

An aerial photograph of a vast forest landscape. In the foreground and middle ground, there are dense stands of tall, thin trees, likely spruce or fir, with a mix of green and brownish tones. A small, irregularly shaped pond is visible in the middle distance on the left side. The background shows rolling hills and more forested areas under a cloudy sky.

Northeast Alberta Operating Ground Rules

**Revised
November
2014**

**For all Forest Companies operating in
NE Alberta's Forest Management Units
and the Alberta-Pacific FMA Area –
November 2014**



ALBERTA-PACIFIC
FOREST INDUSTRIES INC.



Ed Bobocel
Lumber



S-11 Logging



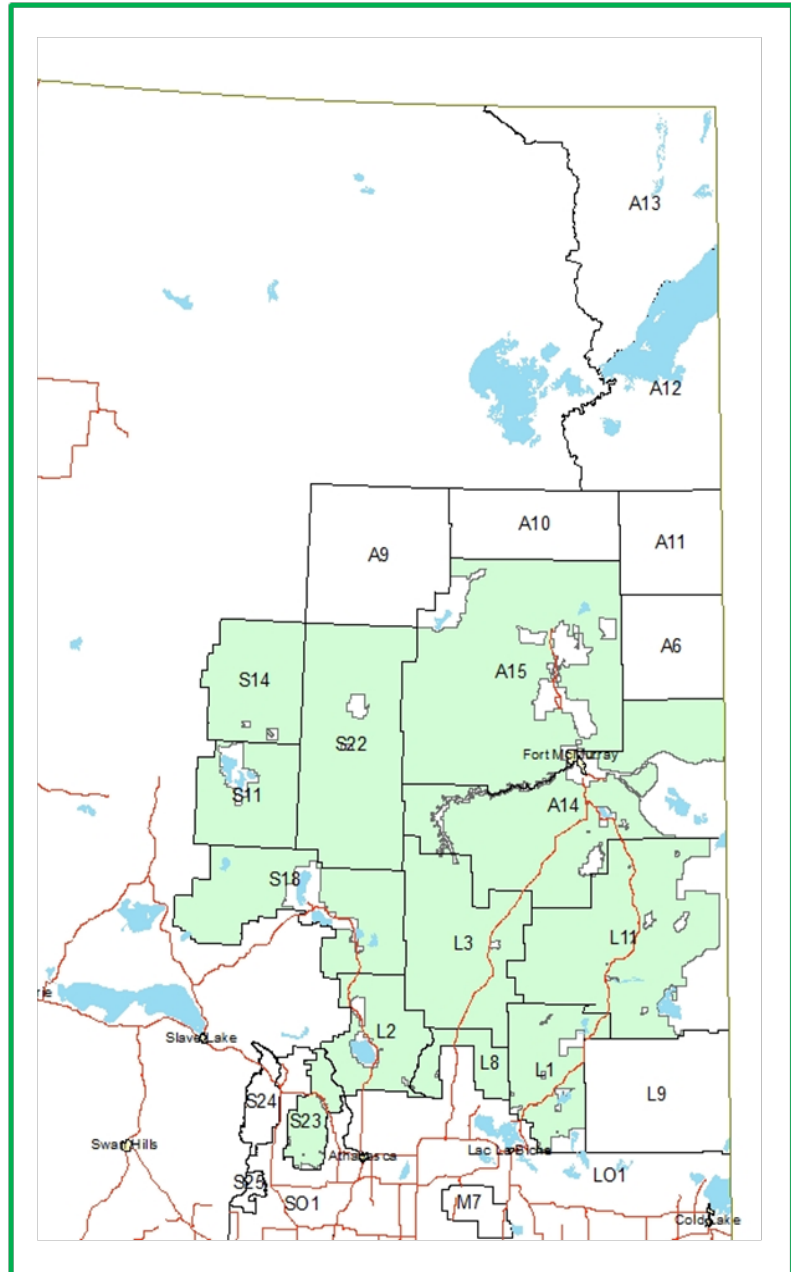
StJean Lumber (1984) LTD



Alberta Forest
Ind. Ltd



Seehta Forest
Products Ltd.



On the map, the 12 Green shaded FMUs are within the Alberta-Pacific FMA area.

2015

Northeast Alberta Operating Ground Rules

**ALBERTA-PACIFIC FOREST
INDUSTRIES INC.**

**ALBERTA
ENVIRONMENT and
SUSTAINABLE RESOURCE
DEVELOPMENT**

ENDORSEMENTS

The Alberta-Pacific FMA Area Timber Harvest Planning and Operating Ground Rules, having been prepared in accordance with Section 11 (2) of FMA 9100029, and hereby endorsed this 1st day of March, 2015. The Executive Director of Forest Management Branch has determined these ground rules will apply to all operations within FMA 9100029 as well as FMU's A6, A10, A11, A12, LO1, L9, and SO1.

Alberta-Pacific Forest Industries Inc.

HER MAJESTY THE QUEEN in right of Alberta as
represented by the Minister of Environment and
Sustainable Resource Development

Per:

Original Signed

Per:

Original Signed

David Cheyne

Darren Tapp

(print name)

(print name)

Management Forester

Executive Director

(title)

(title)

Northeast Alberta Operating Ground Rules
Revisions from 2012 to 2015
(Effective Date: March 1, 2015)

2015 Revisions

Ground Rule Number	2012 Version of the Ground Rule	2015 Version of the Ground Rule
General	Some edits were made outside of the joint review that included deletion of word(s), correction of spelling & grammar, changes to bolded text, etc. that did not change the intent, meaning or requirements of the OGRs, but rather to provide clarification. These changes are not documented in this table.	
3.4.6 j)	key ungulate and caribou areas as per section 7.7.	Key Wildlife and Biodiversity Zones as per section 7.7.
3.4.9.1 d)	The inter block roads may be moved as long as 9.0.3 is not exceeded and no additional watercourse crossings are required. Blocks less than 7 ha or narrow blocks may exceed 5% with these blocks reported on the as-built.	The inter block roads may be moved as long as 9.0.3 is not exceeded and no additional watercourse crossings are required.
3.4.9.1 g)	The creation of up to two 600 m2 decking areas along the road between blocks. Additional decking areas can be added during non-frozen conditions to minimize environmental impacts and to have a maximum skid distance of 400m.	Deleted
3.4.12	The company shall request a FWMIS search annually with results incorporated into new FHPs.	The company shall request a FWMIS search annually with identified sites as listed in 7.7.6.2 incorporated into new FHPs , if applicable and/or relevant to current OGR
4.1.3	All deferrals and bypassed polygons are to be justified in the FHP write-up.	Deletions, deferrals and bypassed polygons greater than 2 ha are to be justified upon Alberta's request.

4.1.5	For variance reporting purposes, additions, permanent deletions, and deferrals > 2ha and all bypassed stands must be tracked and reported in the FHP and GDP summaries as indicated below, using the SHS Variance Determination Procedure described in, Appendix # 5.	For variance reporting purposes, additions, permanent deletions, and deferrals > 2ha and all bypassed stands must be tracked and reported in the FHP and GDP summaries as indicated below.
4.2.1	The tree/piece utilization standards are stated in the applicable timber disposition and shall normally be one of the following standards.	The tree/piece utilization standards are stated in the applicable timber disposition and/or FMP shall normally be one of the following standards.
4.2.2	Added	Company processing practices cannot make an unmerchantable piece from a merchantable tree.
7.2.1.4 i)	key ungulate and caribou areas as per section 7.7.	Key Wildlife and Biodiversity Zones as per section 7.7.
7.4.1	For Alberta-Pacific, an average of 5% of the deciduous merchantable volume and 5% of the merchantable coniferous volume at the FMU level will be retained in harvest areas. A harvest area may have zero structure but the FMU average shall be 5%. Non merchantable structure is not to be tracked as part of the 5%.	For Alberta-Pacific, an average of 5% of the deciduous merchantable volume and 5% of the merchantable coniferous volume at the FMU level by quadrant will be retained in harvest areas. A harvest area may have zero structure but the FMU average shall be 5%. Non merchantable structure is not to be tracked as part of the 5%.
7.4.3	Proximal retention can be utilized for wind firming stands, protection of understory or for defined purposes/values (TLU, sensitive sites, etc.) and is identified in the FHP. Proximal retention is defined as touching the boundary and it will not make up more than 30% of the total retention. It must be excluded from being sequenced for at least 30 years from the skid clearance of the block it is in.	Proximal retention can be utilized for wind firming stands, protection of understory or for defined purposes/values (TLU, sensitive sites, etc.) and is identified in the FHP. Proximal retention is defined as touching the boundary and it will not make up more than 30% of the total retention per FMU level by quadrant. It must be excluded from being sequenced for at least 30 years from the skid clearance of the block it is in.

