Stand Level Ecological Guidelines

Weyerhaeuser Canada

Edson Forestlands

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Stand Level Ecological Guidelines

Overview

Purpose

These guidelines provide strategies and targets on how to create ecological and residual diversity in cutblocks.

Diversity within harvested areas provides many values. Implementation of these procedures will help to ensure ecological diversity and habitat opportunities for all plants and wildlife species.

Target

The overall target is to achieve a balance in "what to take" with "what to leave." Targets include:

- understand the main forest management strategy (DFMP) for an area and implement the applicable stand level ecological guidelines.
- leave as much structure as possible, up to a maximum of 3% of the merchantable volume within the cutblock will be left. This volume may occur within buffers, unique sites, small clumps and/or large patch retention.

Objectives

Specific objectives of stand level guidelines for harvested areas include:

1. Provide for both vertical and horizontal biodiversity in the forest structure
2. Protect sensitive sites
3. Enhance opportunities for both current and short term wildlife habitat purposes
4. Minimize the loss of nutrients from the forest ecosystem.

Principles

The following general principles will guide implementation of stand level procedures:

- safety of harvested areas must be maintained
- most harvested areas will retain some form of vertical structure
- retention of structure within cutblocks is site-specific.

Fit with Groundrules

Weyerhaeuser's *Stand Level Ecological Guidelines* expand on the 1994 - Provincial Ground Rules, Section 4.3.2, as outlined in the following table.

The guidelines are also consistent with the Alberta Forest Products Association's guidelines for the retention of trees in cutovers.

Section of Groundrules	Topic
4.3.2 - 9	• some merchantable and unmerchantable standing trees
4.3.2 - 11	• some slash piles will be left
4.3.2 - 10	• trees of merchantable size will also be left

Monitoring

Weyerhaeuser personnel will monitor the effectiveness of its *Stand Level Ecological Guidelines*, and make adjustments/adaptations as deemed necessary. Components of monitoring include:

- monitoring for quantity, through aerial photography and/or ground surveys, as required
- monitoring for effectiveness in providing wildlife habitat and addressing biodiversity concerns.

Components of Stand Level Guidelines

Components of stand level guidelines

There are six component areas for which *Stand Level Ecological Guidelines* have been developed. These guidelines contain procedures for these six areas and where the primary responsibility of implementing the guidelines occurs.

Procedure for:	Responsibility	See Page
1. Snag Retention	Falling phase	6
2. Single trees/Small Clump Retention	Falling phase; Block planners,Layout	8
3. Tree Patch Retention	Block planners, Layout	10
4. Coarse Down Woody Debris Retention	Block planners; Skidding phase; Final phase	12
5. Wetlands, bogs Protection	Harvest design/layout; Block planner	13
6. Unique Site Retention	Harvest design/layout; Block planner	14

Values provided

By maintaining stand structure diversity, the following values are provided:

Structure	Value Provided
Snags, green trees, small clumps	• habitat opportunities for many species of invertebrates, birds and mammals • retention of late seral conditions (e.g. multi-layered canopy) • increase microsite variability for a more diverse plant understory
Tree Patches	• provide habitat for a variety of species • function as travel routes for species finding harvested areas difficult to cross
Coarse Down Woody Debris	• hiding and nesting cover for small mammals and furbearers, and habitat for invertebrates • nutrient cycling
Woody debris piles	• hiding and nesting cover for small animals • reduction in the amount of nutrients removed from the cutblock (carbon sink)
Wetlands, bogs and unique Sites	• may host rare plant communities • may provide habitat opportunities for small mammals, amphibians, reptiles and invertebrate species.

Procedure for Snag Retention

Definition *Snag* - is a standing dead tree within the harvested area.

How many? Leave ALL snags standing, as per safety considerations.

Procedure The following instructions apply to all harvested areas:

1. Maximize the number of Snags on the harvested area by leaving all "safe" snags.

Exception: if snag creates a safety hazard (*see* safety considerations below)

2. Where possible, live trees may be "topped off" around 6 meters to create snags and bird perches.

Safety considerations **Safety is the first priority** in determining whether a dead or dying snag should remain standing within a block. The following information will provide some direction and it is also consistent with the AFPA policies. Site specific judgment will be required for the final decision.

