



Ministry
of Forests



SILVICULTURE STRATEGY DEVELOPMENT STANDARDS

Effective April 1, 2002

These standards apply, in addition to the General FIA Standards (FS 1001), to all Type II silviculture strategy development activities funded under the Forest Investment Account (FIA).

CONTENTS

ARTICLE 1: GENERAL STANDARDS	1	ARTICLE 3: DOCUMENTATION STANDARDS	4
Definitions	1	Data Package	4
Objectives in Developing Strategies	1	Modelling and Analysis Report	5
Strategy Development Process Overview	2	Silviculture Strategy	6
Involvement of Key Stakeholders	2	ARTICLE 4: SUBMISSION	7
Guiding Documents	2	Submission and Review	7
ARTICLE 2: ANALYSIS STANDARDS	3	Revision	7
Key Assumptions	3		
Analysis Methodology	3		
Required Scenarios	3		

ARTICLE 1: GENERAL STANDARDS

Definitions

1.1 In this Schedule, the following words shall have the following meanings:

“Management Unit” means an area of land having an allowable annual cut determined for it under the *Forest Act* and typically means a timber supply area or tree farm licence;

“Type II Silviculture Strategy” or **“Type II Strategy”** means everything necessary to develop a silviculture strategy based on computer modelling of scenarios of different types, amounts and timing of silvicultural actions within a Management Unit.

Objectives in Developing Strategies

1.2 A Type II Silviculture Strategy must meet the objectives of producing:

- a fully rationalized plan to guide the expenditure of public silviculture funds to improve the future supply and quality of the timber and habitat resources of a Management Unit;
- a common set of detailed objectives, potential social benefits, and performance indicators at the Management Unit level that can be consolidated to regional and provincial levels;
- standardized analysis outputs so that public incremental silviculture budget allocations between Management Units can be evaluated and made on a consistent basis;
- information that can be utilized by industry and government decision makers in their considerations with regard to tree improvement, silvicultural regimes, partial cutting, commercial thinning and management for non-timber values; and
- silviculture regimes and associated standards that may form legally required standards for basic and incremental silviculture operations.

Strategy Development Process Overview

- 1.3 Except as may be otherwise approved by the Technical Contact, a Type II Strategy must be developed through the following general process.
- (a) A draft data package is presented to a workshop of key stakeholders that proposes the inputs to be made to the forest estate model, the methods to be used to obtain the inputs, the forest estate and stand growth models to be used, and the silviculture scenarios to be investigated.
 - (b) The data package is finalized and approved by the Recipient before modelling commences.
 - (c) Modelling analysis is undertaken and the results documented in a draft analysis report.
 - (d) Based on analysis findings and other relevant considerations, a draft silviculture strategy document is prepared.
 - (e) The draft analysis report and silviculture strategy are presented to a workshop of key stakeholders.
 - (f) Additional modelling analysis is conducted as necessary, including one or more scenarios representing the preferred or recommended combinations of silviculture activities.
 - (g) Key stakeholders reach consensus on a silviculture strategy for the management unit.
 - (h) The analysis report and silviculture strategy are finalized and approved by the Recipient.

Involvement of Key Stakeholders

- 1.4 The strategy development process must include workshops to which are invited key resource management and resource user stakeholders that may be materially affected by the outcome of the strategy, including representatives of:
- (a) provincial and federal government natural resource agencies;
 - (b) forest companies holding a major tenure as defined under the *Forest Act*; and
 - (c) First Nations that have a declared interest in all or part of the Management Unit, if appropriate to meeting the First Nations information-sharing requirements of the General FIA Standards (FS 1001).
- 1.5 While open public consultation is encouraged, it is only required where it is expected that proposed silvicultural activities in a final strategy will vary significantly in either the quantity or type of silviculture from levels experienced at any time over the past ten years in a Management Unit. In the absence of public consultation during strategy development, an adopted strategy may include how any public consultation is proposed to be carried out prior to implementing a proposed significantly increased silviculture activity.