7.6.2	For any activity that disturbs or alters the bed and banks of a fish-bearing waterbody, an assessment of the potential effects on fish and fish habitat must be conducted by an individual with expertise in fisheries and aquatic assessment methods and habitat mitigation measures. For assessment requirements and methods, refer to Schedule 4 of the Code of Practice for Watercourse Crossings Guidelines for Complying with the Code of Practice for Watercourse crossings.	For any activity that disturbs or alters the bed and banks of a fish-bearing waterbody, an assessment of the potential effects on fish and fish habitat must be conducted by an individual with expertise in fisheries and aquatic assessment methods and habitat mitigation measures. For assessment requirements and methods, refer to Schedule 4 of the Code of Practice for Watercourse Crossings
7.7.5	Ungulate Habitat in Major River Valleys	Key Wildlife and Biodiversity Zone
7.7.5.2	The amount, tenure and class of new forest company access roads shall be minimized and consistent with the land use objectives in regionally defined key wildlife zones (regional SRD land use referral maps). Access development will strive to minimize new human infrastructure.	The amount, tenure and class of new forest company access roads shall be minimized and consistent with the land use objectives in regionally defined key wildlife zones (Landscape Analysis Tool (LAT)). Access development will strive to minimize new human infrastructure.
7.7.5.10	Stand tending activities shall only remove competing vegetative growth that interferes with free-to-grow standards in order to maintain browse availability.	In order to maintain browse availability, mechanical stand tending activities shall only remove competing vegetative growth that interferes with the Reforestation Standard of Alberta (RSA) targets.
9.0.3	The total area covered by temporary roads, bared processing areas, and soil displaced during timber harvesting operations shall not exceed five percent of each harvest area without Alberta's approval. This ground rule does not apply when the company has an approved silviculture strategy to reclaim these disturbed areas.	The total area covered by temporary roads, bared processing areas, and soil displaced during timber harvesting operations shall not exceed five percent of each harvest area without Alberta's approval. Blocks less than 7 ha or narrow blocks may exceed 5% with these blocks reported on the as-built. This ground rule does not apply when the company has an approved silviculture strategy to reclaim these disturbed areas.
Table 3		Added clarification that specifications for roads under Department License of Occupation (DLO) are guidelines and actual approved specifications would be found in related DLO disposition document, and may be different than presented in Table.

11.3.1.2	New	<p>Temporary road construction activities that are required outside an approved ROW can be considered incidental to construction and will be approved as part of the AOP provided the following is met:</p> <p>a) Be immediately adjacent to AOP approved disposition (temporary road and associated ROW only);</p> <p>b) Be reclaimed or reforested in the same fashion as the adjacent AOP approved disposition (if applicable);</p> <p>c) Be without conflict of existing dispositions and/or adjacent land uses; and</p> <p>d) Be an activity type and within the parameters as described below:</p> <ul style="list-style-type: none"> •Log Decks or Decking Areas: <ul style="list-style-type: none"> i. ≤ 0.18 hectares in size; ii. Located on average ≥ 400 metres apart •Bank Stabilization: <ul style="list-style-type: none"> i. Related to hill cuts impacted during construction; •Push Outs: <ul style="list-style-type: none"> i. ≤ 0.04 hectares in size; ii. Located on average ≥ 800 metres apart. Where this distance is not feasible due to operational constraints, line of sight between push outs should be minimized.
Appendix 5	SHS Variance Determination Procedure	Deleted
Glossary - Delegated Authority	Added	The ESRD personnel located at the Regional or Area level charged with supervision of all forest management activities in a defined Region or Area. It can also mean someone who is authorized to approve an AOP.
Glossary - Department License of Occupation (DLO)	Added	A disposition issued by Alberta (ESRD) authorizing occupation of a linear corridor, often for an access road.
Glossary - Exterior Road	Added	Inter-block road that exists outside block boundary.

Glossary - Fisheries & Wildlife Management Information System (FWMIS)	Added	The Fisheries and Wildlife Management Information System (FWMIS) is a Government of Alberta database that provides a central repository for which government, industry, and the public can store and access extensive and reliable fish and wildlife inventory data.
Glossary - Forest Program Manager	The senior Alberta manager located at a Forest Area charged with supervision of all forest management activities in a Forest Area. It may also mean someone else who is authorized to approve an AOP.	Deleted

Table of Contents

1.0	GROUND RULE SCOPE	1
1.1	REGULAR REVIEWS	1
2.0	THE TOPICS	1
3.0	OPERATIONAL PLANNING	2
3.1	PLANNING PROCESS	2
3.2	COMPARTMENT ASSESSMENT (CA)	3
3.3	GENERAL DEVELOPMENT PLAN (GDP)	3
3.4	FOREST HARVEST PLAN (FHP)	5
3.5	ANNUAL OPERATING PLAN (AOP)	9
3.6	SALVAGE PLANNING	11
4.0	UTILIZATION	12
4.1	SPATIAL HARVEST SEQUENCE (SHS) VARIANCE	12
4.2	TREE UTILIZATION	17
5.0	INTEGRATION WITH OTHER USERS	18
5.1	DECIDUOUS/CONIFEROUS INTEGRATION	18
5.2	FOREST RECREATION AND TOURISM	19
5.3	TRAPPING	19
5.4	RANGE MANAGEMENT	20
5.5	FOREST AESTHETICS	21
5.6	HISTORICAL RESOURCES	21
6.0	WATERSHED PROTECTION	22
	Figure 1. Watercourse Classification Diagram	24
	Table 1. Watercourse/ Waterbody Classification	25
	Table 2. Standards and Guidelines for Operating Beside Watercourses/ Waterbodies	27
7.0	HABITAT MANAGEMENT	30
7.1	LANDSCAPE PLANNING AND HARVEST AREA DESIGN	30
7.2	HARVEST AREA DESIGN AND LAYOUT	31
7.3	DEBRIS MANAGEMENT AND WILDFIRE PROTECTION	34
7.4	STRUCTURE RETENTION	35
7.5	UNDERSTOREY PROTECTION	38
7.6	FISHERIES AND THE AQUATIC ENVIRONMENT	40
7.7	SPECIES OF SPECIAL MANAGEMENT CONCERN	41
8.0	SILVICULTURE	47
8.1	PLANNING	47
8.2	REFORESTATION PROGRAM	47
8.3	SILVICULTURE OPERATIONS	49
9.0	SOILS	50
	Figure 2. Change in Soil Moisture and Susceptibility to Compaction and Rutting Following Rainfall Diagram	51
10.0	FOREST HEALTH/PROTECTION	52
10.1	INSECT AND DISEASE	52

10.2	WEED MANAGEMENT	53
11.0	ROADS	53
11.1	ROAD CLASSIFICATION	53
	Table 3. Road Classification and Design	55
	Table 3A. Road Classification for the Caribou Area	57
11.2	ROAD PLANNING AND DESIGN	58
11.3	ROAD CONSTRUCTION, MAINTENANCE AND RECLAMATION	60
11.4	WATERCOURSE CROSSINGS	63
11.5	ACCESS CONTROL	67
11.6	CAMPS AND FACILITIES	68
12.0	REPORTING	69
	Appendix 1 – Role of Regulated Forestry Professionals in Forest Management	70
	Appendix 2 – Debris Disposal Policy– Update to new directive	72
	Appendix 3 – Directive for Weed Management	75
	Appendix 4 – FHP and AOP Checklists	80
	Glossary	86

Northeast Alberta Operating Ground Rules

1.0 GROUND RULE SCOPE

Ground rules are the practices used in planning and conducting timber harvesting operations which constitute the methods used to implement decisions made in the Forest Management Plan (FMP) and other higher level plans such as Integrated Resource Plans (IRP). In the event that these strategic plans do not exist, the ground rules shall establish practices that minimize the chance of negative impacts from roads, timber harvesting and forest management operations and activities. Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act and Migratory Birds Convention Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans, Environment Canada) regarding federal legislation requirements.

Authorization of the Annual Operating Plan (AOP) does not constitute waiver or exemption from the ground rules, nor is authorization of the AOP verification of compliance with the ground rules.

The Delegated Authority (Alberta) has the authority to approve Annual Operating Plans and may also waive or amend the application of specific ground rules in unusual or special circumstances. However, waivers must be completed in writing and conform to all applicable provincial legislation or statutes.

1.1 REGULAR REVIEWS

The intent is to have an annual review of ground rules if requested by either forest disposition holders or Alberta. This is not meant to be a complete redevelopment but rather an opportunity to fine-tune the ground rules. It is expected that regular reviews will allow participants to plan revisions more systematically and to correct any inconsistencies or problems. It will also create the ability to regularly consider modifications that reflect the best and most current knowledge and tools available.

2.0 THE TOPICS

This annex provides a list of topics that must be addressed in all ground rules. Each topic includes a purpose, discussion, and ground rule heading. All ground rules shall be written following this format. Bolded text is mandatory and would only be changed if, in Alberta's opinion, the result is a higher standard of practice. Non-bolded text may be modified where in Alberta's opinion it doesn't apply to an area, or the issue is handled differently to meet local needs while still meeting Alberta's expectations.

PURPOSE

A statement of what the topic is designed to accomplish.

DISCUSSION

Include background information, research knowledge, and reasons for the concern. The discussion shall focus on why a ground rule is needed. Alternative actions or solutions could also be discussed here.

GROUND RULES

These are definitive statements of the desired results to be achieved and a clear indication of what is expected. **The ground rules shall be relevant, measurable, understandable and achievable.**

3.0 OPERATIONAL PLANNING

3.1 PLANNING PROCESS

PURPOSE

The operational planning process is designed to expedite the implementation of the FMP. Where management direction has not been established through an approved FMP, then required decisions shall be made during this operational planning process.