- Live or dead trees less than 6 meters in height, or firm trees less than 15 cm dbh can normally be considered acceptable.
- Dead trees greater than 6 meters in height and/or greater than 15 cm dbh are considered acceptable if they have been tested to ensure they are firm (i.e. bumped with machine), and are not in machine maintenance areas, near roads or landings.
- Unsafe trees including leaners, non-firm, unsound or decayed standing trees greater than 6 meters in height, and all dead or dying trees within 2 tree lengths of roads, landings, camps or other designated work areas must be removed.
- Dead or dying trees contained within clumps and away from designated work areas will be considered acceptable. In all cases the operator will have the flexibility and responsibility to remove any snag or tree deemed unsafe for workers on site.
- Reforestation activities are post operation treatments and will be allowed providing that a reasonable amount of time, at least 30 days, has elapsed since operations. Operations will have removed unsafe trees and the time period will allow any additional trees to fall. In addition, reforestation workers must have the flexibility to avoid trees they feel are dangerous. This may include entire blocks on very windy days where hazards exist.

Exception: scarification activities conducted with appropriately equipped forestry equipment may commence treatment of a cutover immediately following harvesting operations.

Procedure for Single Green Tree & Small Clump Retention

Definition

Single Green Tree Retention - refers to single trees left standing in the harvested area.

Small Clump Retention - refers to small groups (3-4) of trees growing together that are left standing undisturbed in the harvested area.

Trees for retention can include:

- understory trees
- unmerchantable trees
- merchantable trees
- rub trees/posts/stumps.

Best choices for Tree Retention:

- dying trees that are safe to leave
- balsam fir, tamarack and birch
- wolf trees
- trees with heavy branching or poor form (e.g. red flag trees)
- wildlife trees (e.g. with nests, cavities)
- single trees located in sensitive sites.

When leaving single trees select trees that are more wind firm; consider:

- exposure to wind (topo, proximity to edge, etc.)
- root – soil resistance, and
- tree form (branching and taper)

How Many?

Conifer Dominated Stands (C)

- live single conifer trees, merchantable and non-merchantable, should be retained in small clumps (approx. 3-4 trees). No single conifer trees, except windfirm wolf trees, wildlife trees, etc.
- at least 1 small clump /ha should be retained
- "Topping-off" at 6 m height must be considered when safety is at risk.
- at least one above average diameter tree/ha must be left

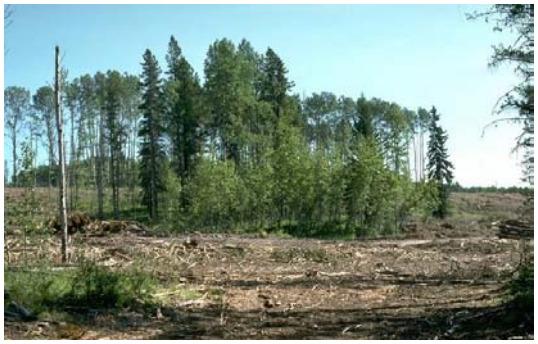
Mixedwood Stands (DC or CD)

- small clumps need to include both deciduous and conifer trees
- at least 1 small clump/ha should be retained
- at least one above average diameter tree/ha must be left

Procedure

The following instructions apply to all harvested areas:

1. Understand type of forest and tree retention required (above).
2. Retention of small clumps is preferable to single trees.
3. Single trees and/or small clumps should be widely distributed throughout the harvest site.
4. Try to locate a minimum of 2-3 small groups 30-50 m from the edge of the cutblock.
5. No small clumps or single trees shall be left within the 5-meter Slash Free Zone of the cutblock.



Procedure for Retention of Tree Patches

Definition

Tree Patch -- is a large group of trees (more than 10) left within cutblocks. The shape of patches will be highly variable.

Patches of Trees include:
- understory trees that also contain mature merchantable and/or unmerchantable trees
- large conifer trees that are windfirm.

Best choices for Tree Patches:
- riparian areas (ephemeral creeks, etc.) within the cutblock
- inoperable areas within the cutblock

Note: these areas should be included and accounted for in the harvest design.

How many? What size?

- On average, there must be 1 patch of trees every 10 hectares harvested.
- Patch size will vary depending on site conditions and size of cutblock.
- The larger the cutblock, the larger the size of patch should be left (e.g. a cutblock of 20 ha may have a patch size of 1 ha; a cutblock of 50 ha may have a patch size of 2.5 ha or multiple smaller patches).
- Patches could include merchantable and/or unmerchantable trees, buffers around creeks, unique sites, bogs, etc.
- In very large cutblocks design the patches so that removal could occur in the future.

Procedure

The following instructions apply to all harvested areas:

1. No tree patches shall be left within the 5-meter Slash Free Zone of the cutblock.
2. Try to locate some patches 30-50 m from the edge of the cutblock
3. Ensure windfirmness:
    - This can be achieved though feathering the edges of patches.
    - Locate patches in a wind-protected area.
4. Take advantage of natural features when locating patches. For example:
    - wet areas
    - watercourses and water sources buffers (including ephemeral streams)
    - patches of shrubs
    - patches of understory
    - sensitive soils
    - unique sites
    - steep slopes.
5. Locate patches around clusters of snags, wolf trees, wildlife trees, patches of understory, etc.

