Cariboo Chilcotin Land Use Plan Integration Report

IAMC Implementation Committee

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Cariboo Chilcotin Land Use Plan Integration Report

Executive Summary

The Cariboo Chilcotin Land Use Plan 90 Day Implementation Process (CCLUP) identified the need to complete additional work to improve land use certainty over the next few years. A test of the CCLUP targets and strategies was required to ensure that the CCLUP delivered a balance of environmental sustainability, community stability, and economic security. The Cariboo Mid-Coast Interagency Management Committee (IAMC) and the Cariboo Chilcotin Regional Resource Board (RRB) directed the Implementation Committee to complete this task through the development of an Integration Report.

In 1996, under the direction of IAMC, agency committees developed strategies which addressed options for the achievement of timber access, biodiversity, mule deer, and caribou targets. In addition, impact assessment reports were completed for fisheries and visual resource targets. After a period of review IAMC and RRB directed that an integration report be developed which balances all of the strategies and targets.

References to technical reports (Appendix XIII), including the strategy documents, contained in this document acknowledge the reports may be subject to revision or replacement as new or more relevant technical evidence becomes available. The use of these documents in the integration report does not imply endorsement of the individual documents by the RRB.

The purpose of the integration process is to develop a management strategy which provides direction to subregional planning, operational planning, and the establishment of landscape unit objectives on achievement of all of the CCLUP targets. The expectation is that those involved in these planning processes will use this guidance to help ensure CCLUP targets are met. In the case that these other processes arrive at the stage where they have not achieved the targets using this direction those involved would then raise the issue to IAMC who, in consultation with the RRB, will provide further direction.

Under the direction of the IAMC, adjustments to the strategies were made where required in order to achieve all of the targets in a balanced manner. The analysis included consideration of the overlapping requirements among the strategies. The assumptions and strategy adjustments are the foundation for the integration report and subsequent implementation of the report.

The result of the long term analysis is that the zonal targets and the balance referred to in the CCLUP can be met through the following access to timber targets over one rotation:

70% in the Special Resource Development Zone;

81% in the Integrated Resource Management Zone; and,

83% in the Enhanced Resource Development Zone.

A result of the analysis is that in achieving these zonal targets the individual subunit targets for areas of no-harvest and timber access are different than the subunit targets found within Appendix 3 of CCLUP. The difference is due to the much greater level of landbase analysis completed as part of the integration report.

The implementation of the integration report is expected to shift the current focus from the numerical timber access targets of the CCLUP to the application of management prescriptions at the forest development plan level. The numerical targets will remain a primary objective of subregional plans and will be the basis of long term monitoring of the CCLUP.

The short term analysis reviewed the block option presented in the Short Term Timber Availability Assessment (STTAA) report and summarized the level of compatibility between the STTAA and the results of the long term analysis. The high degree of compatibility demonstrated by the results of this assessment indicates that the integrated strategies can deliver the timber access targets at the operational level. The level of compatibility indicated by this strategic level analysis will be addressed at the Sub-regional planning level.

The results also provide direction on potential flexibility for relocation of STTAA volume. This analysis recognizes that the STTAA is only one option for cutblock configuration and that, within the constraints of the CCLUP and the Forest Practices Code, flexibility exists for actual allocation of cutblocks. Initial work indicates that opportunities exist to make up the non-compatible area, however confirmation of the full requirement of the STTAA will only be determined through implementation of the integration results through the forest development plan process.

Included in this report are summaries of tests completed on both the long and short term analyses. The tests provide a confidence level that the results of the integration process are within a reasonable level of error.

A separate report, the Technical Report of the Integration Process, will be available for those who require more technical information on the methodology or results of the integration process.

The Integration process is a regional strategic level analysis. Inherent in a process of this scope are limitations on the ability of the analysis to anticipate and resolve all site-specific issues that may arise.

The next phase of implementation of the CCLUP will be the completion of sub-regional planning. It is at this level, through the completion of a more site-specific spatial analysis, that the assumptions used in the integration process can be confirmed. In recognition of the importance of this task, this report includes direction to SRP processes in three areas:

1. **Roles and responsibilities of the RRB and IAMC:** A key component of this direction is the established process for referring to the IAMC/RRB all strategic land use issues, and those sub-regional planning issues that, despite the best efforts of the planning participants, cannot be resolved at the SRP level. As an example, if SRPs encounter seral target issues which they cannot resolve as a

result of more detailed spatial analysis they will be referred to the IAMC who, in consultation with the RRB, will provide further direction.

2. **Application of the management direction contained in this report:** This includes direction on the allocation of conventional, modified, and no-harvest areas. A key component of this section is the following direction on application of area based targets:

   The SRP processes should assess opportunities to overlap non-timber requirements with (for example) areas which are presently inoperable from a timber perspective. Useful map layers for this exercise will include inoperable areas, problem forest types, forest site classes, and non-merchantable stands. The zonal netdown should be located where it best maintains/protects the values for which it was designed while taking into account timber values and making the best use of overlap opportunities to better meet all CCLUP targets.

3. **Delivery of targets that were not addressed in the integration process:** These include:

   mining exploration and mineral development

   maintenance of backcountry recreation opportunities

   maintaining habitat requirements for key regional species, including white pelicans, moose, furbearers, and dolly varden trout

   grassland habitats

   wetlands

   access management; including off-road vehicles (for example snowmobiles and ATVs)

   watershed management

   fisheries values, including lakes management

   grazing/agriculture

   wildcraft/agro-forestry

Through the integration process, a number of implementation issues were identified that require additional work or information in order to be addressed. Detailed descriptions of these tasks are included in Section 6, Additional Information Requirements.

The tasks listed in Section 6 are not intended to be an exhaustive list. It is expected that SRP processes, through direct stakeholder involvement, will have a major role in identifying additional information requirements.

Cariboo Chilcotin Land Use Plan Integration Report

Background

In response to IAMC and RRB direction, the Implementation Committee released the report entitled **Final Integration Report** dated September 11, 1996. The report provided:

- information on the requirements for each CCLUP target
- details on how short term timber availability and CCLUP targets can be integrated over the short term
- outstanding integration issues
- recommendations to resolve outstanding issues

The report was subsequently released to the RRB. The primary concern of RRB and IAMC were that the September 1996 report contained some unresolved issues. A process was needed that adequately addressed the interaction and overlap of all of the individual strategies and ensured that all of the CCLUP targets would be achieved. After a period of review the RRB passed the following motion at their November 12, 1996 meeting:

That the strategy documents be returned to the IAMC and that the IAMC in consultation with strategy groups develop a draft CCLUP Integration Report.

The IAMC agreed to this approach and directed the Integration Committee to complete the task. The terms of reference for the Integration Committee is found in Appendix II and the proposed Workplan in Appendix III.

The purpose of the integration process is to develop a management strategy which provides direction to subregional planning, operational planning, and the establishment of landscape unit objectives on achievement of all of the CCLUP targets.

The initial workplan developed by the Integration Committee contains the following key tasks:

1. develop a long term (model) analysis that addresses all targets and tests the cumulative impact of non-timber targets on the timber access target
2. develop a short term (model) analysis that assesses the STTAA against the long term analysis
3. complete a subunit test of the modeling assumptions used in the Integration Report
4. prepare a report which provides a summary of assumptions and management direction.

A key part of this report is the management direction contained in Section 4. This section provides important information for forest development planning. This report

also identifies further technical work that is required along with recommended process and timelines. The appendices contain background information that is essential to ensure that those reading this report have a basic understanding of the information utilized in the integration process.

This report does not attempt to explain in detail the technical process used in assessing the impact of the non-timber strategies on the access to timber targets or the methodology used to determine the cumulative impact of the non-timber strategies. Readers interested in this level of detail are referred to the Technical Report of the Integration Process available from the IAMC on request.

Cariboo Chilcotin Land Use Plan Integration Report

1. Long Term Analysis

The long term analysis is designed to examine the compatibility of all of the strategies. To achieve this objective a key element of the analysis is measurement of the impacts of the non-timber strategies on access to the productive forest land base. This required the development of assumptions on how to analyze all of the pre-integration strategies and access to timber targets. The strategies are:

- Biodiversity Conservation Strategy dated July 1996;
- Caribou Strategy Report dated July 1996;
- Regional Mule Deer Winter Range Strategy dated June 1996;
- Short Term Visual Resource Management for the Cariboo-Chilcotin Land Use Plan dated November 19, 1996;
- Fisheries Target Risk Assessment dated August 15, 1996; and,
- Short Term Timber Availability Assessment (Timber Strategy) dated August 15, 1996.

In addition to the listed strategies, the analysis considered the impact of Riparian Management and Wildlife Tree Patch stand level biodiversity requirements. The remaining resource targets/strategies included in the CCLUP including backcountry, wildcraft, mining, grazing, settlement, recreation corridors, integration of public and commercial recreation, access management, and timber enhancement are assumed to not significantly affect the achievement of the other resource targets at the regional level and therefore were not included in the long term analysis. Nevertheless they are important and are addressed in Section 5 of this report.

References to technical reports (Appendix XIII), including the strategy documents, contained in this document acknowledge the reports may be subject to revision or replacement as new or more relevant technical evidence becomes available. The use of these documents in the integration report does not imply endorsement of the individual documents by the RRB.

The analysis also made use of the information and definitions contained in government's clarification of key components of the CCLUP dated September 27, 1996.

The long term analysis projects the forest in the equilibrium state which would result from application of the non-timber strategies over several rotations. The current condition of the forest, including natural or logging disturbance, is not reflected in the long term integration analysis. The transition from the present forest conditions to the long term forest conditions is addressed in the Short Term Analysis and management direction.

The long term analysis provides an overview of target achievement at the zonal level. The subunit conventional, modified, and no-harvest targets were not met in all cases, however the government commitment to meeting targets at the zonal level has been met. The expectation is that over the long term the numerical subunit targets will become less important at the operational level as subregional plans establish objectives consistent with the integration process. Achievement of these zonal targets will still be required however. There should be some confidence at the SRP level that application of the prescriptions will help to ensure that the numerical targets are achieved.

1.1 Long Term Analysis Assumptions

The initial long term analysis, referred to as the baseline, examined cumulative impact of the non-integrated strategies on the access to timber targets. It was recognized that this would likely result in the need for adjustment to access to the timber land base at the subunit level from the level indicated in Appendix 3 of the CCLUP. A summary of the process used in completing this analysis is presented below.

- the base rotation ages are 80 years for pine and deciduous stands and 120 years for other species. The rotation age represents the number of years required to harvest 100% of the productive forest in a given area.
- initial long term analysis assumptions regarding non-timber targets are based upon the original input strategy documents (with the exception of one mule deer assumption, see 1.2.1).
- non-timber impacts on timber access are based on the prescriptions and areas identified in the applicable strategy documents.
- the long term analysis uses equivalent excluded area (EEA) as a common unit to measure the impact of the non-timber strategies on the access to timber targets. The EEA is based on the difference between a strategy rotation age and the base (normal) rotation age. As an example, if a prescription implies a rotation age of 160 years, and the normal rotation age is 80 years, then the EEA would equal 0.5 multiplied by the strategy area. In this example, 50 per cent of the strategy area would be unavailable for harvesting in a normal rotation.
- for the analysis each non-timber strategy was analyzed and the prescriptions translated into an implied rotation age. If a strategy requires that stands be retained beyond the base rotation age the result is an impact on access to the timber land base. The longer the strategy rotation age, the more restrictive the harvesting practices and the less timber available. (See Appendix VIII).
- the EEA impacts for each strategy are incremental to the current silviculture system (normal rotation) in practice. For the analysis the following were assumed as normal practice:

- even aged management for all species except fir;
- fir is managed on both an even and uneven aged management basis (see Appendix V for table that lists the standard management practices for fir by subunit).

- the analysis uses portions of the no-harvest target areas as well as modified target to meet extended rotation requirements (see page 11 CCLUP).
- over the long term, application of non-timber and timber targets will create a forested landscape that is at an age class equilibrium. For the long term analysis, current existing seral stage forest inventory information was not considered.
- for the purpose of the long term analysis, the current species distribution remains constant over time (i.e. no stand conversions).
- in the case of Draft Biodiversity Units partially within Protected Areas, the productive forest land base within the protected area is assumed to contribute to Old seral requirements within that unit.
- the calculations for the fisheries targets and objectives includes private land (this is the only time that private land is included in the long term analysis).
- the impact of the Goal 2 protected areas has not been analyzed. When these areas are determined they will assist in meeting non-timber objectives.

1.2 Strategy Specific Assumptions

IAMC directed the Implementation Committee to include all of the CCLUP strategies as input documents to the integration process. The assumptions listed for each strategy describe the elements that were used as inputs to the analysis process.

1.2.1 Mule Deer Winter Range (MDWR)

- for all fir leading crown closure classes, the intent of the strategy is to remove the incremental volume. This level of harvest is estimated to be a 20% volume removal on a 50 year interval, or a 250 year rotation.
- the non-fir component will be managed on a normal rotation. MDWR management is based on the requirement for fir stands of appropriate crown closure for snow interception. The management of pine stands with a large component of fir (>40%) at the same prescription as fir as proposed in the MDWR strategy would result in a significant additional impact to access to the timber land base. Management of pine on a normal rotation is a change from the original strategy (see section 1.5.2).

1.2.2 Eastern Caribou

- the no-harvest and modified harvest areas are based on the CCLUP subunit targets for Eastern Caribou.
- the Eastern Caribou Strategy modified harvest prescription is a 33% removal on an 80 year interval for a strategy rotation of 240 years.
- the 65% deferral area is treated as a no-harvest area.

1.2.3 Itcha Ilgachuz Caribou

- the no-harvest and modified harvest areas are based on the CCLUP subunit targets for Itcha Ilgachuz caribou.
- the Itcha Ilgachuz caribou modified harvest prescription is a 140 year rotation on terrestrial lichen sites and a 240 year rotation on arboreal lichen sites (based on the estimated lichen distribution contained in the Caribou Strategy, 80% of the modified area is managed for terrestrial lichen and 20% is managed for arboreal lichen).
- the 65% deferral area is treated as a no-harvest area.