DISCUSSION

The planning process includes five main components:

1. **Approved Forest Management Plan (FMP)**
 - **Spatial Harvest Sequence (SHS)**
 - **Approved Long Term Road Network**
2. **Compartment Assessment (CA)** – A CA shall be required when information or major issues are identified that in Alberta’s opinion, have not been addressed in the FMP. In the event that the SHS is deemed by Alberta to be inappropriate due to a significant change in circumstances since the approval of the FMP, a compartment assessment describing current issues, shall be required (see section 3.2).
3. **General Development Plan (GDP)** The GDP gives a comprehensive description of a forest operator’s proposed harvest strategy, road building plans, and reclamation operations for a five-year period, and includes all licences, permits, and a listing of FHPs to be submitted. The GDP is used to guide integration of activities (see section 3.3).
4. **Forest Harvest Plan (FHP)** – The FHP is a map and associated report describing the laid out harvest plan (see section 3.4).
5. **Annual Operating Plan (AOP)** – The AOP describes operations in detail through a series of components that shall be submitted together at the same time, or as individual submissions on a schedule approved by Alberta:
 - a) **Operating Schedule and Timber Production**
 - b) **Applicable FHPs**
 - c) **GDP**
 - d) **CAs**
 - e) **Reforestation Program**
 - f) **Fire Control Plan**
 - g) **Road Plan**(see section 3.5)

3.2 COMPARTMENT ASSESSMENT (CA)

PURPOSE

To address significant issues that have arisen since the approval of the FMP.

DISCUSSION

It is recognized that circumstances change over time and it is possible that the SHS approved in the FMP may prove to be inappropriate. Where Alberta deems it necessary, a CA shall be completed to adjust the operational plan for the area. CAs are necessary when major new issues or information that have been identified since FMP approval make the SHS inappropriate. (e.g., forest fire, insect or disease, species of special management concern, a major change in land use direction or an unacceptable variance of >20% of the SHS/cover type/compartments/ ½ decade as determined by the Delegated Authorities at the Region (or Area) and the Forest Management Branch (FMB). The CA shall describe how the new issues will be incorporated into the FHP. In completing the CA, operators must consult in a meaningful way with stakeholders and strive to reach general agreement on issues. The CA provides an opportunity to reconsider management strategies at the time of operational planning if warranted.

GROUND RULES

- 3.2.1 Alberta shall decide on the boundaries of the area on which a CA is required after consultation with the forest disposition holder.**
- 3.2.2 If a CA is required, the operator must receive Alberta's approval for the CA prior to the submission of an FHP.**
- 3.2.3 A CA is considered current if it has been approved by Alberta and an FHP is submitted to Alberta within three years of approval.**
- 3.2.4 The CA shall include any maps, analyses, and reports deemed necessary by Alberta to adequately address the issues.**

3.3 GENERAL DEVELOPMENT PLAN (GDP)

PURPOSE

To provide a projection of activities for the next five years to:

- a) guide the integration of activities;**
- b) schedule timber disposition administration activities;**
- c) predict cut control status;**
- d) co-ordinate the development and reclamation of roads.**

DISCUSSION

The primary components of the GDP include a forecast of the areas scheduled for harvest for a five year period. The GDP must also include the current status and forecast of the respective annual allowable cuts (AACs) and cut control period for each of the companies within the planning area. This could be either a joint submission by all companies or separate submissions containing consistent information between companies.

In addition to outlining the projected wood supply forecast, the GDP shall also include details regarding road requirements, and fish and wildlife issues within the planning area. Consultation of the GDP with First Nations is a requirement of Alberta's First Nations Consultation Guidelines on Land Management and Resource Development.

Plans submitted within the Mineable Oilsands Area (MOSA) are submitted under a separate plan to the FMA GDP.

GROUND RULES

- 3.3.1 The final GDP submission date is June 1 for quota operators and March 1 for Al-Pac of each year unless otherwise approved by Alberta. Alberta shall respond within 30 days. The GDP shall be approved subject to an appraisal by Alberta.**
- 3.3.2 The GDP shall describe volume supply by area, road standards and construction schedule, and reclamation activities. The plan is a notification to Alberta of proposed activities and exceptions to guide future regulatory activities.**
- 3.3.3 Other forest companies affected by the GDP must agree in writing (e-mail notification acceptable) to the GDP before it will be approved (see section 5.1.1).**
- 3.3.4 It is the responsibility of the operator to ensure that an over-cut exceeding that allowed in their tenure document is not proposed.**
- 3.3.5 When a change in a company's GDP strategy is proposed a revision will be required by Alberta.**
- 3.3.6 The GDP consists of the following:**
 - 1. Schedules with the following information:**
 - a) the areas to be harvested each year of the next five-year period;**
 - b) timber production summary table for all dispositions (by year);**
 - c) class I, II and III road developments showing planning and construction time lines and the status of Department License of Occupation (DLO) applications;**
 - d) roads identified for disturbance monitoring, and all outstanding and anticipated reclamation work related to DLO road and stream crossings (may be reported as part of the Road Plan);**
 - e) actual unscaled volumes in satellite yards for the current operating year (this may be included as part of the Fire Control Plan); and**
 - f) variance summary as per 4.1 (may be submitted in the FHP).**
 - 2. A map (of appropriate scale) that shows the following:**
 - a) the mill site location;**
 - b) proposed construction or reclamation of access to planning units and haul routes (differentiating existing roads from proposed roads) and primary routes to be used for reforestation access;**
 - c) satellite yard locations**
 - d) the timber dispositions to be operated; and**
 - e) key ungulate and caribou areas (as identified by Alberta or through public input) that could be directly affected by forest operations.**

3.4 FOREST HARVEST PLAN (FHP)

PURPOSE

To describe the laid out harvest and road design

DISCUSSION

The primary components of an FHP are a map and report that clearly show and document the harvest area boundaries, roads and water crossings for the planning unit. The design shall be valid for five years from the time of approval, unless issues deemed significant by Alberta arise during this period.

GROUND RULES

3.4.1 An FHP shall be approved by acceptance if:

- a) validated by a regulated forestry professional (RFP);
- b) it deletes less than 20% of the area sequenced in the SHS/cover type table within the FHP;
- c) the harvest area (ha) does not exceed the SHS hectares by cover type in the FHP, and
- d) it adheres to all ground rules as per the FHP checklist (see Appendix 4).

Any deviations from the ground rules shall be listed and justification provided for Alberta review. Alberta shall respond within 10 days through written approval from the Delegated Authority.

Where the FHP does not meet a, b, c or d above, the FHP shall undergo a review by Alberta of the variance detailed in a, b, c and d. Variances from the SHS shall be reported in the FHP in a format acceptable to Alberta (see section 4.1).

3.4.2 If a CA was completed, the FHP shall undergo a full Alberta referral and review to ensure the direction in the CA has been implemented.

3.4.3 All FHPs submitted by companies who harvest more than 30,000 m³ each year from crown land, must be validated by an RFP. Validation means that, the OGRs were followed, the SHS was followed or variances identified, and all affected companies have agreed to the design (see section 5.1.1).

3.4.4 There shall be discussion to resolve significant issues with Alberta before the FHP is submitted.

3.4.5 Other forest companies affected by the FHP must agree, in writing, with the FHP before it will be approved (see section 5.1.1). Affected means forest companies with timber dispositions operating within the same forest management unit (FMU).

Where agreed to by Alberta, the information required by 3.4.6, 3.4.7 and 3.4.8 may be submitted within any of those sections. The information requested in those three sections must be submitted in a format acceptable to Alberta.

3.4.6 Maps shall accurately show the following information:

- a) the approved forest inventory;
- b) SHS areas and variances from the SHS;
- c) all existing and proposed class I, II and III roads within planning units and harvest area boundaries for all timber companies;

- d) all proposed class IV inter block roads;
- e) current dispositions and reserves (e.g., permanent sample plot (PSP) locations);
- f) channelled watercourses, their classifications and protective buffers;
- g) known springs, water source and seepage areas;
- h) planned channelled watercourse crossing locations for inter-block roads;
- i) updated cutover boundaries and year of cut, existing trails, seismic lines, power lines, pipelines and access routes; and
- j) Key Wildlife and Biodiversity Zones as per section 7.7.

3.4.7 In addition to the FHP map, the following information is required:

- a) area (ha), and coniferous and deciduous volume by cover type for each proposed harvest area;
- b) summary table of variances from the SHS for each FHP as per section 4.1.5;
- c) regeneration stratum for each harvest area (based on dominant or largest area of pre-harvest stratum within the harvest area, or stratum conversion if known (see RSA manual for further details);
- d) dispositions (i.e., protective notation (PNT), consultative notation (CNT), industrial sample plot (ISP) designation, grazing and trappers);
- e) description of how the CA is addressed in the FHP;
- f) list of channelled watercourse crossing locations for inter-block roads;
- g) access control methods employed;
- h) description of integration with other users and how their concerns will be addressed (see section 5.0);
- i) summary of harvest design consideration for non-timber values; and
- j) road class and location shall be described for all inter block roads and DLO roads to be constructed for extraction of timber from all proposed harvest areas.

A block form is required for all harvest areas and where applicable the following comments are documented (the comments may be general and apply to many or all harvest areas or harvest area specific):

- a) layout bordering and encompassing riparian management zones when different than the standards in section 6.0;
- b) layout bordering restricted areas (e.g., PSPs, private land);
- c) identification of coniferous understorey (see section 7.5);
- d) harvest area-specific structure retention and woody debris management strategies;
- e) tactics to address forest health issues;
- f) tactics for protection of lesser vegetation bordering roads;
- g) proposed inter block roads and crossings locations;
- h) important wildlife sites as defined in section 7.7.6.2 (this information shall be made available for resource planning purposes only through Fish and Wildlife); and
- i) historical resource considerations.