Guiding Documents

- 1.6 Development of a Type II Strategy should take into consideration and be guided by:
- (a) the *Interim Incremental Silviculture Strategy for B.C.*, particularly the strategy's working targets – mitigating impending reductions in timber supply, increasing timber supply over the long-term, and ensuring that future timber supply consists of at least 10% premium quality logs;
 - (b) any existing Type I or Type II Silviculture Strategy for the Management Unit;
 - (c) any management plans for timber tenures issued within the Management Unit;
 - (d) any higher level plans as defined under the Forest Practices Code that apply to the Management Unit;
 - (e) reports from the most recent timber supply review (TSR) for the Management Unit;
 - (f) recent historical levels of incremental silviculture funding for the Management Unit; and
 - (g) any plan, issue, or matter a District Manager specifies to be taken into consideration.

ARTICLE 2: ANALYSIS STANDARDS

Key Assumptions

- 2.1 The following key assumptions should be employed in all analyses.
- (a) Opportunity evaluation is not limited by factors such as the availability of funding, funding source, or the ability to deliver a program. However, the final adopted strategy must be plausible.
 - (b) “Normal” market conditions will prevail in terms of demand and prices for timber and fibre.
 - (c) A status quo timber harvesting land base, excepting substantial actual alienations since the last TSR may be taken into account in a “revised base case.”

Analysis Methodology

- 2.2 Analysis methodology must:
- (a) observe all current Forest Practices Code requirements, unless a regional manager has approved otherwise;
(Where otherwise approved, deviations from FPC code standards must be clearly documented and suitable alternate forest conditions analyzed and illustrated.)
 - (b) follow existing Ministry timber supply concepts, harvest flow rules, and timber utilization standards;
(Where there is a significant deviation from these, the deviation must be clearly documented and approved by the Technical Contact.)
 - (c) start timber supply modelling at current harvest levels unless there is a clearly defined rationale for deviation;
 - (d) project data and graphical information until a steady state harvest level or 200 years is reached, whichever is greater (the “planning horizon”); and
 - (e) where data and harvest planning are sufficient, preferably be capable of tracking and mapping the spatial location of areas harvested and/or silviculturally treated for at least the first 20 years of the planning horizon.

Required Scenarios

- 2.3 At a minimum, a data package must propose and an analysis report must include:
- (a) a scenario re-creating the latest timber supply review (TSR) base case to validate the data and the forest estate model;
 - (b) a “revised base case” scenario, if necessary to reflect changes in information and practices since the last TSR, or as may be needed to recognize the impact of expected availability of improved seed over and above that recognized in the TSR;
(A revised base case must be done if new land base, site index, or tree improvement information is used. Increased estimates for improved seed availability may be based on commenced tree breeding programs even though the seed itself may not yet be available. The subsequent scenarios (below) should build on and be compared to this “revised base case.”)
 - (c) a scenario demonstrating the outcome of managing with only basic silviculture;
(Previous actual, but not planned future, incremental silviculture treatments should be recognized. Assume appropriate natural ingress with no density control except for maximum density spacing of basic silviculture stands with > 10 000 sph. This scenario should not include any planned backlog, incremental silviculture, or increased stand volumes due to tree improvement (other than for trees already in the ground.)
 - (d) in those units having backlog and incremental silviculture opportunities (e.g., spacing, pruning, fertilizing, etc), scenarios of 100%, and 200% of recent backlog and incremental silviculture program funding levels (individual activities within each program may vary from recent levels but each overall program total must be kept to the 100% and 200% levels);

- (e) unless exempted by the Technical Contact, in those units where no timber-oriented scenario comes near to producing a long term harvest level having 10% premium log content, a scenario that reduces harvest levels to the extent necessary to produce a 10% premium log content;
- (f) in those units where no timber-oriented scenario reasonably meets a habitat supply target for a key wildlife species, a scenario that meets the habitat supply target;
- (g) if the scenario above causes undue reductions in timber supply, a further habitat supply scenario that represents a reasonable trade-off between habitat and timber supply objectives; and
- (h) a “preferred” scenario of the perceived optimal combination of silviculture activities (including but not limited to partial cutting, backlog reforestation, tree improvement, and incremental silviculture) required to achieve the desired forest level objectives for timber and habitat as best as possible within plausible funding levels.