1.2.4 Fisheries

for the analysis the Fisheries requirements were initially confined to the five watersheds identified in the CCLUP to be managed for hydrologic stability through watershed assessment, restoration work, and monitoring: Horsefly, Cottonwood, Cariboo, Bridge Creek, and Bonaparte (includes Bonaparte and Green Lake).

Equivalent Clearcut Area (ECA) levels of 20, 25 and 30 were evaluated.

analysis results are based on a maximum ECA of 30 for the five watersheds identified in the CCLUP to be managed through riparian protection and controls on the rate of harvest.

the remaining 11 watersheds with fisheries objectives stated in the CCLUP were evaluated following completion of the initial strategy integration. Results are in Appendix VII.

for the analysis hydrologic mature age (100% hydrologic recovery) is the same as normal rotation age; 80 years for pine and deciduous and 120 years for other species.

immediately after harvesting the ECA of a clearcut is 100% and there is no hydrologic recovery.

for the analysis the progress of hydrologic recovery from the time of harvest to hydrologic mature age is assumed to be a straight line relationship. It is recognized that this approach is more conservative than the methodology utilized by watershed assessment processes.

for selectively logged stands, hydrologic recovery equals the average stand volume over time. For example removal of 30% of a stand would result in an ECA of 30 and hydrologic recovery of 70%. For the analysis this approach to calculating ECA was applied to MDWR and Eastern and Itcha Ilgachuz caribou modified areas.

for the analysis 100% hydrologic recovery includes:

- mature pine and deciduous stands (greater than or equal to 80 years old);
- mature other stands (greater than or equal to 120 years old);
- all natural non-forested areas such as wetlands and alpine areas; and,
- all of a watershed within a Park.

for the analysis the assessment of ECA for private land is based on:

- *100% for cultivated or developed land;*
- *0% for all naturally non-forested areas (i.e. wetlands); and,*
- *forested areas harvested on a normal rotation.*

This approach is based on the assumption that there will be no significant net loss of private forest land to other uses over the long term, i.e., the rate of conversion of private forest land to other uses will be equal to the rate at which agriculture or other private land reverts to a forested state.

1.2.5 Visual (Tourism/Recreation) Quality

the visual quality area is comprised of the viewsheds identified in the CCLUP subunit recreation targets as well as the viewsheds surrounding existing tourism operations (provided by Ministry of Small Business, Tourism and Culture) as outlined in the tourism targets.

tourism operations include lodges and resorts but do not include satellite camps or staging areas.

visual concerns around staging areas and satellite camps will be addressed through operational planning and the application of landscape design techniques.

the Government Clarification of Key Components of the Land Use plan document indicates that recreation visual objectives can be met through the application of an average Visual Quality Objective (VQO) of partial retention. For existing tourism operations, the appropriate VQO may be a mix of retention and partial retention. The long term analysis considers any requirement to maintain visual quality will be met if the viewshed is managed to meet an average partial retention VQO.

all areas where a partial cut silviculture system is employed (e.g. dry belt fir, MDWR, Eastern and Itcha Ilgachuz Caribou modified harvest) will meet a partial retention VQO.

in even aged management partial retention VQO provides for a range of disturbance of 5 - 15%. The analysis allows a maximum of 15% of an area to have not reached visual green-up, based on the assumed use of landscape design techniques to ensure the intent of partial retention is met.

for the analysis visual green-up is reached in 20 years.

15% removal on a 20 year interval equals a 133 year strategy rotation.

1.2.6 Biodiversity

The Biodiversity Strategy includes 3 components:

1. landscape level seral stage requirements;
2. stand level wildlife tree patch (WTP) requirements; and,
3. riparian reserves.

1) Landscape level seral stage requirements

biodiversity emphasis is as outlined in the Biodiversity strategy.

early seral stage requirements do not limit access to timber. (This is based on the FPC implementation assumption that current green-up, adjacency, and hydrological practices would result in constraints before early seral became constraining).

an old requirement can be met by establishing set-aside areas.

the old and mature requirements are not species specific except in Natural Disturbance Type 4 (NDT4) (dry belt fir) where pine doesn't meet fir old and mature requirements but the fir component can contribute to the pine old and mature requirements.

the Biodiversity Guidebook has two Old requirements, based on natural disturbance type and biogeoclimatic subzone combinations. For this analysis Old 1 is defined as greater than 251 years and Old 2 greater than 141 years.

the Biodiversity Guidebook has three Mature requirements, defined for this analysis as: Mature 1 greater than 121 years; Mature 2 greater than 101 years and Mature 3 greater than 81 years. Given that the minimum rotation length is 80 years the mature 3 requirement is assumed to be not limiting.

using biodiversity units, old and mature requirements were determined by subunit, as outlined in the Biodiversity Strategy.

2) Stand level Wildlife Tree Patch Requirements

WTP requirements are based on the Biodiversity Guidebook.

over the long term, less than 10% of the area available for harvesting will have been harvested without recommended WTP requirements (see Appendix VI). Note that the 10% value was used because biodiversity guidebook requirements are not specified for the case where all harvesting has been done with WTP requirements.

the equivalent of 50% of each WTP will be available for harvesting over one rotation in the long term. This implies a strategy rotation of 2x normal (160 years for pine and deciduous, 240 years for all other species).

3) Riparian Management

for the analysis, 6% of the gross productive forest is not available for timber harvest as a result of riparian requirements. The 6% estimate is intended to address timber access impacts through application of riparian reserve and management zone requirements to streams, lakes, and wetlands.

1.2.7 Timber

the definition of productive forest land base is as described on page 47 of the "Final CCLUP Integration Report" dated September 21, 1996. The complete text of this definition is provided in Appendix X.

normal rotation is as defined in the Interim Interpretive Guide; 80 years for pine and deciduous and 120 years for all other species.

over the long term, application of non-timber and timber targets will create a forested landscape that is at an age class equilibrium. For the long term analysis, current seral stage forest inventory information was not considered.

within the long term analysis, current species distribution remains constant over time (i.e. no stand conversions).

the crown productive forest land base, as defined by CCLUP, is used for the long term analysis.

the Timber Access Targets for each subunit within the Special Resource Development Zone (SRDZ) is determined by applying the 70/30 commitment in the land use plan (page 8) as defined in the Interim Interpretive Guide.

the CCLUP and Interim Interpretive Guide do not provide a similar method for translating the subunit targets within the Integrated Resource Management Zone (IRMZ) or the Enhanced Resource Development Zone (ERDZ) into timber access targets. There is general agreement that, due to the definition of the IRMZ and ERDZ in the CCLUP, the IRMZ timber access target is higher than the SRDZ and the ERDZ is higher than the IRMZ.

the integration process required a level of timber access in the IRMZ and ERDZ against which to test the long term analysis. The STTAA proposed timber access levels based on the same methodology described in the Interim Interpretive Guide for the SRDZ.

Based on that application of the SRDZ methodology the level of timber access tested was as follows: (see Appendix IV)

Special Resource Development Zone 70%

Integrated Resource Development Zone 84%

Enhanced Resource Development Zone 88%

The report entitled "Technical Report of the Integration Process" will provide further detailed information on the test.

1.3 Strategy Overlaps and Net Impacts

The calculation of an EEA for each strategy provides an estimate of the long term impact of that strategy on the timber harvesting landbase. In order to assess the cumulative impact of all of the non-timber strategies the contribution of one strategy to meeting the objectives of a second needs to be measured. For example, a riparian reserve zone will, to some extent, meet landscape level old and mature forest requirements.

On a subunit basis, a geographic information systems (GIS) analysis was completed to determine areas where two or more strategies overlapped. Where this area overlap occurred, assumptions were made on the degree to which the EEA for a strategy needed to be reduced to reflect the contribution of the overlapping strategy. These

assumptions were based to a large extent on the determined rotation age of each strategy. In general, where strategy areas overlap, a strategy with a longer rotation age will meet the requirements of a strategy that has a shorter rotation age.

1.4 Baseline Analysis Results

IAMC viewed that achieving the access levels of 84% in the IRMZ and 88% in the ERDZ would result in an unacceptable level of risk to the non-timber targets and would not meet the environmental sustainability objective of the CCLUP.

The analysis of the pre-integration strategies resulted in timber access of:

SRDZ: 68%

IRMZ: 77%

ERDZ: 79%

The IAMC reviewed these results and decided they did not meet the CCLUP commitment to economic security and community stability. The Implementation Committee was then directed to examine the implications of adjusting all strategies to meet the following zonal targets:

SRDZ: 70%

IRMZ: 81%

ERDZ: 83%

1.5 Strategy Adjustments

This section outlines the adjustments made to the strategies. The implications of these adjustments are described in section 1.6.

1.5.1 Timber Access Targets

SRDZ target remained at 70%

IRMZ timber target is 81%. This represents a 3 percentage point reduction from the access level tested.

ERDZ timber target is 83%. This represents a 5 percentage point reduction from the access level tested.

A result of the long term analysis is revised timber access and no-harvest targets by subunit. The subunit targets have been adjusted from those contained in the CCLUP due to the more detailed analysis and accounting for overlaps. The revised subunit targets are contained in Appendix XII.

1.5.2 Mule Deer Winter Range (MDWR)

pine in mixed stands, where the fir component is 40% or greater, is to be removed over an 80 year period rather than over the extended rotation for Douglas fir proposed in the strategy. In practice it is anticipated that pine in mixed stands will be selectively harvested but that the rates of harvest and entry periods will be adjusted so that the 80 year rotation is met. Initial stand entries will favour pine over fir and should protect fir from harvest, physical damage and forest health hazards. Douglas fir silviculture concerns will have to be addressed. (This was an initial adjustment that was part of the baseline.)

low crown closure areas will be managed through normal Interior Douglas Fir (IDF) harvesting prescriptions with some allowance for mule deer requirements including terrain considerations, a more clumped stem distribution, and a more uneven age distribution.

for the analysis the assumption was made that the impact of applying the MDWR prescription would produce a timber availability ratio of 1.5:1 between normal Douglas fir management and MDWR management. This ratio means that over the long term, the portions of a MDWR managed for high and moderate Crown closure should produce 66% of the timber produced on comparable areas managed without mule deer constraints. The prescription as presented in the MDWR strategy, allowing the removal of the incremental volume (i.e., volume produced after initial stand entry), remains unchanged.

1.5.3 Eastern Caribou

The CCLUP indicates that, for no-harvest areas, "It is believed that, over time, the development of alternative management regimes will show that harvest is possible in some of these areas while still protecting other resource values." (page 149, CCLUP). In order to allow for this likelihood and to address timber access requirements in the SRDZ and other zones, the analysis assumptions were modified to allow for access of up to 10% of the caribou no-harvest area.

Note that this represents the adjustment modeled in the analysis and the actual reduction in impact to timber could result from a combination of the following:

within the proposed no-harvest area, and in addition to the modified harvest access, the salvage of old stands which have been lost to severe natural disturbance.

development of a revised harvest approach within the modified harvest area which reduces the impact on timber availability. This could, for example, result from a reduction in rotation age as a result of the current or future research.

modifications to the deferral line boundary resulting from the current or future caribou research. For Eastern Caribou, this may include areas with steep terrain which are not used by caribou but could be available for harvest using appropriate harvesting methods.

development of a satisfactory modified harvest approach which could be applied within the no-harvest area. This approach would have to maintain caribou habitat values and address access concerns.

1.5.4 Itcha Ilgachuz Caribou

Similar to Eastern Caribou, the analysis assumptions were modified to allow for access of up to 10% of the caribou no-harvest area, this additional access to timber could result from a combination of the following:

within the proposed no-harvest area, and in addition to the modified harvest access, salvage of old stands which have been lost to severe natural disturbance.

development of a revised harvest approach within the modified harvest area which reduces the impact on timber availability. This could, for example, result from a reduction in rotation age as a result of the current or future research.

modifications to the deferral line boundary resulting from current or future caribou research.

development of a satisfactory modified harvest approach which could be applied within the no-harvest area. This approach would have to maintain caribou habitat values and address access concerns.

1.5.5 Fisheries

no changes to the baseline fisheries assumptions were made; Appendix VII presents the calculated ECA values (maximum of 30) for the five watersheds with hydrologic stability targets and the calculated ECA values for the additional 11 watersheds with fisheries targets. ECA is used as an indicator of potential risk to fisheries and not a target in fisheries impact management. Section 6.4 contains further information.

1.5.6 Visual (Tourism/Recreation) Quality

the visual impact was adjusted to achieve a 10% reduction in impact in the IRMZ and ERDZ. In practice this could be achieved through a reduction in the total area managed with visual constraints or through landscape design techniques that would allow for a higher level of timber access.

1.5.7 Biodiversity

ten percent of the total old requirement within Old Growth Management Areas (OGMAs) and outside of caribou, mule deer and riparian requirements, will become available for harvest over the course of a rotation. This availability will occur through salvage of volume resulting from severe natural disturbance. It may also allow for innovative approaches to meeting old requirements such as selective harvest and attribute management.

over the course of a rotation, if natural disturbance results in the need to salvage greater than 10% of the OGMA stands, then this timber access will be exchanged for older mature stands which will achieve the old stand characteristics much more quickly than would be the case if regeneration of the disturbed stands was relied upon. Once OGMAs are in place for a zone, the 10% would be available and be balanced over each 20 year period. It is very likely that natural disturbance will often exceed the 10% level.

within the IRMZ in areas of lower biodiversity emphasis, the residual old growth requirement is assumed to be reduced by 50%. The residual old requirement is that portion of the total old requirement recommended in the biodiversity guidebook that is not addressed by riparian, caribou or MDWR areas (see provincial advice on biodiversity implementation in low emphasis landscape units).

the above represents a 20% reduction in old requirements across the IRMZ.

within the ERDZ in areas of lower biodiversity emphasis, the residual old growth requirement is assumed to be reduced by 70%. The residual old requirement is that portion of the total old requirement recommended in the biodiversity guidebook that is not addressed by riparian, caribou or MDWR areas (see provincial policy direction on biodiversity implementation in low emphasis landscape units).

the above represents a 34% reduction in old requirements across the ERDZ.

the reduced old requirement in the IRMZ and ERDZ applies to the first rotation only.

