card. This is a reconnaissance level analysis intended to identify several broad categories of risk from past or planned forest harvesting. When high hazard levels are indicated, it is expected that these will be addressed in the forest development plan.

The domestic watershed report card is comprised of several key indicators which were developed for the Interior Watershed Assessment Procedure (IWAP). Larger class 3 watersheds may have sub-drainages delineated on the mapping. The report card indicators are to be generated for each sub-drainage.

IWAP is a very new procedure and will not be fully calibrated until many applications can be ground-truthed and analyzed. For example, current applications are experiencing numerous problems with “false highs”. This occurs when high hazard scores are registered on the report card but are not confirmed by field investigation. Studies are currently underway to calibrate the reconnaissance level hazard ratings with actual on-the-ground hazards. The hazard table below will change to reflect any future calibration of ratings.

Forest activity proponents are required to submit a domestic watershed report card. This report card is based on the watershed report card on page 18 of the IWAP guidebook but is limited to:

- a) peak flow index (including the equivalent clearcut area [ECA] calculation)
- b) road density for entire sub-basin ( $\text{km}/\text{km}^2$ )
- c) no. of stream crossings ( $\text{no.}/\text{km}^2$ )
- d) no. of landslides ( $\text{no.}/\text{km}^2$ )
- e) roads on unstable slopes ( $\text{km}/\text{km}^2$ )

These 5 indicators will be calculated by the methodology described in the IWAP guidebook and should be recorded in the following format:

Form 1. Watershed report card

Impact Indicators	Sub-basin name							
a) peak flow index (also record ECA % in this space)								
b) road density for entire sub-basin (km/km <sup>2</sup> )								
c) # of stream crossings (no./km <sup>2</sup> )								
d) # landslides visible on 1:20000 photos(no./km <sup>2</sup> )								
e) roads on unstable slopes (km/km <sup>2</sup> )*								

\* Class IV and V terrain where terrain mapping is available or otherwise on slopes greater than 60%.

Hazard ratings will be determined by the following Hazard Index table:

Note: Hazard index ratings for IWAP's are presently under provincial review.

Impact Indicators	Hazard rating		
	low	medium	high
a) peak flow index	<0.3	0.3-0.42	>0.42
b) road density for entire sub-basin (km/km <sup>2</sup> )	<1.5	1.5-2.1	>2.1
c) no. of stream crossings (no./km <sup>2</sup> )	<0.4	0.4-0.6	>0.6
d) no. of landslides (no./km <sup>2</sup> )	<0.1	0.1-0.18	>0.18
e) roads on unstable slopes (km/km <sup>2</sup> )	<0.15	0.15-0.25	>0.25

**NOTE:** Hazard ratings which are derived from this table may not reflect true conditions in the watershed. Therefore it is important that hazard scores be used only as a course filter to help identify potential problem areas and/or to aide in the prioritization of watersheds for application of a full IWAP. When scores are tending to the high end of the scale, the FDP should state how the possible hazard will be addressed.

The following is an illustration of how the hazard rating might be used:

- If indicator "a)" is high - discuss further assessment (i.e. channel assessment) needs with agency specialists and or consider alternate harvest schedules or areas;
- If indicators "b)" to "e)" are high - confirm indicator with field review, discuss assessments with agency specialists, consider reducing new road development and/or a road reclamation strategy.

## **Assessment and Detailed Mapping for Mineral Exploration Activities in Domestic Watersheds**

Impacts of mineral exploration and related activities are more localized than do forest development activities, therefore, the same general assessment and mapping procedure can be used in all three classes of domestic watershed.

The proponent may request relief from the requirement for an assessment by illustrating to the MEM District Inspector that the proposed activity creates an insignificant impact to the watershed (i.e. large watershed with a very small amount of proposed activity). The District Inspector will consult Water Management staff as appropriate.

When activities which require a Mines Act permit (mechanized soil disturbance) are proposed within a domestic watershed, the District Inspector may require all or some of the following based on; the proposed amount of disturbance, the sensitivity of the area and the proximity of the disturbance to water intakes:

- 1) Obtain a 1:20,000 TRIM map (or better quality map if available) of the area, the largest scale air photo pairs available, the MELP map of water intake locations and the a list of water licensing for the area from MELP. (Contact the Ministry of Energy and Mines for copies of relevant maps or information on how they may be obtained.)
- 2) Transfer the locations of the water intakes on the MELP water rights map to a large scale topographic map (i.e. the 1:20,000 TRIM map). Provide a description of the intakes with accompanying photographs.
- 3) Map the courses of the streams above the water intakes on the topographic map by walking upstream from the intake to the area of proposed activity. It may be possible to quickly affirm that the TRIM map is correct and further ground verification is not necessary. If it is not correct, use compass and chain methods or a GPS to enable transfer of true stream locations onto the topographic map. Generally, inaccuracies in TRIM stream locations, occur more on small streams that are poorly defined by contours.
- 4) A reconnaissance level terrain stability assessment and detailed surface soil erosion assessment and mapping may be required by the District Inspector in particularly sensitive areas.
- 5) Use the map with an overlay of the terrain map (if a terrain stability assessment has been required) to plan the trail building and other mining or exploration activities. All proposed works are to be noted on the map.

### **Riparian Management**

**For forest activities**, riparian management in domestic watersheds will be determined by the Riparian Management Guidebook with one important exception. Streams licensed for domestic use which are classified as S5 or S6 under the guidebook, will be managed as S4 streams for a distance of 500m above the most upstream domestic intake. S4 management



(see page 50 of the guidebook) is designed to maintain water quality, stream channel processes and stream temperatures.

This riparian management will be applied to all water sources which support domestic licensing regardless of whether they are defined as streams under the FPC.

**For mineral exploration activities**, riparian management provisions will follow the Mineral Exploration Code. Except for stream crossings and pump locations, works shall not occur within 5 metres of the wetted perimeter of a stream. In cases where the 5 metre buffer does not afford adequate protection for water quality, the District Inspector may employ additional best management practices adjacent to the reserve. The extent of the management area and the type of practices employed will be determined by the proposed level of disturbance, proximity to the stream and the sensitivity of the site.

## **Forest Practices in Domestic Watersheds**

### **Terrain Hazards**

- A person should not propose harvesting of an area in a domestic watershed if the area is subject to a high likelihood of landslides following timber harvesting.
- Reconnaissance level terrain mapping is normally required in domestic watersheds.

### **Roads**

- A road in a domestic watershed should not be located within a 50 m radius upslope of a water intake.
- Roads should be constructed so as to minimize disruption of surface and subsurface flow pathways particularly in spring recharge areas.
- A person who constructs, modifies or deactivates a road in a domestic watershed should; (a) notify water licensees or their representatives of the start date of road construction, modification or deactivation at least 48 hours before the start of road construction, modification or deactivation if it is anticipated that sediment could reach a water intake; (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.

### **Harvest Levels**

Harvest levels are determined by calculation of the equivalent clearcut area (ECA) as is necessary for the watershed report card. This is done for the watershed as a whole and for major sub-drainages within the watershed as shown on the MELP watershed mapping. The concentration of harvesting on smaller areas should also be considered.

#### ***ECA's in sub-basins***

- The maximum ECA in any basin larger than 250 ha, that has not been individually considered in the report card, should not exceed 30 % of the area. If it has been considered individually, the report card will apply.

***ECA's above sensitive sites***

- When cutblocks are proposed on areas which drain onto class IV or V terrain (or slopes over 60% if terrain mapping not available), the ECA should be limited to 20 % of the area draining onto the sensitive site.

**Range**

Range management provisions within the Forest Practices Code recognize domestic water use. Range Use Plans (RUP's) are mandatory and must indicate known domestic intakes and actions taken to accommodate this resource use. The FPC requires that the RUP indicate levels of use, strategies for wetlands and riparian areas and other provisions.

Domestic water users can review RUP's and provide comment. The MOF district manager approves RUP's and can require amendments if special circumstances warrant. In addition, the district manager can require security for the performance of obligations under a RUP.

If problems or special circumstances arise with respect to range use in a domestic watershed, the initial preferred approach is for the water user to deal with the MOF district manager. In cases where it is suspected that a water supply has been contaminated, the district manager should promptly notify and consult with staff in MELP, Ministry of Health and Ministry of Agriculture, Fisheries and Food in order to locate the appropriate expertise to confirm and respond to the problem. Occasionally, an inter-agency team may be required to resolve contentious situations.

**Timber Harvesting**

- A person carrying out a timber harvesting operation on applicable land within a domestic watershed should not, except to provide access to, or to maintain, a water supply intake, cut or damage a tree that is closer than 50m upslope of a water supply intake and must protect known water supply intakes and infrastructures.