Procedure for Coarse Down Woody Debris

Definition

Coarse Down Woody Debris (CDWD) - includes downed logs on the harvest site. CDWD can include:

- naturally occurring unmerchantable downed logs scattered through the block
- small, unburned brush piles
- single green trees that are dying and/or snags subject to blowdown (ultimately become CDWD)
- other slash.

How much?

The amount of dispersed CDWD will vary in each harvested area. Guidelines are to:

- if building CDWD piles, use the "unusable pieces of timber" e.g. branches and tops
- leave naturally occurring unmerchantable wood scattered throughout block
- leave naturally occurring unmerchantable large diameter (>20 cm diameter) pieces

Brush piles

- size of brush piles should be approx. 6 m in diameter and 1-1.5m high
- minimum of 2 piles located within 30m of edge.
- should contain coarse wood (log diameter greater than 10 cm) and limbs.

Procedure

The following instructions apply to all harvested areas:

1. No CDWD or slash piles shall be left within the 5-meter Slash Free Zone of the cutblock.
2. For fire protection, NO piles to be burned should be left within 8 m of cutblock edges.
3. Leave all naturally occurring unmerchantable wood scattered in block
4. Leave unburned brush piles.
   Logging supervisor and Forest Officer to determine location and number of brush piles to retain.

Exceptions

Retention of CDWD may not be practiced in grazing leases, and areas managed primarily for "Aesthetics" (i.e. may want a "clean" forest floor).

Procedure for Protection of Wetlands and Bogs

Definition

Wetlands and bogs are water-collection sites where soil is water saturated for most of the year.

- Wetlands and bogs can be of any size.

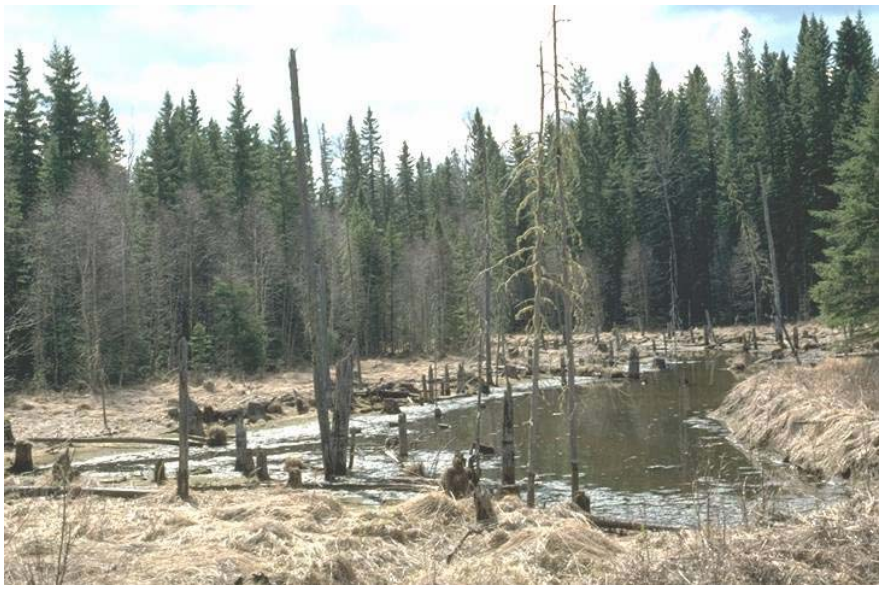
How many?

All wetlands and bogs be identified during planning and layout, and left undisturbed during harvesting.

Procedure

The following procedure will protect wetlands and bogs:

1. Identify sites and incorporate in layout designs
2. Unmerchantable or merchantable trees, and/or shrubs, adjacent to wetlands and bogs provide great opportunities for single trees and clumps retention.
3. Ribbon out sites during reconnaissance and layout.
4. All sites will be left undisturbed during harvesting.
5. Protection of these sites includes buffering.



Procedure for Retention of Unique Ecological Sites

Definition

Unique ecological sites - are sites that contain natural features of special value for wildlife and plant species.

Unique sites may include:

- small patches of old forest remnants from previous fires, or old logging
- clusters of large diameter downlogs
- small bogs and wetlands
- wildlife trees
- rock outcrops
- sites immediately surrounding dens, hibernacula, licks, etc.

How many?