1.6 Implications

This section outlines the implications by strategy of the adjustments stated in Section 1.5.

The implementation committee believes that the adjustments described deliver the objectives of each strategy, are consistent with the strategy-specific direction contained in the CCLUP, and meet the overall objective of environmental sustainability, economic security, and community stability.

1.6.1 Timber

The implications of the adjustments to timber access targets and non-timber strategies are:

in the SRDZ, the timber access target of 70% is achieved

in the IRMZ and the ERDZ the reductions in timber access levels increase the risk of not achieving the CCLUP objectives of community stability and economic security.

1.6.2 Mule Deer Winter Range (MDWR)

The implications of the adjustment to the management prescription in low crown closure habitats are:

low crown closure habitats are not in short supply in managed forests, therefore no substantive impact on mule deer would be anticipated as a result of the change to low crown closure management.

- it will be necessary to identify areas to be managed for low crown closure over the long term. In the short term, low crown closure habitats exceed objectives on most winter ranges.
- capabilities to achieve moderate and high crown closures will also have to be assessed in conjunction with the development of a wider attribute management framework.
- management plans for MDWRs will become a higher priority and will have to incorporate a transition plan to meet short and long term requirements.

The change in pine harvesting has the following implications:

- the harvest of pine will have to be carefully managed to ensure that the fir components of the stand are protected, particularly during the transition period. If this change is not carefully managed and results in a more rapid harvest of fir in the short and medium term, it could be detrimental to mule deer by reducing winter range capability.
- no explicit provision was made for the conversion of pine stands to fir in the long term analysis. This issue will require further study as conversion of some stands is likely.

1.6.3 Eastern Caribou

The adjustment to Eastern Caribou Management will require continued investment in research, inventory, access management, and development of innovative harvesting approaches.

(see section 6, Additional Implementation Requirements)

1.6.4 Itcha Ilgachuz Caribou

The adjustment to Itcha Ilgachuz Caribou Management will require continued investment in research, inventory, access management, and development of innovative harvesting approaches. (see section 6, Additional Implementation Requirements)

1.6.5 Fisheries

- there were no adjustments made to the fisheries strategy.

1.6.6 Visual (Tourism/Recreation) Quality

The implications of the 10% reduction to the visual quality management area are:

- it will be more difficult to manage public expectations with respect to visual management in affected areas; and
- will require a commitment to the development of alternative visual management approaches.

1.6.7 Biodiversity

early analysis results indicated that outside of caribou, mule deer and riparian areas, the only approach which would allow timber access requirements to be met was to treat the required old growth areas as set asides. Managing the forest land base to meet old growth requirements through extended rotations was shown to be impractical. It would require a greatly extended rotation on two or three times the target old growth area. However, managing old growth as set asides would not allow for the effect of natural disturbance and subsequent recruitment of old growth stands.

The implications of the old seral adjustment described in Section 1.5.7 are:

overall old growth requirements will be met to a greater extent than would be the case if the OGMAs were treated completely as set asides. If this was the case any OGMA which was subject to natural disturbance would not achieve old growth requirements for 100 or more years. The old adjustment includes provisions to allow the replacement of some of the OGMAs lost to natural disturbance (beyond 10% over a rotation) with other old or mature stands. This allows some level of old recruitment.

the risks to biodiversity will be increased over what would be the case if old growth targets were fully met at all times through a large scale recruitment program. The analysis indicated this would have very high impacts on timber availability, however.

natural disturbance levels can be expected to be much higher than 10% over a rotation, therefore recruitment of advanced mature stands will be an important component of management for old growth.

The implications of meeting some old requirements on MDWRs are:

the stands managed for mule deer may not have all of the attributes required for old representation; therefore, particularly within IDF, the old forest requirements under the Biodiversity Guidebook may not be fully met.

the approach will require further research on both mule deer habitat management and old growth attribute management. The research should focus on an approach which addresses both requirements.

The reduction in the old requirement in the low emphasis biodiversity units is consistent with provincial advice on biodiversity implementation. The implications of not fully achieving old requirements in low emphasis subunits within the first rotation within the ERDZ and IRMZ is that the risk to biodiversity in these biodiversity units would be increased significantly.

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2. Subunit Test

The Integration Report Workplan envisioned the subunit test as a map-level test of the analysis assumptions over sample subunit areas. Through the integration process, it became clear that a comprehensive test of the assumptions used in the long term analysis wasn't possible using a strictly map-based process, the methodology used in the long term analysis was too complex. This subunit test is a test of the long term assumptions using smaller units of land as input areas. Originally, this test was to be applied to a sample of subunits in each zone but during the development of the long term analysis it became apparent that a more complete test (i.e. all subunits) was required. This change was due to the complexity of the long term analysis and the high degree of variability between subunits based on combinations of land use issues.

Similar to the long term analysis, GIS technology assisted with this map-based exercise by delineating different land uses (visual, caribou, etc.) at different land administration levels (zone, subunit, biodiversity unit, and Natural Disturbance Types/Biogeoclimatic Zones (NDT/BEC) combinations.

2.1 Methodology

The assumptions made in the long term analysis regarding the strategy areas and prescriptions, the overlapping of strategies and land use issues, the adjustments to strategies, the impact of the individual and overlapped strategies, and the time horizon (several rotations) of the long term analysis are maintained within the subunit test. While utilizing the same analysis methods, the subunit test differs from the long term analysis in two ways:

- the long-term analysis assumes a reduction to the gross productive forested landbase of 6%, applied uniformly to all subunits, to represent the impact of riparian reserve and management zones required by the Forest Practices Code of British Columbia (FPC). In an attempt to improve the estimation of the impact of this important issue, the subunit test calculated a percentage for riparian reserve and management areas specific to each subunit. This was accomplished by buffering all of the lakes, wetlands, and creeks identified on the MOF forest cover map base with a 25 meter reserve.
- a fundamental assumption of the long term analysis is that various land use issues overlap each other, and that this overlap needs to be accounted for in the impact/target calculations. The long term model used the CCLUP subunit as the basic analysis land unit, and the subunit test uses the biodiversity unit/biogeoclimatic (as per biodiversity guidebook) combination as the basic analysis unit. These land units are much smaller than the CCLUP subunits, and therefore the resolution of the overlap of the issues and the impact/target calculations is much finer. This is especially important for the targets and impacts of the biodiversity strategy.

2.2 Results

The results of the subunit test and a comparison with the results from the long term analysis are presented in the following table.

Table 1:

Comparison of long term analysis to subunit test:

Equivalent Area Access over one Rotation **% of productive forest land base**			
Zone	long term	Subunit test	**target**
SRDZ	70.2	68.2	70
IRMZ	83	83.7	81
ERDZ	84.3	83	83

The use of the smaller land units in the subunit test provides a finer level of analysis, and in the case of biodiversity requirements, better reflects the impact at the NDT/BEC level.

The subunit test results do not exactly replicate the zonal targets provided by the IAMC. The IRMZ came out slightly above the target and the SRDZ is slightly below. Given the limitations of a strategic level analysis, further refinement of these results to achieve the targets is not appropriate at this level. Refinement of the zonal targets should be undertaken through sub-regional planning and target monitoring processes.

The similarity in the results from the two approaches to the long term analysis illustrates two key points:

- the long term analysis assumptions regarding the magnitude of overlap between riparian areas and biodiversity old and mature requirements was confirmed for each subunit.
- the subunit test also confirmed the assumption within the long term model regarding the relatively uniform distribution of riparian areas throughout the landbase (at the NDT/BDU/BEC level)

The results of the long term analysis and the subunit test are based on the assumptions detailed in this report. Other processes may result in changes to some of the assumptions over the next two to five years. Any changes to the assumptions will require analysis to show that all of the CCLUP targets are achieved.

Potential sources of adjustments include:

location, size, and biodiversity emphasis of designated Landscape Units. Any significant changes from the biodiversity unit boundaries or the distribution of emphasis used in this analysis would effect the conclusions reached through the integration process.

caribou research and the potential adjustments to the location and size of the modified harvest areas.

completion of more detailed assessments that may effect the analysis assumptions regarding access to timber. Stream, wetland, and lake classification processes will provide a more accurate measure of the impact and location of riparian reserve and management zones (see section 6.5, Additional Implementation Requirements).

IAMC will ensure the achievement of the CCLUP targets through monitoring of subregional planning, operational planning, establishment of landscape unit objectives, and other land base management processes

Cariboo Chilcotin Land Use Plan Integration Report

3. Short term analysis

The purpose of the short term analysis is to:

- assess the degree of compatibility between the long term integrated strategies and the timber sources identified in the STTAA.
- resolve any resource management issues identified.

Specific deliverables from this analysis include:

an identification of the magnitude and extent of resource management issues;

an examination of the flexibility available within the integrated strategies and the 20 year STTA supply to address identified issues; and,

identification of the need for transition strategies, consistent with the FPC and the integrated strategies, required to resolve short term resource management issues.

The result of the short term analysis is based on information provided through the completion of three separate tasks:

1. An overview level assessment of the consistency of the STTAA with FPC requirements regarding adjacency and green-up;
2. A cursory map-based assessment of selected biodiversity units combined with the database assessment of all biodiversity units completed as part of the long term analysis to determine if there was sufficient old and mature areas available in addition to the STTAA requirements to meet OGMA requirements; and,
3. An analysis comparing the area requirements of the STTAA to the area available consistent with the integrated strategies.

A summary of the methodology used, results, and implications of each task is provided in the following sections.

3.1 Assessment of the STTAA against selected FPC requirements:

The purpose of this exercise was to ensure that the STTAA was consistent with the following FPC requirements:

adjacency, block size, and leave strips;

green-up, appropriate separation of blocks over time; and,

riparian zones, adequate allowance for riparian management and reserve zones.

3.1.1 Results

The analysis did not identify any examples of inconsistency with the FPC.

Assessing compliance with riparian requirements proved inconclusive due to the scale of the analysis. This issue is addressed in section 3.3. FPC green-up and adjacency requirements can only be fully addressed at the operational plan level. A summary of the process used and results is in Appendix XI.

3.2 Spatial check of OGMA requirements

The report entitled Final Integration Report (F.I.R.), dated September 1996, examined the capability of the forest land base to meet both the STTAA requirements and the biodiversity seral stage requirements. The results of this analysis indicated that at a biodiversity unit level, there is sufficient area of old and mature remaining following the application of the STTAA requirements to meet draft emphasis requirements in all but a few of the 157 biodiversity units.

While the task of identifying the locations of the OGMAs is outside the scope of this strategic modeling process, a spatial test of a sample of biodiversity units was undertaken to determine if the OGMA requirements could be met in the area that the F.I.R. indicated was available.

The results of this check tended to confirm the conclusions reached in the F.I.R. Old and mature requirements, in all but a few biodiversity units, are not a constraint to timber access over the short term. A majority of the biodiversity units appear to have a significant surplus of old and mature stands. However, in addition to the units that don't meet seral requirements, there are others that only marginally meet them. A particular concern is the availability of areas of sufficient size for the establishment of OGMAs where the indication is that old requirements are only marginally met. These units should be considered when the priorities for establishing OGMAs are set.

3.3 Comparison of STTAA to Long term results

In order to assess the degree of compatibility between the STTAA and the integrated long term strategies an area analysis was completed. This analysis examined the area of blocks contained in the STTAA with what the long term analysis indicated was available within a 20 year period. The analysis included all of the strategies identified in the long term analysis with the exception of biodiversity seral stage requirements, WTP requirements, and fisheries impacts.

Biodiversity seral stage requirements were separately assessed and the results are described in section 3.2. Based on the results of that assessment as well as the information contained in the F.I.R., it was determined that, over the 20 year period, old and mature requirements were not a significant constraint to the STTAA requirements.

The long term analysis assumed that gross (no accounting for overlaps) WTP requirements would vary between 1% and 7%. This is based on the assumption that, over the long term, less than 10% of blocks will be harvested without WTP requirements (see Appendix V). Over the short term, it is expected that the gross

impact of WTP will be significantly higher than indicated in the long term analysis. In addition, the potential to harvest WTP areas on a double rotation basis, as assumed in the long term analysis is not applicable over the short term. Therefore, in the short term, WTP areas can contribute to meeting Old requirements. As the short term Old and mature requirements have been accounted for, it is assumed that the application of WTP requirements in the short term will not create additional constraints to timber availability.

The short term analysis did not constrain timber based on fisheries requirements. The long term analysis assumptions indicated that fisheries requirements could result in the need to constrain timber availability. Methods to mitigate risk to fisheries, including constraints on achievement of other targets, should be based on the results of watershed assessments.

Other reports, including the recently released 'An Inventory of Watershed Conditions Affecting Risks to Fish Habitat in the Cottonwood, Cariboo and Horsefly Watersheds', include recommendations on mitigative measures. Section 4.4 provides further information on the application of these recommendations. Long term forest development planning initiatives will be an important tool to ensure that fisheries requirements are addressed.

The potential exists that biodiversity requirements and fisheries values may further constrain timber access in specific biodiversity units and watershed sub-basins in the short term.

3.3.1 Results

The results of the short term test are in Table 2. The total of the column titled STTAA non-compatible area represents the area of blocks contained in the STTAA that are inconsistent with the long term integrated strategies. A significant portion of this area is due to the removal of blocks located in the Eastern Caribou and Itcha Ilgachuz Caribou no-harvest areas. These blocks were located prior to the preliminary identification of the no-harvest areas contained in Option A of the Caribou Strategy.