**Silviculture**

- The use of livestock to carry out site preparation or brush control within a riparian management area, must be guided by a suitable management or animal control plan which addresses maintenance of water quality.
- The use of pesticides will be managed similarly to the Pesticide Management section of the Community Watershed Guidebook (see page 101). Under this strategy, pesticide applicants would be required to develop an Integrated Pest Management program prior to receiving a permit. IPM programs consider non-toxic alternative treatments, long term prevention of pest problems and would provide opportunities for public input in contentious areas.
- A 10m fertilizer-free zone should be maintained around any flowing stream that is observable from the air. See the Fertilizer Management section of the Community Watershed Guidebook for a description of how to ensure this zone is maintained. Fertilizer application close to streams is sometimes beneficial to water quality (e.g. hydro-seeding of road banks at stream crossings).

- Fertilizer should not be applied within 50m upslope of a water intake.
- Fertilizer should be applied during cool and moist conditions (not during the summer).

#### **Recreation**

- The construction of recreation facilities within riparian management areas should be avoided whenever possible.
- In general, activities such as motorized recreation and camping should not be encouraged in smaller domestic watersheds (< 10 km<sup>2</sup>).

#### **Mineral Exploration Activities in Domestic Watersheds**

- Avoid locating roads, drill sites, trenches or other works within 50 metres radius upslope of a water intake or on unstable ground, unless authorized by the District Inspector.
- Exploration drilling and the establishment of pump intakes in domestic watersheds should not be located within 50 metres radius upslope of a water intake.
- Roads, drill sites, trenches or other works should not interfere with any known subsurface flow paths of a drainage area that contributes to a spring.
- When a road location is surveyed in the field, the location of the crossings of each water source stream should be clearly ribboned with the name of the source and “domestic water supply” written on the flagging. The locations of the crossings are to be pointed out to those doing the construction.
- When the roads are constructed, signs are to be placed at each water supply stream crossing which name the stream and indicate “domestic water supply”.
- Trail, drill pad, trenching and other works should be carried out in such a manner that adverse impacts on water quality are minimized. For instance, sumps shall be utilized to contain drill cuttings and mud. Drilling muds and fluid additives shall be of a non-toxic and non-hazardous nature.
- Works should be designed and constructed in such a manner that surface drainage is prevented from directly entering a water supply stream. Where possible, works should be designed and constructed such that water drains away from the stream. Specialized construction practices, operating practices and materials (such as filter fabrics, high quality surfacing materials etc.) may be required to be utilized. For instance impervious drill sumps with drilling fluid recirculation may be required in select instances.
- All personnel working on the project must be informed that they are operating in a water supply area and that all activities including personal hygiene must respect the maintenance of the downstream water supply.
- In general works shall be reclaimed as soon as practicable, when they are no longer required.
- A person who constructs, modifies or reclaims a road or exploration trail in a domestic watershed should; (a) notify water licensees or their representatives of the start date of road construction, modification or reclamation at least 48 hours before the start of road construction, modification or reclamation if it is anticipated that sediment could reach a water intake; (b) ensure that rock containing significant amounts of sulphide minerals, and which may have potential for generation of acid, is not used for road construction or modification.
- The District Inspector may require drill holes that make water to be sealed with cement.
- Trenches should be located or oriented to minimize inflows of surface water.

If trenches intercept the water table or groundwater flows, work should not continue until it can be determined that domestic water supplies will not likely be adversely affected and the District Inspector has approved a mitigative strategy.

### B. 3.6.4 Planning Framework and Public Input for Domestic Watersheds

For forest activities, the following chart summarizes the first stage of planning in domestic watersheds.

	Class 1	Class 2	Class 3
Watershed type	Springs and very small streams	Small streams with defined drainage area <500 ha.	Larger streams with defined drainage area >500 ha.
Objective	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.	Maintain water quality, quantity and timing of flow.
Watershed characteristics	Very small streams and spring recharge areas often with indistinct catchment boundaries and channels. Drainage patterns and sensitive areas can not usually be determined from existing mapping.	Erosion prevention is the principle concern. Sediment is likely to reach intakes. Streams may be of sufficient size to cause debris flows or bedload movement. Peak flow becomes a concern in larger streams in this class.	Slope failure, sediment delivery and channel stability are the key factors in maintaining water quality. Peak flow is a concern.
Strategy	Detailed mapping required. Forest development plan should address hazards for specific local conditions.	The domestic watershed report card may prove useful but must be accompanied by ground-truthing local conditions. Forest development plan should address hazards.	Reconnaissance level assessment required using domestic watershed report card. In larger watersheds assessment by sub-drainage becomes important. Forest development plan should address hazards.
Target conditions	Avoid problem areas. Minimal disturbance of sub-surface drainage patterns and surface channels. Recommend ECA < 30%.	Avoid problem areas which could result in sediment movement. Minimize roads and stream crossings. Recommend ECA < 30%.	Distribute cut by elevation and sub-drainage to reduce peak flows. Mitigative action plans are required for problem areas. Recommend ECA < 35%

Watershed type	Class 1	Class 2	Class 3
	Springs and very small streams	Small streams with defined drainage area <500 ha.	Larger streams with defined drainage area >500 ha.
Data requirements	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns, drainage areas and water intake and stream locations.	Recommend level B or C terrain and soils mapping. Detailed mapping of drainage patterns and drainage areas may in required in portions of the watershed.	Recommend level D terrain and soils mapping to ensure the effective application of the domestic watershed report card.

In the second stage of planning, the forest licensee or SBFEP must incorporate the assessment information and recommendations into the forest development plan. Riparian management and other forest management practices particular to domestic watersheds must be incorporated into the various operational plans.

When the forest development plan is advertised for public review, the forest company (or the Ministry of Forests for the small business program), will make a reasonable attempt to notify the affected water licensees that:

- a) the BLANK forest development plan is being offered for review (date, time, place);
- b) the forest development plan proposes harvesting or roads in the BLANK domestic watershed within the next five years.

This process will ensure that water licensees are notified about the proposed activity and are aware of their opportunity to comment on the forest development plan. Public input will be facilitated by the inclusion of the watershed assessment which will give water users an indication of existing and proposed impacts to the watershed.

The responsibility for approving forest development plans which cover areas in domestic watersheds, rests solely with the MOF district manager. This is unlike the situation in community watersheds where, under the Forest Practices Code, forest development plans must be approved by both the district manager and a designated environment official. The district manager must be satisfied that the forest development plan complies with the FPC, adequately manages and conserves the forest resources and, lastly, is consistent with any higher level plan.

This guideline should be considered baseline management which can be applied to all domestic watersheds regardless of the number of users or other management issues. Obviously, there are some domestic watersheds where the consequences of a damaged water supply are very high and others where the consequences are relatively low. In some high consequence areas, it is expected

that more planning, assessment, monitoring and public involvement will be necessary to address all issues.

**For mineral exploration activities**, the need for public consultation will be considered on a project-by-project, site-specific basis when activity is proposed in domestic watersheds.

### **B. 3.6.5 Contingency Planning for Domestic Watersheds**

The contingency planning section was largely brought over from the Community Watershed Guidebook. Work will continue on this section with the goal of improving clarity and providing better definition of agency roles and responsibilities. Any changes to this section will be made in compliance with the plan amendment procedures outlined in Chapter 6.

#### **a) Forest Activities**

This section describes the purpose, content, and the roles and responsibilities associated with the development and execution of a contingency plan for a domestic watershed.

#### **Elements of a contingency plan**

A contingency plan will help provide for the supply of emergency water and for the rehabilitation of the water system should damage occur. The contingency plan is based on the principle of *immediate response* to water supply problems. Aspects of a contingency plan for a domestic watershed are as follows:

- A contingency plan should be adopted for domestic watersheds with input from water users, forest companies, MOF and MELP.
- The contingency plan will normally apply only to forest activities on Crown lands within the domestic watershed. Water users can expand the focus to broader issues (e.g. private land or other resource uses) by establishing agreements with other parties.
- The contingency plan should identify:
  - a list of participants which will usually be comprised of water users, forest company, MOF, MELP and sometimes MOH;
  - names, addresses and phone numbers of the initial contacts to ensure proper action (Figure 3.1 “Emergency response flow chart”);
  - procedures for the provision of alternative water supplies for the water users serviced by the domestic watershed. These can include, for example, the use of water tankers, wells, or pipelines from adjacent drainages;
  - in some cases, a description of procedures to mitigate some potential water supply impacts (e.g., the construction of settling ponds, the laying of bypass pipe, and construction of a filter system to clarify water).

