Forest Practices Board

Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek

Complaint Investigation 070762

FPB/IRC/137

May 2008

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Executive Summary

Background

Southeast of Prince George, towards McBride, the Rocky Mountain Trench contains unique hemlock and cedar forests that are a part of the interior cedar hemlock biogeoclimatic zone (ICH). The ICH forests in the Prince George Forest District have been classified as 'inland temperate rainforests' based on climatology. The ICH contains plant complexes that also occur in coastal temperate rainforests.

Globally, inland temperate rainforests are a rare forest type. The inland rainforest occurs primarily in British Columbia and the flora that occurs here is many times richer than that of coastal temperate rainforests.

In April 2007, the Forest Practices Board received a complaint from several public groups about the management of biodiversity in the interior cedar-hemlock rainforest near Prince George, and about forest management adjacent to two hiking trails.

The complainants asserted that approved cutblocks and harvesting practices did not address government's biodiversity objectives. The complainants were also concerned about impacts of approved harvesting on the Driscoll Ridge hiking trail and the Ancient Forest hiking trail, both located east of Prince George.

The complainants requested that government: spatially define old growth management areas (OGMAs) to secure the biodiversity of the interior cedar-hemlock rainforest; consider all approved cutblocks as part of this process; and place a moratorium on logging in all known 'antique' cedar stands.

Conclusions

Concern about Management of Biodiversity

With regard to the complainant's first concern about the management of biodiversity, the Board found that the licensee's cutblocks were exempted from the requirements of the 2004 *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order), which sets targets for conserving biodiversity. However, with respect to how the Biodiversity Order addresses biodiversity in the ICH forests overall, the Board found that there is a gap in the ability to manage for, and maintain, old growth values because government's "old forest" targets can currently be met without conserving any forest older than 140 years. Biodiversity targets need to be representative of the ecosystem but the current targets are not refined enough to capture old forest stands that have specific moisture regimes and slope positions, which result in some of the richest biodiversity values in the ICH.

Researchers have identified stands in the ICH in wet toe-slope positions that contain rare lichen species and rich biodiversity. These areas are not recognized in the aspatial targets set in government's Biodiversity Order. The implementation policy included in the Biodiversity Order allows for spatial establishment of OGMAs if rare biological values are jeopardized or at risk. The Board found that there is sufficient information to warrant spatially locating OGMAs; rare biological values are jeopardized and possibly at risk.

In July 2007, in response to concerns by University of Northern British Columbia (UNBC) researchers and the Prince George Land and Resource Management Planning table, government, through the Integrated Land Management Bureau (ILMB), started the Legacy Project. The project's goal is to develop science-based, spatial OGMAs in the rare forest types of the ICH zone and assess risks to biodiversity, social and economic values. The project was intended to establish spatial OGMAs by March 31, 2008. A report has been completed, but as of May 5, 2008, ILMB has advised the Board that no decision has been made about whether or not to spatially establish any old-growth management areas.

With regard to the complainant's request for a moratorium on logging, a moratorium is possible under Part 13 of the *Forest Act* if government considers the very old forests (or elements of them) to be at significant risk of extirpation.

Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails

As for the complainant's concerns about the hiking trails, both the Driscoll Ridge Trail and the Ancient Forest Trail have not been legally established, nor have management objectives been established for the trails under section 56 of the *Forest and Range Practices Act* (FRPA). Without established objectives, there is no FRPA requirement for licensees to address the recreation values associated with the trails in forest stewardship plans, nor are there requirements under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging the trails.

However, the cutting permit that encompasses the Ancient Forest Trail has now been closed. The forest licence has been sold and the volume transferred to beetle-attacked pine stands in the Prince George Timber Supply Area (TSA).

Board Commentary

Need for a Conservation Strategy and Interagency Cooperation

The complainants raised concerns about old forest stands in the ICH. The ICH ecosystem has unique features that include rare and sensitive species such as cyanolichens. This investigation corroborated the complainant's concern that, although the Biodiversity Order established landscape biodiversity objectives, it may not adequately provide for, or recognize, the unique and rare values in the ICH. Researchers believe there is imminent threat of expiration of rare and previously unknown species. The Biodiversity Order came with an implementation policy that anticipated circumstances where spatial identification of retention areas could be considered. This investigation has confirmed that spatial identification is needed.

ILMB initiated the Legacy Project in 2007 to develop science-based OGMAs in the rare portions of the ICH zone and to assess risks to biodiversity values as well as social and economic values. However, as of May 5, 2008, no decision had been made to advertise or establish OGMAs. At one point, ILMB had directed staff to advertise 57 hectares that have high recreation values as a proposed OGMA under the *Land Use Objectives Regulation* and to identify draft OGMAs on a further 4,770 hectares. The draft OGMAs would constitute non-binding guidance to forest officials and forest professionals. Taking such an approach may not be effective because without identification or assessment of endangered plant communities and rare species, and the incorporation of that information into designated OGMAs, there is no legal constraint on forest practices to balance timber and non-timber resources.

Reliance on non-binding advice to forest professionals contains risk. Such reliance carries the assumption that all forest professionals will give more consideration of, and conservation to, rare species without any legal requirement to do so. However, even if professionals follow the advice, they can only advocate for these goals. The licensee is not obliged to follow the advice.

The public expectation is that FRPA will set objectives for key values including timber, wildlife, biodiversity, recreation, cultural heritage, and designated resource features. Once these objectives are established, FRPA requires licensees' operational plans to include results or strategies consistent with these objectives. In the circumstances of this complaint, information from UNBC and ILMB indicates that there are risks associated with continuing to apply aspatial aspect of the 2004 *Old Growth Order* to manage biodiversity. The targets for old growth in the ICH can be met without adequately considering endangered plant communities and rare species associated with the old (antique) stands.

Given the emerging information about the ICH forests and rare species, the Ministry of Forests and Range, the Ministry of Environment and ILMB should continue to communicate and coordinate their efforts. These organizations need to enact effective mechanisms to ensure the conservation of red-listed species (such as lichens) and rare very old forest stands in the ICH.

Recommendations

Interior Rainforest and Rare Lichens

1. **The Ministry of Forests and Range, Ministry of Environment and the Integrated Land Management Bureau should formulate an overall stewardship strategy for the interior rainforest to ensure that biodiversity values are adequately managed and conserved.**

This strategy would include mechanisms such as Part 13 of the *Forest Act*, spatially located OGMAs, wildlife habitat areas, general wildlife measures etc. from the *Forest and Range Practices Act*. Such a strategy should consider and build on the 2004 Biodiversity Order and implementation policy. Government should include research information and public input. The strategy should also clarify the role of licensees and individual ministries in managing biodiversity. Furthermore, the existing Biodiversity Order does not adequately address the definition of old forests in the ICH. Further stratification and re-definition should be considered

so that rare sites can be conserved. The Board's investigation noted that the ILMB Legacy Project focused on rare Tier 1 sites in the ICH only. However, the remaining wet cedar stand types also have significant biological value and warrant further biodiversity management. A complete analysis of the ICH Tier 1 to 3 sites is needed and other ecotypes may also require such consideration.

Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Forests and Range, Ministry of Environment and the Integrated Land Management Bureau notify the Board of the steps that have been taken to implement the Board's recommendation by May l, 2009.

2. **The Minister of Forests and Range should examine the UNBC research and the ILMB Legacy Project reports to identify vulnerable interior rainforest stands in the Robson Valley and Prince George TSAs and the risk to such values from harvesting. Once areas are identified as vulnerable and at risk, the Minister should designate those areas under Part 13 of the *Forest Act* and suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years.**

The UNBC researchers concluded that cedar-leading stands in wet toe-slope positions represent significant biodiversity hotspots for canopy lichens and are key to the maintenance of biodiversity within much larger regional landscapes. At present, few old growth forests in these wet toe-slope positions fall within designated protected areas or old-growth management zones.

Given the disproportionate level of forest harvesting that has already occurred in wet toe-slope positions in the ICH,[1] there is a real risk of extirpation of an internationally significant assemblage of canopy lichens in the upper Fraser River watershed if further habitat loss occurs in these areas.

Designation under Part 13 of the *Forest Act* is needed to ensure that vulnerable interior rainforest stands in the Prince George and Robson Valley timber supply areas are not subject to new forest licence awards, timber harvesting plans or permits until further scientific information is gathered and that new information is incorporated into the management regime for the ICH.

In 2002, the chief forester recognized the emerging issue of the ancient cedar forests and that the forests appeared to contain rare and sensitive species such as cyanolichens. The chief forester stated that he encouraged

> "…staff to complete landscape unit planning objectives for the ICH to ensure that rare biogeoclimatic sites series are identified and protected in OGMAs."

[1] ICHvk2

It has been five years since the last timber supply review, and while ILMB has issued a Biodiversity Order, this investigation indicates that rare site series are not protected in OGMAs, and are not likely to be in the near future. The research from UNBC and the ILMB Legacy Project indicates that the current aspatial Order may not guarantee that values in the ICH are conserved. As well, even though ILMB may designate rare sites as old growth management areas, it is possible that this will not address all the values.

Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Forests and Range notify the Board of the steps that have taken to implement the Board's recommendation by May l, 2009.

3. **The Regional Executive Director of ILMB should provide the Board with a copy of the decision on whether to establish spatial OGMAs, upon the completion of the Legacy Project. The document should incorporate a rationale for the decision including the factors considered and how values and risks were identified and addressed.**

This investigation has highlighted scientific rationale and documented risks from harvesting which in turn support the establishment of retention areas to protect rare ecosystems and species in the ICH rainforests. The goal of the ILMB Legacy Project is to develop science-based OGMAs in the portions of the ICH zone containing rare biodiversity and to provide a business case for establishing spatial OGMAs. The Board recognizes that the existing "biodiversity budget" has already removed timber supply volume to address old growth retention requirements. Therefore, the impact of spatially locating OGMAs should not affect the available timber supply volume, though it may affect some timber licences and profiles. As of May 5, 2008, no decision has been made to advertise OGMAs or provide advice to professionals. The public should be provided with a rationale explaining ILMB's final decision regarding spatial establishment of OGMAs upon the completion of the Legacy Project. The rationale should detail the information currently known about the rare species and ecosystems in the interior rainforest, as well as the risks that were considered, and how those risks were recognised or minimized in the decision.

Under section 132 of the *Forest and Range Practices Act*, the Board requests that ILMB notify the Board of the steps taken to implement the Board's recommendation by May 1, 2009.

Driscoll Ridge and Ancient Forest Hiking Trails

4. **The Minister of Tourism, Sport and the Arts should establish the Driscoll Ridge Trail and the Ancient Forest Trail as recreation trails under section 56(1) of the *Forest and Range Practices Act*.**

The government approved construction of the Driscoll Ridge Trail and Ancient Forest loop portion of the trail. Legally establishing the trails will ensure that the Driscoll Ridge Trail and the Ancient Forest loop are recognised when, and if, other tenures are considered for the area.

As well, legal recognition provides the minimal level of consideration under FRPA to ensure that forest operations do not render the trails ineffective.

5. **The Minister of Tourism, Sport and the Arts should consider setting legal objectives for each of the trails as empowered by section 56(3) of the *Forest and Range Practices Act*.**

Currently, trail construction and management is occurring without approved plans in place and without consideration of future interaction or integration with Crown tenures. Government committed itself to a results-based regime in creating the *Forest and Range Practices Act*. In order to mandate results, the government must have objectives established to direct operational planning. In this case, establishing objectives would serve two purposes: first, any objectives would have to be considered by licensees in any future forest stewardship plans; and second, the objectives would form a basis for management agreements that the Ministry of Tourism, Sport and the Arts (MTSA) may enter into.

6. **The Minister of Tourism, Sport and the Arts should consider designating the Ancient Forest hiking trail as an interpretative forest site as empowered by section 56(1) of *Forest and Range Practices Act*.**

The Ancient Forest hiking trail is used by the public to examine the surrounding forest of large cedar and other ecological values in the antique forest. The trail's value is in the surrounding forest's unique attributes. Such a site may be better suited for use as an interpretative forest site rather than merely a trail.

Under section 132 of the *Forest and Range Practices Act* the Board requests that the Ministry of Tourism, Sport and the Arts notify the Board of the steps that have taken to implement the Board's three recommendations concerning recreation trails by May l, 2009.

The Complaint

On April 19, 2007, the Dome Creek Forest Information Committee, the Prince George Backcountry Society, and the Save-The-Cedar League (the complainants) submitted a complaint to the Forest Practices Board. The complainants had concerns with the management of biodiversity in the interior cedar-hemlock rainforest and with forest management adjacent to two hiking trails.

The complainants asserted that the approved forest development plan of TRC Cedar Limited (the licensee) conflicted with government's October 20, 2004 *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order). They asserted that the licensee's approved cutblocks and harvesting practices did not address the biodiversity objectives and were inconsistent with several sections of the implementation policy contained in the Biodiversity Order. Further, they said that the licensee's harvesting practices did not mimic natural disturbance patterns because they fragmented the ecosystem and put endangered species and the unique ecosystem at risk.

The complainants were also concerned about impacts on the Driscoll Ridge hiking trail and the Ancient Forest hiking trail, both located east of Prince George. The licensee has an approved cutting permit for a portion of the area accessed by these trails, and the complainants believe that harvesting there will be detrimental.

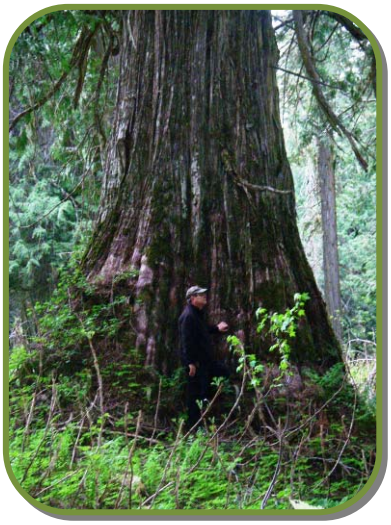
As a remedy, the complainants requested that government spatially define old growth management areas (OGMAs) to secure the biodiversity of the interior cedar-hemlock rainforest; consider all approved cutblocks as part of this process; and place a moratorium on logging in all known 'antique' cedar stands.

The Board's approach to this investigation was to first examine the issues concerning the Biodiversity Order, and then examine the issues concerning the hiking trails.

Background

Antique Forests

Southeast of Prince George, towards McBride, the Rocky Mountain Trench contains unique hemlock and cedar forests that are a part of the interior cedar hemlock biogeoclimatic zone (ICH). The ICH contains a diversity of plants and animals. It provides habitat for a variety of threatened or endangered species, including mountain caribou, rare and newly discovered lichens, and forest stands with trees that are sometimes more than 1,000 years old. Such stands have been called 'antique forests' by various researchers and the general public.



Old growth cedar along the Ancient Forest Trail, Dome Creek BC.

Inland Temperate Rainforests

The ICH forests in the Prince George Forest District have been classified as inland temperate rainforests based on climatology. The ICH contains plant complexes that also occur in coastal temperate rainforests. Globally, inland temperate rainforests are a rare forest type. The inland rainforest occurs primarily in British Columbia and the flora that occurs here is many times richer than that of coastal temperate rainforests. Within the ICH there are specific site series that are geographically very limited, such as wet cedar sites (the ICHvk2[2]) that occur in the northern limit of the ICH biogeoclimatic zone.

Disturbance Intervals

Forests reflect the influence of natural disturbance agents such as fire, wind, insects, and disease. These agents influence the composition, size, age, and distribution of forest types on the landscape, as well as the characteristics of those forests. The inland rainforests have infrequent and localized disturbances, which results in only the loss of individual trees or small pockets of trees as opposed to entire forest stands. Stand-replacing disturbances, such as fires, are extremely rare, particularly in the wetter portions of the ICH. In some cases, stand-replacing fires happen as infrequently as once every 1,200 years. It is this rarity of natural disturbance that produces antique forests.

Lichens in the Inland Temperate Rainforest

Lichens are an important component of inland rainforests and are a good indicator of biodiversity. For example, epiphytic lichens require humid forest canopies in rarely-disturbed forests, and, because of the unique antique trees of the inland rainforests, many lichen species not found anywhere else in the world thrive there. Inland rain forest old growth stands contain cyanolichens, which will not grow in younger stands. There is still a limited knowledge about the biological communities in these antique forests, but recent studies show a high diversity of lichens.

Evidence of logging, fire scarring on cedar trees.

[2] The Biogeoclimatic Ecosystem Classification (BEC) system is used to classify and manage sites on an ecosystem-specific basis. BEC zones are the highest level of classification and are named after the dominant tree species and the general climate or region. In this case, the ICH is the *Interior Cedar Hemlock* zone. Subzones define the climate of an area and in the interior, subzones are divided based on climate and precipitation. The vk2 specifies that the subzone is very wet and cool.

Timber Supply Review

In 2002, BC's chief forester commented on the interior rainforest in his annual allowable cut determination for the Prince George Timber Supply Area (TSA). He noted that the ICH ecosystem has unique features and values due to unique disturbance patterns and fire history; vegetation; lichens; and, wildlife habitat in the area. He also recognized the presence of rare and sensitive species such as cyanolichens. The chief forester stated:

> *I encourage staff to complete landscape unit planning objectives for the ICH to ensure that rare biogeoclimatic sites series are identified and protected in old growth management areas (OGMAs). I also encourage and support the on-going research being conducted in the ICH. This research will help improve forest management policies and practices, which can be reflected in future timber supply analyses.*

In December 2007, the Ministry of Forests and Range (MFR) began collecting data prior to conducting another timber supply review for the Prince George TSA. The review can reflect any changes in practices resulting from research as well as establishment of set-asides such as OGMAs. The timber supply review includes provisions for a public review anticipated to occur in the spring of 2008.