The column titled residual long term available indicates the area available under the long term analysis not covered by STTAA blocks. The areas in this column provide an indication by zone of the area available to accommodate the STTAA non-compatible area. The ability to shift the STTAA non-compatible area to the residual long term available area will be constrained to some extent by current seral condition (availability of mature stands) and FPC constraints (adjacency requirements).

Table 2:

Short Term Test:

Area Comparison of STTAA to Long Term Analysis

Zone	Total Area Productive Forest Land Base (hectares)	STTAA Area (hectares)	STTAA/Long Term Overlap (hectares)	STTAA non-compatible Area (hectares)	Residual Long Term Available (hectares)
SRDZ	1,395,306	214,257	179,099	35,158	32,633
IRMZ	1,194,487	127,178	124,696	2,482	118,143
ERDZ	3,042,998	539,168	514,207	24,946	109,685
TOTAL	5,632,791	880,603	816,745	63,858	260,461

The rows of the table are not intended to sum. The column descriptions are found below.

Description of Columns:

Total Area is the productive forest land base by zone

STTAA Area represents the total area of blocks contained in the Short Term Timber Availability Analysis

STTAA/Long Term Overlap is the portion of the STTAA blocks that are consistent with the integrated strategies

STTAA Non-compatible Area is the portion of the STTAA blocks that are not consistent with the integrated strategies

Residual Long Term Available is the area available under the long term analysis not covered by STTAA blocks. The areas in this column provide an indication by zone of the area available to accommodate the STTAA non-compatible area.

The results of the short term test indicate that the integrated strategies provide a level of access consistent with the timber access targets contained in the CCLUP. In assessing the significance of these results, it is important to realize that the STTAA was prepared without the benefit of the completed non-timber strategies.

As outlined in Section 3, the results in the above table do not take into account any possible impacts on timber availability resulting from biodiversity fisheries requirements. Biodiversity requirements and fisheries requirements may further constrain timber access in specific biodiversity units and watershed sub-basins in the short term, however, they are not expected to have a significant affect at the broader level of this analysis.

The Table 2 column entitled Residual Long Term Available indicates the area, by zone, that is potentially available. This area has not been examined to determine the affect of non-CCLUP constraints such as merchantability, adjacency and operability. The potential exists that availability within this area may exceed what was proposed by the STTAA by utilizing the flexibility provided under the FPC and related guidebooks. This will be resolved through subregional planning, establishment of landscape unit objectives and through operational planning.

The degree of compatibility between the STTAA and the long term analysis provides a level of certainty that the integrated strategies can deliver the timber access targets at the operational level and meet the overall CCLUP objectives of environmental sustainability, economic security, and community stability over the short term.

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4. Management Direction

This section describes the key components of the integrated strategies and how they are intended to be applied in order to achieve an integrated CCLUP over the short and long term. Application of the strategies as described in the following sections will be the basis for meeting the zonal timber access targets at the operational level.

The strategy requirements detailed in the following sections are divided into two parts. The long term requirements form the basis for strategy application. In cases where refinements to the long term requirements were required to meet short term objectives, these are described under short term analysis requirements. The long and short term requirements are intended to be applied as a package, with the short term requirements providing a transition from the current seral condition of the land base to the managed forest in the long term analysis.

These strategic level requirements, if applied at the SRP and operational levels, will provide a level of certainty that the CCLUP zonal targets are met.

Other non-timber requirements not addressed by this analysis may be addressed through modified harvest measures which do not impact timber availability over a rotation or through overlaps with other non-timber requirements.

4.1 Mule Deer Winter Ranges

Long term integration analysis requirements:

- the Handbook for Timber and Mule Deer Management Co-ordination on Winter Ranges in the Cariboo Forest Region (Land Management Handbook No. 13) is the basic planning standard for landscape and stand level forest resource management.
- the predicted impact of applying the MDWR prescription is based on a timber availability ratio of 1.5:1 between normal Douglas fir management and MDWR management. This ratio means that over the long term, the portions of a MDWR managed for high and moderate Crown closure should produce 66% of the timber produced on comparable areas managed without mule deer constraints. The prescription as presented in the MDWR strategy, the direction on the removal of the incremental volume (i.e., volume produced after initial stand entry), remains unchanged.
- the pine component in mixed stands at or in excess of 40% fir content will be selectively harvested based on an 80 year rotation on an even flow basis. Similarly, spruce is to be managed on a 120 year rotation.
- there are no MDWR constraints on pine harvest in pure pine or in mixed stands of less than 40% fir content.

- stands identified for low crown closure management within MDWRs to be managed according to normal silviculture fir management with allowance for mule deer requirements including terrain considerations and a more clumped stem distribution. The identification of these low crown closure stands should be done through the MDWR management planning process.
- a map of the MDWRs is in Appendix I, Map 1.

Short term integration analysis requirements:

- the primary objective is to achieve the crown closure objectives on MDWR as quickly as possible. In practice, it is understood that MDWR management will shift to a wider attribute-based management over time (see section 6.1).
- the overall level of timber access (but not the location in most cases) proposed under the STTAA to be available within the following types in order of priority:
- MDWR which have achieved crown closure objectives and show timber availability under the MDWR Strategy.
- non-fir stands and areas to be managed for low crown closure. It is anticipated that these stands will support much of the short term harvest on MDWRs.
- age Class 5 Douglas fir stands where commercial thinning would provide benefits to MDWR values.
- high or moderate crown closure where selective logging can be done without impacting the crown closure class. The application of this approach includes winter ranges which have not yet achieved overall crown closure objectives.

Note that this is a zonal access level only and access on individual winter ranges will vary substantially from that proposed under the STTAA.

Additional Information

- the strategic analysis indicates that application of these requirements at the subregional plan and FDP levels will help to ensure that CCLUP zonal requirements are met.
- it is important that IAMC monitor the MDWR management planning process in order to ensure that the targets are met.
- if the timber access levels cannot be achieved within the priority areas identified above the issue will be referred to IAMC, who in consultation with RRB, will provide further direction.

4.2 Eastern Caribou

Long term integration analysis requirements:

timber harvest to be within the modified harvest area identified as Option “A” on Map 2, Appendix I. It is also understood that the location of the modified harvest will likely shift as a result of the current research project and as a result of further work to be completed by June 30 1998 (see Section 6.2).

timber harvest to be based on the caribou modified harvest prescription contained within the 1996 Caribou Strategy Report "one-quarter of the modified harvest areas could be harvested within the first 20 year period (calculated as follows: 20 years divided by 240 year rotation divided by 33% volume removal). A maximum of 33% timber volume should be removed from this area. At this rate, 8% of the total volume would be taken in a 20 year period with a 240 year total rotation (assuming 100% of volume available in 240 years);" This prescription may change based on the results of the Caribou research.

Short term integration analysis requirements:

the prescription is applied on an even flow basis with the proviso that 20 years access (1996 to 2015) would be available over the 16 year period from years 2000 to 2015. The result is that 25% of the modified harvest area is to be accessed over the first 20 year period (see Section 6.2).

the 10% access in the no-harvest (65%) area is not likely to be available in the short term (20 year) period to allow the ongoing research to address this issue.

Additional information:

two options (A & B) for the location of caribou modified harvest areas were proposed under the Caribou Strategy. Option A was selected for analysis because it best met the CCLUP subunit modified harvest targets.

4.3 Itcha Ilgachuz Caribou

Long term integration analysis requirements:

timber harvest to be within the modified harvest area identified as Option "A" on Map 3, Appendix I. It is also understood that the location of the modified harvest may shift as a result of the current research project and as a result of further work to be completed by June 30 1998 (see Section 6.3).

timber harvest to be based on the caribou modified harvest prescription presented in the 1996 Caribou Strategy Report, "for an estimated 80% of the modified harvest area (on terrestrial lichen sites), two-sevenths of the modified harvest areas will be harvested within the first 20 year period (calculated as follows: 20 years divided by 140 year rotation divided by 50% volume removal). A maximum of 50% timber volume should be removed from the harvested areas. At this rate, 14% of the total volume would be taken in a 20 year period with a 140 year rotation (assuming 100% of the volume available in 140 years);"

"for an estimated 20% of the modified harvest area (on arboreal lichen sites), one-quarter of the modified harvest areas will be harvested within the first 20 year period (calculated as follows: 20 years divided by 240 year rotation divided by 33% volume removal). A maximum of 33% timber volume should be removed from the harvested areas. At this rate, 8% of the total volume would be taken in a 20 year period with a 240 year rotation (assuming 100% of volume available in 240 years):"

These prescriptions may change based on the results of the Caribou research.

further information on the management technique is provided in the Caribou Strategy report.

Short term integration analysis requirements:

the prescription is applied on an even flow basis with the proviso that 20 years' access would be available over the 16 year period from years 2000 to 2015. The result is that approximately 27% of the modified harvest area is to be accessed over 20 years (see Section 6.3).

the 10% access in the no-harvest (65% area) is not likely to be available in the short term (20 year) period to allow the ongoing research to address this issue.

Additional Information

Extremely careful management of access and application of appropriate modified harvest prescriptions designed to protect caribou winter range values will be required. The logging should be monitored and form part of the research program.

two options (A & B) for the location of caribou modified harvest areas were proposed under the Caribou Strategy. Option A was selected for analysis because it best met the CCLUP subunit modified harvest targets.

4.4 Fisheries

Long term integration analysis requirements:

ECA should be utilized as a coarse filter to assist in the identification of watersheds with risks to fisheries and which therefore require further assessment, restoration, and mitigation.

risks to fisheries targets are to be mitigated through long term forest development planning and FPC requirements including riparian management, road construction practices, controls on the rate of harvest, and watershed assessment procedures. Other mitigative processes (including constraints to achieving other targets) may be required based on the results of watershed assessments.

Other reports, including the report entitled "An Inventory of Watershed Conditions Affecting Risks to Fish Habitat in the Cottonwood, Cariboo and Horsefly Watersheds" provide further information on fisheries risk due to forestry, mining, and agriculture practices and mitigation options.

the map of the fisheries watersheds is attached as Map 5, Appendix I (see also Section 6.4).

4.5 Visual Quality

Long term integration analysis requirements:

the visual quality area is comprised of the viewsheds identified in the CCLUP subunit recreation targets as well as the viewsheds surrounding existing tourism operations (provided by Ministry of Small Business, Tourism and Culture) as outlined in the tourism targets.

tourism operations include lodges and resorts but do not include satellite camps or staging areas.

the CCLUP made allowances for the management of 95 quality lakes for wilderness fisheries when no-harvest and modified targets were established. Specific allowances were not made in the long term analysis for the 200 meter lakeshore management areas on these lakes however, due to the relatively small size and number of these lakes, the impact on timber access is minimal. It must be clearly understood that these allowances would be exceeded if substantially more lakes were managed with long term restrictions on timber access. Achievement of the timber access targets would be jeopardized if this were the case. As for other visual requirements, access to timber impacts above those analyzed in the long term analysis, can be addressed through overlaps with other non-timber strategies and through landscape design techniques. Additional lakes may be classified according to the Lakes Classification Guidebook where no additional impact on timber availability is created. This includes modified harvest prescriptions which allow access to all of the adjacent forest (outside of the riparian reserve zone) within a rotation.

the impact of managing for visual quality will be reduced by 10% in the IRMZ and ERDZ from the level described in the baseline of the long term analysis. One option for delivering this adjustment is to reduce the area managed for visual quality by 10%.

the visual quality areas are shown on Map 6, Appendix I.

harvest of other areas identified locally as visually sensitive should attempt to overlap visual management with other values (e.g. WTPs, Riparian, OGMAs, MDWRs, Caribou).

4.6 Landscape Level Biodiversity

Long term integration analysis requirements:

with the modification noted below, seral stage objectives are to be based on the draft landscape units and draft biodiversity emphasis as applied in the Biodiversity Conservation Strategy.

early seral requirements are not to be applied, this is consistent with FPC implementation advice from the Deputy Ministers of MOF and MELP. It is understood that other FPC requirements such as cutblock adjacency, watershed assessments, visual quality objectives, wildlife habitat, riparian management, and green-up should normally address these requirements.

within draft landscape units, NDT BEC units smaller than 1000 ha. for valley bottom units and smaller than 5000 ha. for non-valley bottom units, are too small to adequately represent the full range of seral stages that occur across a landscape. In these cases, the small area may be included as part of the overall

landscape unit when calculating the seral stage requirements. The seral stage requirement can then be met anywhere within the draft landscape unit.

within the IRMZ, in areas of lower biodiversity emphasis, the residual old growth requirement is to be reduced by 50%. The residual old requirement is that portion of the total old requirement recommended in the biodiversity guidebook that is not addressed by riparian, caribou or MDWR areas (see provincial advice on biodiversity implementation in low emphasis landscape units).

the above represents a 20% reduction in old requirements across the IRMZ.

within the ERDZ, in areas of lower biodiversity emphasis, the residual old growth requirement is to be reduced by 70%. The residual old requirement is that portion of the total old requirement recommended in the biodiversity guidebook that is not addressed by riparian, caribou or MDWR areas (see provincial advice on biodiversity implementation in low emphasis landscape units).

the above represents a 34% reduction in old requirements across the ERDZ.

once an area is selectively harvested in the areas of Eastern Caribou and Itcha-Ilgachuz Caribou that area no longer contributes to old seral but does contribute to mature seral requirements.

25% of the fir-leading stands within MDWR are to meet old seral stage requirements following the first entry (see Section 6.1). The selection of these stands is to be based on stand attributes and should be addressed through the MDWR plans.

25% of the fir-leading stands within MDWR are to meet mature seral stage requirements following the first entry. The balance of selectively harvested stands may meet mature requirements if they achieve the Biodiversity Guidebook requirements for this category.

priority areas for the establishment of OGMAs are within constrained areas including caribou, mule deer, and riparian areas. Where OGMAs are needed outside these areas to meet old seral representation requirements, they are to be established in stands which are most likely to achieve old growth characteristics in the shortest possible time..

over a rotation it is assumed that 10% of the OGMA area outside of constrained areas will be subject to severe natural disturbance and the remaining timber within these areas will be salvaged. The designation of the areas for salvage should be by the DM and DEO since not all natural disturbance will compromise the old seral values.