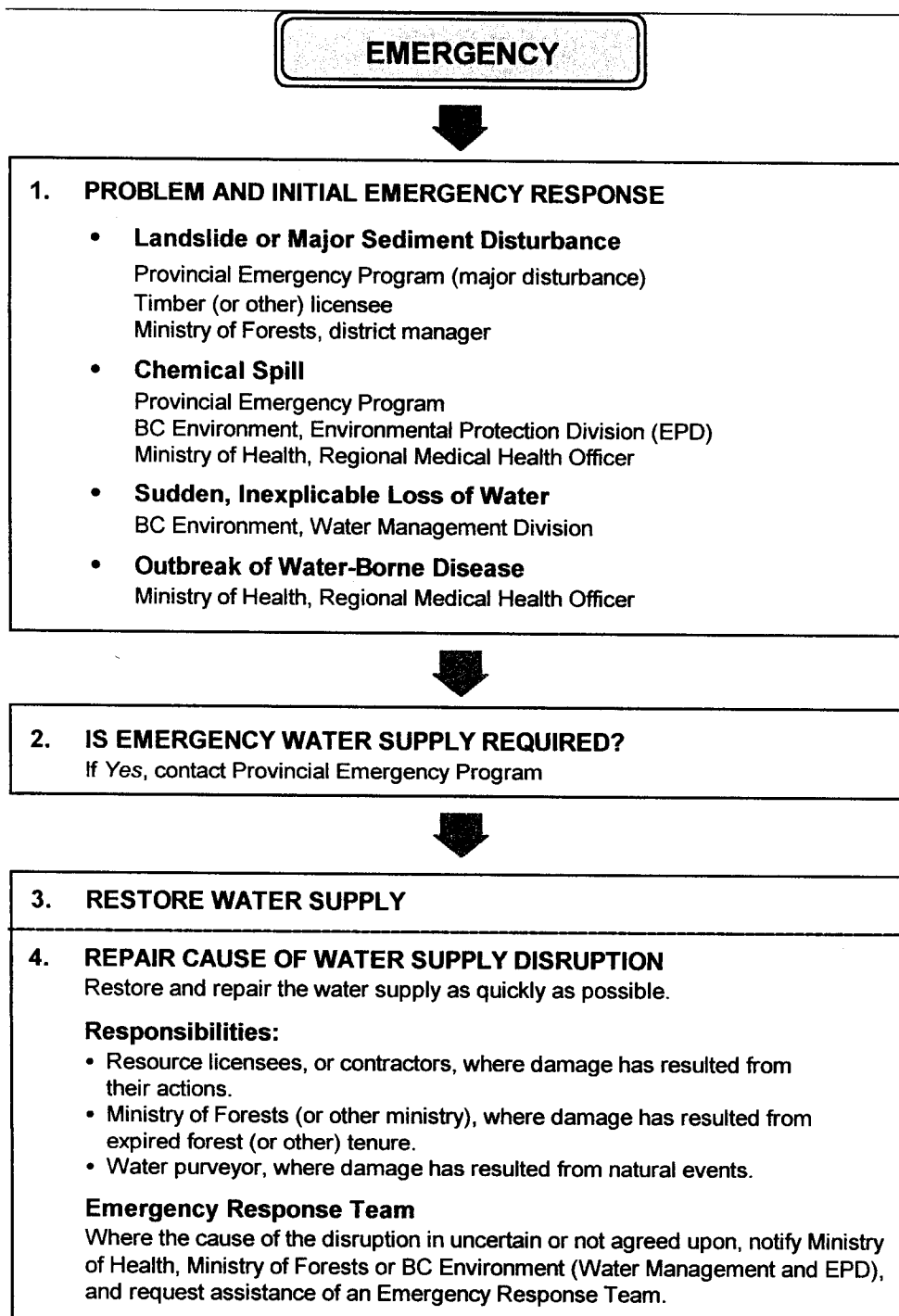


Figure 3.7.1 Emergency response flow chart

### **General roles and responsibilities**

Whenever there is an event which adversely impacts the quality or quantity of water within a watershed by disrupting or damaging a water supply or by posing a health risk, every effort shall be made to re-establish the supply, or mitigate harmful effects, as quickly as possible. In some situations this may require that the participants undertake the necessary remedial action using any available resources before responsibility is determined.

The roles and responsibilities of the participants may vary between plans. The remainder of this section summarizes typical roles and responsibilities.

#### **Water licensees**

The roles and responsibilities of the water licensees are to:

- Be responsible for the installation and maintenance of systems consistent with their licensing, and capable of handling the natural ranges of water quantity and quality from the source, including sediment loads.
- Participate in field inspections and reviews of road construction, logging operations and other resource developments and advise the government ministries and resource licensees of their concerns.
- In cooperation with the appropriate agencies and other resource licensees, restore a disrupted water supply as quickly as possible to minimize the impacts on the water users.
- Assist other resource users in the rehabilitation of the water resource and water systems where there is an impairment of water quality or quantity due to resource development.

#### **Ministry of Health**

The roles and responsibilities of the Ministry of Health are to:

- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.

#### **Ministry of Environment, Lands and Parks (Water Management Division)**

In most contingency plans, the Water Management Division will be the lead participant from the Ministry of Environment, Lands and Parks. In addition, the Environmental Protection Program, Fish and Wildlife Branch and the Conservation Officer Service may be requested to participate depending on the circumstances.

The roles and responsibilities of the Water Management Division are to:

- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.
- In cooperation with appropriate provincial ministries, adjudicate disagreements over responsibilities and determine what remedial actions are required and by whom, as legislated under the *Water Act* and other applicable legislation.



### **Ministry of Forests**

The roles and responsibilities of the Ministry of Forests are to:

- Direct Ministry of Forests tenure holders to rectify situations arising from activities authorized by the ministry which have the potential to impair or degrade water quality or quantity.
- Through the district manager, initiate repair of damage to a water supply if a Ministry of Forest tenure has expired.
- Upon request, assist with the emergency investigation and response in the event of impairment or disruption of water quality or quantity.
- In cooperation with appropriate provincial ministries, adjudicate disagreements over responsibilities and determine what remedial actions are required and by whom, as legislated under the *Ministry of Forests Act*, *Forest Act*, *Range Act*, and other applicable legislation.
- Assume the role and responsibilities of a forest licensee, as set out in this section under "Resource licensees and tenure holders", when the Ministry of Forests carries out operations under the Small Business Forest Enterprise Program.

### **Ministry of the Solicitor General (Provincial Emergency Program)**

The Provincial Emergency Program (PEP) helps local governments and provincial ministries prepare for, and respond to, disasters which threaten life and property.

PEP may:

- Assist in providing emergency potable water in the event of an emergency which causes damage to or loss of a water supply which is beyond a water purveyor's or a licensee's ability to resolve.
- Act as a facilitator in resolving an human or environmental emergency.
- Provide emergency financial assistance to others for the purposes of repairing a damaged water supply through the Disaster Financial Assistance Program.

### **Forest licensees and tenure holders and their contractors**

The roles and responsibilities of forest licensees and their contractors are to:

- Advise affected water licensees of planned interruptions or potential sediment increases as a result of their activities.
- Immediately advise the water licensees, Water Management, and the Ministry of Forests of any situation for which they are responsible, or which they observe, which is potentially harmful to water quality or quantity.
- Immediately take remedial action to correct any situation arising from their activities which may potentially impact water quality and quantity, or otherwise damage a water supply system.
- Cooperate with the water purveyor or licensees, and the appropriate agencies, to restore a disrupted water supply as quickly as possible, thereby minimizing the impacts on the water users.

### **Determination of responsibility**

The objective of the contingency plan is to have all water supply problems resolved as quickly as possible and, where necessary, to determine responsibility following rehabilitative work. Where damage to a water supply occurs:

- Refer to the contingency plan flow chart to identify the sequence of events in solving an unplanned impairment to water supplies.
- If a contractor or forest licensee is on site, the contractor or licensee and a representative of the water users should endeavor to determine the nature of the problem and the responsibility for the impairment, and agree upon a procedure to correct it. This should be done within 12 hours of impairment being reported.
- The regional water management office and the Ministry of Forests district office shall be notified immediately of any impairment which cannot be corrected within 12 hours.
- Where the forest licensee and the representative of the water users cannot agree on the type and extent of, and responsibility for, remedial action, they shall immediately notify either the Water Management Division or Ministry of Forests to request the involvement of an Emergency Response Team.
- An Emergency Response Team will be comprised of staff from the Water Management Division of the Ministry of Environment, Lands and Parks, the Ministry of Forests, a representative of the water users and, where appropriate, the resource licensee/contractor. Involvement of the Provincial Emergency Program may also be requested depending on circumstances. Outside experts may be called upon at the request of the team.
- The Emergency Response Team will be responsible for determining the source and cause of damage to the water supply, and preparing recommendations regarding the type of remedial action required and responsibility for its completion. This should be done within 4 days of identification of the problem.
- The Emergency Response Team will submit a report on its findings to the regional water manager, Ministry of Environment, Lands and Parks, and the district manager, Ministry of Forests, with recommendation regarding the assignment of responsibilities. The final decision regarding responsibility and the recovery of costs will rest with the two managers.