3.4.9 All amendments to harvest plans must be justified and submitted to Alberta in writing. RFP validation of all amendments is required. Any changes must be incorporated into the as-built plan.

3.4.9.1 Changes meeting the following criteria are considered ‘Minor Amendments’, and require only company RFP validation and notification to Alberta. Minor Amendments don’t require Alberta’s approval, provided all appropriate background checks (e.g., land status automated system (LSAS)) have been made and rationale for the change has been provided (changes can be implemented prior to notification but must be reported bi-weekly unless otherwise stated). A company supervisor shall approve amendments prior to the change being carried out. Changes shall not adversely affect buffers established for the protection of riparian areas, wildlife sites, historical resources, or aesthetic values.

Any change to the approved AOP not listed in 3.4.9.1 shall be treated as a major amendment and requires the approval of Alberta prior to implementation. Alberta will provide the company feedback and/or approval of the AOP amendment within 10 working days of the submission.

- a) Additions or deletions to the approved FHP harvest area boundary where the final area does not vary from the area in the approved FHP by more than five percent for blocks greater than 10 ha, or more than .5 ha for blocks less than or equal to 10 ha. Any additions or deletions to block areas must be approved by a company supervisor prior to the change being carried out. Any resulting variances from the approved SHS must be categorized. This ground rule does not apply to commercial timber permits (CTPs) and deciduous timber permits (DTPs) where all additions to a harvest area must be within the company’s disposition and landbase and be approved by Alberta.**
- b) Exterior block roads moved to existing access or conventional seismic lines where re-growth is less than 3 m and new clearing distance to get from the approved AOP access to the existing access shall not exceed 100 meters.**
- c) Exterior block roads requiring the development of new Right-of-Way (ROW) clearing (not detailed above) that are moved less than two ROW widths from the approved FHP road location. ROW is considered to be the maximum ROW allowed in Table 3 for the class of road proposed.**
- d) The inter block roads may be moved as long as 9.0.3 is not exceeded and no additional watercourse crossings are required.**
- e) Added crossings on small permanent or smaller water courses shall be reported on a monthly basis.**
- f) Change of a scheduled harvest area harvest season and its associated roads (including road standard changes) from non-frozen to frozen.**
- g) Adding bell holes and excavator ditching on AOP roads.**

- 3.4.10 Detailed block plans (DBPs) are required in the following circumstances:**
- a) areas of steep topography requiring specific road location and construction or specialized harvesting equipment;**
 - b) unstable slopes which are generally to be avoided but if this is not possible it is necessary to plan operations carefully to minimize impacts;**
 - c) harvest areas with numerous water source areas, seepages, intermittent, or ephemeral watercourses;**
 - d) harvest areas that contain or border trumpeter swan lakes (see Section 7.7.4);**
 - e) harvest areas with white spruce understorey identified for understorey protection method, see section 7.5. DBP's for understorey protection are provided at least 10 days prior to harvest;**
 - f) harvest areas located near recreation sites, tourism areas, and facilities;**
 - g) partial harvests, excluding commercial thinning (CT) and pre-commercial thinning (PCT); and**
 - h) as requested by Alberta for insect or disease infestations.**

The DBP shall include a map of appropriate scale to the issue(s) and describe how the concern will be addressed in operations. DBPs must be available to Alberta upon request.

- 3.4.11 Where a Temporary Field Authority (TFA) is required to open access for the layout of harvest areas, this access shall be incorporated into the road system of the FHP where practical.**

- 3.4.12 The company shall request a FWMIS search annually with identified sites as listed in 7.7.6.2 incorporated into new FHPs , if applicable and/or relevant to current OGR**

3.5 ANNUAL OPERATING PLAN (AOP)

PURPOSE

To annually authorize all road, harvest and forest management activities for the operator.

DISCUSSION

The AOP articulates in detail the activities proposed for the current year and must be approved by Alberta before timber operations shall commence. The AOP components include:

- a) Operating Schedule, and Timber Production
- b) Applicable FHPs
- c) CAs (if applicable)
- d) Reforestation Program
- e) Fire Control Plan
- f) Road Plan
- g) GDP

Alberta's approval does not transfer the accountability for the plan or its implementation from the organization or the submitting RFP to Alberta or its staff. Government RFPs who review submissions are accountable for their reviews and any direction provided to the Organization.

Refer to Appendix 1 for RFP validation requirements.

For timber permit companies and small quota holders who harvest less than 30,000 m³ annually, Alberta has alternate AOP submission requirements.¹

GROUND RULES

- 3.5.1 The AOP submission date for quota holders is as per the Timber Management Regulation and March 1 for Al-Pac of each year unless otherwise approved by Alberta. Alberta shall respond within 30 days.**
- 3.5.2 The Operating Schedule and Timber Production, Reforestation Program, Fire Control Plan, and Road Plan, are submitted as in 3.5.1 above, unless otherwise agreed to by Alberta. The schedule for submitting any necessary CA, GDP and FHPs may be different.**
- 3.5.3 Only harvest areas and roads with FHP approval shall be scheduled for operations in the AOP submission.**

¹ TM118 form

- 3.5.4 The AOP shall contain the following components:**
- a) **The map(s) referred to in 3.4.6 above including shape files of approved FHP harvest areas where not already submitted. The shape files are not necessarily from GPS data and should be used accordingly; Shape files or other digital format approved by Alberta will be submitted.**
 - b) **Administrative and Timber Production Information:**
 - I. **name of disposition holder(s);**
 - II. **number of the disposition(s);**
 - III. **date of submission and effective period;**
 - IV. **location of mill where timber will be manufactured or processed, unless alternative reporting has been approved;**
 - V. **where all volumes (deciduous and coniferous) will be charged (quota, deciduous timber allocation, FMA, CTP);**
 - VI. **proposed harvest volume to be harvested by timber disposition;**
 - VII. **Community Timber Program Companies shall include all road use agreements;**
 - VIII. **scaling methodology (e.g., weigh scale, other arrangements) (not necessary if otherwise submitted);**
 - IX. **utilization standards if different from the disposition;**
 - X. **declaration or list of resource user notifications, and date of notification (see section 5.0 i.e., trapper, grazing, public etc.);**
 - XI. **annual update of the progress of each FHP; and**
 - XII. **summary of variance by FMU.**
 - c) **Operating Schedule – a table which outlines:**
 - I. **list of harvest areas proposed for harvest (including opening number, area and volume by decid and conif, with totals, and approval date of FHP blocks);**
 - II. **lists of non-DLO roads proposed for construction and reclamation, except in-harvest area roads. It includes watercourse crossings to be built or installed or removed/maintained;**
 - III. **a table or report listing all non DLO roads over three years old;**
 - IV. **declaration of outstanding operational items, or an agreement with Alberta on reporting of outstanding operational items; and**
 - V. **debris disposal.**
 - d) **Annual Reforestation Program (see section 8.2);**
 - e) **Fire Control Plan which covers suppression equipment (see section 7.3 ground rule 7.3.5);**
 - f) **Road Plan (see section 11.2); and**
 - g) **GDP and CA if applicable.**

3.6 SALVAGE PLANNING

PURPOSE

Salvage planning shall be implemented when necessary to reduce the potential for loss of fibre.

DISCUSSION

Under certain circumstances, planning shall be expedited to reduce the loss of fibre from fire, disease or insect infestation; blowdown or other such unforeseen disturbances.

Salvage planning shall not be used when:

- a) the disturbance regime is slow moving and can be accommodated under conventional planning timeframes and protocols;
- b) fibre loss is deemed to be within an acceptable range.

Salvage planning does not confer rights to the planner to ignore other values, or the inherent value of a natural disturbance. It does allow for consideration of all values and for prompt, qualified, professional opinion to drive the process.

GROUND RULES

- 3.6.1 Salvage planning is initiated on the natural disturbance when deemed appropriate by Alberta.**
- 3.6.2 An FHP for the salvage area must be developed, and shall form part of the AOP. Modified timelines and content for the FHP shall be considered by Alberta. Companies shall follow the most current standards and directives for salvage planning operations. It is expected that there will be substantial discussion to resolve significant issues with Alberta before the FHP is submitted.**
- 3.6.3 Structure and coarse woody debris shall be retained in blowdown salvage as per section 7.4.**

4.0 UTILIZATION

4.1 SPATIAL HARVEST SEQUENCE (SHS) VARIANCE

PURPOSE

- **To track deviations from the approved FMP SHS, to ensure operational level plans fall within sustainable harvest levels, and to ensure future forest objectives are maintained by maintaining the balance of covertypes through time.**
- **To improve the FMU vegetation inventory by providing a consistent approach to incorporating field level knowledge into the netdown, by tracking areas harvested and areas to be deleted from the productive landbase.**

DISCUSSION

The FMP contains objectives to determine forest harvest sustainability and create a future forest condition. The SHS identifies spatially and temporally, the queue of stands that will produce the sustainable timber harvest level (AAC) and desired future forest condition. The growing complexity of sustainable forest management makes it necessary for operational harvest plans to become strongly linked to the strategic forest model in order to ensure the key objectives and strategies can be obtained. The linkage to harvest plans helps ensure timber supplies and the major forest cover types (D, Sw, Pj, and SB) are sustainable at projected harvest levels.