2004 Order Establishing Biodiversity Objectives

On October 20, 2004, government established landscape units and three objectives for the Prince George TSA. This was contained in a government order[3]—*Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (the Biodiversity Order). The Biodiversity Order established biodiversity objectives for old forest retention; old interior forest; and young forest patch size distribution. The old forest targets in the Biodiversity Order were not delineated on maps—they were aspatial. These aspatial targets have guided forest management in the Prince George TSA since 2004.

The Biodiversity Order also includes an implementation policy. The implementation policy is not legally binding, but provides guidance for implementation so licensees can ensure their plans are consistent with the Biodiversity Order's objectives.

Research Conference

In 2000, a conference was held in Prince George about issues and research into the wet temperate rainforest. A second workshop is planned for May 21 to 23, 2008, in Prince George. The conference will present results of the latest research and will examine the social and community values associated with the rainforest ecosystems.

[3] The Biodiversity Order was enacted under section 4(1) and 4(2) of the *Forest Practices Code Act of British Columbia* by the Ministry of Sustainable Resource Management.

Discussion

The complaint consisted of two parts – concerns about the management of biodiversity in the interior cedar-hemlock rainforest, and concerns about forest management adjacent to two hiking trails. The complainants asked government to consider all approved cutblocks and to spatially define OGMAs in order to secure the biodiversity of the interior cedar-hemlock rainforest. They also requested a moratorium on logging in all known antique cedar stands.

To address the complaint, the Board examined:

- Concerns related to the Biodiversity Order
    1. whether the licensee's approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order;
    2. whether retention areas should be spatially defined;
    3. whether the Integrated Land Management Bureau (ILMB) would provide the requested remedy;
    4. whether government can place a moratorium on logging of the antique stands; and
    5. whether identified wildlife provisions in specified in the *Forest and Range Practices Act* (FRPA) can be used to manage rare species and ecosystems in the antique stands.

- Concerns with the Driscoll Ridge and Ancient Forest hiking trails
    1. the status of the hiking trails; and
    2. the status of a cutblock over the Ancient Forest hiking trail.

Concerns Related to the Biodiversity Order

1. Do the licensee's approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order?

The complainants asserted that the licensee's approved cutblocks and harvesting practices do not address the biodiversity objectives set out in the Biodiversity Order and are inconsistent with several sections of the Biodiversity Order's implementation policy.

The 2004 Order stated that any category A cutblocks[4] (those that had been approved on, or before, the effective date) were not affected. This means that existing category A cutblocks, and cutblocks with approved cutting permits, were not subject to the Biodiversity Order. However, new forest development plans, major amendments and forest stewardship plans submitted after the effective date must be consistent with the Biodiversity Order.

The licensee operated under its 2000 forest development plan and associated approved cutting permits. It did not need additional cutblocks, which would have required the preparation of a

[4] As defined by section 20 of the *Operational and Site Planning Regulation* subject to the former *Forest Practices Code of British Columbia Act*.

forest stewardship plan. Thus there have been no new plans or amendments that would be subject to the 2004 Biodiversity Order.

The Board finds that the licensee's approved cutblocks, having been exempted from the Biodiversity Order, do not conflict with the biodiversity objectives in the Biodiversity Order even though the harvesting may damage canopy cyanolichens.

2. Do circumstances warrant locating retention areas spatially?

The complainants identify the antique stands as biologically significant and at risk until OGMAs are spatially established. Specifically, the complainants assert that the broad and general definition of 'old growth' used in the Biodiversity Order does not reflect the unique qualities of extremely old and biologically diverse cedar stands that occur here. The complainants want category A cutblocks and approved cutting permits to be considered in the Biodiversity Order and they also want OGMAs to be spatially located over those ancient stands.

The Biodiversity Order states that the biodiversity objectives will be periodically updated to incorporate new knowledge and to address changing environmental, economic and social conditions. Under the implementation policy of the Biodiversity Order, the ILMB is responsible for evaluating the compliance and effectiveness of licensees' strategies and deciding whether the biodiversity objectives require amendment.

The policy also states that ILMB may require the establishment of spatially located retention areas. The complainants say that circumstances now warrant spatial location of retention areas, namely OGMAs. The policy identifies three specific circumstances that may require spatial location of retention areas:

1. where licensees have been unable to coordinate aspatial monitoring;
2. where there is a gap in the ability to manage for and maintain the old growth values on the landscape; and
3. where information identifies biological values on the landscape that are jeopardized or at risk.

The Board examined whether current circumstances support the spatial location of OGMAs.

2.1 Have the licensees been unable to coordinate aspatial monitoring?

The implementation policy states that retention areas may have to be spatially located if licensees are unable to coordinate the aspatial monitoring of the biodiversity objectives.

Subsequent to the 2004 Biodiversity Order, the Prince George forest licensees formed a Licensee Landscape Objective Working Group (LLOWG). The LLOWG has agreements and procedures in place that coordinate operations to ensure that biodiversity targets are met. This group organizes and consolidates individual licensee harvesting data and reports on achievement of objectives, including biodiversity and implementation of the aspatial requirements of the Biodiversity Order. The LLOWG provides this information to government agencies. The

implementation policy was revised in December 2005 to refer to a *Reporting Protocol* agreed to between forest licensees and government agencies.

The Board finds that licensees have coordinated the monitoring of the aspatial biodiversity targets, so spatial location of retention areas is not warranted on that basis.

2.2 Is there is a gap in the ability to manage for and maintain the old growth values on the landscape?

The policy anticipates that spatial location of retention areas may be required if there is a gap in the ability to manage for and maintain the old growth values. The complainants assert that the definition of 'old growth' within the Biodiversity Order does not recognise the unique qualities of the very old and biologically diverse cedar stands. Is this a gap in maintenance of those values?

2.2.1 Defining Old Forests by Age Class

The Biodiversity Order established landscape biodiversity objectives for old forest retention, old interior forest and young forest patch size distribution The Biodiversity Order set representation targets for age class by natural disturbance units. In the ICH, old forests are defined as all forests older than 140 years. There is no recognition of different values in much older cedar stands.

Vetern cedar partially fallen. The rotton core makes determining its age an estimate only.

However, forest inventory age classes for cedar forests are suspect. Inventory techniques for determining stand age consist of first selecting representative sample trees and then counting tree rings to determine age. Very old cedar trees generally have rotten cores, making counting growth rings impossible. Consequently, many cedar forest stands may be classified in the inventory as Age Class 8 (141 to 250 years old), but the age is not accurate. Therefore, many Age Class 8 and 9 stands are older than the inventory indicates due to the imprecise way of determining age.

The ICH is characterized by a disturbance regime that functions in gaps in the forest canopy that occur when individual trees become very old and eventually die, creating space for new growth. The resulting stands are very different from those in neighbouring pine forests where large disturbances, such as forest fires, create forests where all the trees are the same age. Cedar trees within stands in the ICH tend to have a wide range of ages, so defining an age class for these stands is often imprecise. Consequently, some stands classified as Age Class 8 are 141 to 250 years old, but there will also be other stands that are much older than Age Class 8 or 9, with very old individual trees.

The implementation policy recognized that the definition of old forests for ICH units required more discussion. A process was to be developed in 2004 to deal with the definition, but that has not yet happened.

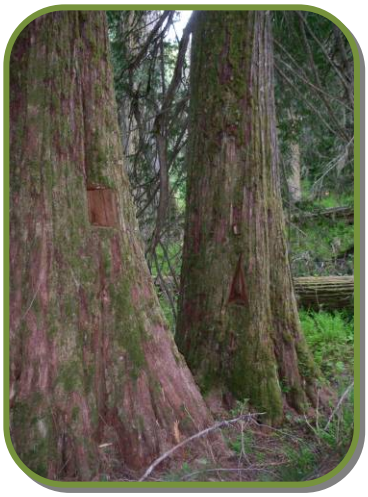
The Board finds that, under the Biodiversity Order, the current old forest targets can be met without conserving any forest older than 140 years old, as the definition of 'old' does not segregate and conserve very old stands. Cedar stands in the ICH often contain individual trees that can be up to 250 years old, with some in excess of 600 years old. This is a potential gap in the ability to manage for and maintain the old growth values using aspatial targets.

2.2.2 Age Class and Biodiversity

The implementation policy stated that more work was needed to deal with the definition of old forests in the ICH.

Old forests cannot be defined only by age if biodiversity values are to be identified. Appropriate definition should consider age plus stand structure, site series representation and other indicators. Stands of significant biodiversity value may not be captured through aspatial management, as age is only one component of biodiversity.

Old forests include both wet and dry variants which, though different from a biodiversity perspective, are indistinguishable on the basis of age alone. This can create problems, which have been illustrated by the findings of UNBC researchers. When examining forest stands that had been harvested in the ICH in the last 20 years, they found that wet forests (those with high biodiversity value) were preferred and targeted for harvesting over drier forests. They concluded that, if the trend continues, this disproportionate harvesting will result in loss of wet forests sites with high biodiversity. Remaining old forests will be drier sites with lower biodiversity value, low canopy biodiversity and greater susceptibility to fire and insect outbreaks.



Wood quality test holes in cedar trees. Loggers check for soundness of wood to determine if they are worth harvesting.

The Board finds that the definition of old forests by age class does not capture the different moisture regimes and higher biodiversity values associated with wetter sites.

2.2.3 Summary

The implementation policy in the Biodiversity Order recognized a need to redefine old forests, but this has not been done. The *Biodiversity Guidebook* noted that the average disturbance interval for ICH forests was 250 years. Research has confirmed that age alone is an inadequate identifier of biodiversity, especially in the ICH where the moisture regimes and slope position influence biodiversity richness.

The Board finds that there is a gap in the ability to manage for and maintain representative old growth values on the landscape. Current old forest targets can be met without conserving any forest older than 140 years, though the highest biodiversity values are in much older forest stands with particular moisture regimes and slope positions in the ICH. Given that gap, spatial location of old growth areas is now required, in accordance with the implementation policy.

2.3 Does information identify biological values on the landscape that are jeopardized or at risk?

The implementation policy states that spatial location of retention areas may be required if information identifies biological values on the landscape that are in jeopardy or at risk. The complainants are concerned that endangered species and the unique ICH ecosystem are both at risk. Is there information indicating that biological values are at risk?

Recent studies and research from UNBC have indicated that there are important ecotypes in the ICH that are both rare and at risk. More information on publications and research on the ICH rainforest can be found at http://wetbelt.unbc.ca/index.html.

In 2007, a UNBC researcher gave the Prince George Land and Resource Management Plan monitoring committee a presentation entitled *Conservation Biology Priorities for Management of BC's Inland Rainforest.* The researcher evaluated ICH forests and discussed different types of forest stands, dividing the ICH rainforest into three tiers based on location; Tier 1 stands occupies the "toe" area of slopes where seepage and small streams irrigate the soil, even in the driest conditions; Tier 2 stands occupy productive, well drained sites often found at mid-slope; and, Tier 3 stands occupy rocky soils on hill slopes.

The researcher then discussed each tier's attributes and the risk of extirpation and concluded that Tier 1 stands were at immediate risk. Tier 1 sites tend to be the best sites, and are usually found on north facing exposures. It is on these sites that the largest and oldest trees, sometimes more than 1,000 years old, are found. These areas also have a high level of lichen diversity, probably because the consistent availability of groundwater promotes growth. As well, canopy lichens thrive due to high relative humidity within the lower canopy which provides increased nutrient availability and reduces fire return intervals (allowing the accumulation of rare species over time). These unique toe areas are also at greatest risk from forest development.

In March 2008, after discussing their work with ILMB, UNBC researchers provided the Board with a draft manuscript containing statistics and data supporting the contention that portions of the ICH are rare and at immediate risk. The researchers noted that, over the last several decades, high biodiversity sites (such as the Tier 1 stands) have been disproportionately harvested compared to their area on the landbase. Those sites also have very low representation regionally in protected areas. For example, protected areas containing wet cedar-leading forest stands represent only two percent of regional landscapes. The researchers advised that the continued loss to forest harvesting, "threatens the extirpation of old-forest associate canopy lichen communities in the upper Fraser River watershed." They estimate that less than six significant Tier 1 forest stands remain in the Headwaters and Prince George Forest Districts.

The researcher also contended that loss of the remaining Tier 1 stands would impact the entire landscape because the Tier 1 stands contain core lichen populations that colonize surrounding poorer quality habitats. As Tier 1 sites are lost, the loss in canopy lichen biodiversity will be amplified over the broad regional landscape. The researchers recommend the immediate conservation of the remaining old forest stands in wet toe-slope positions, given the disproportionate significance of Tier 1 stands to sustaining lichen biodiversity.

In the Board's opinion, a more detailed stratification of forests in the ICH is required because some of these forests contain very important biodiversity values. Past harvesting preferences have concentrated harvesting in these rare stands, but that has met the current aspatial targets in the Biodiversity Order.

ICH stands in wet toe-slope positions, with their rare lichen species and rich biodiversity, are not specifically recognized nor separated out in the aspatial targets in the Biodiversity Order. The aspatial targets, without more stratification, fail to represent and protect the antique forest types. The Board finds that there is sufficient information to warrant spatially locating retention areas (by using OGMAs), as rare biological values on the landscape are currently at risk.

3. Has the Integrated Land Management Bureau provided the requested remedy?

The complainants asked that government spatially define additional OGMAs to secure the biodiversity of the interior cedar-hemlock rainforest.

In late 2006, ILMB proposed a project as part of a province-wide plan for to complete biodiversity planning. The project was entitled *Legacy Biodiversity Completion in the Prince George Rare Interior Cedar Hemlock Zone* (Legacy Project). The project was to identify candidate (OGMAs) in the ICH stands in the Prince George Forest District for designation under the *Land Use Objectives Regulation*.

3.1 What is the goal of the Legacy Project and could it meet the requested remedy?

ILMB initiated the Legacy Project in July 2007 in response to concerns by UNBC researchers and the Prince George Land and Resource Management Planning table. The project goal is to develop science-based, spatial OGMAs in the rare forest types of the ICH zone and assess risks to biodiversity values as well as to social and economic values. The project was intended to establish spatial OGMAs by March 31, 2008. Upon completion, the regional executive director of ILMB will consider whether to spatially establish OGMAs using the *Land Use Objectives Regulation*.

The Legacy Project includes a spatial analysis to identify high, medium and low biodiversity value forests in two of the ICH biogeoclimatic subzones (ICH vk2 and wk3) that are currently outside existing OGMAs, parks and protected areas. The project will compare the high value stands with recent and planned harvesting of blocks that have category A (approved) status, or with issued cutting permits, in order to assess the effectiveness of the current aspatial approach to biodiversity. The project includes consultation with identified stakeholders including the

members of the Prince George Land and Resource Management Plan table, tenure holders, First Nations, UNBC researchers and the complainants. It also includes a formal public review and comment aspect.

The complainants asked government to spatially define additional OGMAs to secure the biodiversity of the ICH rainforest, and to consider the category A cutblocks as part of this process. ILMB began analyzing this request in the Legacy Project. The Legacy Project should provide ILMB with the information necessary to assess whether the current existing aspatial targets are sufficient to manage the values within the ICH rainforests.

3.2 What is the current status of the Legacy Project and has it met the requested remedy?

On March 7, 2008, ILMB provided an update on the Legacy Project, indicating that it had prepared a draft report with recommendations. On April 3, 2008, ILMB wrote to the Board providing the outcomes of the Legacy Project and indicating direction that had been provided to staff. At that time, ILMB intended to advertise 57 hectares with high recreation values as a proposed OGMA under the *Land Use Objectives Regulation*. This advertisement would be designed to solicit public comment for consideration by the regional executive director as well as to identify draft old growth management areas on a further 4,770 hectares. The draft OGMAs were intended to provide non-binding guidance to professionals. On April 23, 2008, ILMB noted that there would be a delay in both the advertising of OGMA and the non-binding guidance. Then, on May 5, 2008, ILMB again wrote to the Board to clarify that no decision had been made to advertise OGMAs or any other information.

While ILMB has indicated that it has not made a decision on establishment of the 4,770 hectares as of OGMAs at this time, it could do so at its discretion in future. There is no current commitment by ILMB to do as the complainants requested and spatially define additional OGMAs to secure the biodiversity of the ICH rainforest.

4. Can government place a moratorium on logging to protect the antique forests?

The complainants requested a moratorium on logging. Such a moratorium is possible if government considers the antique forests (or elements of them) to be at significant risk of extirpation.

Part 13 of the *Forest Act* allows government, through MFR, to suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years in designated areas. Part 13 has been used to temporarily defer logging on Crown lands while determining land use issues, conservation requirements for rare species, etc.

MFR previously identified issues about the ancient cedar forests during its 2002 timber supply review process. During that process, the chief forester encouraged the completion of landscape unit planning objectives for the ICH so as to ensure that rare biogeoclimatic sites series were identified and protected in OGMAs. Depending on the outcome of the ILMB Legacy Project,

there could be outstanding issues and concerns that MFR may wish to consider in the next timber supply review or elsewhere, such as the use of Part 13.

Information from UNBC supports MFR use of Part 13. UNBC researchers reported that the old forest stands in the upper Fraser River watershed, especially cedar-leading stands in wet toe-slope positions, need immediate protection from development. They concluded that these sites represent significant biodiversity hotspots for canopy lichens, and are important to maintaining biodiversity within much larger regional landscapes. The very old stands not only contain rare lichens and represent rare ecosystems; but these sites are threatened with global extinction as well. Government could declare these forest stands as designated areas under the *Forest Act* if they concur that only a half dozen significant Tier 1 stands remain and that these forest stands need immediate protection. A moratorium on logging would require a careful analysis of the ecological values identified; the risk the ecological values face from forest development or land use; and the social costs.

Government can place a moratorium on logging if it considers antique forests (or elements of them) to be at significant risk of extirpation under Part 13 of the *Forest Act*.

5. Can identified wildlife provisions in FRPA be used to manage rare species and ecosystems in the antique forests?

Many agencies are engaged in this issue and all have recognized the emerging values in the ICH. The ILMB Legacy Project may result in the spatial identification of OGMAs to conserve rare and representative ecosystem types in the ICH. However, the Ministry of Environment (MOE) also has tools under the FRPA that enable it to provide direction, policy, procedures and guidelines for managing species at risk, which can include plant communities as well as individual species.