Every effort should be made to identify all unique sites during planning and layout. All unique sites identified during planning and harvesting must be left undisturbed during harvesting.

Procedure The following procedure will protect unique ecological sites:

1. Identify sites and incorporate in layout designs when possible (information on unique ecological sites should be provided in harvest design).
2. Ribbon out sites during reconnaissance and layout.
3. All sites will be left undisturbed during harvesting.
4. Protection of these sites may include buffering.
5. Where feasible, a wildlife route to the 'unique site' can be incorporated.

Procedure for Designing Cutblocks

Procedure This is to provide guidance that may help to incorporate stand level considerations during the cutblock design phase.

Considerations The following should be considered during design:

- may want to design blocks to INCLUDE unique areas and/or bogs within the cutblock
- there are no differences in applying ecological guidelines to caribou habitat areas
- there are no minimum block sizes to which stand level guidelines are applied (i.e. apply to all cutblocks).

IF:	Then:
Block size is < 10 hectares	Apply all Guidelines except: (a) No Large Patches.
Block size is > 10 hectares	Apply all Guidelines
Area is designated for Aesthetics (e.g. along highways)	All guidelines apply except: (a) Woody Debris Piles and (b) CDWD, in some situations (confirm with harvest design objectives):
Creek buffers and/or unique sites and/or bogs and wet areas account for >3% of the block volume	Only need to apply guidelines for CDWD, slash piles, and snags.

Implementation of Guidelines

Differences to current practices

Currently, operations implement many of these ecological guidelines, to varying degrees.

The main changes to implement these guidelines are:

1. All operating areas will implement ecological guidelines.
2. The final clean-up phase needs to build some smaller slash piles that are left unburned. In addition, there may be some instances where the slash is redistributed throughout the block.
3. The falling phase needs to leave merchantable trees for retention (versus only non-merchantable).
4. The falling phase needs to focus on leaving and/or creating more snags within the cutblocks
5. In large, pure pine blocks with little natural biodiversity; vertical diversity must be planned (i.e. clumps and/or tree patches).

Benefits of implementing guidelines

In addition to providing for ecological biodiversity, the potential exists to incorporate these stand level guidelines into operations that could benefit the company and contractor economically. Examples include:

- leaving less desirable species to provide for vertical diversity (e.g. balsam fir, tamarack, wolf trees, "red flag trees")
- structuring large patches for removal in 20-30 years
- alternatively, the large patches and/or small clumps may be used to meet the percentages required at a landscape level for "older age classes" if they are not harvested.
- some log fill crossings may be piled or spread for CDWD (versus salvage)
- windthrown trees contribute to CDWD; hence do not have to re-enter areas of blowdown to salvage
- tall rub posts used for skidding can be left for bird perches.
- satisfaction to equipment operators and other contractor employees.

Glossary

Aesthetics – the philosophy concerning judgments made about beauty.

Biodiversity – the variety, distribution, and abundance of different plants, animals, and microorganisms, the ecological functions and processes they perform, and the genetic diversity they contain at local, regional or landscape levels of analysis.

Conifer dominated stands (C) – forest stands or blocks that consist predominately of coniferous tree species (e.g. White spruce, pine, fir).

Deciduous dominated stands (D) - forest stands or blocks that consist predominately of deciduous tree species (e.g. Aspen, balsam poplar, birch)

Detailed Forest Management Plan – a strategic long term plan developed by the Weyerhaeuser. It is the foundation for all forest management activities undertaken on the FMA area.

DFMP – see *Detailed Forest Management Plan*

Diversity – is an assessment of the number of species present, their relative abundance in an area, and the distribution of individuals among the species.

Ecology – the science that studies the interrelationships, distribution, abundance, and contexts of all organisms and their interconnections with their living and nonliving environment.

FMA – see *Forest Management Agreement*

Forest Management Agreement – a twenty year renewable forestry agreement between Weyerhaeuser and the Province of Alberta.

Hibernacula – a sheltered place where an overwintering animal rests, or a den where snakes hibernate.

Mixedwood stands (DC or CD) – forest stands that consist of a mixture of deciduous and coniferous tree species in varying proportions.

Nutrient cycling – circulation or exchange of elements, such as nitrogen and carbon dioxide, between nonliving and living portions of the environment.

Riparian areas – those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables, and soils that exhibit some wetness characteristics.

Seral stages – in a forestry context, the series of plant community conditions that develop during ecological succession from bare ground to the climax stage.

Slash free zone – the area around the perimeter of the cutblock that is free of any slash or debris

Travel routes – a route used by animals along a belt or band of suitable cover or habitat.

Wolf trees – a tree of good vigour but poor form.