*The contingency plan is intended to expedite local solutions to water-related problems, but does not preclude a private person or corporation from pursuing individual legal remedies for damage to water quality or quantity.*

### **Specific responsibilities**

#### **Short-term planned disruptions**

Occasionally, the water users and the licensee/contractor agree to allow a short-term planned disruption of a water supply. The licensee/contractor will:

- give a minimum of one weeks' notice to the water users to allow planning for the water supply disruption.

- be responsible for costs incurred by water licensees to change the water system. These can include costs to:
    - access and utilize a temporary water supply;
    - clean the infiltration gallery or intake dam where appropriate;
    - deliver water to households for *minimum* domestic requirements.
- If a disturbance to a water supply system lasts longer than 48 hours, it is considered a long-term problem (see section 3.4.3 “Long-term disruptions”).

#### **Short-term accidental disruptions**

If a short-term accidental disruption occurs, the licensee/contractor will:

- Provide assistance to the water licensees to alter their intake system to prevent further disruptions.
- Be responsible for costs incurred to:
  - access and utilize a temporary water supply;
  - clean the infiltration gallery or intake dam where appropriate;
  - deliver water to households for *minimum* domestic requirements.

#### **Long-term disruptions**

If an accidental or planned disruption or pollution problem lasting longer than 48 hours occurs:

- The contractor will continue to be responsible for extra costs incurred by the water licensee until such time as the problem has been rectified.

#### **Ensuring compliance**

To ensure compliance with contract conditions and specific responsibilities, under section 3.3.5 “Specific responsibilities”, major forest licensees or permittees are required to post with the district manager, Ministry of Forests, bonds, security deposits or safe keeping agreements for working within the domestic watershed area in the amount of \$25,000, or provide documentation of an adequate liability insurance policy.

During operations, and until the district manager is satisfied that all conditions outlined in the relevant tenure documents have been met, the forest licensee should accept the responsibilities associated with operating within a domestic watershed.

Also, it is recognized that, despite all precautions, natural or human-induced damage may occur. If the relevant tenure has expired, the district manager may initiate reparation work. The Ministry of Forests will pursue sources of budgetary funding to conduct repairs required after the term of the forest tenure has expired and after the “free-growing” period has ended.

**b) Contingency Planning for Mineral Exploration Activities**

There are no provisions for routine contingency plans due to the relatively low level of impact to land and water resources of mineral exploration. However, the need for a contingency plan will be determined on a project-by-project, site-specific basis.

The District Inspector will set the requisite reclamation security, based on appraisal of amount required to rehabilitate site to standards dictated by the *Mines Act* and *Mineral Exploration Code*.

## **B. 3.8 Backcountry Recreation Management Guidelines**

### **B. 3.8.1 Introduction**

#### **(a) Guideline Intent**

Provide a range of recreation settings, features, facilities and opportunities on Crown Land.

#### **(b) General Management Approach**

The above intent will be achieved primarily by maintaining a recreation inventory and, through lower level strategic planning which is consistent with this strategy, to establish recreation objectives at the landscape unit level.

The inventory, establishment of recreation objectives and these guidelines utilize the Recreation Opportunity System (ROS) methodology. The ROS system is used to establish targets for recreation. This classification system states the type of recreation experience a recreation user (commercial or non commercial) would have using the terms; Primitive (P- reserved for Protected Areas), Semi Primitive Non Motorized (SPNM), Semi Primitive Motorized (SPM) and Roaded Resource Land (RRL). The criteria used for the classification are; remoteness, size, evidence of humans, social setting, setting characterization and experience characterization. The following explains the criteria and classification of the ROS system:

- **Semi Primitive Non-Motorized (SPNM)**

The management intent of SPNM areas is to maintain the unroaded character of the area and to provide opportunities for dispersed non-motorized recreation. These areas are generally remote, alpine, subalpine and high elevation forest, high elevation ridges and mountain tops that have not been accessed by roads. Trails provide access for recreation users and BCFS permittees (e.g., livestock permittees). Landscape alterations have been minimal. These areas provide an opportunity to experience a reasonable degree of isolation from the sights and sounds of motorized activity in a natural appearing setting. However, in the winter, these areas may be used by snowmobiles and snowcats (subject to local level strategic planning, local agreements and not in conflict with sensitive wildlife species), which gives a seasonal separation between activities. Helicopter use may occur in any season.

- **Semi Primitive Motorized (SPM)**

The management intent of SPM areas is for dispersed motorized recreation. These areas are accessed by primitive roads or trails suitable for high clearance 4 wheel drive vehicles, ATV's (quads), motorcycles and snowmobiles. All forms of dispersed recreation associated with these kinds of vehicles occur. These lands have been impacted by human activities and may or may not be natural appearing landscapes. Opportunities to get away from other recreation users and to experience solitude are good during most seasons of the year. This classification may be

applied for winter use in alpine and subalpine areas used by snowmobiles and snowcats and is also intended for areas where roads have been deactivated, gated or have access restrictions.

- **Roaded Resource Land (RRL)**

The management intent of RRL areas is for dispersed and facility oriented recreation. These lands are accessed by better than primitive roads and are suitable for most conventional 2 wheel drive vehicles. All forms of dispersed and organized recreation associated with vehicles occurs. These lands have been altered by man and the alterations are visible on the landscape. Depending on season and the nature of the recreation activity, opportunities to experience solitude are rare. (This is the classification used for the operable forest that will be harvested using roads. Non motorized activities also occur in this area such as cross country skiing or canoeing and restrictions may occur that prohibit some conflicting recreation activities).

For all areas outside parks, it was assumed that eventually the operable forest management landbase would be roaded. This means that operable forest land presently in an unroaded state (SPNM/P) would be converted to a roaded or semi primitive roaded condition over time. There is also the possibility that inoperable forest land outside of parks may be roaded at some point in the future for subsurface resource development. This was the basis for stating objectives as RRL or SPM. In most cases the land classified as RRL is the operable forest below the alpine/subalpine and the land classified as SPNM is either inoperable (steep, rocky, canyons, etc.), subalpine forest or alpine in nature.

### **B. 3.8.2 Application of Guidelines**

The guidelines are applicable to recreation facilities and features throughout the area. As decisions must be made at the site specific level, and the recreation features facilities are wide spread and difficult to map at this planning scale, these guidelines will apply, in general, to the following types of areas:

- managed trails for non motorized, cross country and motorized uses
- forest roads
- trails recognized under the Heritage Conservation Act
- backcountry river corridors
- BC Forest Service campsites, cabins and historic sites
- backcountry lodges, commercial cabins and camps
- areas tenured under by BC Lands for commercial backcountry recreation
- unroaded lakes
- cave/karst areas

## B. 3.8.3 Operational Guidelines

### a) Backcountry recreation guidelines

Table 8.1 Operational Guidelines for Backcountry Recreation

Feature	Definition	General design intent	Visual design	Access management
<b>Hiking trails, Multi-use trails</b>	Trails managed by BCFS with objectives for motorized or non-motorized activities	Resource exploration and development activities should be designed to minimize disruption to trail corridors. Where substantial disruption is unavoidable, licensees should be directed to re-establish trails. Ideally, new and relocated trails should be designed to avoid future logging activity and mineral exploration		Road crossings of trails should be kept to a minimum.
<b>Cross-country ski trails</b>	Trails managed by BCFS with objectives for cross-country skiing. May include trails managed for other recreational uses in summer.	Where resource exploration or development is proposed on, or adjacent to an area suitable for cross-country skiing, roads and skid trails should be designed for subsequent use as ski trails. For example, design road right-of-ways to be as narrow as possible (<8 m) and have variable grades and suitable alignment to provide cross country ski trails.		
<b>Campsites, cabins, historic sites</b>	Forest Service campsites, named historic sites	Resource exploration and development should minimize potential impacts to the immediate surroundings of the site.	Any logging within 200m of the site should be designed such that modification may be discernibly but not clearly evident from the site.	
<b>Lodges, Commercial cabins Camps</b>	Permanent or semi-permanent camps or structures associated with commercial tourism tenures, without highway access.	Resource exploration and development should minimize potential impacts to the immediate surroundings of the site.	Any logging within 200m of the site should be designed such that modification may be discernibly but not clearly evident from the site. Statements of concern and interest are to identify areas requiring particular design consideration.	Tenure-holders should be consulted to determine particular needs regarding access management.
<b>Tenured or Licensed use areas</b>	Areas tenured for commercial recreation under the <i>Lands Act</i>	Resource exploration and development activities will be evident in tenured use area. Where possible, this activity should be designed to compliment or minimize conflict with commercial recreation activity.	Resource exploration and development in tenured use areas should show evidence of good visual design. Statements of interest and concern are to identify areas requiring particular design consideration.	Tenure-holders should be consulted to determine particular needs regarding access management.