Twisted cedar bark. Thick furrowed bark can provide habitat to a variety of flora and fauna.

As rare species and ecotypes are identified, MOE can make use of the identified wildlife provisions in FRPA. A species or plant community can be classified as red listed, then included or listed in the accounts for identified wildlife. Subsequently, MOE can establish corresponding general wildlife measures and or wildlife habitat areas (WHAs) using the *Government Actions Regulation.* Wildlife measures and habitat areas would have to be considered by licensees for their forest operations under FRPA.

An example of this is one ICH old forest plant community that has been listed as identified wildlife under FRPA—the Western Red Cedar/Devil's Club/Ostrich Fern community.[5] Designating it as such clearly shows that wildlife habitat area designation under FRPA is a possibility for this plant community. However, MOE noted that a critical resource feature of the very old stands is the lichen community, which

[5] ICHvk2/05

includes a number of rare species. Lichens are extremely vulnerable to edge effects, so small, long or narrow retention patches are likely to lose species over time and not be effective as conservation areas.

MOE confirmed that OGMA designation is preferred over WHAs for conservation because OGMAs can be large enough to retain the lichen component. MOE would use WHAs to address any small occurrences of the cedar/devil's club/ostrich fern community outside of OGMAs. Another reason to limit use of WHAs is that such designation is restricted by a one percent cap in terms of impact on the timber supply. The larger biodiversity budget that applies to OGMAs is better able to cover the required area.

In summary, identified wildlife provisions in FRPA can be used to manage small localized values in the very old stands. However, MOE believes that the Legacy Project and the establishment of spatial OGMAs are the most suitable tools to ensure ICH values are not compromised.

Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails

1. What is the status of the Driscoll Ridge and Ancient Forest hiking trails?

The complainants identify antique forests as biologically significant and at risk. Two hiking trails were built east of Prince George to access and view these forest stands. The complainants are concerned about continued harvesting in the area near the trails. In particular, the licensee has an approved cutting permit that the complainants believe should not be harvested because doing so will be detrimental to old growth values.

Permission to build recreation trails is required under section 57(1) of FRPA. Section 57(1) requires ministerial approval to build a trail. On January 31, 2006, MFR received an application by the complainants to build a hiking trail east of Prince George and just west of Dome Creek, along the Driscoll ridge. The ministry considered the request and sought public input on the proposal. The licensee had an active cutting permit in the area but the proposed trail did not encroach on it. During the public review and comment period provided for the trail application, MFR received a proposal to add a small loop trail adjacent to Highway 16. That addition was incorporated into the proposal. The Ancient Forest hiking trail was not discussed with the licensee, but on May 2, 2006, the Ministry of Tourism, Sport and the Arts (MTSA) granted permission for the trail, including the loop, to be built.

Section 57(2) of FRPA allows the minister to attach conditions to approvals, which occurred in this case. The approval recognized the existing cutting permit, stating that the construction of the trail would not limit or preclude future industrial activities such as harvesting or road construction, nor would it conflict with designated OGMA objectives.

The conditions include a requirement that the Caledonia Ramblers Hiking club enter into an agreement with the government which would establish the terms and conditions for use,

construction, improvement, and maintenance of the trail. The Caledonia Ramblers signed a management agreement for the Driscoll Ridge trails in December 2007.

Recently, MTSA staff have noted the amount of people using the Ancient Forest hiking trail has increased, which brings with it several issues. First, the trail needs to be assessed to ensure that trail design can accommodate current and future levels of foot traffic. Second, an assessment of facilities is required to support the anticipated number of tourists and hikers, such as bus and car parking, restrooms and picnic tables.

While permission to build the hiking trails was granted under section 57 of FRPA, the trails have not been formally established. Under section 56(1) of FRPA, recreation trails and sites can be established. Management objectives can be set under section 56(3). However, unless recreation features are formally established, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans. Further, unless the recreation trails are also established as a resource feature, the protective conditions of the FRPA regulations will not apply. Section 5 of the *Government Actions Regulation* (GAR) lets the minister responsible for the *Forest Act* identify resource features, including recreation trails. Section 70 of the *Forest Planning and Practices Regulation* prohibits licensees from damaging a resource feature through primary forest activities.

In March 2008, MTSA informed the Board that the Caledonia Ramblers had submitted a proposal requesting establishment of the Driscoll Ridge hiking trail as a 'trail' under section 56 of FRPA. The Ramblers also proposed that the Ancient Forest hiking trail and the surrounding area be designated as a recreation site under section 56. The proposals are currently being considered.

In summary, both the Driscoll Ridge and the Ancient Forest hiking trails have not been legally established, nor do they have management objectives under section 56 of FRPA. Without established objectives, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans and there is also no requirement under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging recreation trails.

2. What is the status of Cutblock 486, which encompasses the Ancient Forest hiking trail?

The Ancient Forest hiking trail was located and built within an area that is part of an approved cutting permit, which has caused concerns for both the complainant and the licensee. Preliminary information from the ILMB Legacy Project indicates that the cutting permit for Block 486 contains one of the best remaining examples of a cedar-leading old forest stand in a wet-toe slope position (i.e., a Tier 1 site with the highest canopy biodiversity values).

The approval to build the hiking trail specified that the trail would not limit or preclude harvesting or road construction. However, the licensee found its operations under its forest licence to be uneconomic for value-added manufacturing. The stumpage charged for cedar meant that the licensee's costs would have exceeded revenue for its products. Instead, the

licensee sought to transfer its forest licence volume from cedar-hemlock stands to pine stands, allowing it to harvest mountain pine beetle attacked stands elsewhere in the TSA.

In February 2008, a transfer of the forest licence was approved. As a result, the forest licence no longer applies to cedar-hemlock stands. All existing cutting permits are closed (including CP 35 block 486) or harvesting is complete. All of the category A cutblocks are obsolete. Therefore, the area covered by both the cutting permits and category A cutblocks will be unencumbered and allow government agencies to consider options for management without conflicts with timber tenures. This includes establishment of OGMAs, recreation trails, sites and interpretative forests.

As of February 28, 2008, the cutting permit that encompasses the Ancient Forest hiking trail is closed.

Conclusions

Concerns Related to the Biodiversity Order

1. Do the licensee's approved cutblocks conflict with the biodiversity objectives in the Biodiversity Order?

No. There may be damage to canopy cyanolichens—in particular from harvesting approved cutblocks—but the Biodiversity Order specifically exempted approved cutblocks.

2. Do circumstances warrant locating retention areas spatially as specified by the implementation policy of the Biodiversity Order?

Yes. The implementation policy identifies three circumstances that may require spatial location of retention areas, and two of those apply.

First, there is a gap in the ability to manage for and maintain the old growth values because current old forest targets can be met without conserving any forest older than 140 years. Biodiversity targets need to be representative of the ecosystem but the current targets are not refined enough to capture the moisture regimes and slope positions that influence the richness of biodiversity in the ICH.

Second, researchers have identified stands in the ICH in wet toe-slope positions that contain rare lichen species and rich biodiversity. These are not recognized in the aspatial targets in the Biodiversity Order. There is now sufficient information to warrant spatially locating retention areas by using OGMAs; rare biological values are jeopardized and possibly at risk.

3. Has the Integrated Land Management Bureau provided the requested remedy?

No. The complainants requested that government spatially define additional old growth management areas to secure the biodiversity of the interior cedar-hemlock rainforest. ILMB initially indicated that it intended to advertise for establishment of one OGMA that is 57 hectares in size. As well, it proposed to provide information on 4,770 hectares of draft OGMAs

as information or non-binding guidance to forest professionals. ILMB then noted that there would be a delay in both the advertising of OGMA and the non-legal guidance. Lastly, ILMB clarified that, as of May 5, 2008, no decision had been made to advertise OGMAs or any other information.

4. Can government place a moratorium on logging to protect the antique forests?

Yes. A moratorium on logging is possible under Part 13 of the *Forest Act* if government considers the very old forests (or elements of them) to be at significant risk of extirpation.

5. Can identified wildlife provisions in FRPA be used to manage rare species and ecosystems in the antique forests?

Yes. However, MOE notes that it supports the Legacy Project and the establishment of spatial OGMAs as better suited to ensure ICH values are not compromised.

Concerns with the Driscoll Ridge and Ancient Forest Hiking Trails

1. What is the status of the Driscoll Ridge and Ancient Forest hiking trails?

The Driscoll Ridge and the Ancient Forest hiking trails have not been legally established, nor have management objectives been set for them under section 56 of FRPA. Without objectives, there is no FRPA requirement for licensees to incorporate recreation values into forest stewardship plans and there is also no requirement under the *Forest Planning and Practices Regulation* to prohibit forest activities from damaging recreation trails.

2. What is the status of Cutblock 486 which encompasses the Ancient Forest hiking trail?

The cutting permit that encompasses the Ancient Forest hiking trail has been closed. The forest licence has been sold and the volume transferred to beetle attacked pine stands in the Prince George TSA. The forest licence no longer applies to cedar-hemlock stands.

Forest Practices Board

File: 97250-20/070762

June 24, 2010

Eamon O'Donoghue
Regional Executive Director
Integrated Land Management Bureau
200-1488 Fourth Avenue
Prince George, BC V2L 4Y2

Dear Eamon O'Donoghue:

Thank you for your letter of June 10, 2010 providing an update on the status of the 4770 hectares of Guidance Old Growth Management Areas (OGMA) and your assessment of the timber supply sensitivity analysis.

In your letter you explain that there has been little harvesting activity in these areas to date and in your discussions with the major licensees you understand that they have no foreseeable plans to harvest within them. You also state that the timber supply impact of legally establishing these areas is relatively minor.

In this case, the Board remains convinced that legally establishing the draft Guidance OGMAs is prudent. Legal establishment would require amendments to licensee's forest stewardship plans and licensees conduct harvesting consistent with what is in their plan. Without legal designation there is a risk that an area will fall through the cracks, or economic pressures may cause a licensee to be interested in these sites. A licensee can submit a cutting permit application, whether or not they know about the biodiversity interest, and the District Manager has limited ability to refuse to issue a cutting permit.

However, the authority to decide whether to legally establish spatially defined areas as OGMAs rests with your ministry and we are confident that the Board has fully explained its concerns with the conservation value of the Guidance OGMAs. We will now close this file.

The Board will continue to assess old growth management and is currently conducting a province-wide special investigation into the implementation of old growth retention objectives.

Thank you again for your consideration of the Board's concerns on this matter.

Sincerely,

R.A. (Al) Gorley, RPF
Chair

Cc
Gary Townsend, ILMB
Jim Snetsinger, MFR
Greg Rawling, MFR
Kristine Weese, Forest Practices Branch, MFR
Dave Tudhope, Land Use Planning Policy, MAL
Dave King, Prince George Backcountry Recreation Society
Rick Zammuto, Save-the-Cedar League
Hugh Perkins, Dome Creek Forest Information Committee

cc Fred

BRITISH COLUMBIA
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File: 17730-30-ICH
(Your File: 97250-20/070762)

June 10, 2010

Al Gorley, Chair
Forest Practices Board
PO Box 9905
Victoria, BC V8W 9R1

Dear Mr. Gorley:

Re: Correspondence relating to Biodiversity in the Interior Cedar Hemlock Forests near Dome Creek

This letter is a follow-up to a letter dated February 4, 2010 from Doug Konkin, Dana Hayden and Steve Carr to Dr. Bruce Fraser.

As per pervious communication with the Forest Practice Board, the natural resource agencies of the Government of BC are committed to managing the biodiversity values in the Interior Cedar Hemlock (ICH) zone of the Prince George Forest District.

One of the initiatives set out to achieve this management is the Guidance Old Growth Management Areas (OGMAs) as laid out in the *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone with the Prince George Land and Resource Management Plan Area, March 2008*. Staff at the Integrated Land Management Bureau (ILMB) and the Ministry of Forests and Range (MoFR), have been monitoring the 4770 hectares currently identified as Guidance OGMAs in the Prince George Forest District.

There has been some road building activity proposed in one of the polygons identified as a Guidance OGMAs. Discussions have occurred between the Forest Licensees proposing the road and MoFR District staff, ILMB Planning staff and UNBC academics who have expertise with some of the values contained in the Guidance OGMAs. There has been no additional commercial harvesting proposed in the balance of these polygons.

I have met with the 3 major Licensees who have operating areas in the vicinity of the Guidance OGMAs and they have no foreseeable plans to harvest within them.

.../2

Integrated Land Management Bureau
Northern Region
Interior Operations Division
Mailing Address:
200-1488 Fourth Avenue
PRINCE GEORGE BC V2L 4Y2
Telephone: (250) 565-6779
Facsimile: (250) 565-6941

I have also reviewed the sensitivity analysis conducted by MoFR as part of the Prince George Timber Supply Review IV process. This analysis indicates that the timber supply impact of legally establishing the OGMAs under the *Land Use Objectives Regulation* is relatively minor. The sensitivity analysis was done considering a partition harvest for the cedar leading stands in the ICH zones. The timber supply model indicated an impact of 2,100 hectares of Timber Harvesting Land Base and 7,500 m3 per year impact if the Guidance OGMAs were to be removed from harvesting opportunity.

In conclusion, at this time, I continue to believe that the Guidance OGMAs adequately manage the risks to biodiversity values.

My staff and I will continue to monitor the values in the ICH. I will consider new relevant information, when it arises. We will notify you if our management action(s) change.

Should you wish to discuss this matter further, please contact me at Eamon.ODonoghue@gov.bc.ca or (250) 847-7495.

Sincerely,

Eamon O'Donoghue
Regional Executive Director
Northern Region, ILMB

pc: Gary Townsend, ADM, Regional Operations Division, ILMB
Jim Snetsinger, Chief Forester, MFR
Greg Rawling, District Manager, MFR
Kristine Weese, Forest Practices Branch, MFR
Dave Tudhope, Manager, Land Use Planning Policy, MAL

Forest Practices Board

File: 97250-20/070762

February 10, 2010

Doug Konkin
Deputy Minister
Ministry of Environment
PO Box 9339, Stn Prov Govt
Victoria, BC V8W 9M1

Steve Carr
President and Chief Executive Officer
Integrated Land Management Bureau
PO Box 9352, Stn Prov Govt
Victoria, BC V8W 9M1

Dana Hayden
Deputer Minister
Ministry of Forests and Range
PO Box 9525, Stn Prov Govt
Victoria, BC V8W 9C3

Dear Participants:

Re: Timber Supply Sensitivity Analysis of Guidance OGMAs

Thank you for your February 4, 2010 letter responding to the Board's letter of August 17, 2009 evaluating government's response to the report Biodiversity in the Interior Cedar-Hemlock Forests near Dome Creek. The Board looks forward to the results of the timber supply sensitivity analysis of the OGMAs identified by policy guidance in the Prince George Timber Supply Area. While the Board has expressed its concern for the interim fate of these areas we take note of your confidence that they are not at risk for development. Board staff will contact Eamon O'Donoghue regarding the sensitivity analysis.

Yours sincerely,

Bruce Fraser

Bruce Fraser, PhD
Chair

cc: Eamon O'Donoghue, Regional Executive Director, Integrated Land Management Branch

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File: 280-30
Ref: 167580
FEB 04 2010

Bruce Fraser, Chair
Forest Practices Board
PO Box 9905
Victoria BC V8W 9R1

Dear Dr. Fraser:

Thank you for your letter dated August 17, 2009, evaluating Government's response to two Forest Practices Board recommendations in its investigation report entitled *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek.*

In that letter, the Board expressed concern with Government's response to the recommendations and made a follow-up recommendation to the Chief Forester as follows:

Under section 132 of the Forest and Range Practices Act, the Board requests that the chief forester prepare, for the Minister of Forests, a Part 13 designation under the Forest Act for the 4770 hectares of draft OGMAs identified in the policy guidance until such time that the sensitivity analysis is done. The Board requests that the chief forester notify the Board of the steps taken to implement the Board's recommendations by February 1, 2010.

We also acknowledge receipt of the Board's November 25, 2009 letter, requested by the Minister of Forests and Range, elaborating on the Board's rationale for the follow-up recommendation.

As the Board was informally advised this fall, the Ministry of Forests and Range (MFR) is conducting a timber supply sensitivity analysis for the 4770 ha of guidance OGMAs as part of preparation for an upcoming timber supply review for the Prince George Timber Supply Area (TSA). This analysis will be included as part of the timber supply analysis report for the Prince George TSA timber supply review in early 2010.

This sensitivity analysis and supporting data is in the process of being finalized and shared with Eamon O'Donoghue, Regional Executive Director of the Integrated Land Management Bureau's (ILMB) Northern Region and the delegated decision-maker responsible for establishing OGMAs within the Prince George TSA.

.../2

In February 2010, Mr. O'Donoghue will review the timber supply sensitivity analysis and supporting data sets. He also intends to consult with affected forest licensees regarding their application of the March 2008 *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area.* He will determine if any additional legal designations will be advertised once he has reviewed the analysis, confirmed the licensees' approach to implementing the 'guidance' document and considered any other pertinent information that may be relevant to this decision. We expect that this process will take approximately three to four months and have asked Mr. O'Donoghue to respond directly to the Board by May 31, 2010.

In the meantime, we have considered the Board's concern that these 4770 ha are at risk of being harvested by the forest licensees that operate in the area. We do not, however, believe a moratorium on harvesting is necessary in this case. We remain confident that the forest licensees in the area will maintain the integrity of these guidance OGMAs for the following two reasons:

- The licensees have demonstrated that they are honouring the March 2008 *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management plan Area.*
- None of the licensees are currently targeting cedar-leading stands in the ICH for harvesting. They are currently targeting dead pine, and this is expected to continue for a number of years.