The Alberta Forest Management Planning Standard, Annex 1, Section 6.0 Harvest Planning Standards, indicates the scheduling of stands through the FMP – SHS is dependent upon the timber merchantability criteria allocated in the disposition holder's tenure document (e.g. FMA, quota certificate) and the management assumptions used in the timber supply analysis (TSA). Pertinent assumptions are comprised of deletions from the net landbase (e.g., subjective deletions, stream buffers, protected areas) and parameters that determine a stand's eligibility for harvest (e.g., earliest age of harvest).

The SHS and variance tracking methods are identified in the approved 2006 Forest Management Plan. The SHS consists of a mapped 15 years of coniferous and deciduous primary AAC that will be updated every quadrant (5 years). The quadrant timber supply analysis will include an updated landbase netdown to show actual harvests and deletions and an additional five years of AAC added to the SHS. Variances to the SHS that exceed the criteria indicated in the variance section, will initiate a review to determine the significance of the variances. The intent is to correct weaknesses and challenges so the next SHS will be more accurate. Replacement of stands within the SHS must maintain the balance of major cover types (D, Sw, Pj, and Sb) to maintain the forecasted target areas.

Variance: Area in the SHS not included in the FHP harvest design boundaries. All area removed from the SHS is spatially depicted but only those areas > 2ha will be summarized and reported. Permanent deletions and deferrals make up variance.

Additions: Areas not included in the approved SHS that are incorporated into the FHP harvest design and are proposed for harvest in the submitted FHP. All additions are spatially depicted but only those individual polygons with areas > 2ha will be summarized and reported. Stands currently not part of the SHS that are found to be productive merchantable landbase may be considered for addition with Alberta's approval see 4.1.6.

Permanent Deletions: Areas within the FHP planning unit boundary, that are part of the approved SHS, but have been removed from the FHP harvest design. Permanent deletions are tracked and removed from the productive landbase or addressed in the next TSA.

Bypassed: Areas within the FHP planning unit boundary that are included in the approved SHS but are not proposed for harvest in the submitted FHP. They are, intended for harvest in a future FHP within 15 years of the polygons SHS timestamp. Bypassed polygons remain part of the productive landbase.

Deferral: Areas within the FHP planning unit boundary that are included in the approved SHS but are not proposed for harvest in the submitted FHP. They are intended for harvest in a future FHP beyond 15 years of the polygons SHS timestamp but within the current rotation. Deferrals remain as part of the productive landbase.

Covertypes: Polygons classified in the following groups:

- Deciduous (D)
- White Spruce (Sw)
- Jack Pine (Pj)
- Black Spruce (Sb)

Deciduous leading mixedwood (DC) is part of the "D" covertype within FMUs L1, L11 and S22. For the other eight FMUs, C, CD and DC are apportioned to Sw/Pj/Sb covertypes, based on the leading conifer species within the AVI overstorey label.

Polygon: The spatial area created when the FHP laid out boundary is overlaid on the SHS boundary.

FHP Planning Unit: Operational subunit of an FMU, delineated by environmental, operational, or watershed characteristics. An FHP is the operational plan for a planning unit.

GROUND RULES

- 4.1.1 As part of the SHS variance submission, the following spatial data shapefiles shall be submitted to Alberta: Planning Unit, Additions, Deletions, Bypass and Deferrals.
- 4.1.2 All variance and additions from the SHS will be spatially depicted on a 1:15000 scale map that forms a component of the FHP submission. The variance map must clearly identify the proposed harvest areas, and must clearly distinguish between areas added, permanently deleted, deferred, or bypassed from the SHS.
- 4.1.3 Deletions, deferrals and bypassed polygons greater than 2 ha are to be justified upon Alberta's request.
- 4.1.4 Entire stands or portions of stands may not be deferred or bypassed unless they form part of a logical future harvest.

- 4.1.5 For variance reporting purposes, additions, permanent deletions, and deferrals > 2ha and all bypassed stands must be tracked and reported in the FHP and GDP summaries as indicated below.

FHP level Variance Summary Reporting

An FHP variance summary must be included as a component of each submitted harvest plan:

SHS Variance Planning Unit Summary FHP Planning Unit	Covertime			
	D	Sw	Pj	Sb
Total SHS Area (ha) within Planning Unit				
SHS Area (ha) Planned for Harvest in FHP				
Permanently Deleted SHS Area (ha)				
Deferred SHS (ha)				
SHS Variance % ⁽¹⁾				
Additions to SHS (ha)				
Bypassed SHS (ha)				
Total Harvest Area (ha) ⁽²⁾				

(1) SHS Variance % is the Permanently Deleted and Deferred SHS Area (ha) within the FHP planning unit, expressed as a percentage of the total SHS area within the Planning Unit boundary.

(2) Total Harvest Area (ha) is the sum of the planned SHS area and any additions of non-sequenced areas to the harvest design, within the planning unit boundary.

GDP level Variance Summary Reporting

All FHP variance will be calculated for the entire population of proposed FHP harvest by planning unit. The sum will be included in the GDP variance summary in the year the FHP is approved.

SHS Variance Quadrant Summary Forest Management Unit _____	Covertime			
	D	Sw	Pj	Sb
FHP Planning Unit _____ Total SHS Area (ha) within Planning Unit SHS Area (ha) Planned for Harvest in FHP Permanently Deleted SHS Area Amendments Additions to SHS Bypassed SHS (ha) Deferred SHS (ha) Total Harvest Area (ha) ⁽²⁾				
FHP Planning Unit _____ Total SHS Area (ha) within Planning Unit SHS Area (ha) Planned for Harvest in FHP Permanently Deleted SHS Area Additions to SHS Bypassed SHS (ha) Deferred SHS (ha) Total Harvest Area (ha) ⁽²⁾				
FHP Planning Unit _____ Total SHS Area (ha) within Planning Unit SHS Area (ha) Planned for Harvest in FHP Permanently Deleted SHS Area (ha) Additions to SHS (ha) Bypassed SHS (ha) Deferred SHS (ha) Total Harvest Area (ha) ⁽²⁾				
Allowable FMU level 5 Year SHS Area (ha) Total FMU SHS Area (ha) within Planning Units Total SHS Area (ha) Planned for harvest in FHP's Total Permanently Deleted SHS Area (ha) in FHP's Total Amendments FMU level SHS 5 Year Variance % (1) Total Additions to SHS (ha) in FHP's Total Bypassed SHS (ha) Total Deferred SHS Area (ha) in FHP's Total FMU Harvest Area (ha) ⁽³⁾				

(1) FMU level SHS 5 Year Variance % is the Total Permanently Deleted and Deferred SHS Area (ha), expressed as a percentage of the FMU level 5 Year SHS Area (ha)

(2) Total Harvest Area (ha) is the sum of the planned SHS area and additions to the SHS within the planning unit boundary.

(3) Total FMU Harvest Area (ha) is the summation of SHS Area (ha) Planned for Harvest in all FHP's and the Total Additions of SHS (ha) in all FHP's

- 4.1.6 Areas outside of the approved SHS can only be added to the FHP harvest design where stands added are not contributing to other FMP level objectives (i.e. Old growth) and when an equal or greater amount of the same cover type within the FHP planning unit has been classified as a variance and tracked in the FHP.

- 4.1.7 Where FHP variance exceeds 20% or where proposed harvest area exceeds 100% of the FHP SHS harvest area, a review shall take place as per 3.4.1.
- 4.1.8 The total FMU harvest area (ha) shall not exceed the total area in the SHS by covertype, by FMU, by quadrant, as tracked in the GDP. If exceeded, Alberta shall determine if a review of the TSA or AOP volume/ha is required.
- 4.1.9 All variance ≥ 2 ha from the SHS must be coded and tracked spatially by company to allow for FMU level roll-up, and incorporation into the netdown, at the five year update. Permanent deletions will be removed from the harvestable landbase or addressed in the TSA.
- 4.1.10 Approved FHP harvest areas included in the SHS that are not harvested and are subsequently deleted from the FHP harvest design through the amendment process, must be identified at the end of the 5 year quadrant and captured as deletions in the netdown update unless classified as a bypass or deferral.
- 4.1.11 All SHS stands, including bypasses must be harvested, or tracked as variance, within 15 years of first being listed in the SHS.
- 4.1.12 Planned and laid out retention areas, may be permanent deletions, bypasses, deferrals or included as FMP retention targets (these are already deleted from the AAC).
- 4.1.13 Areas included in planned structure retention patches within blocks not sequenced, are to be considered as additions for the purpose of reporting unless included as FMP retention targets.

4.2 TREE UTILIZATION

PURPOSE

To utilize all merchantable trees and pieces in a merchantable stand as defined by the timber disposition and the FMP.

DISCUSSION

Tree utilization assumptions in the FMP must be followed so that sustainability is not affected.

GROUND RULES

4.2.1 The tree/piece utilization standards are stated in the applicable timber disposition and/or FMP shall normally be one of the following standards.

Coniferous Utilization Standards

15/10 Utilization

- Merchantable Tree: one that has a minimum diameter of 15 cm outside bark at stump height (30 cm) and a usable length of 4.88 m to a 10 cm diameter (inside bark).
- Merchantable Piece: one that is 2.44 m (plus 5 cm trim allowance) or longer, with a 10 cm (inside bark) small end, where rot content or form does not render it unusable.

