

The Forestry Corp.

Manning Diversified Forest Products Ltd. Polygon Update Protocol

**Prepared For:
Manning Diversified Forest Products Ltd.**

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1. Introduction

1.1. Background

The Manning Diversified Forest Products Ltd. (Manning Diversified) FMA area contains many blocks that were harvested under various dispositions prior to the receipt of the Company's FMA. These represent approximately 15,000 ha and all were established prior to the implementation of the free-to-grow standards. Stands are relatively young, and harvesting and silvicultural history is quite variable (*e.g.*, partial harvesting, clearcuts, leave for natural, planted, etc.).

A yield stratum assignment may be made subsequent to harvesting based on ground surveying (*e.g.*, post harvest assessment and regeneration surveys) or silvicultural treatments. However, because these blocks were harvested prior to Manning Diversified's receipt of the FMA, this information is not always readily available.

It is not feasible for Manning Diversified to ground sample each block in order to obtain an accurate stratum assignment, nor is the company responsible for doing so. The alternative is to use Alberta Vegetation Inventory (AVI) information obtained from aerial photography. This is problematic in that assignment of strata based on AVI data often does not work well in young blocks, and treatment may have occurred since the AVI was completed (*e.g.*, aerial spraying to control deciduous competition).

Since accurate stratum assignment is important for Timber Supply Analysis (TSA), Manning Diversified has elected to gather additional information in order to enhance yield stratum assignment. This is a voluntary program intended to improve the results of TSA by more accurately representing the existing condition (yield strata) of these blocks.

Ground sampling will be used to improve upon the accuracy of stratum assignment for the TSA. It will not be incorporated into the AVI. This document outlines the process

that Manning Diversified will follow to capture the information required to assign these areas to yield strata for the TSA.

1.2. Objectives

The protocol is intended to assign old cutblocks (harvested prior to the establishment of the free-to-grow standards) to regenerating yield strata. Ground samples and aerial assessments will be considered a supplement to AVI data. Sampling is not intended as a replacement for regeneration surveys, and therefore will not follow Alberta Sustainable Resources Development (SRD) Regeneration Standard protocols. It is also not intended to replace existing regeneration liabilities or commitments.

The intention is that each polygon will be assigned to a regenerating yield stratum. However, yield strata have not yet been determined. As such, data must be sufficient to allow yield strata to be assigned post-hoc to each polygon. In order to do so, broad cover group, leading species, understory information and stocking.

1.3. Intended Use of Data

The blocks in question are being sampled for the purposes of updating, or supporting the update of assignments for the purposes of timber supply analysis. Although some of the data collection procedures are based loosely on the Alberta SRD Regeneration Standards manual, failure of the data to pass Alberta regeneration standards in no way indicates liability on the part of MDFP to treat or otherwise manage these stands.

2. Preparing Blocks

2.1. Data Summaries

Data will be obtained from a variety of sources, including early regeneration survey data, ARIS data, treatment records, records used in determining need for treatment, FRIP proposal data, and so on. Block age will be obtained from ARIS records, last planting date or harvest date.

For each block, existing data will be used to classify blocks. Summaries will be provided to Alberta Sustainable Resources Development as required to provide an auditable link between block records and block classification for sampling.

2.2. Grouping Blocks

Blocks will be grouped for sampling under the following circumstances:

1. Blocks fall within one license; and
2. The same treatment has been applied to all blocks; and
3. All blocks have the same leading conifer species and are expected to be assigned to the same broad cover group.

Two sets of blocks have been identified based on these criteria. Manning Diversified has received approval from Alberta SRD to amalgamate CTLP060012 and CTLP060019 into one unit for treatment and administration (hereafter referred to as L12/L19). Based on similarity in treatment history, P6 MOF (Maintain Our Forests) blocks will also be grouped together.