If the Board has any questions or would like further information regarding Government's actions to address the Dome Creek follow-up recommendation, we ask that you contact Mr. O'Donoghue directly at eamon.odonoghue@gov.bc.ca or 250 847-7495.

In closing, we thank the Forest Practices Board for its follow-up recommendation and the expressed desire to see the values in these unique, ancient forests maintained into the future.

Sincerely,

Doug Konkin	Dana Hayden	Steve Carr
Deputy Minister	Deputy Minister	President and CEO
Ministry of Environment	Ministry of Forests and Range	ILMB

pc: Larry Pedersen, Deputy Minister, Agriculture and Lands
Jim Snetsinger, Chief Forester, Ministry of Forests and Range
Ralph Archibald, ADM, Environmental Stewardship Division, Ministry of Environment
Gary Townsend, ADM, Regional Operations Division, ILMB
Phil Zacharatos, ADM, Operations, Ministry of Forests and Range
Eamon O'Donoghue, Regional Executive Director, Northern Region, ILMB
Diane Medves, Director, Forest Practices Branch

Forest Practices Board

File: 97250-20/070762

November 25, 2009

Honourable Pat Bell
Minister of Forests and Range
PO Box 9049
STN PROV GOVT
Victoria, BC V8W 9E2

Dear Minister Bell:

Re: Old growth management areas in the Prince George Timber Supply Area.

Thank you for meeting with me on November 19, 2009. During our meeting we discussed the issue of the ancient cedar stands in the Prince George Timber Supply Area and the findings of the Board's investigation of complaint 070762 entitled *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek*. You were concerned that spatially identifying old growth management areas would reduce or eliminate flexibility on the landscape. Specifically you were concerned with losing the best growing sites that could buffer losses to the mid-term timber supply.

The potential impacts to timber supply if ancient forest stands are spatially established as draft old growth management areas (OGMA) have been studied by the Integrated Land Management Bureau (ILMB) in Prince George. This information is included in ILMB's April 2008 policy entitled *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area* (guidance policy). Their analysis considered the impact on the timber harvesting landbase including how much of the spruce-leading stands are in the guidance policy draft OGMAs. The guidance policy was developed in part as a response to the Board's investigation. That policy provides much of the information that I have used to help address your concerns.

First, there are significant biodiversity values at risk to forest development. The Board's investigation examined whether or not specific interior cedar hemlock (ICH) stands warranted spatial establishment in OGMAs. We reported that ILMB; the chief forester; and University of Northern BC researchers, all identified significant biodiversity values in specific ICH stands and that these stands are at substantial risk from development. Without spatial designation, licensees are legally permitted to

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harvest the most sensitive, non-replaceable ancient cedar stands. These stands are rare on the landscape, precisely mapped, small in total extent and essentially irreplaceable. These stands are globally rare, containing both red-listed and newly discovered species.

Second, how much of these ICH forests stands are protected already? ILMB conducted an exhaustive study of the existing 2004 Order and concluded that current reserves (OGMAs, parks, and protected areas) do not capture the highest value ICH stands. Eighty-four percent of the areas identified as having a high probability of containing antique stands, and 81% of those with a medium probability, are outside existing reserves. Conversely the stands with lower biodiversity values make up the majority of area in current reserves. ILMB staff had recommended that the draft OGMAs be spatially designated. They concluded that the OGMAs were consistent with established enactments and would not introduce additional harvest constraints or costs to the area.

In the Board's opinion, by spatially identifying the OGMAs, licensees gain a certainty of where their operations can now focus and this was anticipated in the 2004 Order.

Third, will designation of OGMAs limit the mid-term timber supply? You mentioned that you wanted to maintain flexibility to use the best growing sites to buffer losses to the mid-term timber supply. The ILMB policy guidance stated that its selection of OGMAs did so with keen attention to that issue. ILMB noted that their analysis did not consider areas in the SBSvk2 o ESSF which contain significant levels of mid-term harvest opportunity. They avoided leading spruce stands as much as possible when locating the 4,770 hectares of draft OGMAs. The guidance policy provides substantial detail about the limited impact on mid-term timber supply. I note that they analysed the impact to each of the three licensees operations for the ICH vk2 and ICH wk3.

The overall impact would constitute **408 hectares from 30,412 hectares** in the timber harvesting landbase of the three licensees planning cells. That is, the OGMAs would spatially identify **1.34 percent** of spruce leading stands from these planning cells. This would be part of the timber volume already removed from the timber harvesting landbase as part of the 2004 Order. Spatially designating the OGMAs will conserve the highest value biodiversity areas and assist licensees in identifying other stands which provide the best opportunity for timber harvesting. It will provide the licensees with certainty.

Lastly, if biodiversity targets must be reduced are the ancient forest stands the best choice? These ICH stands are clearly the highest value for biodiversity conservation. Should you determine that more stands are needed for mid-term timber supply a

conservative approach would be to remove low or medium biodiversity stands first, rather than target the globally rare ancient ICH forests. As well, the mountain pine beetle has significantly altered the visual landscape throughout the timber supply area. Recognizing that in some cases the objectives can no longer be met, removal or adjustments of those social objectives may be a better source of volume.

ILMB has identified the types of stands that would conserve the rarest of the forest stands. Staff recommended that the OGMA's be spatially designated which was previously recommended by the chief forester as well. In our investigation, we recommended that the chief forester prepare for the Minister of Forests, a Part 13 designation under the *Forest Act* for the draft OGMAs identified in the policy guidance until such time that the sensitivity analysis is done. I understand that the analysis is almost complete and the results confirm ILMBs conclusions that designation of the sites will not have an appreciable effect on the timber supply. Input from the chief forester and the Prince George Forest District Manager should clarify the level of concern with the mid-term timber supply.

In conclusion, I appreciate the opportunity to discuss this issue with you. If you have any questions I would pleased to meet with you or your designate to resolve the issue.

Yours sincerely,

Bruce Fraser, PhD
Chair

cc: - Jim Snetsinger, Chief Forester, Ministry of Forests and Range
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BRITISH COLUMBIA
Ministry of Agriculture and Lands

Integrated Land Management Bureau

Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area

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Purpose of Document

The purpose of this document is to share information with other forest professionals on biodiversity management in Interior Cedar Hemlock (ICH) forests in the Prince George Land and Resource Management Plan Area. It is the intention of the Integrated Land Management Bureau (ILMB) that this paper will provide useful information; however, ILMB would like to stress at the outset that this is not to be interpreted as direction. This paper is intended as guidance only and is not legally binding. ILMB will work with the Ministry of Forest and Range and forest licensees to implement this guidance. If biodiversity management in the ICH is significantly inconsistent with this guidance, future legal objectives may be considered by government.

Through project work, staff in ILMB have collected and synthesized available scientific and technical information on biodiversity management in the ICH into both technical guidance, maps and background information which is intended to assist professionals in the development of operational plans. The background also discusses socio-economic information that may assist both professionals and statutory decision makers in future planning in the ICH area.

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1.0 Executive Summary

The Interior Cedar Hemlock forests near Prince George are globally unique. They contain cedar trees in excess of 1500 years old, rare plant species and endangered caribou. Indeed there are few forests in the world that parallel its biodiversity value. Within this unique area, there are stands of trees that are considered by science as global hotspots for biodiversity.

Since the early 1990's the Interior Cedar Hemlock forests in the Prince George forest district have been the subject of public scrutiny and debate. Unprecedented levels of public comment received during reviews of various government initiatives, international conferences and official investigations of forest management by government agencies indicate the highly contentious nature of these cedar forests.

The objective of this Forest Investment Account project was to develop scientifically based spatial Old Growth Management Areas that capture the highest proportion of rare and biologically valuable forest types, minimize the impact on the current timber flow for the Prince George Timber Supply Area and facilitate implementation of the *Forest and Range Practices Act.*

The project concluded that the environmental and social risks of current biodiversity management enactments are significant, and that Old Growth Management Areas can substantially address these risks while not introducing additional or undue economic impacts to government or the forest tenure holders.

This project identifies 4,770 hectares of Old Growth Management Area within the Prince George Land and Resource Management Plan (LRMP) area. These Old Growth Management Areas are consistent with established enactments and will not introduce additional harvest constraints or costs to the area. This is because the current legal enactment for biodiversity management requires area from the timber harvesting land-base in an amount greater than that identified in this report. The project also identifies areas of high and medium biodiversity value that are outside Old Growth Management Areas and parks. These areas can contribute biodiversity management in the ICH.

At this time the areas identified as Old Growth Management Areas and the areas identified as high and medium biodiversity value are intended as guidance and best available information for biodiversity management in the area. The guidance and background information contained in this document is not legally binding and is intended to assist professionals in the preparation of results and strategies under the *Forest and Range Practices Act* (FRPA). It is expected that this information will augment biodiversity management in the area however evolving scientific understanding should be continually incorporated into planning.

2.0 Background

Since 1990 local communities, researchers, public stakeholders and the environmental sector have been adamant over the need for spatial biodiversity planning in the Interior Cedar Hemlock (ICH) forests near Prince George. The global significance of the biodiversity resources in the area, specifically the old cedar forests, has been verified by a number of independent scientists and was highlighted by the Chief Forester during the second Timber Supply Review (TSR II).

Consistent with existing policy in 2002, Old Growth Management Areas (OGMA's) in three landscape units were established to address social pressures and biological risks. Information gained through research since then, however, indicates a need for additional planning.

In 2004 the "*Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area*" (hereafter the '*order*') was completed. Largely based on the work of the Craig Delong through the Ministry of Forest and Range, this *order* is the current policy tool for managing biodiversity in the area. It establishes non-spatial targets for old forest, old interior forest and young forest patch size.

This non-spatial approach however, may pose environmental and social risks in areas of high biodiversity value, as those areas may not be captured in a non-spatial framework. These risks were the subject of much debate during the establishment of the *order*. Since 2004 independent study further indicates the significance of the biodiversity resources that exist in these ICH forests and the risks that further resource development presents to them.

3.0 Structure of Report

This project considered socio-economic as well as scientific information in the formulation of biodiversity management guidance. This report is divided into two parts.

Part 1 presents guidance for biodiversity management in the ICH. Section 4.0 includes suggested strategies and results for spatial biodiversity management in the ICH. This section is supported by maps for use in operational planning.

Part 2 provides background information on the scientific and socio-economic justification for biodiversity management in the ICH. Section 5.0 contains scientific and technical information about biodiversity risks and requirements in the ICH area. Section 6.0 presents some of the socio-economic data that may assist professional foresters, as well as Statutory Decision Makers (SDM) in developing future objectives for the area. Section 7.0 contains timber supply information that may also support professionals and SDM's in future decision making. Maps and spatial datasets (Appendix 1) were built based on the indicators outlined in section 5.0 and were developed consistent with the requirements of the Land Use Objectives Regulation.

Part 1 – Guidance for Biodiversity Management in the ICH

4.0 Operational Guidance for Biodiversity Management in the ICH

This project identified areas important for biodiversity in the ICH zone. The spatial biodiversity guidance is intended to assist with harvest decisions occurring in Forest Development Units in the ICH area. The guidance for additional biodiversity management in the ICH provides the location of spatially explicit areas that contain significant biodiversity resources. This guidance is intended to provide useful information; however, ILMB would like to stress that this is not to be interpreted as direction. This is intended as guidance only and is not legally binding.

4.1 Spatial Biodiversity Guidance

Within the areas identified on the map in appendix 1 as Guidance – Old Growth Management Areas 2008, the following results or strategies are recommended:

- Reserve all timber within identified Old Growth Management Area (OGMA) boundaries;
- Access structures should be located at least 200m away from OGMA boundaries;
- Harvesting near the boundaries of OGMA's should not increase the risk of windthrow in OGMA's.

4.2 Guidance for Additional Biodiversity Management in the ICH

The specificity of the biodiversity resources in the ICH may require a spatial approach to management. The area identified on the map in appendix 1 as High Biodiversity Value (HBV) and Medium Biodiversity Value (MBV), can contribute to old forest representation, which is an important surrogate for biodiversity. This guidance is recommending the following strategies for ongoing biodiversity management in the ICH;

- Prioritize retention of areas identified as High Biodiversity Value as indicated on the map in appendix 1;
- If all of the High Biodiversity Area is retained, prioritize Medium Biodiversity Value areas for retention as indicated on the map in appendix 1.

Part 2 – Backgound for Biodiversity Management in the ICH

5.0 Biodiversity Assessment and Risk Analysis

This section will provide professionals and decision makers with scientific and technical background information intended to inform future decisions in the management of biodiversity in the ICH area in the Prince George LRMP area. It will outline key indicators and information that was used to locate guidance Old Growth Management Areas (OGMA) attached in appendix 1, and will support future biodiversity management efforts in the ICH. Other relevant information on the role of biodiversity in forest management is presented to provide further guidance to professionals making operational decisions under current landscape enactments in the ICH. Planning context and history will be included to provide important context in regards to the current risks associated with further forest development in the area. This scientific rational and planning context will characterize the risks of the current management approach in the area and justify the recommendation for additional management considerations.

5.1 The Critical Role of Biodiversity in Forest Planning

Overwhelmingly, the literature emphasizes that biodiversity should be maintained at multiple spatial and temporal scales to sustain desirable system states as environmental conditions change over time (Drever et al. 2006, Walker and Salt 2006, Gunderson and Holling, 2002). The cumulative pressures on ecological services (i.e. timber production, water filtration, carbon storage) resulting from, most significantly, resource development and climate change, have created the imperative for comprehensive approaches to maintaining biodiversity. A failure to accommodate biodiversity in planning can diminish the capacity of forests to continue providing ecological services, namely the production of timber, of the same quality and quantity in perpetuity (Constanza et al. 2000, Holling and Meffe, 1996).

Based on simple correlation between diversity and measures of ecosystem functioning, consensus is growing for the argument that biodiversity must be represented and conserved to maintain ecosystems (Lyons, et al., 2004). In addition to representative elements of a given ecosystem, rare species can play an important role in the maintenance of this ecosystem function. For example, studies examining the role of keystone species with low abundance at landscape scales indicate a disproportionate role in the maintenance of ecosystem function. As well less common plant species may have an important role in the maintenance of ecosystem productivity (Power et al. 1996; Theodose et al., 1996).

This guidance has a considerable linkage to the importance of rare and representative species in the maintenance of ecosystem function. The entire temperate rainforest area is globally rare and represents less that 0.5% of the forest world's forests (Goward and Spribille. 2005). The ICH is a subset of the forest type and is unique among temperate rainforest regions, emphasizing the need for this guidance, and careful biodiversity planning that maintains old forest representation. While science has not defined the role of each component in the ICH ecosystems, the growing scientific

consensus around the critical role of representative and rare biodiversity is compelling and should be considered in FRPA implementation.

5.2 Project Area Context

Biodiversity planning in the province was initiated in 1990 through the identification candidate areas that contained significant old growth resources. At that time, the *Strategy Toward Old Growth*[1] identified the Prince George ICH forests as candidates for deferment. In 2000, the Interior Cedar Hemlock Stewardship Conference held at the University of Northern British Columbia outlined the scientific basis for prioritizing biodiversity planning in the ICH[2]. During the second timber supply review (TSR) the Chief Forester noted the significance of the forests in the ICH and directed staff to complete landscape unit planning for the area[3].

In 2002, old growth management for three landscape units in the ICH was undertaken, resulting in the legal establishment of OGMAs. In 2004 the "Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area" (hereafter the '*order*') was legally established. This *order* was based on the ecologically derived landscape units that are driven by common natural disturbance regimes and ranges of natural variation (DeLong, 2007). These 'Natural Disturbance Units' (NDU) provided the framework for old forest representation targets, similar to the approach taken in the 1995 Biodiversity Guidebook and the subsequent 1999 Landscape Unit Planning Guide. These units were felt to better separate areas based on differences in disturbance processes, stand development, and temporal and spatial landscape pattern (DeLong, 2007). These old forest targets in the *order* have guided non-spatial old forest management in the project area since 2004, which has since experienced further development in areas considered biologically significant under a replaceable forest license issued in 2000.

The implementation policy of the *order* indicated that further clarification of the definition of old forest in the ICH was needed to adequately implement its provisions. This guidance will move toward implementation of those provisions. Those provisions, consistent with the biodiversity guidebook and the principals of ecosystem management, insist that not only old forest be maintained, but old forests across the range of site conditions that are present in a given ecosystem.

Since the previous TSR, and the issuance of a replaceable forest license in the ICH partition, additional research has been completed which has identified the specific characteristics found in rare and representative old forests in the ICH. Consistent with the recommendations of the previous TSR, this assessment and risk analysis will inform spatial management of biodiversity resources and may enhance forest stewardship in the region through the identification of rare and representative old forest types for potential management as OGMAs. This guidance may further management in the

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[1] See "Towards and Old Growth Strategy: Short Term Deferrals for Old Growth Protection" Recommendation of the Conservation of Areas Team Sub-Committee. September 5, 1990.

[2] See: http://wetbelt.unbc.ca/publications.htm

3 The TSR 2 rational states that the "Protection of several rare biogeoclimatic site series may be required beyond that currently provided and modeled in the base cases.... I encourage staff to complete landscape unit planning objectives for the ICH to ensure that rare biogeoclimatic sites series are identified and protected in OGMAs. I also encourage and support the on-going research being conducted in the ICH. This research will help improve forest management policies and practices, which can be reflected in future timber supply analyses."

ICH in a manner consistent with; existing policy, relevant science, and will positively contribute to the ecological resilience of the area.

5.3 Rational for Spatial Old Growth Management in the ICH

The *Biodiversity Guidebook* states that "given the high degree of ecological variability in our forests, managers need to consider biological diversity on a site-specific basis." The concept behind this recommendation is well documented in scientific literature. Because ecosystems exist at multiple spatial scales, conservation of biodiversity at multiple scales increases the chances of success (Poiani *et al.*, 2000). Maintaining representative ecosystems in suitable abundance and distribution across watersheds, landscapes and regions may be the only way to maintain these species and processes (Franklin, 1993). This assessment and risk analysis will clarify the importance of the project area globally and the key indicators of rare and important forest types that are required for representation to maintain ecosystem function. This assessment will assist in the identification of rare and representative ecosystem types in the ICH and recommend areas that may, in future, be designated as OGMA's or, in the interim, provide guidance to managers for use in the implementation of the existing *order*.