15/11 Utilization

- Merchantable Tree: one that has a minimum diameter of 15 cm outside bark at stump height (30 cm) and a usable length of 4.88 m to a 11 cm top diameter (inside bark).
- Merchantable Piece: one that is 2.44 m (plus 5 cm trim allowance) or longer, with an 11 cm (inside bark) small end, where rot content or form does not render it unusable.

Deciduous Utilization Standards

15/10 Utilization

- Merchantable Tree: one that has a minimum stump diameter of 15 cm outside bark and a merchantable length of 4.88 m or greater to a 10 cm top diameter (inside bark), or to the point where the stem is unusable or there is no central stem due to heavy branching.
- Merchantable Piece: one that is 2.44 m or longer to a 10 cm (inside bark) small end, where rot content or form does not render it unusable.

Salvage Operations

19/13 Utilization

- This standard may be adopted by Alberta to encourage recovery of timber damaged by fire or insects and diseases in coniferous and deciduous stands.
- Merchantable Tree: one with a minimum diameter of 19 cm outside bark at stump height (30 cm) and a merchantable length of 5.0 m or greater to a 13 cm top diameter (inside bark).
- Merchantable Piece: one that is 2.44 m (plus 5 cm trim allowance) or longer, to a 13 cm (inside bark) small end, where rot content or form does not render it unusable.

- 4.2.2 **Company processing practices cannot make an unmerchantable piece from a merchantable tree.**
- 4.2.3 **Coniferous and deciduous log butts or large ends exhibiting advanced decay greater than 50% in area of the cut surface (basal area) may be bucked at 0.61 m intervals or less to 50% sound wood.**
- 4.2.4 **Trees with butts (or large ends) of 19 cm diameter or less, containing soft rot, may be bucked at 0.61 m intervals to 100% clear face. For butts (large ends) greater than 19 cm in size, the normal bucking rules shall apply.**
- 4.2.5 **Maximum stump height when measured from ground level shall be no more than 30 cm or that used in the timber supply analysis for the FMP (e.g., 15 cm). Stumps exceeding this height are acceptable where left to delineate areas (e.g., harvest areas, create rub posts for understorey protection, or to delineate poorly defined watercourses).**
- 4.2.6 **As per the Debris Management and Structure Retention ground rules, forest companies are permitted to leave merchantable volume in harvest areas if the approved FMP identifies specific stand structure retention strategies. In the absence of FMP guidance, the standards in section 7.4 of this annex apply.**
- 4.2.7 **All trees/pieces used in the construction of crossing structures may be scattered or piled along the right-of-way or in the harvest area, but they shall not be piled in riparian areas if any chance of re-entering the watercourse. It is acceptable to use these pieces for erosion control on the road bed.**

5.0 INTEGRATION WITH OTHER USERS

5.1 DECIDUOUS/CONIFEROUS INTEGRATION

PURPOSE

To ensure that planning, harvesting and reforestation in overlapping dispositions are carried out efficiently and with a minimum of environmental impact.

DISCUSSION

Due to overlapping tenures, landbase tracking and chargeability, integration of activities between the various companies is essential (see Appendix 4). Alberta monitors the integration of roads and harvesting, but the responsibility for co-ordinating plans and operations lies with the companies. Integration of activities is necessary to:

- a) reduce the amount of time roads are open;
- b) reduce disturbance of wildlife;
- c) enable prompt reforestation.

GROUND RULES

- 5.1.1 **All companies with timber dispositions in an area covered by an FHP/GDP must agree to the FHP and GDP before approval is granted. If agreement cannot be reached after all meaningful consultation has taken place, the following dispute resolution process can be implemented. Areas of disagreement will be documented**

and forwarded to the AESRD Senior Forester for review with the reviewing forester. Depending on the exact nature of the disagreement, AESRD will either: 1) facilitate a dispute resolution process, or 2) direct the companies on areas of disagreement through conditions of approval. If either proponent disagrees with the determination of the Senior Forester, they may appeal the decision to the Delegated Authority.

- 5.1.2 All roading, harvesting and silviculture operations shall be completed at a time and in a manner that enables effective reforestation and minimizes road access. Where operations are returning on a previously reforested block road, the company using the road shall rollback and plant the road to an acceptable species as per the reforestation standard of Alberta.

5.2 FOREST RECREATION AND TOURISM

PURPOSE

To manage the implications of forest management activities on forest recreation.

DISCUSSION

Forest management activities can impact recreational opportunities. Potential exists for increased public awareness and for increased recreational opportunities through co-ordination with forest management practices. The FMP shall have addressed recreational issues through a variety of tactics such as deferrals or buffers around specific sites or access management strategies. Forest recreation groups include both commercial and public groups such as guides and outfitters, snowmobile or ATV clubs etc.

GROUND RULES

- 5.2.1 Operational tactics to mitigate impacts on recreation and tourism shall be described in the GDP and FHP.
- 5.2.2 The forest operator shall work with forest recreation groups or recreationalists that have raised concerns with the operator or have been identified by Alberta.
- 5.2.3 Roads should be planned to avoid recreation sites. Roads shall be designed to ensure they can be used safely while minimizing their impact on the recreation values of the area.
- 5.2.4 FHPs affecting recreational sites shall provide opportunities for the enhancement of existing recreational trail and road systems whenever possible, while adhering to the provincial Motorized Access Management Policy on Industrial Dispositions.

5.3 TRAPPING

PURPOSE

To avoid damage to the infrastructure associated with Registered Fur Management Areas (RFMA) and to reduce the impact on trapping opportunities.

DISCUSSION

Communication with the senior RFMA partner(s) of a trapline is a key element in minimizing the impact of timber operations. Discussions held early in the planning process allow both the trapper and the forest operator to work co-operatively, with the least amount of disruption to their individual operations.

GROUND RULES

- 5.3.1 Upon request the local Fish and Wildlife office shall provide the relevant list of trappers to the forest companies before January 1 of each year.**
- 5.3.2 A representative of the forest operator shall personally contact, or send a registered letter to the senior partner(s) of an RFMA during the preparation of the FHP. Information such as cabin locations, trails and other improvements, or concerns shall be noted at this stage. During the development of the FHP, information and concerns, where applicable, shall be integrated into the plan. The forest operator shall provide the trapper with a copy of the FHP map.**
- 5.3.3 At least ten days prior to commencing operations, the forest operator shall notify the trapper, preferably by personal contact, that timber operations are beginning in the RFMA.**

5.4 RANGE MANAGEMENT

PURPOSE

To integrate forest and range management operations.

DISCUSSION

The goal is to develop a co-operative, long-term relationship between grazing disposition holders and forest companies to sustain fibre and forage resources.

At the GDP, FHP and AOP stages of planning, the emphasis is to integrate harvesting, silviculture, and grazing schedules to ensure the sustainability of timber, forage, wildlife and watershed values (i.e., wildlife habitat, watershed protection). Specific harvesting and reforestation operations and grazing systems would be identified within components of the AOP.

Effective communication between the timber and grazing operators is necessary. Discussions held early in the planning process are intended to enable the grazing disposition holder and the forest operator to work co-operatively minimizing the disruption to their individual operations. Alberta has developed standards to guide the integration of timber and grazing. These standards will be used by the two industries to ensure effective communication and integration is occurring on overlapping dispositions.

GROUND RULES

- 5.4.1 The forest operator shall conduct all operations in accordance to the Grazing Timber Integration Manual and Directive SD 2011-03.**
- 5.4.2 The forest operator shall ensure that timber operations do not negatively impact the range management of the grazing disposition. Examples of these impacts include: damage or disruption to, range improvements, infrastructure, roads, and bridges (e.g., fencing, water developments). The forest operator is responsible to repair and/or replace any damage to these improvements and infrastructure.**

- 5.4.3 The forest operator shall contact the grazing disposition holder in person or by phone a minimum of 10 days prior to commencing timber operations to discuss access and any other issues affecting the range management of the grazing disposition.

5.5 FOREST AESTHETICS

PURPOSE

To manage the visual impact of timber operations on the forest landscape.

DISCUSSION

The objective is to mitigate the impact of timber operations on the visual quality of the forest landscape by:

- identifying the location of forest landscapes and other areas of high visual and scenic value, and setting objectives for their management;
- addressing visual quality issues in the FMP.

Areas considered highly sensitive are those:

- a) within, adjacent to or viewed from recreational sites and tourist developments;
- b) seen from elevated public viewpoints;
- c) adjacent to or viewed from major use areas (lakes and rivers, etc.), rural/urban forest interface and site-specific areas identified during the referral and public review process; and
- d) adjacent to primary and secondary highways in Alberta.

Tactics to reduce the impacts of timber harvest and reforestation on visual quality may include: retention of forest structure and lesser vegetation at strategic vantage points in the harvest area, modification of harvest area design, silviculture techniques, vegetative buffers, and utilizing natural topography.

GROUND RULE

- 5.5.1 Highly sensitive areas shall be assessed and tactics shall be employed in the FHP to mitigate the impacts of harvesting and reforestation on visual quality.

5.6 HISTORICAL RESOURCES

PURPOSE

To ensure that forest companies identify and protect historical and cultural resources.