2.3. Classifying Blocks

All blocks harvested prior to the establishment of a Free-To-Grow standard and which were successfully treated to remove deciduous competition (either via aerial spraying or basal bark treatment) will be assessed. A decision tree will be used to identify eligible blocks and separate blocks into different populations based on treatment (Figure 1).

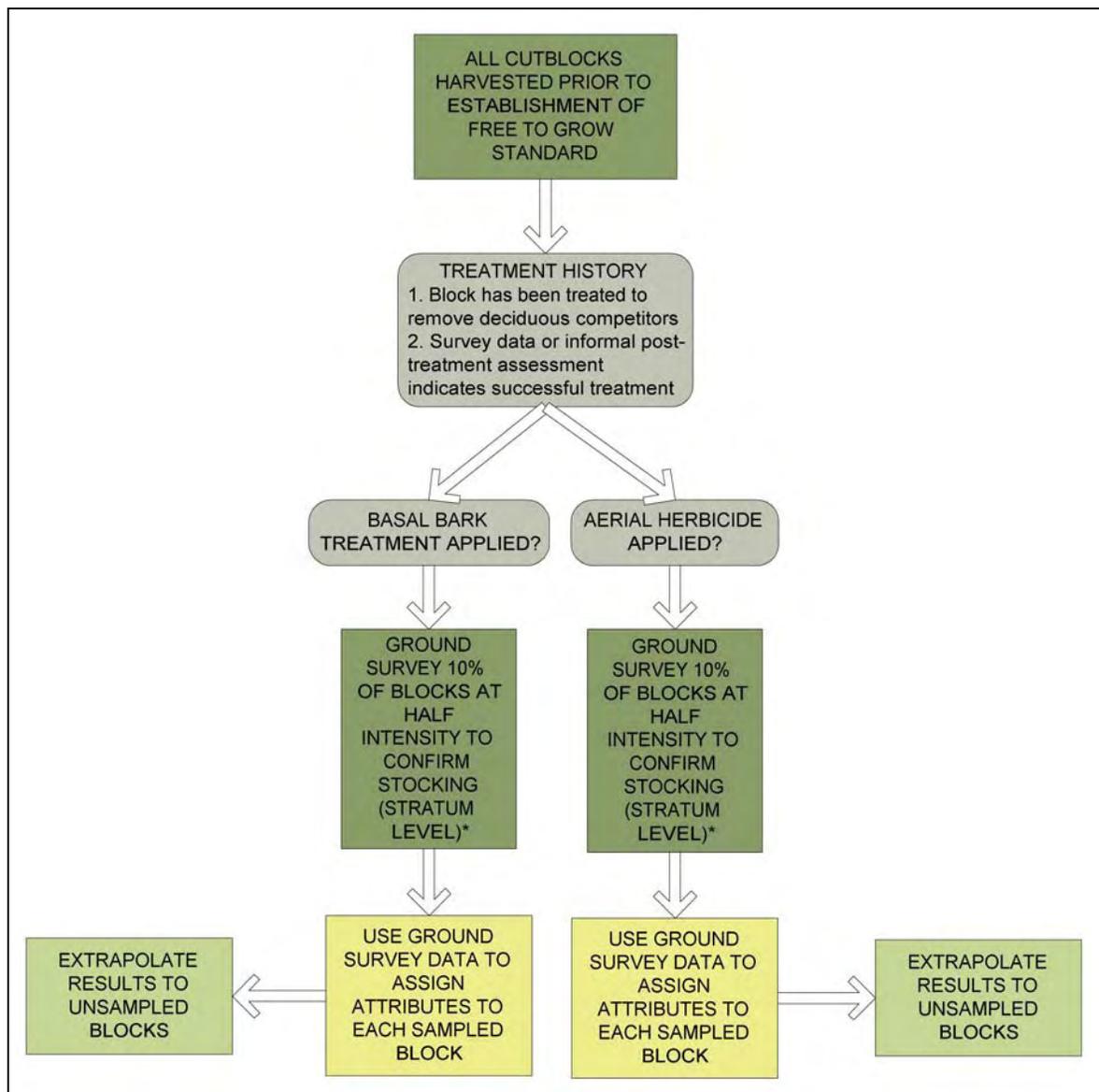


Figure 1. Decision tree for classifying blocks.