5.4 Requirements for Old Forest Representation in the ICH Forests

The ICH forests in the Prince George forest district have been classified as inland temperate rainforests based on climatology and plant complexes also found in coastal temperate rainforests (Goward and Spribille, 2005). This is important as this rainforest ecosystem type is highly disjunct and globally rare, accounting for less than 0.5% of the world's forest area (Goward and Spribille, 2005). Globally, the Pacific Northwest contains the majority of this rare forest type. The inland rainforest region occurs primarily in British Columbia and, in many ways, the flora that occur is many times richer that that of coastal temperate rainforests. Within this forest type (ICH), there are stand types that are very limited in spatial extent, in particular wet cedar sites in the northern extent of the zone ($ICHvk_2$). The inland temperate rainforest therefore represents a very small portion of this 0.5% area.

These stands contain flora and fauna similar to that found in coastal temperate forests, hence their classification as rainforests. A key indicator of this 'rainforest' type is the presence of epiphytic lichens, which require specific in canopy humidity, long ecological continuity (i.e. long time spans between disturbance) and are made up of trees regenerated through gap dynamic processes (Goward, 1994). Lichen sensitivity to the subtle environmental conditions required for their establishment in old growth forests make them an appropriate indicator for these rainforest conditions (Kershaw, 1985). Recent studies concluded that 40% of oceanic epiphytic lichens occurring in coastal temperate forests also occur in the inland rainforest area (Goward and Spribille, 2005) indicating a strong correlation between the two systems. The northern ICH forests experience an even higher correlation of common lichens (91% at similar latitudes) then the southern ICH zone, further indicating the conditions needed to assign rainforest classification to the area. In particular, a recent study showed a strong correlation between the presence of specific cyanolichens in ICH old growth stands that did not occur in ICH younger stands (Radies and Coxson, 2004), further supporting the use of lichens as an old growth indicator. The presence of specific lichen species and the strong

indications that ICH forests are part of a globally rare forest type are of particular relevance for the project.

Old growth forests in the ICH region are characterized by large Cedar and Hemlock trees, some >600 years old. A fire return interval of 600 years provided the basis for old forest representation targets for use in the ICH NDU's (DeLong, 2004). However, through carbon dating soil samples, fire intervals up to 1200 years were found in some $ICHwk_3$ areas, indicating similarities to old stands found in coastal rainforest areas (Sandborn *et al.*, 2006). The $ICHvk_2$ (NDU 23) is the wetter of the two ICH variants in the project area, therefore may contain sites with longer disturbance return intervals. These areas of very old trees are maintained through unique mesohabitat heterogeneity (i.e. lack of summer moisture deficit) (Newmaster *et al.*, 2003) and contain high levels of species diversity. The spatial pattern of these biologically valuable forest areas will therefore be dispersed across the landscape on receiving sites (i.e. toe slope positions) that will not have been affected by fires that would otherwise affect drier sites (Coxson, 2007). These unique stand conditions should be represented at appropriate levels to maintain the genetic and species diversity that characterizes old stands in the project area.

The oldest stands in the ICH have been classified as 'antique' (Goward, 1994, cited in Coxson *et al.*, 2006) in recognition of the fact that some stand attributes continue to develop well after the attainment of old growth status at approximately 140 years. Generally antique forests are those that have not experienced major disturbance events over a period of time greater than the age of the oldest trees in the stand (Coxson, 2007). Indeed findings showed that the development of old growth characteristics that support cyanolichens growth, which are a primary indicator of old forest in the ICH Goward and Arsenault, 2001), take well in excess of 120-140 years to develop (Radies and Coxson, 2004). These antique stands support many lichen species not found elsewhere in regional landscapes, and are commonly found on toe slope positions, where moist nutrient rich soils favor tree growth and limit their susceptibility to fire (Coxson *et al.*, 2005).

5.5 Methodology for Locating Rare Sites

Old growth management that does not include areas of advanced old growth structure on wet, rich Cedar leading sites will fail to maintain certain stand characteristics, and increase risk to biodiversity (Holt *et al.*, 2002, Goward and Arsenault, 2000,). Currently certain elements of the ecosystem are not represented at the thresholds indicated in the *order*. In particular some rare sites, including those with rare cedar, require careful planning to ensure their adequate representation.

The map in appendix 1 was developed to locate these sites, and will provide valuable guidance to operations in the ICH. It used the key indicators outlined above. These biodiversity indicators include; slope position, relative soil moisture, leading species composition, age class, aspect and crown closure. Two of the current available datasets; Vegetation Resource Inventory (VRI), and Predictive Ecosystem Mapping (PEM), contain some of the information required for this analysis. However, both of these data sets have accuracy problems that were addressed using additional tools. To overcome these inaccuracies three custom datasets were developed to produce a result that would more accurately predict locations containing desired stand elements. Those three datasets are Topographic Position Index (TPI), Topographic Wetness Index (TWI) and Aspect.

The combination of VRI, TPI, TWI, Aspect and PEM allows for the definition of parameters that then assign a predictability value to specified areas. The resultant indicates areas with a high probability of containing desired rare stand attributes, and medium probability of containing these same attributes. These areas have been verified and adjusted through detailed field surveys.

5.6 Current Policy Instruments used in the Management of ICH Forests in the PG LRMP

The most significant policy instruments used to manage old growth resources in the ICH are legally established spatial OGMAs in three landscape units and the regional non-spatial *order* that sets old forest representation targets for the NDU's in the project area. The current definition of old in the '*order*' are those >140 years, however in the case of the ICH, old forests are more appropriately classified as >250 years[4]. Currently the old forest target for both NDU 22 and 23 is 53%[5]. This is primarily based on forest cover age class and is considered non-spatially in the *order*. While not included in the *order*, the implementation policy directs that retained old forests should also be representative of the ecosystem, consistent with best management and a strong scientific consensus. What constitutes representative and adequate old forest was identified as an outstanding issue in the *order* and in the previous TSR. This document offers some clarity on that definition and indicates that certain forest types are a risk of being under-represented, which is a primary driver for this guidance.

Other regulatory tools include the *Identified Wildlife Management Strategy* (IWMS). In 2006, the ICH vk_2 05 ecosystem was listed on the IWMS *Accounts and Measures for Managing Identified Wildlife*. While the ecosystem is red listed by the BC Conservation Data Centre, it is not classified as a species at risk under the *Wildlife Act*, and does not have any general wildlife measures established through the *Government Actions Regulation* that would require a result or strategy in a Forest Stewardship Plan. In addition to the ecosystem itself, a number of rare lichen species occurring in these forests have recently been discovered and are known to only occur in the northern portions of the ICH at this point in time. These species may be the first of many unknown species that contribute to the unique biological diversity of the area (Goward pers. comm., 2007). The status of these species is currently being reviewed, and may likely be classified as rare and subsequently listed in IWMS or COSEWIC in the future.

An additional tool for old growth management is the *Landscape Unit Planning Guide* (LUP) which provides guidance for the delineation of OGMAs. The LUP recommends that OGMAs should primarily occur in the non-contributing land-base, while maximizing contributions to biodiversity conservation. The LUP notes that rare site series should be captured wherever possible, and contains special provisions to ensure rare areas are represented in OGMAs. These provisions include the ability to establish OGMAs in previously approved cutblock's and an ability to place OGMAs in the Timber Harvesting Land-Base (THLB) when the location of the rare site is known. In the case of the

[4] The PG Biodiversity Order alluded to further discussion defining old forest for the ICH. While no formal discussion has occurred since the order was made legal in 2004, published science reviewed in this analysis, as well as discussions with experts confirms that old forests in the ICH would more appropriately be classifies as old growth in stands that are well beyond 600 years.

[5] This target includes parks and protected areas in the region, which under the guidance of the LUPG and the order, contribute to old growth targets. Currently, a total of 23,545 ha in NDU 23 and 10,507 ha in NDU 22 are located in legally designated reserves.

ICH these conditions with respect to rare sites, are met and should inform biodiversity management in order to maximize contributions to the maintenance of biodiversity and ecological resilience.

The current policy framework contains some gaps that create a risk to biodiversity resources in the project area. These gaps were highlighted in TSR 2 as well as the implementation policy of the *order*. This guidance has presented information on the representative ecosystem types that are required to maintain the ongoing functionality of the ICH forests.

5.7 Risk Analysis

A combination of GIS analysis, digital imagery and field verified data was used to construct a predictability model that identified the rare cedar stands that are considered 'Antique' as demonstrated by literature, and have a demonstrated high level of social significance. The analysis was also used to identify a range of risks to these stands. Available literature on the risks associated with different thresholds of landscape level retention was also reviewed in relation to the old forest representation targets.

The scientific information for old forest representation in the project area, based on the range of natural variation, indicated a range between 76% and 84% (DeLong, 2004). However, a 1.4% impact in the allowable cut was determined to be reasonable while still maintaining adequate levels of biodiversity. Thus an old forest target of 53% was established (DeLong, 2007) in the ICH. The legal portion of the *order* does not specify the exact nature of those stands retained for old forest purposes, rather only specifies that the age of the stand be greater than 140 years. It is difficult to quantify the risk, if any, between the differences in these different levels of old forest representation, however the nature of these forests and their associated sensitivity to environmental change (Benson, *et al.*, 2002, Coxson and Stevenson, 2004, Radies and Coxson 2004) indicates some risk to their on going persistence should further resource development occur.

The implementation policy of the *order* does specify that stands retained should be representative of the range of ecosystems that exist in the area, although measures to verify this have not been developed. The GIS analysis, which predicted the location of rare antique stands, indicated that past and planned harvesting was concentrated in areas that have a high likelihood of containing antique stands. The analysis indicated that 9.2% of the currently planned harvesting occurs in areas with a high probability of containing antique stands, which are already very limited extent on the land-base. Further analysis indicated that a high degree of past harvesting was located directly adjacent to areas having a high probability of containing antique stands. The Highway 16 corridor is also directly over top likely antique stands as indicated by the nature of the adjacent stands in the analysis. The combination of these results indicates that representation of these highly unique and spatially limited stands is below the current old forest representation threshold. This may pose serious risks to biodiversity, given these stands significance to ongoing ecosystem functionality as indicated by reviewed literature.

The GIS analysis also examined the level to which current reserves (OGMA, Parks, and Protected Areas) captured areas identified as rare antique stands. Currently, in the Crown Forest Land Base within the project area, 84% of the areas identified as having a high probability, and 81% of those with a medium probability of containing antique stands, are outside existing reserves. Correspondingly, the amount of areas containing stands with lower biodiversity value constitutes the

majority of area in current reserves. The combination of these results indicates that antique stands, or those playing a disproportionate role in biodiversity and the maintenance of ecosystem function, are under-represented in current reserves.

The data required for the identification of old forests to the extent required to maintain ecological resilience is complex. The Landscape Unit Planning Guide and *order* rely primarily on age class and forest cover data in the identification of old growth resources. However, overwhelmingly research indicates that in the case of the ICH, additional information is required to accurately identify priority old growth that contributes significantly to biodiversity. For example, a study that developed criteria for the identification of old growth in the southern ICH completed in 2000 revealed that only 53% of the age estimated in forest cover information were correct as verified by field sampling (Holt, et al. 2002). Harrison et al. 2002 found that between 20% and 40% of the age estimates used in old growth analysis were incorrect, which introduces serious miscalculations into old growth identification. Using age in isolation to locate old growth stands will not differentiate between very old or 'antique' stands (>500) or between high and low structure old growth stands (Holt *et al.*, 2002) which presents a risk to successful biodiversity management[6].

Arsenault and Goward (1999) suggest that old growth forests of the ICH are at risk. They assert that their future contribution to biodiversity may be diminished resulting from a combination of factors including; their limited spatial distribution, their sensitivity to climate changes, and their association with highly productive sites and the historic correlation between productive sites and logging development. Indeed, the likely locations of high biological value sites typically render them easily accessible for harvesting and vulnerable to disturbance from road building (Arsenault and Goward, 2000). An assessment of the location of logging disturbance since 2000 with known rare sites indicates a strong correlation between the two, presenting a significant risk to biodiversity. The results of the GIS analysis and risk assessment confirm these findings.

The legal target threshold for ecosystem representation differs from DeLong's literature, but represents a reasonable risk to biodiversity in the area. The literature on the thresholds of habitat suggests that the effects of habitat loss is the primary cause of species decline and recommends that retaining sufficient habitat structures at both the stand and landscape level is the best strategy to mitigate declines in populations and species (Dykstra, 2004). In this project, the rare antique stands being focused on require specific habitat to maintain integrity and stability over time. Species dependent on old forest habitat, (i.e. lichens, caribou) may be impacted at differing thresholds of habitat supply. While a higher threshold, that is, a greater proportion of ecosystem representation at landscape and watershed scales is supported by literature, it may not satisfy the socio-economic needs for the area. However the 53% threshold, allocated across the range of site series, including

[6] The GIS analysis for this project developed a series of models based on demonstrated indicators of rare antique stand attributes. Among the most important indicators of rare old growth in ICH forests are stand moisture regime and slope position, the presence of lichens and other rare plant complexes, and micro-disturbance regime that differs from adjacent stands (Arsenault, 2004). Verification of the analysis included imagery assessments, recent field data correlation and a comparison to a recent UNBC analysis attempting to identify wet cedar stands. The combination of the GIS analysis, verification of that analysis and subsequent field checks will ensure a high level of accuracy in identifying these stands.

these rare sites, is likely required to maintain the areas characteristics for public benefit over the long term.

There is a significant risk to the long term ecological integrity of forests throughout the province stemming from increased natural disturbances resulting from climate change (Kurzet al. cited in Volney 1995). Studies indicate that fire severity, susceptibility to insects and pathogens, and drought may increase in North America as result of increasing temperatures (Dale et al. 2001). Changes in climate conditions are particularly important in the management of old ICH forests, as they depend on a stable moisture regime that maintains their species richness. Literature indicates the potential for large pest occurrences to increase with temperature (Hunt *et al.,* 2006). The need to enhance the ecological resilience, or the capacity of the ecosystem to absorb stress and recover to a similar condition following disturbance (Haeussler et al. 2006, Gunderson et al. 2002) is therefore critical. The conservation of a diversity of functional ecosystem groups and appropriate levels of species richness are the primary tools to maintain ecological resilience (Noss, 2002;Drever *et al.,* 2006; Berryman, 1993;Kohm and Franklin, 1997).

This discussion of risk likely represents only a portion of the potential risks associated with the ecological integrity of ICH forest types. Some studies concluded recently indicate the potential for single-tree and group-selection silviculture systems to maintain old growth structure (Benson *et al.,* 2002; Coxson *et al.* 2005), but researchers caution that even alternative siliviculture systems together with the cumulative impacts of settlement and environmental change may create stresses in the system that impact its functionality.

This cumulative risk necessitates a robust biodiversity strategy. This guidance and the areas mapped in appendix 1, in the opinion of government, represents the best available information on biodiversity management of the rarest forest types in the ICH. Allocation of old forest targets in the remaining wet cedar stands, or those identified as having medium biodiversity value on the map in appendix 1, would also be appropriate given the emerging science on their importance. The guidance is intended to be incorporated into operational planning by forest licensees and BC Timber Sales and in the medium term assist decision makers in further biodiversity planning in the area.

6.0 Socio-Economic Values

Socio-economic values are helpful in ascribing the appropriate costs and benefits related to the use of biodiversity resources and can inform policy decisions about their management. Generally there are two themes of values associated with the forests in British Columbia, that of use and non-use values. Use values are considered here as the timber and recreation values normally associated with forests in BC. Non-use values are considered those ecological goods and services (e.g. conservation of old growth, carbon sequestration and biodiversity), which, though widely present in BC forests, do not normally have an associated market price. To follow is a discussion on the economic values found in ICH forests. By no means is this a comprehensive assessment, rather presented for discussion purposes to be considered by SDM's and professionals involved in the management of ICH forests.

6.1 Timber Values

This project focused on cedar leading stands and, as such, they are the focus of this timber valuation. The timber value in cedar leading stands is variable due to low lumber quality and limited manufacturing options. The license currently active in cedar lading stands has requested to transfer the volume quota remaining on their license, indicating ongoing limitations to the economic viability of harvesting in these stand profiles.

Table 3 provides a summary of the current annual harvest activity in the ICH and related economic values. The ICH partition is based on a cedar and hemlock harvest. Since there has been virtually no performance in hemlock stands throughout the life of the license, only the cedar component will be presented in the table. The spruce harvest, while not part of the ICH partition, reflects the mixed nature of the stands in the area and is presented here because of their importance for mid-term timber supply. These estimates have considered average volume recovery rates but not other operational adjustment factors, which may influence average appraisal rates. However, the table below provides a reasonable illustration of the current timber value, revenue and employment associated with current ICH harvesting operations.

Table 1 – Status of ICH Growing Stock and TRC Ltd. Harvest Operations 2000-2007 (values derived from Harvest Billing System)

	Total ICH Crown Forest Land-Base (LOWG 2007)	Total Timber Harvesting Land-Base (TSR 2)	Total THLB Cedar Leading	Total THLB Spruce Leading
Area (ha)	172,836	33,935	24,360	30,560
Volume (m3)	49,258,260	33,581,550	5,310,502	10,696,000
Average Annual Harvest (m^3/yr)			23,557	126
Annual Revenue (Stumpage/yr)			$60,240	$289,398
Person Years Employment**			23.3	14.7

**Person Years employment coefficients are derived from the Socio Economic Analysis in the Robson Valley TSR 2.

The current operation currently harvests < 0.01% of the total cedar and less than 0.01% of the spruce available in the ICH partition. The average revenue to government from operations in the ICH constitutes 0.001% of the total revenue collected in the Prince George TSA in 2006. Based on 2002 statistics, the TRC operation constitutes approximately 8% of the total employment (direct and indirect) in the Robson Valley TSA.