Short term integration analysis requirements

areas designated to meet WTP requirements fully contribute to meeting old and mature requirements where they are larger than 2 hectares.

the inventory correction factor contained in the Biodiversity Strategy is to be applied as per Appendix 6 of the Biodiversity Strategy.

Additional Information

since the long term analysis was completed, the District Managers have submitted a Regional Landscape Unit Planning Strategy to the Chief Forester. The strategy includes minor modifications to the biodiversity unit boundaries to address District planning issues. The changes are not expected to affect the results of the long term analysis. As a result, the requirements in this management direction section should be applied to the Regional Landscape Unit Planning Strategy map, a copy of which is attached as Map 7, Appendix I.

OGMAs should be located to maximize overlaps with other resource requirements (e.g. visual areas, MDWR).

OGMAs should be established to provide an interim solution to achievement of old requirements until Landscape Unit Objectives are in place. Priority should be given to draft landscape units that do not, or only marginally, meet old requirements.

regarding the reduction in old seral requirements in the low emphasis areas (IRMZ and ERDZ) the understanding is that the integration process has provided a strategic level component of the "assessment of harvesting opportunities and conservation values" referred to in the August 25, 1997 memorandum regarding "Achieving Acceptable Biodiversity Timber Impacts". The needed recruitment strategy should, however, be in place as specified in the advice. The drawdown in any landscape unit should not exceed the zonal allowance.

the subunit test refined the riparian allowances based on a buffering of all streams, lakes, and wetlands on forest cover maps. The expectation is that the riparian allowances will change as stream classification information is completed and the result will be reflected in some units by an adjustment to the residual old requirements.

4.7 Stand Level Biodiversity

Long term integration analysis requirements

over the long term WTP requirements are to be based on the percentage area identified in Table 20(a) of the Biodiversity Guidebook. The use of Table 20 (a) assumes that over the long term, landscape units will be designated and objectives completed over the entire region. The analysis did not include an allowance for WTP impacts in Mule Deer or Caribou modified harvest, fir selective harvest outside of MDWRs or other harvest prescriptions where the remaining stand is greater than 50% of the pre-harvest volume. The selective systems should incorporate small patches which allow some snags to be retained and allow WTP requirements to be addressed. This measure is intended to address Workers' Compensation Board requirements.

Short term integration analysis requirements

WTP areas are only now being established and will be based on Table 20(b) of the guidebook until Landscape Units and objectives are in place. They will not be available for timber access during this establishment period.

the establishment period will likely be more than 20 years and up to a rotation in some cases.

selective harvesting systems should utilize prescriptions which assist in providing WTP attributes. For example, a patch selective system may be more successful than an individual tree selection system.

4.8 Timber Access

Long term integration analysis requirements

The following access to timber targets, expressed as percentage equivalents of the productive forest land base, will be met over one rotation:
SRDZ: 70% timber land base equivalent access, 30% no-harvest equivalent
IRMZ: 81% timber land base equivalent access, 19% no-harvest equivalent
ERDZ: 83% timber land base equivalent access, 17% no-harvest equivalent

The above access and no-harvest targets are subject to the following:

- the no-harvest equivalent includes all the impacts associated with application of the results of this report and those non-timber related constraints contained in the FPC.
- it is anticipated that application of the non-timber requirements will allow access to timber which is approximately equal on an annual basis and meets the zonal targets over a rotation.

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5. Direction to Sub-regional Planning

This section provides direction and clarification to sub-regional planning processes in three areas:

- roles and responsibilities of the RRB, IAMC and sub-regional planning tables in the SRP process;
- application of the management direction contained in Section 4; and,
- delivery of targets at the SRP level that were not addressed in the integration process.

5.1 SRP Roles and Responsibilities

The primary focus of SRP processes is the implementation of the CCLUP targets and strategies at the sub-unit level. This work must be consistent with the CCLUP and supporting implementation documents. It is anticipated that the final outputs of the completed plans will include an assessment of how the targets and strategies of the CCLUP has been addressed.

If, during the planning process, instances arise where, despite the best efforts of the SRP participants, the CCLUP and FPC requirements cannot be fully addressed then the matter will be referred to the IAMC/RRB. The referral of an issue to IAMC/RRB should only be made after the planning table has exhausted all avenues for solution that are consistent with their terms of reference. At no point in the process are planning tables expected to make strategic land use choices outside the bounds of the *Forest Practices Code of British Columbia Act* and the CCLUP.

SRDZ 70/30 Target

The Government clarification of Key components of the Cariboo-Chilcotin Land Use Plan dated September 27, 1996, provided clarification on the interpretation of the 70/30 target. It indicated that the "exact nature or magnitude of the impacts of this decision are presently unknown and will not become fully discernible until completion of Short Term Timber Availability analysis and the Strategy Integration Process. It should be understood that some modification may be required, consistent with the CCLUP."

It is IAMC's position that the Integration Report does not produce a need to revisit the 70/30 clarification at this time. IAMC believes the Integration Report provides an appropriate balance of the CCLUP targets.

5.2 Addressing Targets

The SRP processes should assess opportunities to overlap non-timber requirements with (for example) areas which are presently inoperable from a timber perspective. Useful map layers for this exercise will include inoperable areas, problem forest types,

forest site classes, and non-merchantable stands. The zonal netdown should be located where it best maintains/protects the values for which it was designed while taking into account timber values and making the best use of overlap opportunities to better meet all CCLUP targets.

The long term analysis is based on an assumption that the riparian requirement is an average 6% netdown distributed across the entire CCLUP productive forest land base. This netdown is an estimate only of the impact of riparian reserve and management zone requirements of the Code. The expectation is that, as stream classification is completed, riparian impacts will be calculated to arrive at the true riparian impacts on the landbase. These actual impacts may be less or greater than 6% on specific areas of the landbase. There is no intent to establish the 6% as an objective or ceiling for fish stream classification.

It is important to note that the integration report assumes a direct link between the riparian netdown and the old growth requirements over the long term. The final riparian impacts, once determined, may have an affect on the area of OGMAs required in a specific landscape unit. For example, if an area has greater than 6% riparian requirements, the requirements for OGMA's would be reduced over what was estimated in the Integration Report. The actual distribution of old stands in riparian reserves should also be considered.

In the application of the targets the SRPs should recognize the limitation of the strategic level Integration Report. For example, while the analysis did address seral stage requirements, it did not address issues of connectivity which are also of importance in biodiversity conservation. The expectation is that these requirements will be addressed at the sub-regional and operational levels through various mechanisms including overlaps and through modified harvest approaches which do not limit access to timber beyond a rotation.

If SRPs encounter biodiversity target issues as a result of completing a more detailed spatial analysis which, after exhausting all options are still unable to resolve, then the issue will be referred to IAMC who, in consultation with the RRB, will provide further direction.

5.3 Other Targets

As outlined in Section 1, the integration process focused on the biodiversity, caribou, MDWR, and timber strategies as well as some impact information developed for the areas identified in the CCLUP as visually sensitive or requiring special management to address hydrologic concerns. The basic assumption was that other targets and values identified in the CCLUP would not have a significant impact on access to the timber land base. This approach is consistent with Appendix 3 of the CCLUP which, in addition to identifying resource targets by sub-unit, provides direction on how other targets will be met.

The following sections summarize the direction contained in the CCLUP on the targets that were not addressed in the Integration Process. Additional implementation direction on the achievement of these important targets is also provided.

5.3.1 General Target Achievement

Targets not included in the integration process can be achieved by:

recognizing the contribution made by areas which are outside the productive forest. An important example is the meeting of a significant portion of the backcountry targets in alpine areas. In addition, grassland and wetland areas will make contributions to the species at risk, moose, and watershed management targets.

maximizing the overlap among strategies, as outlined in Appendix 3 of the CCLUP. As an example, Appendix 3 includes the following statement: "to manage for grizzly bear, moose, furbearer, species at risk and other sensitive habitats within the area identified as riparian buffers, recreation areas, caribou habitat, MDWR and lakeshore management zones and throughout the polygon under the biodiversity conservation strategy."

utilizing modified harvesting techniques that address a value or a range of values without increasing the normal rotation age. For example, visual management concerns can be addressed by using a partial cut silviculture system that removes 100% of the volume over a rotation, and through the application of landscape design techniques. A concern regarding the impact of harvesting in areas adjacent to waterfowl nesting habitat could be addressed through restricting the harvesting during the nesting season.

research will be required in the future on a variety of values relevant to plan implementation. An important example of this is the identification and protection of furbearer habitat. Research results will be used to improve the implementation of the plan.

Stakeholder input on the identification and location of other values (e.g. Traditional Use Studies) should be encouraged, considered, and incorporated in the planning process.

all of the available netdown by zone has been accounted for through the integration process. The addition of constraints to those documented in this report will require adjustments to other non-timber strategies to ensure the zonal targets are met. Alternatively, better information on the impacts associated with each strategy or the degree that one meets the objectives of a second (overlap) may provide some flexibility.

5.3.2 Mining

The following is a summary of CCLUP commitment to the Mining Industry's access to the land base:

1. The mineral and placer industries will have full access to all three zones for exploration and mine development, subject to regulations of applicable statutes.
2. In the SRDZ, mineral exploration and mining development will be carried out in a manner which respects sensitive natural values.

Further direction on applying the mining target is provided in Appendix 4 of the CCLUP.

5.3.3 Recreation

The CCLUP lists three factors as the focus for the recreation targets. Included with each factor is direction on delivering that portion of the recreation target at the SRP level:

1. maintenance of backcountry recreation opportunities along regionally significant rivers and trails; and,
2. maintenance of backcountry recreation opportunities in a significant portion of the areas of the region that are presently in a backcountry condition, principally in the Special Resource Development Zone.

The Integration process assumed that the backcountry targets will primarily be met in areas above 5000 feet, the Caribou Strategy area, MDWRs, riparian areas, and OGMAs.

Meeting of backcountry targets at the SRP level will require careful application of access management planning to ensure that the development and management of roads required for resource extraction recognizes their impact on backcountry targets.

When assessing backcountry targets, it is important for SRP tables to understand government's definition of "maintain backcountry condition". This definition and clarification is contained in the document titled "Government Clarification of Key Components of the Cariboo Chilcotin Land Use Plan" dated September 27, 1996. Government's direction on applying backcountry targets can be summarized in the following points:

government interprets "backcountry" to mean a combination of resource opportunity spectrum (ROS) experience classes including semi-primitive motorized, semi-primitive non-motorized, and primitive.

backcountry does not mean roadless in all circumstances. Forest harvesting will occur in many of these areas over time.

access and harvesting will be proposed and conducted in ways which reduce the impact of harvesting in backcountry areas.

government does not interpret "maintain backcountry condition" as a static condition.

3. management for the retention of visual qualities over key recreation resources, including key lakes.

the Integration Process includes allowances for the management of visual impact.

5.3.4 Tourism

As outlined in the CCLUP, the tourism targets address two factors:

1. maintenance of visual quality surrounding existing tourism facilities and key tourist areas.
2. maintenance of tourism industry development opportunities in association with backcountry areas.

The Integration Process includes allowances for the management of visual impact on tourism facilities. It is expected that SRPs will refine the application of this target on a site specific basis.

It is also assumed that the maintenance of the backcountry areas will help to ensure continued tourism opportunities.

5.3.5 Fish, Wildlife and Water

In addition to the targets addressed in the Integration Process, the CCLUP includes requirements for the following environmental values:

moose; furbearers and other species; species and habitats at risk, including white pelicans; grassland habitats; wetlands; access management; watershed management; fisheries values, including lakes management.

These requirements can be met by applying the direction contained in Section 5.3.1.

5.3.6 Grazing/Agriculture

"The grazing targets are not as closely tied to land area as the other resource targets. For the purposes of this Land Use Plan, grazing is considered to be generally compatible with many of the other resource uses. Therefore these targets are expressed in terms of maintaining or enhancing the current authorized levels of "animal unit months" (AUMs) in their approximate regional distribution." (page 14, CCLUP).

Increases in authorized grazing levels above the sub-unit targets, consistent with applicable legislation, are consistent with the CCLUP, provided other values (chiefly environmental) are maintained.

5.3.7 Wildcraft/Agro-forestry

"A general target for this sector is to maintain the existing resource and enhance the existing level of use. For each sub-unit, Appendix 3 presents a target that expresses the area available for wildcraft harvesters by roads versus foot access. Another important target is to maintain key pine mushroom harvesting sites in a condition that promotes mushroom growth." (page 15, CCLUP).

Based on this direction, wildcraft and agro-forestry should be considered in development of the access management component of a SRP. In addition, the management techniques described in Section 5.3.1 can be utilized to address specific wildcraft and agro-forestry sites.

5.3.8 Access Management

Appendix 3 of the CCLUP references access management under four resource targets:

wildcraft targets for maintenance of roaded access;
recreation targets of site specific areas for access restrictions;
tourism targets of site specific restrictions on road development; and
fish and wildlife targets for the application of an access management strategy

SRPs should address access management issues that include the specific targets summarized above. This will require consideration of all forms of vehicle access

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6. Additional Implementation Requirements

The completion of the integration process represents an important step in the implementation of the CCLUP. Through the integration process a number of implementation issues were identified that require additional work or information in order to be addressed. This section outlines these priority tasks.

6.1 Mule Deer Winter Range

- it is essential that MDWR Management Plans be completed for each MDWR as quickly as possible. The management plans, once completed and based on these objectives, will become the primary tool for management of MDWRs. The expectation is that the management plans will shift the focus to attribute management on the most suited sites and less on crown closure alone. Whatever the resultant management regime the overall objective is to reach the MDWR objectives as quickly as possible.
- it is recommended that IAMC establish a joint Ministry technical committee, by January 31, 1998. The committee will make recommendations on MDWR management. It is anticipated that forest licensees will provide a biologist to work with this committee.