Feature	Definition	General design intent	Visual design	Access management
<b>Backcountry lakes</b>	Lakes, 2 ha or larger, with no road or highway access within 500m.	Backcountry lakes should be managed to maintain an unroaded condition (ROS Semi-Primitive Non Motorized).	Any logging within 200m of the lake should be designed such that modification may be discernibly but not clearly evident from the lake.	Where practical, no new, permanent roads should be constructed within 1 km of backcountry lakes. Where practical, existing roads within 1 km of backcountry lakes should be decommissioned.
<b>Cave / karst features</b>	Areas with significant cave or karst features	Resource exploration and development activity should be designed to minimize disruptions to hydrology and terrain that would adversely affect the karst feature. Slash should not be deposited in openings and sinkholes. Significant cave openings should be protected with a 30m reserve.		

## b) Commercial recreation tenures

- Referral of commercial recreation tenure applications

*All new commercial recreation tenure applications and tenure renewal applications will be referred to resource agencies and existing resource tenure holders to ensure potential conflicts are identified and addressed before tenures are approved.*

- Statements of interest and concern

*Tourism tenure holders will prepare statements of concern and interest for consideration during development planning which include the following:*

- *Crown land areas of particular significance to the tourism-related tenure holders*
- *other resource values and interests*
- *proposed approaches to resource development*
- *information required in operational planning processes*



## **B.3.9 Guidelines for Timber Management in Timber Enhanced Resource Development Zones**

*The following guidelines have been defined for Enhanced Resource Development Zones – Timber (ERDZ-T) in the Kootenay-Boundary Land Use Plan Implementation Strategy. While the concept of ERDZ-T does have application in Revelstoke, further work is required to define criteria and operational guidelines appropriate for this area. ERDZ-T areas will then be identified based on the locally developed criteria. The regional guidelines are included as a starting point for developing local criteria.*

### **B.3.9.1 Introduction**

#### **(a) Guideline Intent**

To increase volumes of merchantable timber, to streamline the permitting process and provide associated employment benefits, while maintaining basic environmental quality.

#### **(b) General Management Approach**

The above intent will be achieved by applying the following operational guidelines within the Timber Enhanced Resource Development Zone (ERDZ-T) land use designation. The guidelines reflect an emphasis on promoting timber supply through application of intensive silvicultural practices, including timber harvesting on appropriate sites within the zone. Environmental stewardship on these lands will be maintained through application of FPC requirements.

Although intensive forest management will also be practiced on other lands in the region (i.e., within the Integrated Resource Management Zone (IRMZ), and potentially in selected pockets within the Special Resource Management Zone (SRMZ), the ERDZ -T reflects a relatively high concentration of sites suitable for intensive forest management practices, given the average to above average timber productivity and the absence of regionally significant environmental, recreational and tourism values on these lands. Accordingly, these lands reflect the best opportunity, based on biophysical attributes, to focus intensive silvicultural activities, including harvesting, in the long run.

### **B.3.9.2 Location of ERDZ - T**

The operational guidelines below, generally apply to the operable land base within the KBLUP's ERDZ-T designation. Areas designated for the following values are not candidates for application of ERDZ-T guidelines:

- community watersheds
- domestic watersheds
- high and most intermediate biodiversity emphasis areas (as per the FPC Guidebook)
- most regional connectivity corridor
- caribou 1 and 2 habitat

- Coal ERDZ areas

The intent is to exclude key areas of the following from ERDZ –Ts, however more work is required to identify areas and negotiate appropriate boundaries:

- regionally significant visual values
- requirements for red listed and other blue listed species
- high value fish
- key winter ranges
- settlement lands
- Agricultural Land Reserve land

When appropriate areas can be identified, it is expected EDRZ-T guidelines, while meeting Forest Practices Code standards, will take precedence over other guidelines.

### **B. 3.9.3      Operational Guidelines**

On appropriate sites within the operable area of the ERDZ-T, emphasis will be given to increasing timber supply through the intensive application of silvicultural regimes (i.e. various combinations of harvesting, site preparation, artificial regeneration, spacing, pruning, fertilization, commercial thinning). In particular the following practices will be promoted, within the requirements of the Forest Practices Code.

#### **(a)                *Reforestation***

- Accelerated backlog (incremental) reforestation, including site preparation, planting and brushing, will be applied to harvested areas.
- Maximizing efforts to reduce regeneration delay (with exception of winter ranges).
- Larger, genetically improved stock will be planted to reduce the green-up period, achieve full site occupancy, and increase long-term yields.
- Density control to be applied rigorously at the free to grow stage.

#### **(b)                *Fertilization***

- Multiple fertilizations per rotation may be applied to suitable sites to reduce time to green-up and to increase long-term yields.

#### **(c)                *Pre-commercial / Commercial Thinning***

- Multiple, pre-commercial and commercial thinnings will be undertaken where economically feasible and biologically appropriate, to recoup mortality losses, improve timber quality and increase short-term timber supply.

**(d)                    *Species Management***

- Optimal species selection and single species management will be applied where ecologically suited to the area.
- Effective vegetation management practices will be applied, possibly including herbicides to control competing vegetation and enhance growth of crop species.

**(e)                    *Utilization***

- Enhanced utilization standards may apply (within the bounds of long-term sustainable timber productivity and basic biodiversity requirements).

**(f)                    *Rate of Cut***

- Rate of cut will be guided by the results of standard watershed assessments
- Harvest ages and rotations will be determined primarily by maximizing timber volume.

**(g)                    *Biodiversity Management***

- ERDZ-T areas will be managed predominantly at a low emphasis biodiversity level. Forest interior conditions will be no more than 10% of the required old seral area. The remaining 90% may be partially harvested (up to 30% of the volume in this remaining 90% may be removed in the first entry).
- Within patches, the green-up requirement between cutblocks will be based on successful silviculture planting, based on silviculture surveys, while between patches, green-up will be similar to the Integrated Resource Management Zone. See Table 1 below for preferred patch size distribution for each natural disturbance type (NDT).
- Wildlife tree patches will be implemented as per the Forest Practices Code Biodiversity guidebook.

**(h)                    *Protection***

- Intensive forest health surveys and effective pest management techniques will be applied to protect timber values and silvicultural investments, in accordance with FPC requirements, while minimizing impacts on significant non-timber resource values.

**(i)                    *Timber Harvesting Land Base***

- Within the ERDZ-T, emphasis will be placed on increasing the timber harvesting land base through:
  - development and application of new and innovative harvesting technologies
  - increasing the utilization of stands that have been excluded (problem forest types, deciduous stands)
  - minimizing site degradation.

**Table 1**  
**Distribution of Patch Sizes for Each NDT**

	Patch Size (ha)	Per Cent Forest Area Within Landscape Unit Within ERDZs
<i>NDT1</i>	<40	30
	40-80	30
	80-250	40
<i>NDT2</i>	<40	30
	40-80	30
	80-250	40

## **B.3.10 Access Management Guidelines**

### **B.3.10.1 Introduction**

#### **(a) Guideline Intent**

To provide the necessary strategic direction on access management required to balance and integrate the range of resource uses and interests.

Highways, Forest Service Roads and Operational Roads serve the public, the forest industry, small business, tourism, mining, the petroleum industry and other interests by providing access to Crown land. However, roads can pose a challenge for managing and maintaining environmental and social values. Therefore, access management must promote an integrated, flexible approach for managing the landbase and all values through the maintenance of a network of highways and forest roads, to provide access for all uses, while giving careful consideration for the siting of new roads and the regulation/deactivation/rehabilitation of existing roads in order to meet the range of resource objectives and strategies.

While it is recognized that access issues are best dealt with at a more local or operational scale, these guidelines are intended to provide both strategic direction on access management to guide local level strategic planning and also interim direction until such local level strategic planning can be completed. Specific access management objectives that are to be addressed through landscape unit plan objectives and strategies, operational level plans, such as Forest Development Plans, and the regular permitting processes administered by various government agencies, are identified through the:

- Biodiversity and Connectivity Guidelines, section 3.2.;
- Grizzly Bear Guidelines, section 3.3.;
- Ungulate Winter Range Guidelines, section 3.4.;
- Mountain Caribou Guidelines, section 3.5.;
- Backcountry Recreation Guidelines, section 3.6.;
- General objectives and strategies, particularly with respect to alpine/sub-alpine areas;

#### **(b) General Management Approach**

The above intent will be achieved by applying the following general measures:

- Licensed and government authorized resource users have access, including road access, to all Crown Land outside of Protected Areas for the purpose of potential resource development. The timing, location and duration of road and other forms of access will recognize and be consistent with the resource management objectives and strategies, the Forest Practices Code and all other relevant government policy and legislation, to ensure sensitive values are adequately managed.