ARTICLE 3: DOCUMENTATION STANDARDS

- 3.1 The development of a Type II Silviculture Strategy should be recorded in three documents – a data package, an analysis report, and a final report containing the adopted strategy. These documents should be prepared in accordance with the specifications contained in this article.

Data Package

- 3.2 A Type II Strategy data package is prepared in advance of modelling analysis and describes all the information that is material to the analysis. At a minimum it should contain:
- (a) a description of the Management Unit, including its location, total and proposed netted down forest landbase (including netdown criteria and area by criterion), current age class structure, current timber quality profile (if available), and management emphasis zones together with the management objectives within each zone;
 - (b) a description of the timber supply and habitat supply issues to be addressed in the analysis (focusing on those on which silvicultural activities may positively affect);
 - (c) a description of each key wildlife species for which habitat supply is proposed to be individually forecast, together with area-based habitat supply targets where appropriate;
 - (d) the criteria to be used to define seral stage distributions;
 - (e) unless exempted by the Technical Contact, the criteria to be used to define pulplog, sawlog and premium quality logs;
 - (f) historical levels of the silviculture program, by activity and year;
 - (g) the structure of proposed timber supply and/or silviculture management analysis units, if any;
 - (h) the yield and stand quality tables to be used for existing natural stands, and for existing and future managed stands in different silvicultural states, and the stand models, criteria and assumptions used to generate them (including assumptions regarding expected total stand density at establishment, at free growing, and immediately before any incremental silviculture treatments, broken into appropriate stand density classes), together with evidence demonstrating that a model is suited to the proposed use;
 - (i) a description of the timber management practices to be modelled in the analysis including utilization standards, minimum harvest ages, forest cover requirements, unsalvaged losses, decay, waste, and breakage, etc;
 - (j) the forest estate model to be used, together with evidence demonstrating that the model is suited to the proposed use;
 - (k) definition of the short (always the first 1 – 20 years), medium (generally from 21 years until harvesting is primarily in managed 2nd growth stands), and long (generally a steady state harvest level) term time periods;

- (l) proposed timber supply targets to be striven for in the analysis, including the priority and relative importance of each target;
- (m) the silviculture scenarios to be evaluated, including for each scenario
 - i) the approximate types, amounts, locations, timing, and unit and total cost of silvicultural activities, either individually or as a regime of treatments, as appropriate,
 - ii) a preliminary assessment of the extent of the treatment opportunity and the degree to which the scenario is expected to address the identified habitat and timber supply/quality issues (to demonstrate feasibility); and
- (n) a proposed analysis methodology for optimizing or otherwise evaluating the financial efficiency, social benefits, and degree to which each scenario addresses the identified habitat and timber supply or quality issues.

Modelling and Analysis Report

3.3 The analysis report must show for each scenario:

- (a) graphical depictions by decade over the planning horizon, together with supporting data, of
 - i) forecast annual harvest volume,
 - ii) total and merchantable growing stock forecast within the timber harvesting land base,
 - iii) age class distribution at 50 year intervals or at intervals appropriate to depicting how critical age class gaps affect the harvest forecast,
 - iv) tree species composition,
 - v) habitat supply by individual key wildlife species by management emphasis zone, and
 - vi) generalized habitat supply in the form of seral stage distributions by management emphasis zone;
- (b) commencing in year 1 where data are available for existing stands or otherwise commencing in the decade where $\geq 75\%$ of the harvest is in managed stands, graphical depictions by decade over the planning horizon, together with supporting data, of
 - i) diameter distribution in 2 cm dbh classes, and
 - ii) unless exempted by the Technical Contact, log quality distribution showing pulplog, sawlog and premium log content;
- (c) for the total over years 1-5, 6-10, and by decade thereafter, data by activity (e.g., planting, spacing, etc.) by program (basic, backlog reforestation, incremental silviculture, and habitat management), for
 - i) the area treated,
 - ii) unit and total cost, and
 - iii) short-term jobs generated from doing the activity; and
- (d) a discussion of the items given in subsection 3.2(n).