DISCUSSION

There are many thousands of historical and cultural resources (e.g., archaeological, paleontological and applicable traditional use sites), located on Alberta's Crown land. In keeping with the requirements of Alberta Culture, forest companies shall develop and implement a process for identifying and protecting resources that are regulated by the Historical Resources Act.

GROUND RULES

- 5.6.1 All known historical resources shall be assessed in keeping with the requirements of Alberta.
- 5.6.2 Historical resource records are confidential and shall not be shared with the public.
- 5.6.3 If a previously unknown historical resource is discovered during road building, harvesting, or silviculture operations, the operations that may directly affect the historical resource shall cease and the Heritage Resource Management Branch of Alberta Culture and Community Spirit shall be notified.

6.0 WATERSHED PROTECTION

PURPOSE

To manage the implications of timber operations on water quality, quantity, and flow regime by:

- minimizing the potential for sedimentation in watercourses;
- preventing soil, logging debris and deleterious substances from entering watercourses;
- maintaining aquatic and terrestrial habitat;
- complying with the relevant legislation.

DISCUSSION

The FMP shall address watershed water quantity and flow issues. Ground rules define operating practices to protect water quality and riparian values.

Riparian areas adjacent to watercourses and water source areas perform a number of ecological functions. Riparian areas help to regulate stream flows (storage and release of surface and groundwater), reduce sheet, rill and gully erosion, and moderate stream temperature. Functional riparian areas provide bank stability, debris for creating aquatic habitats and provide a source of food and nutrients for aquatic organisms. Riparian areas also provide habitats supporting a high diversity of wildlife species and other terrestrial biota, and provide corridors that can link different landscape and habitat features.

Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans) regarding federal legislation requirements.

GROUND RULES

- 6.0.1 **Watercourses shall be classified according to Table 1, Watercourse/Waterbody Classification. In the event the channel classification is not distinctly evident, the width shall be determined by the average of measurements taken at 50 m intervals at representative points of undisturbed stream channel over the length of the watercourse bordering the block.**
 - **A minimum of four measurements are required with the measurement location flagged for audit purposes.**
 - **The channel width is measured from where the bank begins to slope down towards the channel bottom across to the same point on the opposite bank.**
 - **Where the distance bordering the block is not enough for four measurements reduce the measurement interval as required.**

- 6.0.2** The annual review will incorporate new information on water yields as a new model is developed.
- 6.0.3** Measures must be implemented, including temporary and permanent erosion control measures, to minimize erosion and sedimentation into the watercourse or waterbody.
- 6.0.4** Riparian protection areas shall be established as in Table 2, Standards and Guidelines for Operating beside Watercourses/Waterbodies. Where uncertainty exists on the classification of the watercourse, the watercourse protection area shall be that required by the higher class of watercourse.
- 6.0.5** All unmapped or incorrectly classified watercourses/waterbodies encountered during operations shall be given the appropriate protection as described in Table 2.
- 6.0.6** Unless otherwise approved in an FMP, variances from the standards in Table 2 must demonstrate that aquatic and terrestrial objectives are met. Any such proposals shall undergo a review by Alberta prior to being considered for approval.
- 6.0.7** Sediment, logging debris or deleterious materials (e.g., fuels, oils, greases, industrial or household chemicals or refuse) shall not be deposited into the water or onto the ice of any watercourse or water body during forest operations.
- 6.0.8** Equipment shall cross watercourses only at approved crossings.
- 6.0.9** Logs shall not be decked in channelled watercourses, their riparian areas, or watersource areas.
- 6.0.10** Authorized in-stream activities in fish-bearing watercourses shall be scheduled to avoid disturbing migration, spawning and incubation of fish species, and carried out in such a manner as to avoid stream sedimentation.
- 6.0.11** Beaver ponds shall have a 20 m buffer or a buffer for the same classification as the watercourse flowing out of the pond, whichever is larger, as measured at a representative width within 50 m of the dam (see section 7.7.6).
- 6.0.12** Where harvesting is permitted within water source areas; it shall only be during frozen periods.

Figure 1 – Watercourse Classification Diagram

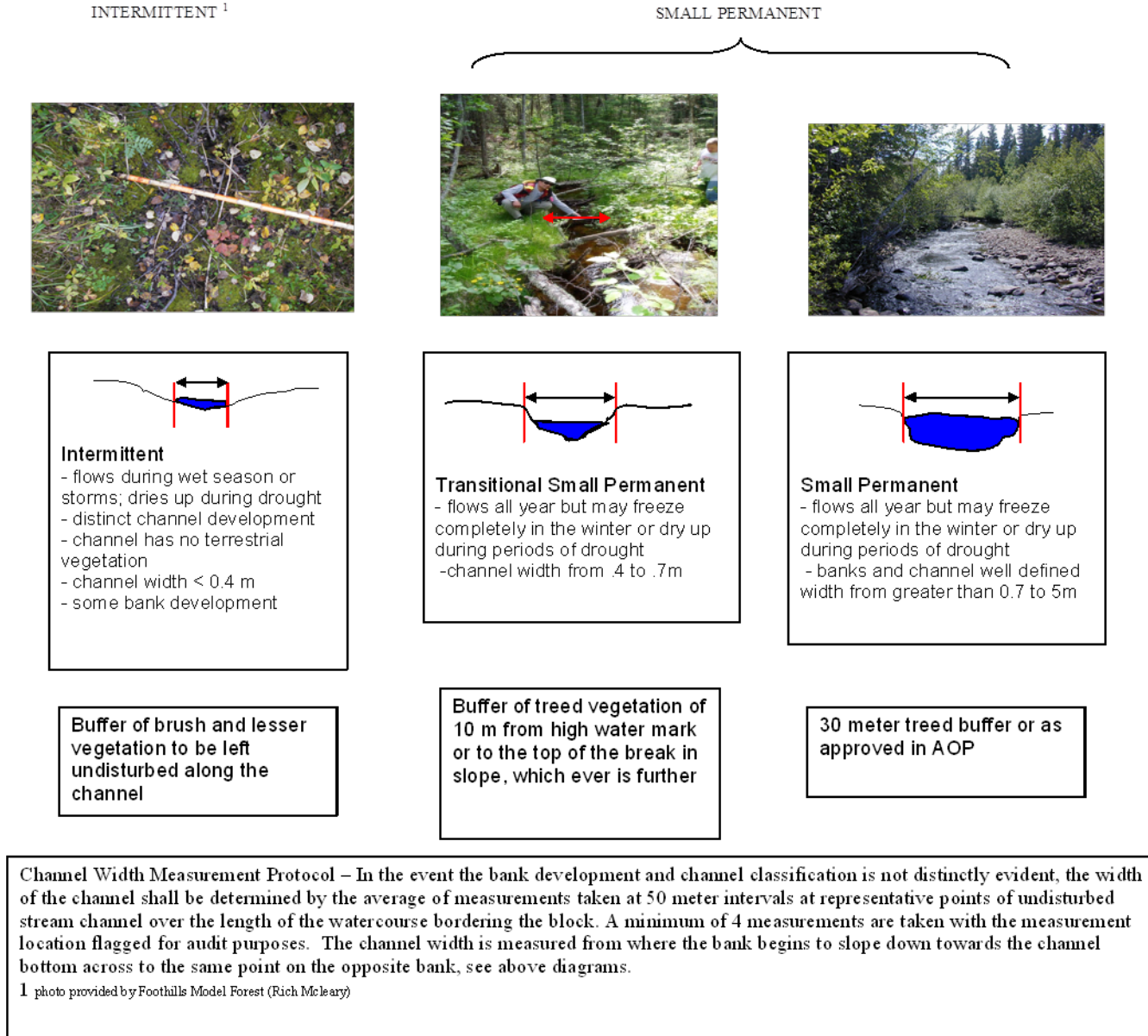


Table 1. Watercourse/Waterbody Classification

Watercourse Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development		
Class “A” Watercourses	Solid red line on Watercourse Crossing Codes of Practice (Water Act)	Not applicable	Not applicable	Not applicable	Known habitats critical to the continued viability of locally or regionally important fish species; Habitat areas are sensitive enough to be damaged by any type of in-stream activity or changes to water quality or flow regime	Fish and fish habitat affected by sediment load, turbidity, disposition of sediment, chemical contamination or alteration of stream flow
Class “B” Watercourses	Solid (variable colour) lines overlain by small circles on Watercourse Crossing Codes of Practice (Water Act)	Not applicable	Not applicable	Not applicable	Key broadly distributed habitat areas important to the continued viability of a population of locally or regionally important fish species; Habitat areas are sensitive enough to be potentially damaged by in-stream activities; Potential short and long-term effects of in-stream activities considered to have detrimental effects on, and are high risk to, the survival of fish populations	Fish and fish habitat affected by sediment load, turbidity, disposition of sediment, chemical contamination or alteration of stream flow
Large Permanent	Solid heavy line or double line	Major streams or rivers; Well-defined flood plains; Often wide valley bottoms	All year	Non-vegetated channel width exceeds 5 m	Resident and migratory fish populations; Important over wintering, feeding and rearing habitat; Important wildlife feeding/travel corridors	Water quality often reflects all upstream land use impacts and natural processes; Primarily sedimentation of stream channels; Loss of wildlife habitat, restriction of movement
Small Permanent Channel width is the characteristic that will be used to determine the stream classification.	Usually solid although are sometimes broken heavy lines Not always mapped; To be identified during layout.	Permanent streams; Often small valley bottoms; Bench floodplain) development	All year but may freeze completely in the winter or dry up during periods of drought. Some are ‘transitional’ to intermittent and dry up during drought	Banks and channel well-defined channel width from greater than 0.7 m to 5 m Transitional streams channel widths are between .4 and 0.7 m	Significant insect populations; Important spawning and rearing habitat; Resident and migratory fish populations; Over wintering for non-migratory species; Important wildlife feeding/travel corridors;	Primarily sedimentation of stream channels; Water quality and water yield; Fish population sensitive to siltation; Loss of stream bank fish habitat; Loss of wildlife habitat, restriction of movement

Continued...