The committee will:

- ensure a winter range plan template is prepared and MDWR planning is undertaken.
- examine the feasibility of detailed biophysical mapping for MDWRs and movement to a broader attribute based approach to MDWR management. The use of basal area as a surrogate for crown closure will also be explored.
- develop a harvesting prescription which meets both MDWR requirements and old seral requirements. This is an important and difficult task.
- provide linkage between resource managers and forest licensees.
- develop a timetable to achieve the long term access levels which is linked to the completion of the winter range plans. This will be an iterative process and will require that MDWR management plans be developed concurrently. IAMC will review the results of this work and provide further guidance, if needed, on the timing of the achievement of these access levels.
- examine the implications and needs in relation to possible site conversion from pine to fir.
- address the management requirements of "wet belt" MDWR. Selective harvest within some "wet belt" stands can create problems for fir regeneration. The need to develop a prescription tailored for these stands should be addressed.
- in the event that it is shown that both the integration assumptions on timber access levels and MDWR objectives, cannot be met, then the issue will immediately be referred to IAMC for resolution.

- the objective is to complete at least 50% of the MDWR plans by 2001 with the balance completed no later than 2006, subject to availability of resources.
- the calculated impact of MDWR management on timber access is based on growth and yield analysis on selective harvested fir stands. This work indicated that the incremental volume (20%) may be available on a 30 year entry. This may or may not be correct for all sites. The committee should undertake further work on fir stands to establish the reentry periods. The impact assessment remains valid provided the 1.5:1 timber production ratio is achieved.

6.2 Eastern Caribou

a joint ministry caribou committee has been established to make recommendations on caribou habitat management for Eastern and Itcha Ilgachuz Caribou. It is anticipated that forest licensees will provide a biologist to undertake technical work with this committee.

the CCLUP calls for five years of research prior to development of the caribou strategy. It is therefore premature to attempt to fully develop the caribou strategy. There are, however, timber supply and operational issues which create a need to at least partially resolve the issue.

the current research program will help to determine the location of the modified harvest areas. The long term location of the modified harvest areas have not been determined through the integration exercise and it will not necessarily follow the existing Option 'A'. Potential opportunities for modified harvest for caribou within the 100 Mile TSA should also be assessed.

work on the full identification of the modified harvest areas should also begin immediately. This work should examine issues of operability and merchantability and produce an option for the distribution of the modified harvest area by June 30,1998, which will meet timber access commitments to 2005. The results of this work should be firm for year 1 (2000) but would be increasingly flexible beyond year 1. It is recognized that this may change as a result of the research, however it will provide a basis for forest development planning. A full identification of the modified harvest areas should be completed by June 30, 2000, with the recognition that research may continue and may result in modifications to this distribution. This work is required to ensure that timber access commitments are met in a timely manner.

it is important that IAMC monitor this process in order to ensure that CCLUP targets are met.

the research will include operational trials undertaken in cooperation with the forest industry.

in undertaking the research and making final decisions on caribou and timber it will be important to follow the specific direction in the CCLUP on time frames and reevaluation requirements.

modified harvest areas for caribou may also be included within Enhanced subunits where it was estimated in the CCLUP that there would be no modified harvest for caribou. These areas should be identified by the Caribou Strategy Committee. This will be consistent with CCLUP direction if the overall modified

harvest targets are met in each subunit and the total area of modified harvest is 35% of the productive forest land base within the deferral area.

any proposed changes to the caribou deferral area which would result in additional area coming into the deferral must be balanced by areas which are removed from the deferral area. The objective should be to attain a favorable result for all resources including caribou and timber access, as well as other resource interests which might be affected by these changes. This approach is currently being used in Quesnel District to address caribou habitat and logging needs on Mt. Tom.

The process for identification of the modified harvest area is proposed to be:

1. Research will continue and include work which will assist in the identification of this area
2. The joint MOF-MELP Committee will undertake this identification. It is anticipated that forest licensees will provide a biologist to work with this committee.
3. The information generated by this committee will be provided to Designated officials and to appropriate planning processes.

in the event that it is shown that integration assumptions on timber access levels and caribou objectives cannot both be met, then the issue will immediately be referred to IAMC for resolution.

6.3 Itcha Ilgachuz Caribou

a joint ministry caribou committee has been established to make recommendations on habitat management for Eastern and Itcha Ilgachuz Caribou. It is anticipated that forest licensees will provide a biologist to work with this committee.

the CCLUP calls for five years of research prior to development of the caribou strategy. It is therefore premature to attempt to fully develop the caribou strategy. There are, however, timber supply and operational issues which create a need to at least partially resolve the issue.

the current research program will help to determine the location of the modified harvest areas. The long term location of the modified harvest areas have not been determined through the integration exercise and it will not necessarily follow the existing Option 'A'.

work on the full identification of the modified harvest areas should also begin immediately. It is assumed that a portion of the modified harvest area falls within B-1. This work must address issues of operability and merchantability and produce an option for the distribution of the modified harvest area by June 30, 1998, which will meet timber access commitments to 2005.

this is subject to satisfactorily addressing access control needs. Any further opportunities for logging in B-1 will be assessed following December 31, 1999. This assessment will be in the context of addressing overall subunit targets and will be reviewed by IAMC and RRB.

the results of this work should be firm for year one (2000) but would be increasingly flexible beyond year one. It is recognized that this may change as a result of the research, however it will provide a basis for forest development planning. A full identification of the modified harvest areas should be completed by June 30, 2000, with the recognition that research may continue and may result in modifications to this distribution. This work is required to ensure that timber access commitments are met in a timely manner.

any proposed changes to the caribou deferral area which would result in additional area coming into the deferral must be balanced by areas which are removed from the deferral area. The objective should be to attain a favorable result for all resources including caribou and timber access, as well as other resource interests which might be affected by these changes.

the research will include operational trials undertaken in cooperation with the forest industry.

in undertaking the research and making final decisions on caribou and timber it will be important to follow the specific direction in the CCLUP on time frames and reevaluation requirements.

meeting the 65% no-harvest and 35% modified harvest targets in the deferral area is required.

The process for identification of the modified harvest area is proposed to be:

1. Research will continue and include work which will assist in the identification of this area.
2. The joint MOF-MELP Committee will undertake this identification. It is anticipated that forest licensees will provide a biologist to work with this committee.
3. The information generated by this committee will be provided to Designated officials and to appropriate planning processes.

in the event that it is shown that integration assumptions on timber access levels and caribou objectives cannot both be met, then the issue will immediately be referred to IAMC, who in consultation with the RRB, will provide further direction.

6.4 Fisheries

If, in the long term, as a result of addressing fisheries requirements, it is found that ECA levels are less than the estimated ECAs contained in Appendix VII, then a re-evaluation of all targets, including timber and fisheries, would be required.

ECA is intended to be treated as a flag for further assessment work and not as a target. An important example of this further work is provided by the recently completed fisheries risk assessment for three watersheds, "An Inventory of Watershed Conditions Affecting Risks to Fish Habitat in the Cottonwood, Cariboo and Horsefly Watersheds". The report identifies placer mining, private land agriculture practices, and harvesting activities as the major contributors of risk to fisheries. This report indicated the need for continued work on channel rehabilitation and riparian stabilization. There are also important

recommendations regarding long term forest development planning initiatives. Other needs may include extension of watershed restoration to historic placer activities and the rehabilitation of riparian areas on private land. The report also indicates that new road construction and rehabilitation of existing roads may have to exceed FPC requirements as a result of the steep terrain and the particularly fine sediments which are present in a number of the sub-basins. Existing and future Interior Watershed Assessment Processes and long term forest development planning initiatives which pertain to the rate and distribution of timber harvest, will provide additional information and recommendations on managing risk to fisheries.

a similar or more intensive assessment will likely be required after five years.

a risk assessment similar to "An Inventory of Watershed Conditions Affecting Risks to Fish Habitat in the Cottonwood, Cariboo and Horsefly Watersheds" should be undertaken in the Bonaparte and Bridge Creek watersheds.

technical processes to further address fisheries issues include watershed assessments, terrain hazard assessments, and additional fisheries risk assessments. On the basis of this and other information the DMs and DEO will address the fisheries requirements through FDPs and possibly 20 year forest development plans. Where FPC IWAPs are completed the result will provide recommendations to these officials. The SRPs and Landscape Unit Plans may also play an important role in linking operational planning to higher level planning objectives.

a watershed monitoring program is recommended for high value fisheries streams such as the Horsefly River.

the level of impact of fisheries on timber access will be established at the operational level on the basis of watershed assessments and fisheries risk assessments. It is anticipated that fisheries values will be addressed through a variety of mitigative approaches but could include shifts in planned harvest timing and location.

in the event that it is shown that the integration assumptions on timber access levels and fisheries objectives cannot both be met, then the issue will immediately be referred to IAMC who, in consultation with the RRB will provide further direction .

6.5 Biodiversity

Forest Cover Inventory

the biodiversity guidebook requires assessment of seral stages and other requirements in order to determine if the full range of biodiversity objectives are achieved. The forest cover inventory was not designed to provide the level of information required. Areas of concern include a separation between 'old' and 'mature' stands as defined in the biodiversity guidebook and a means to determine the seral stage contribution of uneven-aged stand management. Government should initiate a Provincial task force to ensure that inventory procedures are updated to meet biodiversity guidebook requirements.

development of a comprehensive transition strategy for achievement of objectives is required. Achievement of old seral requirements in the second rotation in the low emphasis landscape units within the ERDZ and IRMZ and OGMA establishment and management are important aspects of this transition strategy.

development of a harvesting prescription which meets both MDWR requirements and old seral requirements is needed

stream, lake, and wetland classification are needed. Through the sub-regional planning process, determine location and net impact of riparian management and reserve zones and timber access impacts associated with lake classification.

operational planning problems regarding IDF seral representation requires work on an attribute based seral classification procedure rather than one based solely on age.

It is recognized that biodiversity is much more than seral stage representation. Further research and information is essential to our understanding of biodiversity requirements. As new information becomes available it will be used, consistent with the CCLUP, to improve plan implementation.

6.6 Tourism and Recreation Targets

better define backcountry areas through sub-regional planning.

draft Lake Classification Guidebook harvesting prescriptions should be reviewed to ensure that impacts to timber access are consistent with timber access targets.

6.7 Wildcraft

silvicultural needs for maintaining pine mushrooms should be determined.

6.8 Timber Access

The results of the short term analysis indicate a high degree of compatibility between the STTAA and the long term analysis and that the potential exists to address the non-compatible area. It is possible however, that short term timber availability issues may arise. Subject to the FPC and the integration results, it is expected that timber availability will be resolved at the development plan level, through the application of the following and other measures:

cutblock size; the STTAA used a conservative 34 ha. average, an increase in average cutblock size may result in increased timber availability.

application of the reduced old requirements for the IRMZ and the ERDZ detailed in this report.

locate OGMAs to optimize overlap with other non-timber strategy requirements.

Further information will be provided through the results of the work identified in sections 5.1 to 5.6.

The use of 20 year forest development planning may be an important tool to address short term timber availability issues.

6.9 Enhancement

The CCLUP contains specific reference to opportunities for enhancement of resources and direction on areas suitable for enhancement activities (pages 16-17, Appendix 4 and Appendix 7). Included are:

> the areas of timber not available for harvest should be strong candidates for enhancing resources such as recreation, tourism, fish and wildlife.
>
> the areas of timber available for harvest under modified or more sensitive practices should be strong candidates for enhancing resources such as wildcraft, tourism, recreation, fish, and wildlife, as well as implementing alternative forest management practices which can enhance timber value and forest employment.
>
> the areas of timber available for conventional harvest should be strong candidate areas for enhancing resources such as wildcraft and timber.

Specific resource enhancement initiatives and targets should be expressed and refined at the sub-regional level of planning.

IAMC and RRB should develop a process to promote and monitor enhancement initiatives.

6.10 Target Monitoring

As a result of the integration process, the focus at the forest development level is expected to be on the delivery of management prescriptions rather than on the numerical zonal and subunit targets. However, there is a need to develop a process by which the numerical targets are tracked.

The RRB and IAMC should establish a committee to develop a monitoring and reporting process that will provide information on current status and trends in meeting the CCLUP targets.

The committee should prepare a workplan and terms of reference for IAMC and RRB by June 1998.

6.11 Communication Strategy

A communication strategy is required which provides a clear message of what the results of integration are and what they mean to subregional and operational planning.

IAMC and RRB should work together to complete the communications package.

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Appendix I

Maps

Efforts to accurately translate hard-copy maps from Appendix 1 to HTML have not been successful. For information on the availabilityof printed maps pertinent to this report, please contact Ken Vanderburgh, Cariboo IAMC Coordinator at (250) 398-4674

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Appendix II

Integration Report, Terms of Reference, January 10, 1997

PURPOSE

- To complete a strategic level integration consistent with the targets in the CCLUP and in consultation with
the strategy groups.
- Address, to the extent possible at the strategic level, all targets.
- Address both the long term and short term integration issues.
- Provide the basis for IAMC direction to Sub-Regional Planning processes.

PROCESS/DELIVERABLES

The Implementation Committee, through a review of available information including the Final Integration Document, consultation with the Strategy committees and, based on direction provided from IAMC, will:

assess the cumulative impact of target integration on Short Term Timber Availability and long term timber targets to the extent possible;

provide clear definitions of targets including how they are measured;

examine the flexibility inherent in the requirements for each target and timber availability to ensure the broadest possible overlap of interests;

identify unresolved issues and options;

to the extent possible, present the results on a subunit basis;

forward issues and options to IAMC for resolution and,

test the Regional Integration assumptions through a Integration Test.

REPORTING RELATIONSHIP

The Implementation Committee will report to the IAMC weekly or as required to provide updates and receive direction. A STTA representative will be present at the information sessions, the IAMC may invite representatives of other technical committees as required. Resolution reached by the IC and technical committees will be forwarded to IAMC for confirmation.