- Existing roads will be used wherever possible and the amount of new road construction will be kept to the minimum necessary for balancing and integrating access and management for all values.
- Owners of private land, holders of crown tenures or utility companies will have their access needs evaluated in all areas outside of protected areas. The goal is to seek accommodation for such access needs, including potential road access, with location and management options subject to the range of resource management objectives and strategies.
- Access management will be flexible and therefore able to accommodate changing technology and societal values.
- Access management will be used to maintain a range of recreational opportunities on Crown Land.
- Access restrictions, including road closures, deactivation and rehabilitation, will involve public, industry and stakeholder consultation, except when closures or restrictions are related to public safety issues. In the rare cases where roads do not meet Forest Practices Code standards and must urgently be deactivated, affected government agencies will be consulted and tenure holders notified.

*Revised wording*

### **B. 3.10.2 Access Management Planning Priorities**

As was noted in section 3.10.1, specific access management objectives are outlined in various guidelines, most of which include accompanying maps identifying the areas within the area that such guidelines are to be applied.

*As well, areas of potential concern for further access development have been identified in the Landscape Unit Objectives and Strategies (Chapter B Section 4) and Action Plan – Resource Management Projects (Chapter D Section 3). Such areas are deemed to involve sensitive values which require careful consideration in order to meet the resource management objectives and strategies. The intention is to maintain and revise a list of areas of potential concern and identify such areas in the annual report (see Kootenay-Boundary Land Use Plan Implementation Strategy (June, 1997) Chapter 6).*

### **B. 3.10.3 Operational Guidelines**

#### **(a) Access management strategies**

In order to achieve the intent of integrating and balancing access requirements, the management of all values must be flexible at the site specific level. The following “tool box” for access management includes strategies which may be used independently, or in combination, in a particular area to achieve the desired access objectives:

- seasonal road and activity restrictions through:
  - gated road closures/area closures/legislated closures to be administered through the Forest Practices Code
  - signage

- scheduling of development, construction, deactivation (including the seasonal use of heavy equipment to minimize noise disturbance);
- type and location of road development;
- discourage the construction of loop roads and parallel roads;
- longevity of all types of roads, including requirements for deactivation/rehabilitation prior to approval of new road permits;
- industrial access only;
- two pass timber harvesting system with accompanying road deactivation/rehabilitation requirements;
- non conventional timber harvesting and silvicultural systems;
- emphasize low impact forms of access in currently unroaded areas during the early stages of mineral exploration. In some circumstances, low impact access may equate to a road;
- zoning of recreation uses (commercial/non commercial as well as motorized/non motorized) to provide a range of recreation opportunities and to support the management of sensitive environmental values;
- in areas zoned for recreation uses, the management/movement of problem bears or other wide ranging carnivores may, in exceptional circumstances, be required to maintain access for recreation uses;
- hunting and fishing regulations to redistribute the seasonal access pressures, and;
- improve management of utility corridors by managing and regulating motorized use seasonally and as necessary.

**(b) *Application of Strategies***

**Regular permitting and operational decision-making processes**

The application of specific strategies to areas of concern will be undertaken with an integrated and planned inter-agency focus, in accordance with the general management approach outlined above. In general, the decisions on such issues will be dealt with through the regular permitting processes, including the required referrals.

The Forest Practices Code requires new road permits to address maintenance, deactivation and rehabilitation, where practical, prior to approval. This can be done through the Forest Development Planning process or, alternatively, through access management or other strategic plans.

**Enhanced referral process**

An enhanced inter-agency referral process will be utilized for proposed new access development in areas of concern (see 10.2) or other areas which, through the regular permitting process, are identified as requiring additional consideration. Enhanced referrals encompass a broader range of referees and an expectation of more stringent approval conditions.

In an access-related enhanced referral, the legislated decision-making government agency will notify an inter-agency technical review team. Membership on the technical team will consist of government staff who have in-depth knowledge of the resource management objectives and strategies and who represent all agencies responsible for their development. The technical team member who represents the decision-making government agency will coordinate the process where the team works with the legislated decision-maker to define the specifics of the process.

The enhanced referral process may include:

- additional information requirements by the proponent;
- identification of additional stakeholders to be notified through the newspaper or consulted directly and the means to receive their comments and advice;
- a joint field assessment by all affected agencies;
- a presentation by the proponent to the inter-agency review team;
- identification of the area as a priority for completion of a landscape unit plan. In exceptional circumstances, if the landscape unit planning process is deemed to be unable to address the situation within an adequate timeframe, a more immediate form of resolution at the landscape level will be recommended.

The proponent will be notified by the decision-making agency as soon as possible that the proposal is in a sensitive area and requires an enhanced referral. The inter-agency technical team will commit to working with that agency to ensure an efficient process. The decision-maker will document the rationale for decision and make it available to all interested stakeholders.





## Chapter B Resource Management

### Section 4. Landscape Unit Objectives and Strategies

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## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin)

Total area: 80,956 hectares

Forested area: 47,691 hectares

**Location** – The Mars, Downie and Sorcerer Creek drainages, and Keystone/Standard area

### Values

Source	Value description
CORE	<ul style="list-style-type: none"><li>• <b>General biodiversity:</b> Natural Disturbance Type 1; regional connectivity corridor along the east shore of Lake Revelstoke, the length of Downie Creek and along Sorcerer Creek to Tangiers and Gold Rivers and Batchelor Creek; local connectivity to Pettipiece Pass; major riparian values in Downie Creek drainage</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Fisheries:</b> Downie Creek has critical spawning areas for kokanee, cutthroat and rainbow trout/Downie Arm has highly productive, critical fish habitat, including sturgeon, kokanee, bull trout, rainbow trout and mountain whitefish, which contribute to the Lake Revelstoke fishery; Lake Revelstoke – white sturgeon, kokanee, bull trout, rainbow trout, mountain whitefish; Sorcerer Creek – bull trout; Standard Creek – rainbow trout, bull trout, kokanee</li></ul>
CORE/ LOCAL	<ul style="list-style-type: none"><li>• <b>Mountain caribou:</b> approximately 40 animals range from the Columbia River east into the Downie/Sorcerer drainage and the Keystone area; increased snowmobiling in the Keystone/Standard area may potentially reduce the habitat quality</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Ungulates:</b> 1,548 hectares critical deer winter range along Lake Revelstoke south of Downie Loop, and 6,098 hectares of critical moose winter range north of Downie Loop along Lake Revelstoke as well as Downie and Sorcerer Creeks</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Grizzlies/wide-ranging carnivores:</b> grizzly bears, black bears, cougars, lynx, wolverines, marten and fishers; unrestricted access potentially reduces habitat quality</li><li>• <b>Water:</b> domestic water license for Downie RV Park</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Recreation:</b> lakeshore recreation on Lake Revelstoke; Keystone Standard Basin alpine and sub alpine meadows complex and cabin; Downie Undeveloped Lands; upland mountainous areas, Downie Creek, Downie Arm, mountaineering, hiking, backcountry skiing, snowmobiling, ATV use, mountain biking, berry picking, hunting and river recreation including canoeing and kayaking; identified alpine values</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Heritage:</b> Columbia River; Standard Group; Keystone Group Lode Gold Mines, two Ktunaxa/Kinbasket archeological sites (EiQo –1 and EiQo-2)</li><li>• <b>Commercial tourism (H):</b> guide outfitter camp (Selkirk Big Game Outfitters), heli-skiing (Selkirk Tangiers); commercial campground and recreational vehicle park/ snowmobiling operation (Downie RV Park); backcountry ski touring and hut (Selkirk Mountain Experience)</li></ul>
CORE	<ul style="list-style-type: none"><li>• <b>Viewscapes:</b> viewed from Downie RV Park, Highway 23 North and Lake Revelstoke</li></ul>

## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin) (continued)

### Values (continued)

#### Source

#### Value description

- **Timber** (H): 14,690 hectares operable area; Revelstoke Community Forest Corporation TFL 56 with very small sliver of Joe Kozek Sawmills operating area in southern portion of Keystone/Standard Basin and top of Tangiers drainage; Pass and Nightmare/Daydream Creeks are candidates for intensive management
- **Minerals** (H): several documented metallic and industrial mineral occurrences; placer gold potential; several tenures; geology has good economic potential

Objectives	Strategies
<p><b>General biodiversity</b></p> <p>1.25 Retain forest ecological elements and processes, including species richness, distribution and diversity at a moderate risk level</p> <p>1.27 Maintain the regional connectivity corridors along Lake Revelstoke as well as Downie and Sorcerer Creeks to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration, gene pool exchange and population dispersal</p> <p>3. Retain riparian and wet land values</p> <p>4. Minimize disturbance to wildlife, habitat damage and wildlife harvest concentration</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.26 Intermediate biodiversity emphasis for the area identified on Map 1 in <i>Resource Management Guidelines</i> section 2.</p> <p>1.1 Low biodiversity emphasis for the remainder of area.</p> <p>2.1 Connectivity function to be achieved through intermediate biodiversity emphasis and connectivity guidelines along the connectivity corridors identified on Map 1 in <i>Resource Management Guidelines</i> section 2.</p> <p>3.1 Implement Forest Practices Code riparian protection provisions.</p> <p>4.1 Continue vehicle access hunting closure on Downie Road.</p>

## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin) (continued)

Objectives	Strategies
<p><b>Fisheries</b></p> <p>1.28 Maintain existing fish stocks and habitat for fish species in Downie Creek and its tributaries, Sorcerer Creek, Standard Creek and small creeks draining into Lake Revelstoke</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.29 Develop hydrological stability assessment procedures then conduct assessments of Downie Creek and its tributaries to establish hydrological stability thresholds. Development along these streams will occur within the limits of hydrological stability.</p> <p>1.30 Avoid development that degrades the water quality in these streams to the level that fish habitat is negatively impacted.</p> <p>1.31 Avoid disturbance to spawning areas in the lower reaches and mouth of streams draining into Lake Revelstoke.</p> <p>1.32 Maintain marsh habitats along Lake Revelstoke.</p>
<p><b>Mountain caribou</b></p> <p>1. Maintain sufficient seasonal habitat in areas designated for caribou management to retain the existing mountain caribou population</p> <p>2. Minimize caribou disturbance from recreation activities in areas designated for caribou management</p>	<p>1.33 Apply Mountain Caribou Management Guidelines in critical habitat identified on Map 4 in <i>Resource Management Guidelines</i> section 5.</p> <p>1.34 Intermediate biodiversity emphasis to be applied to the remainder of caribou habitat identified on Map 4 in <i>Resource Management Guidelines</i> section 5.</p> <p>2.1 Commercial Recreation proposals will recognize and respect critical caribou habitat identified on Map 4 in <i>Resource Management Guidelines</i> section 5.</p> <p>2.2 The Keystone-Standard Local Resource Use Plan is to include a winter recreation plan including restrictions which define acceptable snowmobile use (time of year, trail location, type of users), similar to the plan for Frisby Ridge. Access will be restricted, if necessary, to achieve caribou management objectives.</p> <p>2.3 Develop and implement a winter access management plan which defines acceptable snowmobile use (time of year, trail location, type of users, number of users, enforcement and monitoring approaches) for the south end of Caribou Basin/Ridge. Access will be restricted from the south end of the basin, if necessary, to achieve caribou management objectives. Access will be restricted from the northern portion of the area to achieve caribou management objectives.</p>

## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin) (continued)

Objectives	Strategies
<p><b>Mountain caribou</b> (continued)</p> <p>3. Discourage cougar presence in critical caribou habitat</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>3.1 Monitor cougar and wolf population levels in critical caribou habitat.</p> <p>3.2 Encourage hunter harvest of cougars in critical caribou habitat</p>
<p><b>Ungulates</b></p> <p>1. Maintain adequate critical winter range to maintain viable populations of mule deer, elk, and white-tail deer, in this order of priority</p> <p>2. Maintain adequate critical winter range to maintain a viable population of moose</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.35 Apply Ungulate Winter Range Guidelines to critical deer-leading winter range areas identified on Map 3 in <i>Resource Management Guidelines</i> section 4.</p> <p>2.1 Apply Ungulate Winter Range Guidelines to critical moose leading winter range areas identified on Map 3 in <i>Resource Management Guidelines</i> section 4.</p>
<p><b>Grizzlies/wide-ranging carnivores</b></p> <p>1.36 Minimize human conflicts with grizzly and black bears at recreation facilities</p> <p>2. Maintain sufficient seasonal bear habitat to achieve population target levels</p> <p>1.39 Minimize grizzly bear displacement from the Downie and Sorcerer drainages</p>	<p>1.37 Store garbage at informal recreation sites and Keystone Cabin securely so it is not accessible to bears.</p> <p>1.38 Private recreation site owner is encouraged to store garbage at Downie Loop commercial facility securely so it is not accessible to bears.</p> <p>2.1 Apply Grizzly Bear Management Guidelines (<i>Resource Management Guidelines</i> section 3).</p> <p>2.2 Minimize and mitigate impacts of transportation corridor</p> <p>3.1 Develop and implement Access Management Plans for the Downie River and Sorcerer Creek drainages. Summer access will be restricted, if necessary, to achieve grizzly bear management objectives.</p>

## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin) (continued)

Objectives	Strategies
<p><b>Grizzlies/wide-ranging carnivores</b> (continued)</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	
<p><b>Water</b></p> <p>1.40 Maintain water quality and quantity in creeks with licensed water users</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.41 When timber companies or the Ministry of Forests propose operations in watersheds with licensed users they will advise licensed water users of proposed operations and offer the water licensees the opportunity to participate in preparing a written contingency plan.</p> <p>1.42 Licensed water users will be notified by advertisement of opportunities to review forest development plans.</p>
<p><b>Recreation</b></p> <p>1. Maintain a range of recreation settings, features and facilities</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.43 Recreation settings are to be consistent with the Backcountry Recreation Management Guidelines (<i>Resource Management Guidelines section 8</i>), primarily in the Semi-Primitive Non-Motorized and Roaded Resource Land Categories.</p> <p>1.44 Implement the Keystone/Standard Basin Local Resource Use Plan to address activity conflicts and recreation management issues.</p> <p>1.45 Keystone Standard Basin trail is to be maintained by the BC Forest Service.</p> <p>1.46 Restrictions for summer motorized use are to be maintained.</p> <p>1.47 Implement road deactivation prescriptions for road networks that are not designated for Keystone-Standard Basin recreational access.</p> <p>1.48 Update and implement the lower level plan for recreation and commercial tourism on Lake Revelstoke.</p>

## Landscape Unit R12 (Downie/Sorcerer Creeks and Keystone/Standard Basin) (continued)

Objectives	Strategies
<b>Heritage</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Commercial tourism</b> 1. Integrate the needs of commercial recreation tenure holders with public recreation activities, logging and mining development on Crown land	1.1 The appropriate resource agencies will work with commercial recreation tenure holders to develop statements of concern and interest including Crown land areas of particular interest and approaches to resource development. 1.2 Update and implement the lower level plan for recreation and commercial tourism on Lake Revelstoke.
<b>Commercial tourism (continued)</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Viewscales</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Timber</b> 1.49 Minimize conflicts with caribou management and recreation use in the Keystone/Standard Basin area  For further information see <i>Resource Management – General Direction and Guidelines</i>	1.1 Implement timber harvesting consistent with the Keystone/Standard Basin Local Resource Use Plan.
<b>Minerals</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Settlement</b> See <i>Resource Management – General Direction and Guidelines</i>	



## Landscape Unit R19 (Goldstream/Stitt Creek)

Total area: 100,996 hectares

Forested area: 48,636 hectares

**Location** – Goldstream, French, Camp, and Brewster Creek drainages

### Values

Source	Value description
CORE	<ul style="list-style-type: none"> <li>• <b>General biodiversity:</b> Natural Disturbance Type 1; regional connectivity corridors along Lake Revelstoke connecting to Kinbasket Lake and Goldstream River and Stitt Creek to Windy Creek; major riparian area at the mouth of the Goldstream River and French Creek; local connectivity to the Kirbyville corridor</li> </ul>
CORE/ LOCAL	<ul style="list-style-type: none"> <li>• <b>Fisheries:</b> Goldstream River – mountain white fish, lake chub, sculpin, sucker; Norman Wood Creek – west-slope cutthroat trout, Old Camp/McCullough/French Creeks – west-slope cutthroat trout; Stitt Creek – mountain white fish; Lake Revelstoke – white sturgeon, kokanee, bull trout, rainbow trout, mountain whitefish</li> </ul>
CORE	<ul style="list-style-type: none"> <li>• <b>Mountain caribou:</b> approximately 200 animals range through primary habitat in the lower reaches of the Goldstream River, Caribou Ridge, Nicholls, Hoskins, Liberty and Fissure Creeks; large area of young forest at low elevation on east side of Lake Revelstoke is not currently suitable habitat; access conflicts with caribou in Brewster Creek and Big Fish Cr. Road areas; increasing snowmobiling use reduces habitat quality, particularly on Caribou Ridge</li> </ul>
LOCAL	<ul style="list-style-type: none"> <li>• <b>Ungulates:</b> 11,076 hectares critical moose winter range along Lake Revelstoke and in the Goldstream River bottomlands; additional high quality moose winter range in French Creek</li> </ul>
CORE	<ul style="list-style-type: none"> <li>• <b>Grizzly/wide-ranging carnivores:</b> grizzly bears, black bears, cougars, lynx, wolverines, marten and fishers; unrestricted access reduces habitat quality, especially in the Brewster drainage and Caribou Ridge</li> <li>• <b>Water:</b> licensed users</li> <li>• <b>Recreation:</b> lakeshore of Lake Revelstoke; upland mountainous areas, the Goldstream River, river recreation including canoeing (canoe route), kayaking and fishing, mountaineering, hiking, fishing, backcountry skiing and hunting; Groundhog Basin; snowmobiling; extensive alpine meadow complex; identified alpine values</li> </ul>
CORE	<ul style="list-style-type: none"> <li>• <b>Heritage:</b> McCullough Creek Placer Mining Area; Groundhog Basin, Goldstream Ranch, French Creek Townsite</li> <li>• <b>Commercial tourism (H):</b> heli-skiing/heli-hiking lodges (Canadian Mountain Holidays Gothics and Adamants Lodge), guide outfitting (Monashee Big Game Outfitters)</li> </ul>
CORE	<ul style="list-style-type: none"> <li>• <b>Viewscapes:</b> viewed from Canadian Mountain Holidays Adamants Lodge, Gothics Lodge, Lake Revelstoke and Highway 23 North</li> </ul>