3.4 For the “preferred” scenario, the analysis report should also include:

- (a) data for the annual average of the first 5 years, by activity and program, for
 - i) the area treated,
 - ii) unit and total cost,
 - iii) short-term jobs generated from doing the activity,
 - iv) the anticipated stand level volume gain (m^3) from each activity, by the time period in which the gain is anticipated to be captured (time periods 1-20, 21-50, 51-100, 100+); and
- (b) the relative priorities of the silviculture activities and the basis for the priorities.

Silviculture Strategy

- 3.5 The adopted silviculture strategy should represent a consensus (wherever possible) of the key stakeholders as to what constitutes a plausible, cost-effective approach to the application of available silviculture funds to addressing the identified issues of a Management Unit. The silviculture analysis report should be a key consideration in the process of finalizing the strategy but not the only consideration. To name but a few other considerations – modelling reliability and probability of outcome, common-sense judgment as to benefit-cost and financial efficiency, historical perspectives, stated or perceived funding source priorities, priorities and goals stated in the guiding documents, and operational realities – all must be taken into account in establishing the final strategy.
- 3.6 The silviculture strategy should include:
- (a) an executive summary;
 - (b) an introductory overview of the Management Unit, including the key descriptive data for the unit and its incremental silviculture history;
 - (c) a section focussed on resource issues that can be affected through silviculture, particularly those related to
 - i) timber supply, including a general discussion of the dynamics of supply and the identified opportunities to increase timber supply,
 - ii) timber quality, including a general discussion current and forecast quality status and of the identified opportunities to increase timber quality,
 - iii) habitat supply, including a general discussion of the key wildlife species and identified opportunities to increase habitat supply;
 - (d) a summary discussion of the silviculture analysis scenarios relevant to the final chosen strategy, including a discussion as appropriate of the factors considered as stated in section 3.5;
 - (e) the adopted silviculture strategy including
 - i) the objectives of the strategy, including plausible working targets for timber and habitat supply and quality,
 - ii) individual sub-strategies, broken out into programs of basic, backlog and incremental silviculture activities and habitat activities, including the silviculture regimes needed to implement each sub-strategy (a silviculture regime may cross over programs) and identification of the relevant stand types, densities and conditions before and after treatment at each stage of a regime, the total opportunity area, and the proposed annual area to be treated,
 - iii) the recommended annual silviculture program by year or by average annual over the first five year period, broken out into basic, backlog and incremental silviculture program activities and habitat activities, and each program's overall consequences for short-, medium-, and long-term habitat and timber supply;

(If relevant, indicate which parts of the program are necessary to achieve the assumptions regarding incremental silviculture in the current AAC determination for the Management Unit.)
 - iv) for the recommended silviculture program, the information required in sections 3.3 and 3.4;
 - (f) a regime table which identifies the recommended treatment regimes and priority treatments that should be used to deliver the strategy;
 - (g) a monitoring program for the evaluation of strategy implementation and effectiveness;
 - (h) the need and plans for First Nations and public consultation, if any;
 - (i) a summary of information and research that is needed to support or refine the silviculture strategy for the management unit; and
 - (j) reference material used in the development of the strategy.

ARTICLE 4: SUBMISSION**Submission and Review**

- 4.1 For information purposes, the Recipient must submit to the District Manager a copy of each document as it is completed.

Revision

- 4.2 The District Manager may request changes to a document or further analysis that in the District Manager's opinion will be necessary in order for him or her to officially endorse the ultimate strategy on behalf of the Province.