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Re: Proposed FSP Amendment #5

Please consider the following comments on the September 12, 2012 proposal by Pacific Inland Resources to harvest within the Quick Core Ecosystem. Our comments are based on a review of the PIR proposal "*Finding and Utilizing Flexibility within the Bulkley Land and Resource Management Plan / Higher Level Plan Order*", the proposed wording for the FSP amendment, a not-to-scale map of the core area and proposed offset, as well as on a brief meeting with Alan Baxter and our knowledge of the Bulkley LRMP and HLPO. We have not reviewed the ecosystems present in the two areas.

The PIR Proposal clearly states PIR's interests and provides a good summary of relevant direction related to flexibility. It also outlines some reasonable initial ideas for amending core areas. We believe that PIR personnel have acted professionally and responsibly in planning this proposal—particularly in involving the Community Resources Board in the planning process.

We have general comments about amending boundaries and specific comments relating to the Quick Core Ecosystem that we believe would be useful to consider in future discussion around this issue.

## General Comments

**Flexibility in boundaries makes sense if observations suggest that different boundaries would better meet objectives.** Core ecosystems are intended to achieve three objectives: 1) provide representative examples of old forest ecosystems, 2) provide interior forest conditions and 3) link with landscape corridors to form an ecosystem network (p.4, LRMP). Amendment should require demonstration of equal or better likelihood of achieving the three objectives. The "Specific Comments" section below discusses likely effectiveness in relation to the Quick proposal.

We note that the HLPO 2006 preamble refers mainly to adjusting boundaries to reflect field work or better inventory information; it is not clear that this flexibility is intended to support swapping one area for another as proposed. The LRMP, however, which we believe should be seen as the ultimate source of public direction, clearly supports amendments to zones.

**Flexibility requires investment in inventory and monitoring.** The amendments supported by the LRMP were envisioned within a context of ongoing monitoring and support for public participation via the Community Resources Board and broader public engagement. Government and industry support for monitoring (particularly effectiveness) and for public engagement have been weak at best. We believe that modification of LRMP zones requires good inventories and monitoring information and full analysis and review by the CRB. We are not certain about whether these conditions have been met in the case of the Quick Core area. For example, how important is the Quick Core area to the overall functioning of the ecosystem network? Has the CRB had a chance to evaluate a set of alternatives with the support of advisors? Any long-term approach to amending LRMP direction should be tied to meaningful support for monitoring and public participation as originally promised in the LRMP.

**Climate change will continue to increase disturbance rates.** Climate change will continue to increase tree mortality in mature and immature stands. Should core ecosystems be harvested after natural disturbance? Such a policy would move further away from the objective to maintain biodiversity. Disturbance is part of the landscape dynamics of this region—and will be even more so in the future.

The idea that zones should be amended to accommodate disturbance requires careful scrutiny. An alternative approach would maintain the ecosystem network as a relatively “natural area”, rather than as “oldgrowth”, to support overall ecological integrity. Such an approach would require further discussion with the CRB and updating of some objectives. Because climate change was not included in the Bulkley LRMP (or in subsequent plans), there is a clear need to develop an overall approach to dealing with future climate-change impacts on timber and non-timber values. **Land-use objectives and strategies need to be updated with consideration of climate change and cumulative effects.**

As knowledge evolves and climate changes, the “LRMP Budget” of 10% impact on timber supply is open to interpretation. If growth and yield studies show that trees grow faster, is more area available for conservation? If a large disturbance creates unsalvaged mortality and timber supply declines, is less area available for conservation? Furthermore, what happens if non-timber objectives cannot be met within 10%? These questions add to the need for an updated LRMP.

**Knowledge about the importance of dead structure has improved since the LRMP.** Forest structure provides the architecture of an ecosystem with large standing dead or live trees, large downed wood, horizontal and vertical heterogeneity. Natural disturbances provide pulses of death that increase structural heterogeneity. Standing snags are important features of both fire and beetle disturbance events. This structure, renewed by disturbance, supports an ecosystem’s processes and biodiversity.