## Landscape Unit R19 (Goldstream/Stitt Creek) (continued)

### Values (continued)

Source	Value description
	<ul style="list-style-type: none"> <li>• <b>Timber (H):</b> 17,380 hectares operable area; Evans Forest Products TFL 55 north of Goldstream; Revelstoke Community Forest Corporation TFL 56 south of Goldstream; extensively harvested Managed Tree Farm at the mouth of Goldstream River; immature forests on Lookout Mountain are candidates for intensive management, provided caribou habitat requirements can be met; areas outside biodiversity corridors and ungulate winter range are also candidates for intensive management, particularly Brewster and Norman Wood Creeks</li> <li>• <b>Minerals (H-VH):</b> western half of unit has numerous documented metallic and industrial mineral occurrences including past producer Goldstream mine; placer gold in Old Camp, McCullough and French creeks; proposed Stitt Creek placer development for garnets; many tenures</li> </ul>

Objectives	Strategies
<b>General biodiversity</b> <ol style="list-style-type: none"> <li>1. Retain forest ecological elements and processes, including species richness, distribution and diversity at a moderate risk level</li> <li>2. Maintain the regional connectivity corridor along the east side of Lake Revelstoke to Kinbasket Lake and east to Kirbyville and from Lake Revelstoke to the major riparian areas at the mouth of the Goldstream River, and along the Goldstream River and Stitt Creek to contribute to ecosystem representation and to serve as habitat linkage for seasonal migration, gene pool exchange and population dispersal</li> <li>3. Retain habitat for threatened (red-listed) bat</li> <li>4. Retain cottonwoods as wildlife trees adjacent to riparian areas and restore cottonwood component in logged areas</li> <li>5. Retain existing riparian and wetland values and restore damaged riparian areas</li> </ol>	<ol style="list-style-type: none"> <li>1.111 Intermediate biodiversity emphasis for the area identified on Map 1 in <i>Resource Management Guidelines</i> section 2.</li> <li>1.2 Low biodiversity emphasis for the remainder of area.</li> <li>2.1 Connectivity function to be achieved through intermediate biodiversity emphasis and connectivity guidelines along the connectivity corridor identified on Map 1 <i>Resource Management Guidelines</i> section 2.</li> <li>3.1 Conduct research to identify habitat.</li> <li>4.1 List cottonwood as an acceptable crop tree.</li> <li>4.2 Leave cottonwood as wildlife trees.</li> <li>5.1 Develop and implement a restoration plan for riparian areas in the Goldstream valley.</li> </ol>

Objectives	Strategies
<p><b>General biodiversity</b> (continued)</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	
<p><b>Fisheries</b></p> <p>1. Maintain existing fish stocks and habitat for fish species in Goldstream River and its tributaries as well as Old Camp Creek and small streams draining into Lake Revelstoke</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.112 Develop hydrological stability assessment procedures then conduct assessments of all fish-bearing streams in the Goldstream drainage to identify hydrological stability thresholds. Development along these streams will occur within the limits of hydrological stability.</p> <p>1.113 Avoid development that degrades the water quality in the other streams to the level that fish habitat is negatively impacted.</p> <p>1.114 Avoid disturbance to spawning areas in the lower reaches and mouth of Goldstream River and other streams draining into Lake Revelstoke.</p> <p>1.4 Maintain marsh habitats along the Goldstream River and Lake Revelstoke.</p>
<p><b>Mountain caribou</b></p> <p>1. Maintain sufficient seasonal habitat in areas designated for caribou management to retain the existing mountain caribou population</p> <p>2. Minimize caribou disturbance from recreation activities in areas designated for caribou management</p>	<p>1.115 Apply Mountain Caribou Management Guidelines in critical habitat identified on Map 4 in <i>Resource Management Guidelines section 5</i>.</p> <p>1.2 Improve information on caribou habitat use in this area.</p> <p>1.116 Commercial Recreation proposals will recognize and respect critical caribou habitat identified on Map 4 in <i>Resource Management Guidelines section 5</i>.</p> <p>2.2 Develop and implement a winter access management plan which defines acceptable snowmobile use (time of year, trail location, type of users, number of users, enforcement and monitoring approaches) for the south end of Caribou Basin/Ridge. Access will be restricted, if necessary, to achieve caribou management objectives. Access will be restricted elsewhere on Caribou Ridge to achieve caribou management objectives.</p> <p>2.3 Develop and implement a winter access management plan similar to the Frisby Ridge plan which defines acceptable snowmobile use (time of year, trail location, type of users) for the lower portions of the Goldstream drainage and Lookout Mountain. Access will be restricted, if necessary, to achieve caribou management objectives.</p>

## Landscape Unit R19 (Goldstream/Stitt Creek) (continued)

Objectives	Strategies
<p><b>Caribou</b> (continued)</p> <p>3. Maintain balanced predator/prey relationship in critical caribou habitat</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>3.1 Monitor cougar and wolf population levels in critical caribou habitat.</p>
<p><b>Ungulates</b></p> <p>1. Maintain adequate critical winter range to maintain a viable moose population</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.117 Apply Ungulate Winter Range Guidelines to critical moose – leading winter range areas identified on Map 3 in <i>Resource Management Guidelines</i> section 4.</p>
<p><b>Grizzlies/wide-ranging carnivores</b></p> <p>1. Minimize human conflicts with grizzly and black bears</p> <p>2. Maintain sufficient seasonal bear habitat to maintain population target levels</p> <p>1.118 Minimize grizzly bear displacement from the Goldstream drainage</p> <p>For further information see <i>Resource Management – General Direction and Guidelines</i></p>	<p>1.1 Private lodge owners are encouraged to thoroughly incinerate or remove garbage from the lodge regularly.</p> <p>2.1 Apply Grizzly Bear Management Guidelines (<i>Resource Management Guidelines</i> section 3).</p> <p>2.2 Minimize and mitigate impacts of transportation corridor.</p> <p>3.1 Develop and implement Access Management Plans for the Goldstream drainage. Access will be restricted, if necessary, to achieve grizzly bear management objectives.</p>
<p><b>Water</b></p> <p>1.119 Maintain water quality and quantity in creeks with licensed water users</p>	<p>1.120 When timber companies or the Ministry of Forests propose operations in watersheds with licensed users, they will advise licensed water users of proposed operations and offer the water licensees the opportunity to participate in preparing a written contingency plan.</p> <p>1.121 Licensed water users will be notified by advertisement of opportunities to review forest development plans.</p>

## Landscape Unit R19 (Goldstream/Stitt Creek) (continued)

Objectives	Strategies
<b>Water</b> (continued) For further information see <i>Resource Management – General Direction and Guidelines</i>	
<b>Recreation</b> 1. Maintain a range of recreation settings, features and facilities  For further information see <i>Resource Management – General Direction and Guidelines</i>	1.122 Recreation settings are to be consistent with the Backcountry Recreation Management Guidelines (Resource Management Guidelines section 8), primarily in the Semi-Primitive Non-Motorized and Roaded Resource Land Categories. 1.123 Motorized vehicles confined to existing roads. 1.124 Goldstream River is to be managed for non-mechanized recreation. 1.125 Ground Hog Basin is to provide semi-primitive motorized recreation experiences. 1.5 Update and implement the lower level plan for recreation and commercial tourism on Lake Revelstoke.
<b>Heritage</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Commercial tourism</b> 1. Integrate the needs of commercial recreation tenure holders with public recreation activities, logging and mining development on Crown land  For further information see <i>Resource Management – General Direction and Guidelines</i>	1.1 The appropriate resource agencies will work with commercial recreation tenure holders to develop statements of concern and interest including Crown land areas of particular interest and approaches to resource development. 1.2 Update and implement the lower level plan for recreation and commercial tourism on Lake Revelstoke.
<b>Viewscapes</b> See <i>Resource Management – General Direction and Guidelines</i>	
<b>Timber</b> See <i>Resource Management – General Direction and Guidelines</i>	

**Landscape Unit R19 (Goldstream/Stitt Creek)** (continued)

<b>Objectives</b>	<b>Strategies</b>
<b>Minerals</b> <i>See Resource Management – General Direction and Guidelines</i>	
<b>Settlement</b> <i>See Resource Management – General Direction and Guidelines</i>	