The areas currently constrained in the ICH are considered in the *Timber Supply Impact Analysis* in section 6.0. The economic implications of these constraints were based on the *Timber Supply Analysis for the Forest Practices Code Act 1998*, which capped the magnitude of impact for biodiversity management to 4.1%. The analysis completed through the *order* concluded that these constraints amounted to an average of 1.4% impact on long-term timber supply in the PG TSA. This 1.4% does not reflect the impact in the ICH area specifically but it considered here for discussion purposes. Based on the average volume harvested over the past seven years in the ICH, a 1.4% reduction due to the *order* would be equivalent to ~537m^3/yr, or ~$5,104/yr in average stumpage revenue. The nature of these objectives and their impact on timber supply will become clearer through the timber supply review currently underway for the Prince George TSA.

6.2 Recreation Values

The value of nature based tourism and recreation has been growing steadily in North America at over 4% per year. In British Columbia, for the 2004 fiscal year the tourism sector generated over $10 billion in revenue and accounted for 1 in 13 jobs. A number of studies in Canada have attempted to quantify the value of recreation on a given area of forest land. In two studies examined, values for recreation services range from $17.04/ha (Kooten, 1995) to $18.53/ha (Anielski, 2005) annually. If the value of the Crown Forest Land-base in the ICH is considered in a recreation context, based on the above value ranges, it could be equivalent to between $2,945,125/yr and $3,202,651/yr. Considering the average annual harvest in the ICH as a common measure, the recreation value of the harvested area may be $810,672 annually. This can be considered as the opportunity cost, or value of recreation resources forgone should harvesting continue.

6.3 Conservation Values

In addition to timber and recreation use values, ICH forests contain significant non-use values, which should be considered. The non-use values associated with forest reserves can include option, existence and bequest values. These are values that assess individual willingness to pay for the reserve for use sometime in the future (option), the value a person assigns to the knowledge that the reserve exists (existence), and the value of the knowledge that a future generation could benefit from the reserve (bequest). In addition, the ICH forests include significant non-use values in the form of ecological goods and services. All of these values are difficult to quantify for the ICH specifically, but studies in similar jurisdictions are relevant and will be considered here.

In a 1995 study, a range of non-use values were determined for an old growth reserve proposal in the southern ICH zone. In a separate study for the Canadian boreal forest, a range of values for various ecological services were calculated. These included forest carbon storage, carbon sequestration, pest control, and biodiversity. Table 2 below summarizes some of the non-use values present in the ICH.

Table 2 – Summary of some non-use values estimated for ICH forest lands.

Ecological Good or Service	Estimated Value/ Hectare	Value for total CFLB Area in ICH Partition	Value of CFLB currently constrained	Area of CFLB in Guidance OGMA
Option, existence and bequest value	$18.10	$3,128,331	$1,646,756	$94,554
Estimated value for non-use values	**$1,123**	**$194,094,828**	**$102,100,914**	**$5,889,012**
Average value carbon services	$6,244	$1,079,187,984	$567,691,992	$32,743,536
Forest bird-pest control service	$21.84	$3,774,738	$1,985,649	$114,529
Biodiversity conservation	$16.81	$2,905,373	$1,528,332	$88,152
Total estimated value for non-timber goods and services	**$6,282**	**$1,085,755,752**	**$571,146,876**	**$32,942,808**

The table above cannot be considered at face value. The values for non-use elements of forest resources are difficult to measure and quantify. However since the values above are derived from Canadian studies in areas of similar conservation value, they can give an approximate estimate of the opportunity costs of utilizing ICH forests for purposes other that forest development. As shown in the table, these non use values may be significantly higher than those of use values, as such warrant consideration.

6.4 Multiple Economic Values Analysis – Discussion

Professionals and Statutory Decision Makers often consider the economic values associated with a resource during management deliberations and operational strategy development. This information provides a more comprehensive assessment of the different values present in ICH forests.

Table 3 examines the differences in the use and non-use values associated with the values presented in this section. The short term implications these guidance Old Growth Management Areas may constitute a cost in terms of government revenue from timber. However these losses must be considered in a context of marginal, if not negative performance in ICH stand profiles. In the long term, non-use values are significantly greater than those of use values. This is supported in section 4.0 which demonstrates a strong scientific consensus on the importance of non-use values in the ICH, and the risks that development poses to their ongoing persistence. Given the discussion of values above, biodiversity management consistent with this guidance and the map in appendix 1, may in fact support alternative uses of the ICH, which may contain significantly more value in the long term.

Table 3 – Comparison of use and non-use values for Guidance OGMA.

	Total Crown Forest Land-Base (CFLB/OGMA)	Total Timber Harvesting Land-Base (THLB/OGMA)*	Total THLB/OGMA Cedar Leading	Total THLB/OGMA Spruce Leading
OGMA Area (ha)	4,827	3,772	2,687	407
Short Term Volume (m^3)	1,494,540	1,138,860	615,120	178,150
Long Term Volume (m^3/ha/yr)	12,068	9,430	5,248	1,425
Short Term Projected Revenue Loss ($)	$14,191,725*	$10,814,289*	$1,572,950	$3,477,488
Long Term Projected Revenue Loss ($/ha/yr)	$114,590*	$89,545*	$13,880	$27,806
Opportunity Cost for average non-use values ($/ha)	$5,420,721	$4,235,956	$3,017,501	$457,061
Opportunity cost for total non-timber values ($/ha)	$30,323,214	$23,695,704	$16,879,734	$2,556,774

* These values are based on average blended stumpage rates for the ICH, which may not reflect operational realities. There are presented here for relative comparison and discussion.

7.0 Timber Supply Impact Analysis

This timber supply analysis will indicate how this guidance and the map in appendix 1 will affect available the current timber harvesting land-base in the Interior Cedar Hemlock (ICH) partition of the Prince George Timber Supply Area (PG TSA). While the scope of this guidance includes the entire ICH in the PG TSA, the map in appendix 1 is focused specifically on the rarest stand types. Biodiversity management encompassing additional areas categorized as medium biodiversity value on the map in appendix 1 is appropriate given emerging science, as discussed in section 4.0. It is important to note that the various harvest forecasts and projected volume flows included in this analysis indicate only the timber supply implications of guidance OGMA indicated in appendix 1 and are not allowable annual cut determinations. The values used in this analysis have been derived from data used in TSR 2 and the Ministry of Forests and Range.

7.1 Base Case Values used in the Analysis

The Prince George TSA covers approximately 7, 508, 000 hectares in the north central interior of BC of that there is 5, 327, 000 ha (71%) that is considered productive forest. Currently 64% of the productive forest, or 45% of the total TSA area, is considered available for harvesting under current forest management practices. The TSA is summarized in Table 4.

Table 4 – PG TSA Summary (ha)

PG TSA Total Area	Total Productive Forest	Total THLB	Total ICH Partition THLB
7, 508, 000	5, 327, 000	3,378,600	117, 830

The Interior Cedar Hemlock (ICH) zone has a small occurrence in the eastern part of the TSA at lower to mid elevations. Within this zone there is approximately 117, 830 ha contributing to the timber harvesting land base. Within this 117, 830 ha, TSR 2 determined that there are approximately 73, 600 ha of stands where cedar or hemlock is the dominant species of which 37, 900 hectares are currently considered unsuitable for harvesting due to steep terrain, riparian buffers, tree quality economics and environmental sensitivity. This TSR determined that 23,700 hectares of leading cedar stands and 12 000 ha of hemlock are available for harvest.

This OGMA analysis used VRI data to determine species composition in order to be consistent with the TSR 4 process currently underway for the PG TSA. Also, while the analysis examined hemlock stands for completeness and consistency with available literature, hemlock was not included in the timber supply analysis consistent with assumptions being applied in the TSR 4.

The VRI data indicates that 24,342 ha of Cedar leading stands are available for harvest in the ICH (THLB). Although the TSR partition for the ICH does not include spruce, this analysis did for completeness and in light of the importance of the area for mid-term timber supply. Within the ICH area 30,413 ha of leading spruce stands are contributing to the timber harvesting land base.

An analysis of harvest flow within the ICH was broken in to short and long term periods. The analysis used m3/ha and m3/ha/yr values derived from the TSR base case, and reported volume recovery in Cedar stands by licensees operating in those profiles for that past 7 years. This data was

reviewed by the MoFR. The values for existing volume in cedar leading stands are 220 m3/yr. The mean annual increment based on the TSR base case is 2.02 m3/ha/yr. The value for existing volume in spruce leading stands is 350 m3/yr. The mean annual increment based on the data from the MoFR is 3.00 m3/ha/yr. It should be noted that the VRI reported volumes were much lower than those used in the analysis. Based on the total area of cedar and spruce leading stands in the ICH partition, total available volume in existing stands is indicated below in Table 5.

Table 5 – VRI Derived Values for ICH Partition

Leading Species	TSR Base Case Area (THLB) (ha)	VRI Area (THLB) (ha)	Total (VRI) Volume Existing Stands (m_3)
Cedar	23,700	24,342	5,355,240
Spruce	Not included in Partition	30,560	10, 644, 474
Total Cedar and Spruce Leading Stands	23,700	54,902	15,999,714

7.2 Guidance Old Growth Management Areas - THLB Impacts

The timber supply analysis for this guidance was broken into a number of different themes to present an accurate and complete assessment. Section 4.0 outlines that very old Cedar stands primarily located in the vk_2 variant contain rare ecosystems, and, are currently underrepresented in reserves. As such the timber supply analysis examines the impacts of OGMA in the cedar leading THLB. The guidance is also conscious of the importance of the area for mid-term timber supply, specifically with respect to leading spruce stands. Therefore, the analysis also examines the impact of OGMA guidance on spruce stands.

Table 6 provides an analysis of the total area in each contributing class. This was broken into leading species. The TSR 2 THLB dataset was used in conjunction with the updated VRI dataset. The volume values use that same m_3/ha multipliers discussed above.

Table 6 –ICH Partition Area Analysis

Reporting Unit	Total THLB Area (ha)	Cedar THLB (ha)	Cedar THLB Volume (m3)	Spruce THLB (ha)	Spruce THLB Volume (m3)	Cedar CFLB (ha)	Spruce CFLB (ha)	Cedar NCLB (ha)	Spruce NCLB (ha)
Vk2	95,355	19,720	4,333,459	23,120	8,040,476	32,658	36,804	13,887	18092
Wk3	22,475	4,622	1,016,871	7,440	2,603,999	5,872	9,369	1,336	2827
Total ICH Partition	117,830	24,342	5,355,330	30,560	10,644,474	38,530	46,173	15,223	20,919

Table 7 indicates the timber supply impacts of the guidance OGMA on the total THLB in the ICH zone. It is important to note that this guidance was restricted to the ICH merged-BEC units, and does not consider areas in the SBSvk2 or the ESSF, which contain significant levels of mid-term harvest opportunity.

Table 7–Impact on Guidance OGMAs on Total ICH Partition THLB Area

Reporting Unit	Total THLB Area (ha)	OGMA Guidance Area in THLB (ha)	% Impact
Vk2	95,355	2,814	3%
Wk3	22,475	921	4%
Total ICH Partition	117,830	**3,735**	**3%**

Table 8 indicates the % impact of the OGMA guidance in cedar leading stands for the THLB in the ICH partition area. The area for THLB is consistent with the area identified through TSR 2, but was derived based on VRI data.

Table 8–Impact on Cedar Leading THLB stands from Guidance OGMA's

Reporting Unit	Cedar THLB Total (ha)	Cedar OGMA THLB (ha)	% Impact on Cedar Leading THLB
Vk2	19,720	2,187	11%
Wk3	4,622	457	10%
Total ICH Partition	24,342	**2,644**	**11%**

The project has attempted to avoid leading spruce stands in order to mitigate any adverse effects on mid-term timber supply opportunities, an analysis of spruce THLB area within OGMA guidance is presented below in Table 9.

Table 9 - Impact on Spruce Leading THLB Stands from Guidance OGMA's

Reporting Unit	Spruce THLB Total (ha)	Spruce OGMA THLB (ha)	% Impact on Spruce Leading THLB
Vk2	23,120	232	1%
Wk3	7,440	175	2%
Total ICH Partition	30,560	**407**	**1%**

Table 10 indicates the total Cedar leading THLB area in each licensee operating cell that is removed by the guidance OGMA's. Table 10 is the same as table 11, but for Spruce leading stand impacts.

Table 10–OGMA Guidance Impact by Operating Cell for Cedar THLB

Reporting Unit	Data	BCTS	Canfor	Carrier Lumber Ltd.
ICH vk 2	Ha THLB	3,639	11,252	4,829
	Ha OGMA	428	1,114	652
	Impact %	12%	10%	14%
ICH wk 3	Ha THLB	4,327	0	295
	Ha OGMA	457	0	0
	Impact %	11%	0%	0%

Table 11 - OGMA Guidance Impact by Operating Cell for Spruce THLB

Reporting Unit	Data	BCTS	Canfor	Carrier Lumber Ltd.
ICH vk 2	Ha THLB	1,671	18,770	2,531
	Ha OGMA	37	60	136
	Impact %	2%	0%	5%
ICH wk 3	Ha THLB	6,717	0	723
	Ha OGMA	175	0	0
	Impact %	3%	0%	0%

Since 2002, both the *order* as well as a series of spatial reserves has been established in the area. The *order* constitutes the most significant timber supply constraint in the ICH partition as mentioned in previous sections. Both the existing OGMA's as well as those outlines in this guidance, would be implementing existing constraints in the *order*. Below is a summary of these existing constraints.

Table 12–PG TSA Biodiversity Order Analysis

Reporting Unit	Total CFLB (LOWG 2007)	CFLB Old Target Total (2004)	Total Existing OGMA in CFLB	Total Park Old Area CFLB	Total Guidance OGMA CFLB	Total Reserve CFLB Area (Guidance Included) ha	% CFLB Order target in OGMA
vk2	145,660	77,200	5,929	17,616	3,686	27,231	**18.7%**
wk3	27,176	14,403	4,733	5,774	1,084	11,591	**42.7%**
Total	172,836	91,603	10,662	23,390	4,770	38,822	

Table 12 is an assessment of the proposed OGMA's and existing reserves in relation to the legal old forest targets of 53% for each merged-BEC unit as required by the *order*. The total area from parks and previously established OGMA's is considered to provide a cumulative assessment of reserves. Other reserve types (UWR, VQO) are not considered in this analysis.

During the establishment of the biodiversity *order*, analysis indicated that old forest area in the non-contributing land base was insufficient to meet the 53% old forest target. The implementation of the *order* therefore required old forest area from the timber harvesting land-base. In the two merged BEC units in the ICH, based on FC1 Data, 31,819 ha of THLB old forest, in addition to the total

NCLB area, was required to meet the target. This analysis uses VRI data to calculate the amount of CFLB, NCLB and THLB in these merged BEC units, to determine the location and classification of areas required for old forest retention under the *order*. The CFLB definition will change with TSR 4, these values are not currently available. However, a preliminary analysis indicates that the total required CFLB required for the order in the vk_2, (77,200 ha), minus the total amount of >140 old NCLB available in the vk_2 (39,807 ha) minus the currently established reserves that are >140 years old (23,545 ha), means that additional THLB area (~13,848 ha) will be required to meet the current target in the vk_2. The area in this guidance (2,814 ha in the vk_2) is a small sub-set of what could be considered currently constrained old forest.

The analysis determined that this OGMA guidance, as well as established OGMA's and parks, do not constitute any additional impact on the THLB already accounted for in the *order*. The analysis indicates that, including this OGMA guidance both units will still require ongoing non-spatial management of old forest. The non-spatial management could be directed towards areas of high and medium biodiversity value outside reserves as indicated by the map in appendix 1.

7.3 Guidance Old Growth Management Area Volume Impacts

The overall impact of the guidance OGMA's on existing and long-term volume in the ICH partition was also completed. Overall there are 2,644 ha of cedar leading stands in OGMA guidance that occur within the THLB, approximately 2% of the total timber harvesting land base. Spruce leading stands makes up 407 ha of the OGMA guidance which less than 1% of the total partition THLB.

Over the short term, the analysis indicates that 591,140 m_3 of leading cedar stand volume may be reduced from existing stands in the THLB should this guidance be used. This represents 11.3% of the total Cedar leading stand volume in the ICH partition.

Over the short term the analysis indicates that 142,450m_3 of leading spruce stand volume will be reduced from existing stands in the THLB should this guidance be used. This represents 1.3% of the total spruce leading volume in the ICH partition.

The TSR 2 base case indicates a long term harvest flow of 60,000m_3 from the ICH partition. This flow assumes the continued contribution of Hemlock stands, but as was discussed previously, opportunity for hemlock salvage no longer exists, so this long term flow is likely to change through TSR 4. Nonetheless, using the 60,000m_3 flow level, the long term impact of this OGMA guidance constitutes a loss of approximately 8,603 m_3/yr or a 14% reduction in long term harvest flow. This was calculated using the total THLB area of OGMA guidance (3,772 ha) and the average MAI of 2.5m_3/ha/yr.