Since the LRMP, research has improved understanding of the important role of standing and downed dead structure at stand and landscape scales. Organisms are adapted to the natural disturbance regimes of their habitat. Post-disturbance communities frequently differ from undisturbed communities within the same ecosystem type. Fire and beetles create habitats that are neither emulated by harvesting nor prevalent in undisturbed mature forests. **Young, naturally-disturbed ecosystems are ecologically valuable.** Forestry, including salvage harvest, removes valuable ecological legacies and habitats that contribute to the ecological recovery of the stand. Depending on the amount and distribution of dead structure expected to remain in the TSA after the mountain pine beetle outbreak, one of the benefits of core areas could be retention of dead structure.

The processes of post-disturbance ecosystem recovery are not well understood, in part because it is hard to find naturally-disturbed sites that are not logged. This uncertainty is particularly important given the potential shifts in disturbance regime and recovery from disturbance projected due to climate change. This **lack of knowledge increases the importance of leaving disturbed core ecosystems to recover naturally.**

## Specific Comments

Core areas are intended to achieve three objectives: 1) provide representative examples of old forest ecosystems, 2) provide interior forest conditions and 3) link with landscape corridors to form an ecosystem network (p.4, LRMP). We provide the following suggested considerations for determining whether a proposed amendment demonstrates equal or better achievement of these objectives.

Suggested considerations for comparing an existing core ecosystem and a potential offset:

1. **Overall area.** This factor has been considered for the Quick proposal: the proposed offset is about the same size as the proposed cutblocks (about 100ha). To achieve “balance”, the areas should be similar.
2. **Area of interior forest.** This factor has **not** been considered. Although the proposed areas are similar in size in total, several cutblocks are spread over a larger area and hence have a larger impact on interior forest values than they would have if limited to one patch. The remaining core area between the cutblocks will be essentially edge habitat. To achieve “balance”, the interior forest area should be similar. From reviewing a not-to-scale map, we believe that the **proposed offset does not balance the loss of interior forest.** We understand that the forest has been disturbed, but believe that young, naturally-disturbed forest retains more interior forest values than harvested forest. According to the description in PIR’s proposal, 85% of the stand is pine and 90% of that is dead. This leaves over 20% (assuming no high mortality in other species) of the stand in live trees, and a large proportion of standing dead trees. Meta-analyses of stand structure show that greater than 15 – 20% remnant structure provides high value to biodiversity.
3. **Ecosystem type and/or productivity.** We are uncertain about whether this factor has been considered. The analysis within PIR’s proposal describes and compares species composition, but **does not list** BEC site series. If TEM is unavailable, PEM is available for the Bulkley and would be a useful tool. If PEM is unavailable, site index would be the next best proxy. To achieve “balance”, ecosystems would be as similar as possible. If this is not possible, productivity should be similar or higher in the offset area. Otherwise, there is **potential for harvesting the most productive patches of an area and offsetting them with less productive stands.** Ecosystems with different productivity are not equivalent in their value to biodiversity.
4. **Stand structure.** This factor has been considered, but we suggest that current knowledge has not been fully considered. As noted above, dead trees are ecologically valuable, and stands recovering from natural disturbance are ecologically valuable. PIR’s rationale that the offset area, with a more mixed age and species distribution, is more resilient to future disturbance has merit, but without a fuller analysis, we are uncertain about trade-offs. The proposed offset may be missing some of the values of an old dead stand because pockets of dead pine have already been removed.
5. **Connectivity to Landscape Riparian Corridors.** This factor has been considered. The proposed offset connects better to the Bulkley corridor. However, the proposed cutblocks reduce connectivity to the LRC shown to the southeast of the core ecosystem. To achieve

“balance”, connectivity should be similar or improved. The offset seems to improve connectivity to the Bulkley LRC.

6. **Roads and linear features.** We are uncertain about whether this factor has been considered. Roads reduce the value of an area for biodiversity. To achieve “balance”, road density should be similar. The offset is bisected by a road while the core ecosystem is not. However, given the high density of linear features in the area, the impact to value may not be high.

## Conclusions

1. We have some particular questions about whether the proposed offset balances the proposed harvested stands in relation to interior forest, ecosystem productivity and road access. We believe that presentation of ecosystem classification would help answer some of these questions.
2. Our principal concern, however, is in setting a precedent for future less-well-reasoned offsets in the absence of planning for climate change, inadequate monitoring and lack of government support of meaningful engagement with public advisory bodies (such as the Community Resources Board). We believe that amendments should be planned in a complete landscape context, recognising the ecological value of young, naturally-disturbed ecosystems, rather than debated one-by-one.

Thanks for the opportunity to comment.

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