ISSUE RESOLUTION

Issues that can’t be resolved through the technical integration process will be forwarded to IAMC, together with technical information and rationale, for resolution. The IAMC will provide an opportunity for the STTA to make a presentation and may request the attendance of a representative from other technical committees as required.

The IAMC will bring unresolved substantive integration issues to the RRB for review and discussion.

The intent is that IAMC will respond to issues as presented to ensure the timeline is met.

INFORMATION AVAILABILITY

The Integration Report will remain confidential until it is presented to the RRB. All participants must ensure information exchanged with the IC is not distributed to any other individual.

The IAMC will provide the RRB with progress updates only, contents of the report will only be presented as a complete draft.

TIMELINE

Completed report by March 7, 1997.

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Appendix III

Integration Report, Workplan, January 10, 1997

1) Define Model Inputs

a) Identify unresolved issues;

-from Final Integration Report
-other

b) Define how targets are measured

-translation of targets and strategies into a form that can be used as a model input

Assumptions will be based on direction contained in the CCLUP and supporting documents, and interim direction provided by the IAMC.

Completion date: Jan 10

2) Develop Integration Model

Model will be used to test long term and short term target integration. Where possible, the model should provide results at the subunit level.

a) Long Term Model

> *address all targets.*
>
> *test cumulative impact of non-timber targets on timber access target. Model will use the Productive Forest Land as a base to determine if the access to timber targets (i.e. 70% in the SRDZ) can be met.*

b) Short Term Model

> *assess STTA against long term timber targets*
>
> *identify areas where there is conflict between non-timber targets and the STTA*

c) Subunit Test (Integration Test)

> *develop methodology to expand initial Integration Test concept from biodiversity emphasis unit to subunit.*

Completion date: Jan 17

3) Modeling

Application of model developed in 2) to the inputs developed in 1).

a) assess individual strategies for target compliance
b) long term target test
c) short term target test

Completion date: (initial run) Jan 31

4) Analyze Results

d) based on assumptions/definitions used, are the targets achievable at the strategic level ?

e) forward results to IAMC for review, further direction and approval.

This will be an iterative process, results from analysis may require adjustments to the definitions contained in 1). Recommendations on adjustments will go to IAMC.

Completion date: Feb. 28 (includes all iterations required)

5) Subunit Test

Test the assumptions and model over sample subunit areas. This will primarily be a mapping exercise and should address all targets. While this test can't be completed until the long term and short term tests have been completed, the identification of sample areas and the compilation of inventory information can begin in January.

Completion date: Feb. 28

6) Approval

Submit draft report to IAMC prior to March 7th.

Following the completion of the Integration Report, a second document will be required to provide detailed guidance to sub-regional and operational planning. This document will be based on the results of the Integration Report and will update and consolidate current guidance and direction including the "Interim Interpretive Guide", "Government Clarification of Key components of the Cariboo Chilcotin Land Use Plan" and "CCLUP Interim Implementation Guidance for Operational Planning". This document will be prepared in consultation with the Sub-Regional Planning Committee of the RRB.

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Appendix IV

Interim Interpretive Guide, pages 12-15, April 1996

V Application of Specific Targets

(i) Timber Targets

Background:

The CCLUP includes a timber target for the SRDZ; total netdowns in this zone cannot exceed 30% of the productive forest land base (CCLUP; Page 8). The "Productive forest land base" is defined on page 151 of the CCLUP and further clarified in Section I (ii) of the Interpretative Guide.

The timber targets apportion the total productive forest area into conventional, modified and no-harvest areas. These concepts are defined on pages 148 and 149.

- **conventional harvest** is defined as the current industry norm. Where the norm is to do selection harvest, as in drybelt Douglas fir stands, this would be included in the conventional category. Where the normal selection harvest regime has been changed considerably, as in the mule deer winter ranges, these areas then fall into the modified category.

  modified harvest is described as a significant departure from the current norm, in order to address the non-timber resource values that have been identified as targets for that area. While modified may move towards selection harvesting in some zones or to modified clearcut systems, it was assumed that in many zones modified harvest could still include clearcut silvicultural systems, with modifications to things such as: the harvesting process, the pattern, size or shape of the clearcut blocks or the timing of harvest. For instance, significant changes to standard clearcut block designs in order to address visual quality objectives could qualify as modified.

  no-harvest is defined as not available at this time as a result of non-timber resource values and the current knowledge of harvesting techniques and silviculture.

Over the long term, some of the no-harvest could become available for harvest if innovative harvesting techniques or management regimes can be developed which enable some timber to be removed in the no-harvest areas while maintaining or enhancing the non-timber resource values. It was assumed that these innovative techniques or regimes would be significantly different than those currently employed in the modified harvest areas.

As with many of the targets, the concept of conventional, modified and no-harvest areas was developed to provide some strategic direction to further planning processes, and to create a framework within which these more-local processes could find creative solutions to resource management interactions.

A. 1 Interpretation of 70-30 Target for SRDZ

The following direction represents governments intent regarding application of the 70 -- 30 SRDZ target. This direction is essential for application of the CCLUP targets at the subregional level and subsequent assessment of target implementation.

Therefore, in that the exact nature or magnitude of the impacts of this decision are presently unknown and will not become fully discernible until completion of Short Term Timber Availability Analysis and the Strategy Integration Process. It should be understood that some modifications may be required, consistent with the CCLUP.

Two key quotes from the CCLUP are:

> From Page 10: "The commitment of the Land Resource Management Plan that, in the SRDZ, the forest industry would have access to 70% of the timber from the forest land base, with a maximum of 30% netdown, for other values."

These CCLUP targets only include netdowns for land use or non-timber resource management purposes; they do not include netdowns for economic or operability factors such as problem forest types, steep slopes, roads, and right of ways or non-satisfactorily restocked areas.

> From Page 151: "All netdowns in the SRDZ, including those induced by the Forest Practices Code, will not exceed 30 percent of the productive forest land base."

These quotes indicate a commitment of access to timber based on area. This is consistent with the non-timber resource targets which are all measured as a percent of the productive forest land base(area). As a result achievement of the 70% availability or the 30% netdown is measured on an area equivalent basis.

Appendix 3 of the CCLUP contains summaries of resource targets, including timber targets for each of the CCLUP sub-units. Table 11 of the CCLUP contains prorated sub-unit targets and indicates that for the SRDZ 28% is conventional harvest and 49% is modified for total access to 77% of the productive forest land base. The balance of 23% falls within the no harvest category.

The relationship between the broad 70/30 target and the resulting 77/23 prorated target is the basis for this definition.

Key components of the target definition are as follows:

A "rotation" is defined as the average minimum harvest age by tree species for the Cariboo forest region, **80** years for stands in which lodgepole pine or aspen is the leading species, and 120 yrs for other leading species.

> In the SRDZ, 70% of the timbered area within the productive forest land base is available for harvest within one rotation.
>
> Modified harvest practices that do not result in stands being retained beyond one rotation contribute to the 70% target.
>
> Modified harvest practices which will require stands or portions of stands to be retained beyond one rotation, in order to meet the non-timber resource targets and strategies, contribute to the 30% net down.
>
> An area equivalency basis is key to the implementation of the SRDZ 70/30 timber target. A stand, or portion of a stand, which is to be retained beyond one rotation is applied on an area basis to the 30% no harvest net-down. It is not necessary to introduce volume based concepts such as differences in volume per hectare or site productivity into this concept.
>
> Across the SRDZ, access is required to 77% of the productive forest land base in order to access 70% of the timber. Alternatively net downs to the productive forest land base cannot exceed 30% on an area equivalency basis.
>
> Timber related netdowns for operability or economic factors are not included in these targets. For example, an area of steep slope may fall in any of the harvest or non-harvest categories.

A mathematical formula may be applied to determine the **area equivalency factor** which can be applied to the SRDZ sub-unit harvest percentages to determine the proportion of the modified harvest available over one rotation.

The **area equivalency factor** is calculated as follows:

28% + 49% {ß}= 70%
Conventional Modified
Harvest Harvest

ß = .857

The following are examples of the **area equivalency factor** applied to SRDZ sub-units.
Quesnel Lake Sub-unit Targets:

Conventional Harvest: 7%
Modified Harvest: 60%
No Harvest: 33%

7 + 60(.857) = y
7 + 51 = 58

An area equivalent of 51% of the productive forest landbase falls within the modified harvest category and is available within one rotation. The forest industry requires access to 60% of the productive forest land base in order to achieve that objective.

Likewise, a total area equivalent of 58% of the productive forest landbase is available for harvest within one rotation and access is required to 67% in order to achieve that objective.

Flat Lake SRDZ targets:

Conventional Harvest: 68%

Modified Harvest: 22%

No Harvest: 10%

68 + 22(.857) = y

68 + 19 = 87%

An area equivalent of 19% of the productive forest landbase falls within the modified harvest category and requires access to 22% of the productive forest land base to achieve that objective.

Likewise a total area equivalent of 87% of the productive forest land base is, available for harvest under one rotation and access is required over 90% of the productive forest land base to achieve that target.

In order to ensure the overall sub-unit targets are achievable in the interim, subregional plans or landscape unit plans/strategies are expected to fall within 5% of the sub-unit timber targets. Once planning across a sub-unit is completed the individual plans may be revisited in order to reconcile the targets across the sub-unit.

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Appendix V

Fir Management by Subunit

Uneven Aged	Even Aged
E-10 Gustafson	E-1 Baezaeko
E-11 Loon	E-2 Nazko
E-12 Bonaparte	E-4 Cottonwood
E-13 Gaspard	E-8 Canim
E-14 Batnuni	I-A Kluskus
E-3 Quesnel	E-3 Quesnel
E-6 Williams Lake	S-A Boss/Deception
E-7 Palmer	S-G Lang Lk/School.
I-B Anahim Lake	S-H Lower Blackwater
I-C Chezacut	S-L Quesnel Highlands
I-D Kleena Kleene	S-M Quesnel Lake
I-E Eagle	S-P Upper Blackwater
I-F Grasslands	E-5 Beaver Valley
I-G Clinton	E-9 Rail
S-B Brittany Triangle	
S-C Charlotte Alplands	
S-D Flat Lake	
S-E Interlakes	
S-F Itcha Ilgachuz	
S-I Marble Range	
S-J Niut	
S-K Potato Range	
S-N South Chilcotin	
S-O Taseko Lake	

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Appendix VI

Percentage of Area Required as WTP

% of the area available for harvesting that has been harvested without WTP	% of the biogeoclimatic subzone within the landscape unit available for harvest				
	90	70	50	30	10
10	7	5	3	1	0
30	9	7	5	3	1
50	11	9	7	5	3
70	13	11	9	7	5
90	15	13	11	9	7

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Appendix VII

Equivalent Clearcut Area by Watershed

Long Term Model

ECA by Watershed

Watershed	Unadjusted ECA	Adjusted ECA
Horsefly River	28	28
Cariboo River	15	15
Cottonwood River	35	30
Bonaparte River	31	30
Bridge Creek	32	30
Atnarko River	21	21
Baker Creek	39	39
Baezaeko River	27	27
Bowron River	18	18
Chilko River	16	16
Lower Chilcotin	33	33
Nazko River	30	30
Quesnel River	22	22
Taseko River	17	17
Upper Chilcotin	30	30
Upper Dean	27	27

In the above table, unadjusted ECA represents the ECA of a watershed with no impact to timber access attributable to fisheries. The unadjusted ECA is based on the ECA for the specific strategies that occur in a watershed as well as the ECA for any private land, parks and crown land outside the productive forest land base.

The adjusted ECA column gives the ECA numbers by watershed that are included in the long term analysis. The long term analysis limited the ECA in the Horsefly, Cariboo, Cottonwood, Bonaparte and Bridge Creek watersheds to 30. As indicated by the table, the Cottonwood, Bonaparte and Bridge Creek watersheds were the only ones where a ECA reduction was required and a impact on the timber access target produced.

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Appendix VIII

Strategies by Rotation Age

Baseline Analysis

Strategy	Strategy Rotation
Riparian reserve	no-harvest
Eastern Caribou (65% area)	no-harvest
Itcha Ilgachuz Caribou (65% area)	no-harvest
Mule Deer Winter Range	250 years
Old 1	251 years
Eastern Caribou (modified harvest)	240 years
Itcha Ilgachuz Caribou (modified harvest)	160 years
Wildlife Tree patch	160 years
Old 2	141 years
Visual Quality	133 years

Mature 1	121 years
Mature 2	101 years

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Appendix IX

MDWR Crown Closure Objectives by T.S.A.