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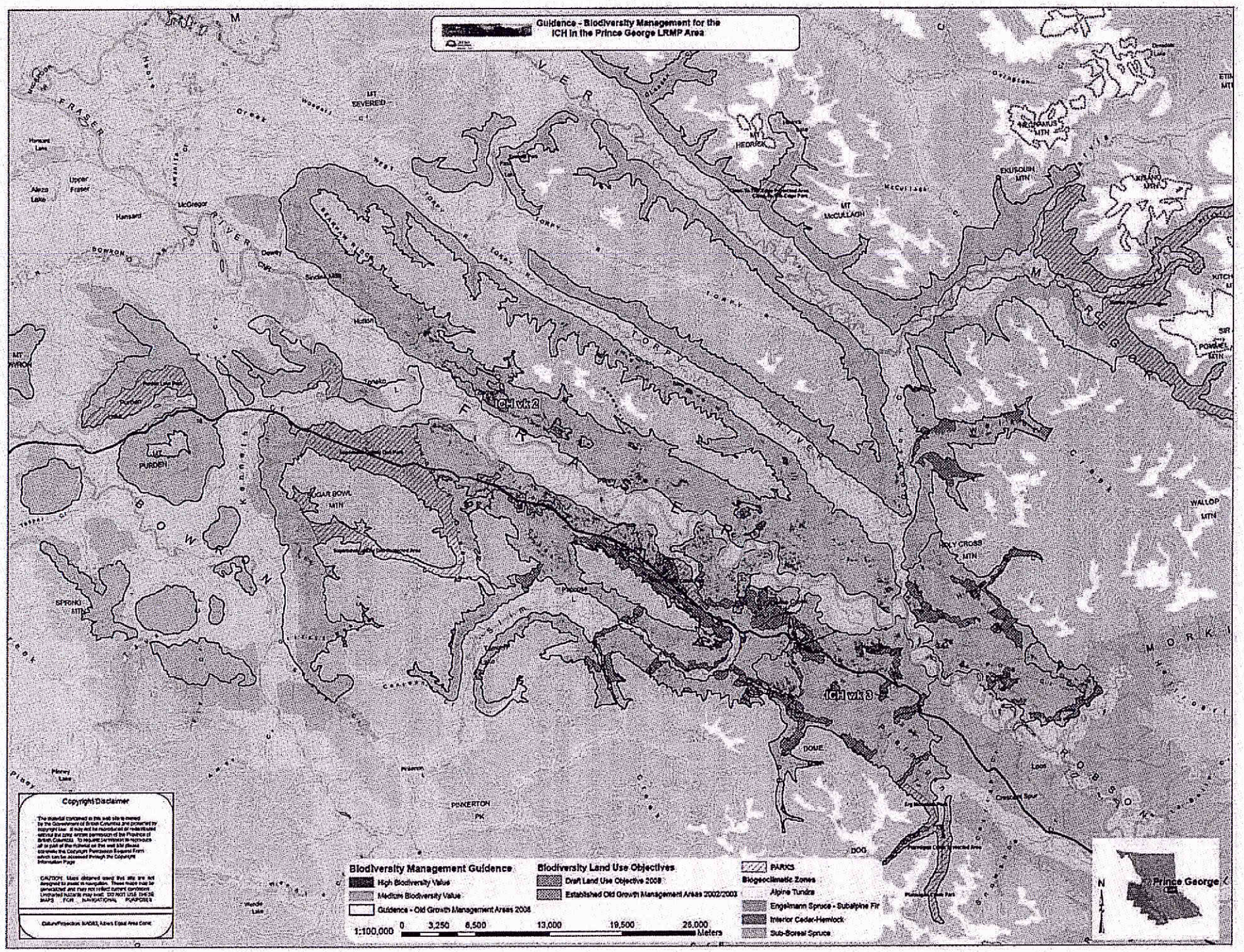
Guidance - Biodiversity Management for the ICH in the Prince George LRMP Area
ICH vk 2
ICH vk 3
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Biodiversity Management Guidance
High Biodiversity Value
Medium Biodiversity Value
Guidance - Old Growth Management Areas 2008
Biodiversity Land Use Objectives
Draft Land Use Objective 2008
Established Old Growth Management Areas 2002/2003
PARKS
Biogeoclimatic Zones
Alpine Tundra
Engelmann Spruce - Subalpine Fir
Interior Cedar-Hemlock
Sub-Boreal Spruce
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Prince George

Forest Practices Board

File: 97250-20/070762

August 17, 2009

Doug Konkin
Deputy Minister
Ministry of Environment

Dana Hayden
Deputy Minister
Ministry of Forests and Range

Steve Carr
Chief Executive Officer
Integrated Land Management Bureau

Jim Snetsinger
Chief Forester
Ministry of Forests and Range

Dear Participants:

Re: Response to Board Recommendations in the *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek* report

I would like to thank the Ministry of Forests and Range and the Ministry of Environment, for their May 8, 2009, and May 15, 2009, responses to two of the Board's recommendations in its investigation of complaint 070762 entitled *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek*. The government responses are posted on the Board's website. The following is the Board's consideration of the responses and its conclusions.

Recommendation 1 was that the Ministry of Forests and Range, Ministry of Environment and the Integrated Land Management Bureau formulate an overall stewardship strategy for the interior rainforest to ensure that biodiversity values are adequately managed and conserved.

In response, the ministries described their stewardship strategy, which contained a variety of components. In my opinion, the most significant component is the April 2008 policy entitled *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area* (guidance policy).The policy states that it is intended as guidance and best available information for biodiversity management in the area, but also stresses that the policy is not direction and is not legally binding. It also states that should biodiversity management in the ICH be found to be significantly inconsistent with this guidance, future legal objectives may be considered by government.

The guidance policy identifies and locates 4,770 hectares of draft old growth management areas (OGMAs). The policy goes on to recommend specific results and strategies for forest licensees to use in their forest stewardship plans. For the draft OGMAs the recommended strategy is to exclude the areas from harvesting and to locate any roads at least 200 metres away from the boundaries.

The Board is concerned that the guidance policy is not legally enforceable. Licensees may disregard it and still be in compliance with the *Forest and Range Practices Act* and meet the requirements of the 2004 biodiversity order. Government's stewardship strategy has stopped short of using the available legislative tools to ensure certainty of conservation of the ICH forests in this area. Vulnerable forest stands can still be legally harvested despite clear guidance to the contrary. A guidance policy approach would seem reasonable for values that have widespread occurrence and that can be managed through general application of practices across the landscape. The old growth or ancient cedar stands that are the subject of the draft OGMAS are, however, rare on the landscape, precisely located, small in total extent and essentially irreplaceable. For such values the stronger measures provided for in legislation appear to be necessary and could be invoked with better effect prior to discovering that the guidance is not being followed, not afterwards. For this reason, I conclude that the recommendation has not been met.

In **Recommendation 2**, the Board recommended that the Minister of Forests and Range examine the UNBC research and the ILMB Legacy Project reports to identify vulnerable interior rainforest stands and the risk to such values from harvesting. Once areas were identified as vulnerable and at risk, the Board recommended that the Minister should designate those areas under Part 13 of the *Forest Act* and suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years.

In May, 2008, the Ministry of Forests and Range responded that there is a timber supply review currently underway for the Prince George TSA and that the implications of the 4,770 hectares of draft OGMAs in the guidance policy would be assessed in a timber supply sensitivity analysis. For this reason the MFR stated it would not proceed with a Part 13 *Forest Act* designation. However, since then, the ministry has informed the Board that it will not be able to conduct the sensitivity analysis for the chief forester's AAC determination, which is scheduled for October 2009, due to the press of other more urgent and consequential analyses. Instead, a sensitivity analysis of the impact of the guidance areas will be done sometime in the future after the October 2009 AAC determination.

In the chief forester's 2004 AAC determination, he noted that there is a partition for harvesting cedar and hemlock stands and those future decisions about the partition

would be subject to a complete analysis and review of current management practices within the ICH zone.

I understand that the 4,770 hectares of draft OGMAs are not reflected as current practice in the base case timber supply scenario; even though the guidance policy has now identified the vulnerable interior rainforest stands. In the Board's view the ILMB guidance policy should be considered current practice and reflected in the base case analysis. Without the sensitivity analysis, the continuation of the cedar/hemlock partition and its impact on the ICH forests and timber supply will be unknown and the chief forester may not have the information necessary to consider both the ICH resource values and the impacts of the partition in the impending AAC determination. For this reason, I find the ministry response to the recommendation to be inadequate.

Under section 132 of the Forest and Range Practices Act, the Board requests that the chief forester prepare, for the Minister of Forests, a Part 13 designation under *the Forest Act* for the 4, 770 hectares of draft OGMAs identified in the policy guidance until such time that the sensitivity analysis is done. The Board requests that the chief forester notify the Board of the steps taken to implement the Board's recommendations by February 1, 2010.

In conclusion, I note with appreciation that government staff have prepared a thorough analysis and stewardship strategy that does identify vulnerable interior rainforest stands. However, in the Board's view the government's response is not adequate to ensure effective management and conservation of the significant biodiversity values in this case and could be significantly improved by use of existing legislative tools.

Yours sincerely,

Bruce Fraser, PhD
Chair

Forest Practices Board

File: 97250-20/070762

August 18, 2009

Eamon O'Donoghue
Regional Executive Director
Northern Interior Region
Integrated Land Management Bureau
Bag 5000
Smithers, BC V0J 2N0

Dear Eamon O'Donoghue:

Re: Response to Board Recommendation #3 in the *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek* report

I would like to thank you for your April 30, 2009 response to the Board's recommendation #3 in its investigation of complaint 070762, entitled *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek*. The following is the Board's consideration of the response and our conclusion.

Recommendation 3 was that the Regional Executive Director of the Integrated Land Management Bureau provide the Board with a copy of the decision on whether to establish spatial OGMAs upon the completion of the Legacy Project. The Board suggested that ILMB provide a rationale supporting the decision and the rationale should speak to the factors considered and how values and risks were identified and addressed.

In your April 3, 2009 response you note that the April 2008 document, entitled *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area* (guidance policy) thoroughly explored the economic, social and environmental values associated with the interior cedar-hemlock forests. You also noted that *Forest and Range Practices Act* (Act) regime relies on a combination of practice requirements, legal objectives and professional reliance to protect values. These factors were highlighted in your decision not to legally and spatially establish the 4, 770 hectares of draft OGMAs identified in the Legacy Project and reflected in the guidance policy.

As you know, on August 17, 2009, the Board considered the government response to two other Board recommendations, in which the ministries outlined a stewardship

strategy for the interior cedar-hemlock forests in the Prince George timber supply area.

The Board recognises and commends the thorough agency staff work that went into the Legacy Project and the stewardship strategy and detailed identification of the draft OGMAs. Our concern at this point is that the strategy is limited by a policy choice that renders it less effective than it could be.

In my opinion, the most significant component of the strategy is the April 2008 guidance policy. The Board concluded that there were inherent weaknesses in the reliance on guidance alone. To be effective, the reliance on professionals needs to be based on a clear planning framework supported by legislation. I accept that ILMB intends to monitor the draft OGMAs. As the guidance policy is non-binding and the monitoring would only show damage after the fact, our concern is that the ICH values represented in the draft OGMA's are now rare and cannot be recovered if lost.

I appreciate your offer to consider any future analysis to determine if further spatial designation would be appropriate. The Board has made a recommendation in its August 17, 2009 letter to the chief forester to prepare, for the Minister of Forests, a Part 13 designation under the *Forest Act* for the 4, 770 hectares of draft OGMAs identified in the policy guidance that would ensure their integrity until such time that the sensitivity analysis is done to establish the potential impact on timber resources.

When a sensitivity analysis is completed by the chief forester, I would expect that it would be appropriate to consider taking the opportunity to reconsider the spatial designation of the draft OGMAs.

In conclusion, I thank you for your response to the Board's recommendation.

Yours sincerely,

Bruce Fraser, PhD
Chair

BRITISH COLUMBIA
The Best Place on Earth

File: 23060-11/IRC137
120226

MAY 8 2009

Dr. Bruce Fraser, Chair
Forest Practices Board
3rd Floor, 1675 Douglas Street
PO Box 9905 Stn Prov Govt
Victoria, British Columbia
V8W 9R1

Dear Dr. Fraser:

Please accept this letter as Ministry of Forest and Range's (MFR's) response to Recommendation 2 in the Forest Practices Board's Complaint Investigation Report 137, *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek, (May 2008).*

Recommendation 2.
The Minister of Forests and Range should examine the University of Northern British Columbia research and the Integrated Land Management Bureau (ILMB) Legacy Project reports to identify vulnerable interior rainforest stands in the Robson Valley and Prince George Timber Supply Areas (TSAs) and the risk to such values from harvesting. Once areas are identified as vulnerable and at risk, the minister should designate those areas under Part 13 of the Forest Act and suspend, vary or refuse to issue cutting permits and other timber harvesting plans for up to ten years.

Response by MFR
The response to Recommendation 1 (submitted in a separate letter) provides detail on the components of a stewardship strategy for the interior rainforest within Prince George Forest District. This strategy identifies protected areas, legal objectives and policy guidance in the vicinity of the interior rainforest. The MFR will work with the ILMB and the Ministry of Environment to implement this strategy and monitor its effectiveness.

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As well, a Timber Supply Review (TSR) is currently underway for the Prince George TSA. In the last major review in 2002, a partitioned cut of 110 000 m^3/year in cedar-hemlock stands was set by the chief forester. Since then, a number of land use and resource management decisions have been made that affect the interior rainforest and adjoining areas. These decisions include:

- Orders establishing spatial Old Growth Management Areas (OGMA) for the Dome, Slim and Humbug Landscape Units;
- Order Establishing Landscape Biodiversity Objectives for the Prince George TSA (aspatial targets);
- Order establishing a 57 hectares (ha) OGMA over the Ancient Forest trail;
- Approval of a 136 ha Recreation Site designation over the Ancient Forest trail;
- Orders establishing Ungulate Winter Range objectives for mule deer and mountain caribou (including new core habitat from the 2008 Mountain Caribou Recovery Strategy);
- Order establishing Visual Quality Objectives along Highway 16;
- Completion and approval of a Legacy Biodiversity project by the ILMB which includes policy guidance for the conservation of 4770 ha of rare old growth cedar stands.

Current land use and forest management practices in the interior rainforest have been documented as basecase assumptions in the TSR Data Package. The timber supply implications of the 57 ha OGMA over the Ancient Forest Trail and 4770 ha of Guidance OGMA[1] from ILMB's Legacy Biodiversity Project will be assessed in a timber supply sensitivity analysis. This information, along with all related public input, will be presented to the chief forester at an Allowable Annual Cut (AAC) Determination meeting scheduled for October 2009.

These two initiatives (Interior Rainforest Stewardship Strategy and Timber Supply Review), along with other provisions in the *Forest and Range Practices Act*, are the basis for resource management and conservation in the interior rainforest at this time. Therefore, the MFR will not be proceeding with a *Forest Act* - Part 13 designation.

[1] A guidance OGMA is "non-legal" OGMA referenced on the ILMB web-site as having significant value and communicated to the Forest Licensees and BCTS that it warrants consideration and avoidance during forest harvesting due to old forest attributes. They are in the professional reliance realm for Forest Professionals to consider when preparing plans.

Dr. Bruce Fraser, Chair
Forest Practices Board

If the board has any questions regarding MFR's response, please contact Kristine Weese, Forest Practices Branch at (250) 558-1760.

Yours truly,

John Dyble
Deputy Minister

pc: Minister of Forests and Range
Minister of Tourism, Culture and the Arts
Minister of Agriculture and Lands
Minister of Environment
Eamon O'Donoghue, RED, ILMB
Doug Konkin, Deputy Minister, MOE
Larry Pedersen, Deputy Minister, MAL
Ralph Archibald, ADM, Environmental Stewardship Division, MOE
Gary Townsend, ADM, Regional Operations Division, MAL
Jim Snetsinger, Chief Forester, MFR
Phil Zacharatos, A/ADM Operation Division, MFR
Bill Marshall, Director, Recreation, Sites and Trails Branch, MTCA
Diane Medves, Director Forest Practices Branch, MFR
Bruce Sieffert, Director, Land Use Planning, ILMB
Greg Rawling, District Manager, Prince George Forest District, MFR
Andy Witt, Manager, Habitat Management Section, MOE
Mikel Leclerc, District Recreation Officer, MTCA
Kristine Weese, Forest Practices Branch, MFR

BRITISH COLUMBIA
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File: 23060-11/IRC137
120231

MAY 15 2009

Dr. Bruce Fraser, Chair
Forest Practices Board
3rd Floor, 1675 Douglas Street
PO Box 9905 Stn Prov Govt
Victoria, British Columbia
V8W 9R1

Dear Dr. Fraser:

On behalf of the Ministry of Forests and Range (MFR), Integrated Land Management Bureau (ILMB), and the Ministry of Environment (MOE), please accept this letter as government's response to Recommendation 1 in the Forest Practices Board's Complaint Investigation Report 137, *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek (May 2008).*

Recommendation #1
1. The MFR, MOE and the ILMB should formulate an overall stewardship strategy for the interior rainforest to ensure that biodiversity values are adequately managed and conserved.

Additionally, the report commented:
"This strategy would include mechanisms such as Part 13 of the *Forest Act*, spatially located Old Growth Management Areas (OGMA), wildlife habitat areas, general wildlife measures etc., from the *Forest and Range Practices Act*. Such a strategy should consider and build on the 2004 Biodiversity Order and implementation policy. Government should include research information and public input. The strategy should also clarify the role of licensees and individual ministries in managing biodiversity. Furthermore, the existing Biodiversity Order does not adequately address the definition of old forests in the interior cedar hemlock (ICH). Further stratification and redefinition should be considered so that rare sites can be conserved. The Board's investigation noted that the ILMB Legacy Project focused on rare Tier 1 sites in

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the ICH only. However, the remaining wet cedar stand types also have significant biological value and warrant further biodiversity management. A complete analysis of the ICH Tier 1 to 3 sites is needed and other ecotypes may also require such consideration."

Response by government
Work by various government resource agencies over the past decade has contributed to an overall stewardship strategy for the ICH area in the Prince George Forest District.