* The 10% survey intensity does not apply to block groups. See Section 3.1 for further details.

3. Sampling Design

3.1. Stand Selection

Generally, a subsample of blocks will be ground sampled. Ground sampling will consist of 1.78 m radius plots, placed in a grid pattern similar to that outlined in the Alberta SRD Regeneration Standards manual (ASRD 2003) for regeneration surveys. An exception to this will be the grouped blocks. These will be sampled using line transects with equal plot spacing; plot size and data collection will be the same as for the grid-based surveys.

P6 MOF blocks: because these blocks are expected to be much larger than the range of other blocks, they will be assessed separately. Approximately 50% of MOF blocks will be selected for sampling; selection will not be proportional to block area.

- ✓ two or more transects placed across the selected blocks; a minimum of 50 plots are to be sampled, with a minimum spacing of 50 m between plots (plot spacing set to achieve the required number of plots)

L12/L19 blocks: this is a large (600+ ha) area comprised of many very small blocks with similar overall treatment. This block group will be assessed separately as a single unit.

- ✓ three or more transects placed across the block group; a minimum of 100 plots are to be sampled, with a minimum spacing of 50 m between plots (plot spacing set to achieve the required number of plots)

All other blocks: a 10% subsample of blocks will be selected for ground sampling. Treated blocks will not be grouped for the purposed of subsampling, and selection will not be proportional to block area. The following data will be collected:

- ✓ sampling intensity at half the level indicated in the Alberta SRD Regeneration Survey Manual; sample one quarter intensity for blocks > 60 ha

- ✓ for half intensity, sample every second line of the grid; for one quarter intensity, sample every second line and every second plot

3.2. Data Collection

Within all sampled blocks, the following data will be collected:

- ✓ 1.78 m radius plots in either a grid layout (individual blocks) or along line transects (grouped blocks)
- ✓ block data: for each vegetation layer, assign crown closure class, leading species, height (m), and percent composition by species using AVI-like descriptors
- ✓ plot data: density class of conifer and deciduous stems by height class and species
 - height classes: 0.3-1.3, 1.3-3.0, 3.1-5.0, 5.1-7.0; 2 m intervals thereafter
 - density classes: 0, 1, 2-5, 6-10, 10+, 100+

Within recently treated blocks (treated in 2004), effects of treatment will not yet be apparent. Areas that have been treated will be delineated within each block, and within these treated areas, all deciduous stems will be assumed to be dead.

3.3. Data Analysis

For each stratum, the following attributes that will be assessed:

- percent stocking
- broad cover group
- understory presence
- leading species

Plot-level attributes will be assessed and rolled up to the block level. For grouped blocks, an average will be taken of all blocks within the group, weighted by block area, to roll up to the block group level.

Plots will be individually assessed for stocking and then rolled up to determine stocking for the block. Because these are treated stands, it will be assumed that these stands will perform to a C/D density crown closure class based on treatment.

The stocked plots within each block will be used to assign broad cover group to the block. Broad cover group must also account for deciduous or mixedwood stands with conifer understories. The range of broad cover groups will follow those outlined in the Manning Diversified Volume Sampling Plan (The Forestry Corp. 2003).

Leading conifer will be assigned based on the most frequently observed tallest conifer in the block/block group. Leading species is not required for deciduous broad cover groups.

4. References

Alberta Sustainable Resource Development. 2003. Alberta Regeneration Survey Manual. Forest Management Branch, Edmonton, AB.

The Forestry Corp. 2003. Manning Diversified Forest Products Ltd. Volume Sampling Plan. Edmonton, AB.

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