Timber Supply Area	Mule Deer Winter Range	High Crown Closure Objective (%)	Moderate Crown Closure Objective (%)	CCLUP Subunit
100 Mile House	111 Mile-Forest Grove	33/40	33/40	S-G, E-9, S-E, E-10
100 Mile House	51 Creek	20	40	I-G
100 Mile House	Alkali Lake	20	40	I-G
100 Mile House	Big Lake	33	33	E-10, S-E
100 Mile House	Bonaparte River	33	33	E-12, E-11, I-G
100 Mile House	Bradley Creek	66	33	S-G, E-8, E-9
100 Mile House	Bridge Lake North	66	33	S-E
100 Mile House	Buffalo Creek	66	33	E-9, S-E
100 Mile House	Canim Lake North	66	33	E-8
100 Mile House	Canim Lake West	66	33	E-8, E-9, S-G
100 Mile House	Canoe Creek North	33	33	I-F, E-10
100 Mile House	Canoe-China Gulch	33	33	I-F, E-10
100 Mile House	China Gulch-Big Bar	33	33	I-F, S-1
100 Mile House	Deadman Creek	33	33	E-11
100 Mile House	Deka Lake North	66	33	S-E
100 Mile House	Dombey Lake	66	33	S-E
100 Mile House	Drewry Lake North	66	33	E-8, E-9, S-E
100 Mile House	Edge Hills	33	33	S-I, I-G
100 Mile House	Fawn Lake	33	33	S-E
100 Mile House	Horse Lake	33	33	S-E, E-10
100 Mile House	Howard Lake North	66	33	E-8
100 Mile House	Jesmond Stable	40	40	S-I

	Creek			
100 Mile House	Kostering Creek	40	40	S-I
100 Mile House	Lac la Hache North	33	33	E-5, E-6, E-9, E-10
100 Mile House	Lac la Hache South	33	33	E-6, E-10, S-E
100 Mile House	Loon Creek	20	40	E-11
100 Mile House	Lower Loon Creek	33	33	E-11. I-G
100 Mile House	Needa Lake North	66	33	S-E
100 Mile House	Porcupine Creek	33	33	S-I, E-10
100 Mile House	Roserim Lake	66	33	E-8
100 Mile House	Sulphurous Lake South	66	33	S-E
100 Mile House	Timothy-Rail	40	40	E-9
100 Mile House	Watch Lake North	33	33	E-12, S-E, E-10
100 Mile House	Young Lake	33	33	E-11, E-12
Quesnel	Alix-Honeyburn	33	33	E-3, E-5
Quesnel	Australian-Alix	33	33	E-3, E-5
Quesnel	Baker Creek	66	33	E-3, E-2
Quesnel & Prince George	Blackwater River	40	40	S-H, E-2
Quesnel	Dragon-Australian	66	33	E-3, E-5
Quesnel	General-Tingley	33	33	E-3
Quesnel	Gerimi	33	33	E-3
Quesnel	Lower Quesnel	33	33	E-3
Quesnel	Narcosli	33	33	E-3
Quesnel	Nazko	66	33	E-1, E-2
Quesnel	Upper Quesnel	66	33	E-3
Quesnel	West Road South	33	33	E-2, E-3, S-H
Williams Lake	Alkali-Dog Creek	33	33	I-F, E-6, E-10
Williams Lake	Anahim Creek	20	40	E-7, I-C, I-F
Williams Lake	Antoine Lake	66	33	E-5
Williams Lake	Beaver Valley North	40	40	E-5
Williams Lake	Beaver Valley South	40	40	E-5
Williams Lake	Big Creek	33	33	I-F, E-13

Williams Lake	Big Lake	40	40	E-5
Williams Lake	Borland Valley	33	33	E-5, E-6
Williams Lake	Chilanko Creek	20	40	I-C, I-E
Williams Lake	Chimney Creek	33	33	E-6
Williams Lake	Chimney-Alkali	33	33	E-6, I-F
Williams Lake	Churn Creek	20	40	I-F, E-13, S-N
Williams Lake	Enterprise	33	33	E-6, E-5
Williams Lake	Farwell	20	40	I-F, E-13
Williams Lake	Fletcher Lake	20	40	E-13
Williams Lake	Gaspard	20	40	E-13, I-F
Williams Lake	Haines Creek North	20	40	E-13, I-F
Williams Lake	Haines Creek South	20	40	E-13
Williams Lake	Hance's Timber	20	40	E-7, I-F
Williams Lake	Hart-Marguerite	40	40	E-5
Williams Lake	Hawks Creek North	33	33	E-5, E-6
Williams Lake	Hawks Creek South	33	33	E-5, E-6
Williams Lake	Horsefly Lake	66	33	S-M
Williams Lake	Horsefly River	66	33	S-M, E-8
Williams Lake	Jones Creek	33	33	E-5, E-6
Williams Lake	Knife Creek	33	33	E-5, E-6
Williams Lake	Koster-Grinder	20	40	S-N, I-F
Williams Lake	Likely	66	33	E-5, S-M
Williams Lake	Little Lake	66	33	E-3, E-5
Williams Lake	Lone Cabin	20	40	S-N, I-F
Williams Lake	Mackin-Buckskin	33	33	E-3, E-6
Williams Lake	McIntosh Lakes	40	40	E-5
Williams Lake	McLeese Lake	33	33	E-3, E-5, E-6
Williams Lake	Meldrum	33	33	E-6, I-F
Williams Lake	Mosley Creek	33	33	S-J, I-E, S-K
Williams Lake	Niquidet	66	33	E-5, S-M
Williams Lake	North Taseko	20	40	I-E, S-B
Williams Lake	Prouton Lakes	40	40	E-5
Williams Lake	Puntzi Lake	20	40	I-C

Williams Lake	Pyper Lake	20	40	I-E
Williams Lake	Quesnel Forks	66	33	E-4, S-M, E-3, E-5
Williams Lake	River Ranch	20	40	I-F
Williams Lake	Rose Lake	40	40	E-5
Williams Lake	Skelton	40	40	E-5
Williams Lake	South Chilcotin	20	40	I-C, I-F, E-13
Williams Lake	South Gaspard	33	33	E-13
Williams Lake	South Taseko	20	40	S-B, I-E
Williams Lake	Temapho-Nazko	33	33	I-C
Williams Lake	W Lk-Chimney	33	33	E-6
Williams Lake	West Arm	66	33	E-5, S-M
Williams Lake	West Chilcotin	20	40	I-C, E-7, I-E, I-F
Williams Lake	West Chilko	20	40	I-C, I-E, S-B
Williams Lake	Williams Lk-Hawks Ck	33	33	E-6

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Appendix X

Definition Of Productive Forest Land Base

The productive forest land base is s a subset of the total area and is defined on page 151 of the CCLUP 90 Day Implementation Process Final Report as follows:

Productive forest land base is defined as the total Crown forest area, determined by subtracting the following from the total area of the region:

- all non-Crown land
- all Crown land committed to non-timber use through a Land Act designation
- all non-forest Crown land, and
- all forest area classified as brush or non-commercial cover in the Forest Inventory.

Technical inventory basis for productive forest land base:

Important to those involved in subsequent CCLUP implementation processes, the productive forest land base is defined by the following criteria based on the MOF forest cover inventory. For the timber resource:

Forest cover type identification codes: [1] *1 & 2 & 3 & 4 & 9*
Land Ownership and character codes: 60-N & 61-C & 62-C & 62-N & 69-C & 72-B & 75-N & 76-N & 77-N & 99-C

For all other forest resources, in each subunit and adjacent park or protected area, the total forest is determined by the following criteria:

Forest cover type identification codes: 1 & 2 & 3 & 4 & 9
Land ownership and character codes: 60-N & 61-C & 61-N & 62-C & 62-N & 63-N & 64-N & 65-N & 67-N & 69-C & 69-N & 72-B & 75-N & 76-N & 77-N & 99-C & 99-N.

[1] There are two forest cover type identification fields in the forest cover database. Type identification is tge code at time of classification. Projected type identification is the code after the forest cover has been "aged" to a date after classification. Projected type identification should be used.

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Appendix XI

Assessment of STTAA Against Selected FPC Requirements

Mapbase test

May 22, 1997

Method:

At the request of the Implementation Committee a small committee of MOF and MELP staff selected seven mapsheets to be reviewed. The original 1:50,000 mapsheets and respective summary tables were borrowed from the STTAA committee for the review. The maps were evaluated based on the information provided. A subsequent meeting with many of the major licensee staff who had developed the original STTAA block information provided further clarification. Many of the initial questions raised regarding adjacency and greenup were addressed at the meeting.

Results:

The initial review of the STTAA resulted in the following:

- some differences in methodologies differed between/within TSAs. The STTAA block drawing was completed by individual licensee staff who are familiar with operational planning within licensee operating areas. They were working under general guidance however some variation in actual block format will vary depending on local knowledge.
- initial concerns that sufficient information did not exist to evaluate individual cutblocks was resolved at the meeting.
- recognized that specific map detail for riparian zones not possible at the scale used but the expectation is that at the subunit level an adequate allowance was made. This detail will be resolved at the operational planning level.
- confirmation of green-up periods was provided explaining why adjacent cutblocks may fall in five year periods 1 and 3, or 2 and 4. It was confirmed that this occurred where a block fell in the start of a five year period , as an example, within the first year of period 1 and the last year of period 3.
- the green-up scenarios have allowed for the development of some block aggregations over time. Given the above green-up scenarios this aggregation may fall within the flexibility found within the FPC guidebooks, including biodiversity.
- examples where cutblocks are proposed over areas classified as NSR or Immature are due to the fact that on the ground some of these forest cover polygons have a mature component. These examples were located from air photography.

concern over fragmentation was discussed. It is recognized that the STTAA is not an operational plan and that landscape level processes including Subregional Plans, establishment of Landscape Unit Objectives, and operational plans will address issues such as fragmentation.

Conclusion:

The STTAA provides a reasonable approximation of timber availability over a twenty year period based on the information that was available to those that developed the map based product. This recognizes that the STTAA was developed prior to the completion of the CCLUP strategies and FPC guidebooks.

The STTAA was developed under the initial direction of the CCLUP and IAMC. That direction indicated the level of harvest the STTAA should use as a baseline. However there are other strategic level factors which indicate that the actual level of harvest over the next twenty years may vary from that modeled.

pulpwood agreements which are triggered by unavailability of raw materials from other mills may not be fully utilized.

the recent round of timber supply review indicates that based on current management the annual allowable cut may drop over the next couple of decades.

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Appendix XII

Subunit Targets by Zone

The following tables provide a comparison of the subunit targets contained in Appendix 3 of the CCLUP to those developed in the integration process.

The Columns under the heading Integration Report are:

- Modified extended: the % area by sub-unit that, based on the results of the long term analysis, will require a management prescription that extends the rotation beyond normal. This area includes modified harvest caribou areas, mule deer winter ranges, allowances for wildlife tree patch requirements, visual management areas, area constraints due to fisheries management and allowances for mature seral stage management.
- Modified EEA: the equivalent excluded area impact by sub-unit attributable to the Modified Extended area. For example, in Boss/Deception, the 23% of the sub-unit that is under modified harvest represents an equivalent no-harvest area of 7%.
- No-harvest: the % area by sub-unit that, based on the results of the long term analysis, will not be harvested over a rotation. This area includes the estimated impact of riparian management, Caribou deferral areas and Old Growth Management Areas.
- EEA: represents the equivalent excluded area by sub-unit and is derived by combining the modified extended impact to the no-harvest impact.

SPECIAL RESOURCE DEVELOPMENT ZONE

Subunit	CCLUP			Integration Report			
	Conv.	Modified	No-Harvest	Modified extended	Modified EEA	No-Harvest	EEA
Boss/Deception	12	51	37	23	7	32	39
Brittany Triangle	64	26	10	25	7	7	14
Charlotte Alplands	67	19	14	28	7	12	19
Flat Lake	68	22	10	12	10	6	16
Interlakes	26	66	8	32	14	9	23
Itcha Ilgachuz	10	58	32	43	18	31	49
Lang Lk/Schoolhouse	39	51	10	29	8	6	14
Lower Blackwater	31	55	14	35	13	9	22

Marble Range	42	48	10	42	13	13	26
Niut	15	76	9	35	9	9	18
Potato Range	50	37	13	13	4	11	15
Quesnel Highlands	34	32	34	26	8	25	33
Quesnel Lake	7	60	33	41	11	23	34
South Chilcotin	29	58	13	31	9	7	16
Taseko Lake	50	33	17	39	10	10	20
Upper Blackwater	20	40	40	7	18	23	41
TOTAL	**28**	**49**	**23**	**36**	**12**	**18**	**30**

- Based on the Integration Report Target of 70% Timber Access, the 30% EEA goal has been met.

INTEGRATED RESOURCE MANAGEMENT ZONE

Subunit	CCLUP			Integration Report			
	Conv.	Modified	No-Harvest	Modified extended	Modified EEA	No-Harvest	EEA
Kluskus	39	46	15	11	6	12	18
Anahim Lake	75	13	12	17	5	10	15
Chezacut	61	27	12	15	8	9	17
Kleena Kleene	61	28	11	26	6	9	15
Eagle	55	35	10	9	2	10	12
Grasslands	0	92	8	48	18	12	30
Clinton	72	22	6	33	9	13	22
TOTAL	**54**	**35**	**11**	**19**	**7**	**10**	**17**

- Based on the Integration Report Target of 81% Timber Access, the 17% EEA achieved is 2% below the goal of 19%.

ENHANCED RESOURCE DEVELOPMENT ZONE

Subunit	CCLUP			Integration Report			
	Conv.	Modified	No-Harvest	Modified extended	Modified EEA	No-Harvest	EEA
Baezaeko	73	11	16	22	6	15	21
Gustafsen	72	21	7	19	8	10	18

Loon	74	16	10	20	6	11	17
Bonaparte	77	16	7	14	10	8	18
Gaspard	75	17	8	7	3	11	14
Batnuni	84	10	6	1	0	8	8
Nazko	81	10	9	8	2	9	11
Quesnel	60	34	6	17	9	10	19
Cottonwood	79	10	11	14	7	15	22
Beaver Valley	62	32	6	20	7	7	14
Williams Lake	45	50	5	27	10	9	19
Palmer	79	12	9	3	3	6	9
Canim	69	18	13	9	3	14	17
Rail	37	58	5	25	9	6	15
TOTAL	**69**	**22**	**9**	**14**	**6**	**10**	**16**

Based on the Integration Report Target of 83% Timber Access, the 16% EEA achieved is 1% below the goal of 17%.

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Appendix XIII

List of Technical Reports referred to in the Integration Report.

References to the following technical reports, including strategy documents, contained in this document acknowledge the reports may be subject to revision or replacement as new or more relevant technical evidence becomes available. The use of these documents does not necessarily imply endorsement of the individual reports by IAMC or RRB.

These technical reports include:

Biodiversity Conservation Strategy Report July 1996
Short Term Timber Availability Assessment August 1996
Mule Deer Winter Range Strategy June 1996
Caribou Strategy Report July 1996
Fisheries Target Risk Assessment August 1996
Short Term Visual Resource Management for the CCLUP July 1996
An Inventory of Watershed Conditions Affecting Risks to Fish
Habitat in the Cariboo, Cottonwood & Horsefly Watersheds November 1997