The various planning processes and land use designations that were in place in 2007 are listed below:

1. Legally established OGMA (Slim, Dome and Humbug landscape units 2002 and 2003);
2. Parks and Protected Areas as part of the Prince George Land and Resource Management Plan 1999 (including the Slim Creek and Sugarbowl/Grizzly Creek protected areas);
3. Ungulate Winter Range designations for mountain Caribou and Mule Deer habitat;
4. Visual Quality Objectives (December 7, 2005);
5. Order Establishing Landscape Biodiversity Objectives for the Prince George TSA (October 20, 2004), (the minimum per cent of Crown Forest Land Base retained as old forest is 53 percent for the ICH wk3 and ICH vk2 and 46 percent for the SBS vk).

During 2008 and 2009, additional planning processes and land use designations have taken place including:

1. Legally established OGMA for 57 hectares (ha) area was established in March 2009;
2. *The Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area* was released to Forest Licensees April 2008 and posted on the ILMB website; it identifies 4770 ha of guidance[1] OGMA;
3. *The Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area* (March 2008) also identifies areas of high and medium biodiversity values that can contribute to biodiversity management in the ICH zone

[1] A guidance OGMA is "non-legal" OGMA referenced on the ILMB web-site as having significant value and communicated to the Forest Licensees and BCTS that it warrants consideration and avoidance during forest harvesting due to old forest attributes. They are in the professional reliance realm for Forest Professionals to consider when preparing plans.

(approximately 4000 ha of high biodiversity value area and 15 000 ha of medium biodiversity value area);

4. A Recreation Order (#149) dated November 19, 2008, was signed off by the Ministry of Tourism, Culture and the Arts (MTCA) to establish Driscoll Ridge Trail as a Recreation Trail and the Ancient Forest hiking trail as an Interpretive Site, as per section 56(1) of the *Forest and Range Practice Act.* The MTCA is undertaking a project to determine how all of the Recreation Sites and Trails and Interpretive Sites in the Prince George Forest District could best be protected. In the interim, they will be managed through section 16 of the *Forest Recreation Regulation;*
5. Additions to Ungulate Winter Range core habitat for mountain Caribou were approved in February 2009.
6. Draft Ecosystem Conservation Framework outputs for the ecological community ICHvk2/05 (Western Red Cedar/Devil's club / Ostrich fern) resulted in the assignment of the highest priority ranking for implementation of policy and legislation (listed under the *Forest and Range Practices Act* in the category of Species at Risk), as well as inventory and monitoring. Outputs for the ecological communities ICHvk2/06 (Western Red Cedar - Hybrid white spruce / Skunk cabbage) and ICHwk3/06 (Western Red Cedar / Devil's club / Common horsetail) resulted in the assignment of the second highest priority ranking for inventory and monitoring.

The above areas are provided in a mapping exercise which demonstrates the spatial land use designations.

The work that is captured in the *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area (March 2008)* goes a considerable way to address many of the concerns raised by the Forest Practices Board's Report. For example, it outlines a methodology developed and used to identify old growth forest that goes beyond a forest inventory age (as the Non-Spatial Order relies on). The methodology used slope position, relative soil moisture, leading species composition, age class, aspect and Crown closure and attributes found in Vegetation Resource Inventory (VRI), Predictive Ecosystem Mapping (PEM), Topographic Position Index (TPI), Topographic Wetness Index (TWI) and Aspect datasets to map biodiversity value areas.

A map is provided in the above Report that outlines "Guidance – Old Growth Management Areas 2008". The following results or strategies are recommended:

- Reserve all timber within identified OGMA boundaries;
- Access structures should be located at least 200m away from OGMA boundaries;
- Harvesting near the boundaries of OGMAs should not increase the risk of windthrow in OGMAs.

Further, the report provides mapped areas identified as High Biodiversity Value (HBV) and Medium Biodiversity Value (MBV) areas. This guidance document is recommending the following strategies for ongoing biodiversity management in the ICH:

- Prioritize retention of areas identified as High Biodiversity Value as indicated on the map in Appendix 1;
- If all of the High Biodiversity Area is retained, prioritize Medium Biodiversity Value areas for retention as indicated on the map in Appendix 1.

The report *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area (March 2008)* can be found at the following web-site: http://www.ilmb.gov.bc.ca/slrp/srmp/north/prince_george/index.html

A key aspect of the above stewardship strategy will be monitoring to ensure the legally established and guidance land use designations are followed. To this end, a Notation of Interest is being established for all legal and guidance OGMAs, so when a new land use is proposed, the status system TANTALIS will prompt the new application to be aware of the OGMA and provide a contact person who can be reached to discuss the compatibility or non-compatibility of the new use with the OGMA. The MFR does status checks on cutting permits before issuance.

In addition, the Forest Licensees in the Prince George Forest District have a certification process which commits them to report on the amount of old forest and interior old forest in their license areas. They have further committed to the Public Advisory Group that they will report on a "quality classification" of old forest.

If the board has any questions regarding MFR's response, please contact Kristine Weese, Forest Practices Branch at (250) 558-1760.

Yours truly,

Doug Konkin
Deputy Minister
Ministry of Environment

John Dyble
Deputy Minister
Ministry of Forests and Range

Steve Carr
CEO
Integrated Land Management Bureau

Dr. Bruce Fraser, Chair
Forest Practices Board

pc: Minister of Forests and Range
Minister of Tourism, Culture and the Arts
Minister of Agriculture and Lands
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Greg Rawling, District Manager, Prince George Forest District, MFR
Andy Witt, Manager, Habitat Management Section, MOE
Mikel Leclerc, District Recreation Officer, MTCA
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April 30, 2009

Dr. Bruce Fraser, Chair
Forest Practices Board
3rd Floor, 1675 Douglas Street
PO Box 9905 Stn Prov Govt
Victoria BC V8W 9R1

Dear Dr. Fraser:

On behalf of the Integrated Land Management Bureau (ILMB), please accept this document as government's response to recommendation #3 in the Forest Practices Board's Complaint Investigation Report 137, *Biodiversity in the Interior Cedar-Hemlock Forests Near Dome Creek (May 2008).*

Forest Practices Board Recommendation 3:
"The Regional Executive Director of ILMB should provide the Board with a copy of the decision on whether to establish spatial OGMAs, upon the completion of the Legacy Project. The document should incorporate a rationale for the decision including the factors considered and how values and risks were identified and addressed."

Factors, Values and Risks considered.
The Inland Rainforest or Interior Cedar Hemlock zone (ICH), in the Prince George Forest District has economic, social and environmental values. More specifically the values include:

- Globally significant and rare for biodiversity, old forest attributes and environmental values;
- economic value for timber harvesting;
- economic value for tourism and recreation; and
- social values to the Dome Creek, Crescent Spur and Prince George communities.

These values are thoroughly explored in the *Guidance and Technical Background Information for Biodiversity Management in the Interior Cedar Hemlock Zone within the Prince George Land and Resource Management Plan Area, March 2008 (*Guidance document*).*

A number of factors contributed to the decisions on how to balance and provide direction for the management of the above values. The *Forest and Range Practices Act* (*Act*) regime relies on a combination of practice requirements, legal objectives and professional reliance to

. . . /2

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protect values. The decisions made by ILMB are believed to be within the latitude of acceptable management with regard to the *Act* framework and reliance on professionals.

There are specific statutory factors required by the Land Use Objectives Regulation that the decision maker must consider before establishing an objective. These statutory factors include providing for an appropriate balance of social, economic and environmental benefits, and ensuring that the importance of the objective outweighs any adverse impact on opportunities for timber harvesting or forage use. The Land Use Objectives Regulation also directs that the decision maker must consider any written comments received during the review period.

Other factors considered were issues, information and advice gathered from a number of sources including academia, community groups, tenure holders, and others members of the public.

A number of activities and conditions are believed to reduce potential risks and support the decisions made. Communication to Forest Licensees and other stakeholders regarding the guidance Old Growth Management Areas (OGMA) was thorough.

ILMB, other agencies and individuals will continue to monitor the values in the ICH zone, of the Prince George Forest District.

Response by Government

57 ha of old growth surrounding the Ancient Forest Trail was advertised for public review and comment, potential designation as OGMA due to high biodiversity and high recreation values. The public review and comment period began on May 31, 2008. This 57 ha OGMA Order was signed-off February 3, 2009, and includes the Ancient Forest Trail.

In addition, another 4770 ha of guidance OGMA has been identified and included in the Guidance document. This document has been posted on the ILMB website and was approved as technical guidance to be implemented through professional reliance of forest professionals.

The intention of the Guidance document is to reduce risk to biodiversity through spatial identification and to provide some flexibility related to timber supply and access. ILMB staff will continue to review and monitor old growth values identified in the Guidance document.

I believe that the combination of the following initiatives adequately manages the risk to biodiversity in the ICH zone, in the Prince George Forest District, at this time:

- The Guidance document
- Legally established OGMA (Slim, Dome and Humbug landscape units 2002 and 2003);
- The *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area (October 20, 2004)*;

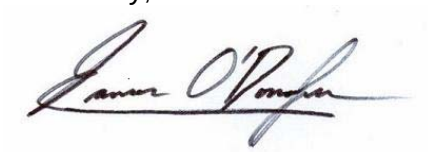
.../3

- The *Order (2009)* establishing a 57 ha OGMA around the Ancient Forest Trail;
- The establishment of Notations of Interest over all old growth spatially identified within the Guidance document; and
- A digital layer of all spatially identified old growth has been entered into the Land and Resource Data Warehouse to ensure reliable access and monitoring of spatial data by Forest Licensees.

ILMB staff will continue to monitor the spatially identified old growth areas within the Guidance document. In the longer term, I will consider any future analysis to determine if further spatial designation would be appropriate.

If the board has any questions regarding this response, please contact Shannon Carson at (250) 565-4463.

Yours truly,



Eamon O'Donoghue
Regional Executive Director
Northern Interior Region, ILMB

pc; Honourable Pat Bell, Minister of Forests and Range
Honourable Bill Bennett, Minister of Tourism, Culture and the Arts
Honourable Ron Cantelon, Minister of Agriculture and Lands
Honourable Barry Penner, Minister of Environment
Steve Carr, Chief Executive Officer, ILMB
Doug Konkin, Deputy Minister, MOE
Larry Pedersen, Deputy Minister, MAL
Ralph Archibald, ADM, Environmental Stewardship Division, MOE
Gary Townsend, ADM, Regional Operations Division, ILMB
Bill Warner, Regional Executive Director, MFR
Phil Zacharatos, A/ADM Operation Division, MFR
Jim Snetsinger, Chief Forester, MFR
Mikel Leclerc, District Recreation Officer, MTCA
Bill Marshall, Director, Recreation, Sites and Trails Branch, MTCA
Diane Medves, Director Forest Practices Branch, MFR
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Forest Practices Board

File: 97250-20/070762

April 14, 2009

Mikel Leclerc
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Bill Marshall
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Jim Ladds
Regional Recreation Manager
Northern Interior Region
Ministry of Tourism, Culture and the Arts
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Dear Participants:

Re: Response to Board Recommendations in the *Biodiversity in the Interior Cedar-Hemlock Forests near Dome Creek* report

I would like to thank the Ministry of Tourism, Culture and the Arts for its January 20, 2009, and February 19, 2009, responses to the Board's three recommendations in its investigation of complaint 070762 entitled *Biodiversity in the Interior Cedar-Hemlock Forests near Dome Creek*.

The Board accepts the response to two of the recommendations but is not satisfied with the response to the third recommendation and is extending the deadline for a response to that recommendation until May 3, 2010.

The following is the Board's consideration of the responses and its conclusions.

The Board concluded in its report that both the Driscoll Ridge Trail and the Ancient Forest Trail had not been legally established, nor did they have management objectives established under section 56 of the *Forest and Range Practices Act* (FRPA). Without established objectives, there is no FRPA requirement for licensees to address the recreation values associated with the trails in forest stewardship plans, nor are there

requirements under the *Forest Planning and Practices Regulation* that prohibit forest activities from damaging the trails. The Board made six recommendations. Three recommendations pertain to the Ministry of Tourism, Culture and the Arts (MTCA). The Board requested that MTCA notify the Board of the steps taken to implement the Board's three recommendations by May 1, 2009.

The Board recommended:

> **4. The Minister of Tourism, Sport and the Arts should establish the Driscoll Ridge Trail and the Ancient Forest Trail as recreation trails under section 56(1) of the *Forest and Range Practices Act*.**
>
> **5. The Minister of Tourism, Sport and the Arts should consider setting legal objectives for each of the trails as empowered by section 56(3) of the *Forest and Range Practices Act*.**
>
> **6. The Minister of Tourism, Sport and the Arts should consider designating the Ancient Forest hiking trail as an interpretative forest site as empowered by section 56(1) of *Forest and Range Practices Act*.**

Recommendation 4 asked MTCA to establish the Driscoll Ridge Trail and the Ancient Forest Trail as recreation trails under section 56(1) of FRPA and recommendation 6 asked MTCA to consider designating the Ancient Forest hiking trail as an interpretative forest site. On January 20, 2009, MTCA provided the Board with copies of an Order under section 56(1) of FRPA. The Order establishes the Driscoll Ridge Recreation Trail and the Driscoll Ancient Forest Interpretative Site. The Order was signed November 19, 2008**. I have concluded that recommendations 4 and 6 have been satisfactorily met.**

Recommendation 5 asked MTCA to consider setting legal objectives for each of the trails.

MTCA said in its email that it had not yet established any objectives for the trail or site. MTCA stated that it was relying on the protection provided under section 16 of the *Forest Recreation Regulation*. They preferred to develop the objectives as part of an extensive review of all sites, interpretative sites and trails within the district. MTCA has stated that it remains their goal to eventually have objectives for all of its Prince George district sites and trails but does not have an anticipated completion date.
To evaluate the adequacy of MTCA's response, I considered the risks to the integrity of the ancient cedar stands if MTCA does not, or delays, establishing objectives for the Driscoll Ridge trail and the Driscoll Ancient Forest interpretive site.

I considered three relevant factors, namely the application of:

1. section 16 of the *Forest Recreation Regulation*;
2. section 70 of the *Forest Planning and Practices Regulation* as it applies to recreation features; and
3. a Ministerial Order under the *Land Act.*

1. Section 16 of the Forest Recreation Regulation

The trail and interpretive site are now established under section 56 of FRPA. Section 16 of the *Forest Recreation Regulation* requires authorization of the use of a recreation site, trail or interpretive forest site for a business or industrial activity. Any harvesting or road construction can be considered an industrial activity. This means that forest licensees have to get authorization, under section 16 of the *Forest Recreation Regulation*, from a MTCA recreation officer before they undertake any industrial activities, such as timber harvesting, road construction, or site preparation on recreation trails or sites. Presumably, the exercising of the authority of MTCA could include the extreme of not authorizing the activity or placing restrictions on that activity.

In my view, section 16 provides some limited protection. However, there is a risk that other ministries may not be aware of this requirement. As well, I note that recreation sites and trails are part of the timber harvesting land base and the timber volumes are considered available for harvesting. Forest licensees may well propose harvesting without any legislated objectives to consider.

2. Recreation features and section 70 of the Forest Planning and Practices Regulation.

While the site and trail are established, in my opinion they are **not** recreation features as defined by section 1 of FRPA.

Currently, section 5 of the *Government Actions Regulation* (GAR) lets the minister responsible for the *Forest Act* identify resource features, including recreation trails. Once established, section 70 of the *Forest Planning and Practices Regulation* stipulates that industrial activities must not damage or render ineffective a resource feature, which includes recreation trails**.**

The site and trail have not been established as recreation features by the Ministry of Forests and Range, so licensees are not obliged to follow the regulation that prohibits them from damaging or rendering ineffective a resource feature.

3. Protection offered by a Ministerial Order under the Land Act.

On February 3, 2009 the Integrated Land Management Bureau established an objective designating an old growth management area near Dome Creek. The objective was contained in a Ministerial Order issued under the *Land Act* that stated all timber within the Old Growth Management Area will be retained.

Accordingly, pursuant to section 8 of FRPA, an approved forest stewardship plan must be amended to take the order into account within one year of the effective date. The Ministerial Order took effect on March 12, 2009 when published in the Gazette.

I have considered the Order, and note that, while it does provide for protection of timber on the Driscoll Ancient Forest interpretive site, it does not apply to the length of the Driscoll Ridge trail. As well, while the objective is to retain all timber, this may not protect other elements of the ecosystem within the ancient forest stands. For example, morel pickers could impact the site.

Conclusion

In considering the adequacy of MTCA's response to the Board recommendations, I examined three factors that influence the risks to the integrity of the ancient cedar stands if MTCA does not establish, or delays establishing, objectives for the Driscoll Ridge trail and the Driscoll Ancient Forest Interpretative Site. I conclude that the establishment of the trail and site under section 56 of FRPA does provide some level of protection. Once established, Section 16 of the *Forest Recreation Regulation* requires authorization of the use of a recreation site, trail or interpretive forest site for a business or industrial activity. This authorization from MTCA should be noted by other ministries as a requirement. I also conclude that the Ministerial Order provides protection to the interpretative site but not the Driscoll Ridge trail.

However, I do not yet consider the response to recommendation 5, that MTCA establish objectives for the site and trails, to be adequate. Nevertheless, MTCA has identified a greater need to establish objectives throughout the district and this is beyond what the Board recommended. I commend the ministry for this recognition and so will extend the deadline for our recommendation. In addition, I expect that MTCA could establish objectives throughout the district in stages. That is, first address high risk areas and ensure that the objectives are established expeditiously, and then establish objectives on less urgent sites and trails in sequence.

Under section 132 of the Forest and Range Practices Act, the Board requests that the Ministry of Tourism, Culture and the Arts, notify the Board of the steps taken to implement the Board's recommendations by May 3, 2010.

Yours sincerely,

ORIGINAL SIGNED

Bruce Fraser, PhD
Chair

cc:

- TRC Cedar Limited
- District Manager, Prince George Forest District, Ministry of Forests and Range
- Regional Executive Director, Northern Region, Integrated Land Management Bureau
- Bob Brade, Ecosystem Biologist, Omineca Region, Ministry of Environment
- complainants