Table 1. Watercourse/Waterbody Classification

Watercourse Classification					Fisheries/Wildlife Values	Potential Impacts
Type	Mapping Designation	Physical Description	Portion of Year Water Flows	Channel Development/Vegetation		
Intermittent Channel width is the characteristic that will be used to determine the stream classification.	Usually broken line; Not always mapped; To be identified during layout.	Small stream channels; Small springs are main source outside periods of spring runoff and heavy rainfall	During the wet season or storms Dries up during drought	Distinct channel development; Channel usually has no terrestrial vegetation; Channel width less than 0.4 m; Usually some bank development	Food production areas; Potential spawning for spring spawning species; Drift invertebrate populations in pools and riffles; Spring fed areas may provide spawning potential for fall spawning species	Sedimentation from bank and streambed damage will damage fish spawning and invertebrate habitat as well as downstream fish habitat; Water quality and water yield
Ephemeral	Not normally mapped	A vegetated draw that contributes directly to a higher order watercourse or wetland.	Flows only during or immediately after rainfall or snowmelt	Little or no channel development; Flow area is usually vegetated	Where sediment can be transported, siltation may impact fish habitat downstream.	Sedimentation downstream due to ground disturbance
Water-Source Areas	To be identified during layout	Areas with surface flow and seepages that contribute directly to stream flow	All year May or may not freeze in winter	No channel development, but may be pronounced vegetation changes	Year-round springs provide potential value to fall spawning fish; Potential high-use areas terrestrial wildlife	Disturbance may cause downstream sedimentation; Interruption of winter flow may disrupt fish egg incubation; Loss of mineral licks
Lakes	Solid outline a water body Reserved areas noted on referral map	Large water collection areas permanently filled with water	Normally frozen in winter	Shorelines defined by absence of permanent terrestrial vegetation	Important fish-bearing habitat; Important bird nesting/rearing areas	Aesthetic values may be disrupted; Potential for wildlife disturbance; Local sedimentation
Oxbow Lakes	Solid heavy or outline	Large water collection area formed when oxbow cut off from main river channel.- Often vegetated	Normally frozen in winter	N/A	Important habitat for ungulates	Thermal cover/grazing areas

Table 2. Standards and Guidelines for Operating Beside Watercourses/Waterbodies

Watercourse Classification	Roads and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Class “A” Waterbodies	Not permitted within 100 m of high water mark. Any existing roads may be maintained at present classification standards. Any proposed watercourse crossings within 2 km upstream must be specifically approved in the AOP.	No disturbance or removal of timber within 100 m of the high water mark; No duff disturbance of intermittent (min 10 m vegetated buffer) or ephemeral drainages (minimum 5m vegetated buffer) within 2 km upstream of Class A waterbody.	Not permitted without specific Alberta approval.	Not allowed without specific Alberta approval.
Class “B” Waterbodies	Not permitted within 60 m of high water mark. Any existing roads may be maintained at present classification standards. Any watercourse crossings within 500m upstream must be specifically approved in the AOP.	No disturbance or removal of timber within the appropriate riparian area specified by stream type unless specifically approved in the AOP; No duff disturbance of intermittent (minimum 10 m vegetated buffer) or ephemeral drainages (minimum 5 m vegetated buffer) within 500 m upstream of Class B waterbody.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Where removal of timber within 60m is approved, no machinery is permitted within 30 m of the high water mark.
Large Permanent	Not permitted within 100 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	No disturbance or removal of timber within 60 m of high water mark unless specifically approved in the AOP. No removal of timber shall be approved within 10 m of the high water mark.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Where removal of timber within 60 m is approved, no machinery is permitted within 20 m of the high water mark.
Small Permanent	Not permitted within 30 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	No disturbance or removal of timber within 30 m of high water mark unless specifically approved in the AOP. No removal of timber shall be approved within 10 m of the high water mark.	Trees shall be felled so that they do not enter watercourse. Should slash or debris enter the watercourse immediate removal is required without a machine entering the watercourse.	Where removal of timber within 30 m is approved, no machinery is permitted within 20 m of the high water mark.
Transitional Small Permanent	Same as above.	Transitional streams: No disturbance or removal of timber within 10 m from the high water mark or to the top of the break in slope, whichever is further.	Same as above.	

Continued...

Table 2. Standards and Guidelines for Operating Beside Watercourses/Waterbodies

Watercourse Classification	Roads and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Intermittent	Not permitted within 30 m of the high water mark or water source areas within the riparian management zone unless specifically approved in the AOP.	Buffer of brush and lesser vegetation to be left undisturbed along the channel; Width of buffer shall vary according to soils, topographical breaks, water source areas and fisheries values.	Trees shall be felled so they do not enter watercourses, unless otherwise approved by Alberta. Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Heavy equipment may operate within 20 m only during frozen or dry periods. No skidding through watercourse except on snow/ice bridge or logfill. Crossings must be planned with adequate crossings to be removed on completion of operations. Where fish and spawning movements have been identified, special crossings that do not obstruct upstream fish passage or cause stream siltation may be required.
Ephemeral	Construction not permitted within a watercourse or water source area.	Buffer of undisturbed vegetation in wet gullies, Class "A" and "B" waterbody tributaries to be left undisturbed.		Skidding shall only be during dry or frozen conditions; Temporary crossings to be removed on completion of operations; On Class "A" and "B" waterbody tributaries, crossing structures that do not cause stream siltation may be required.
Lakes (little or no recreation, waterfowl or sport fish potential)	Not permitted within 100 m of high water mark unless specifically approved in the AOP.	On lakes exceeding 4 ha in area, no disturbance of timber within 100 m of high water mark except where specifically approved in FHP. Where approval is granted to remove timber within the 100m zone, no timber shall be removed within 30 m of the high water mark.	Trees shall be felled so they do not enter watercourses, unless otherwise approved by Alberta. Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse	If timber removal is approved, no machinery to operate within 40 m of the high water mark.

Table 2. Standards and Guidelines for Operating Beside Watercourses/Waterbodies

Watercourse Classification	Roads and Bared Areas	Watercourse Protection Areas	Operating Conditions Within Riparian Areas and Water Source Areas Where Operations are Approved	
			Tree Felling	Equipment Operation
Lakes (with recreational, waterfowl or sport fish potential)	For shorelines not located within reserved areas, no disturbances shall be permitted within 200 m of the high water mark unless specifically approved in the AOP.	On lakes exceeding 4 ha in area, no disturbance or removal of timber within 100 m of the high-water mark. Alberta in the FHP may require additional protection. On lakes less than 4 ha, removal of timber prohibited within 30 m of the high-water mark and any removal within 100 m requires Alberta's approval.	Trees shall be felled so they do not enter the waterbody, unless otherwise approved; Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Consideration must be given to aesthetics when harvesting adjacent to lakes with recreational potential.
Water source Areas and Areas Subject to Normal Seasonal Flooding	Construction not permitted unless approved in the AOP; No log decks permitted; The number of stream crossings must be minimized; No disturbance of organic duff layers or removal of lesser vegetation.	No disturbance or removal of timber within 20 m on all water source areas where sedimentation is a concern, unless specifically approved in the AOP; Buffer width may be altered according to its potential to produce surface water, provided it is approved in the AOP.	Heavy machinery not permitted with in water source areas during unfrozen soil conditions; Minimal disturbance or removal of duff or lesser vegetation; Timber may be harvested if stream sedimentation is the only resource concern, provided there is no disturbance of the organic soils and lesser vegetation when harvesting the trees; On unstable areas subject to blowdown, merchantable trees shall be carefully harvested from water source areas to minimize root disturbances of duff layers and watercourse damming.	Road construction, timber harvest, reforestation and reclamation shall be done with equipment capable of operating without causing excessive disturbance to the soil layers; Heavy equipment is not permitted during moist or wet soil conditions, but may be operated during frozen periods; No soil caps or depositing of soil permitted on roads in water source areas, unless a separation layer is incorporated or the road is designed to provide adequate surface and sub-surface drainage away from the road bed; Where a separation layer is used, the soil cap shall be removed as operations are completed.
Oxbow Lake	Construction not permitted within 100 m of oxbow lake unless specifically approved in the FHP.	The buffer shall encompass the area from the high water mark of the main watercourse to 20 m beyond the high water mark of the oxbow lake. Oxbow lakes outside the buffer of the main watercourse shall be treated as watersource areas.	Heavy equipment not permitted around oxbow lakes during unfrozen conditions. Trees shall be felled so they do not enter the waterbody, unless otherwise approved; Should slash or debris enter the watercourse, immediate removal is required without the machine entering the watercourse.	Approved activities shall be done with equipment capable of operating without causing excessive disturbance.

See Water Act for definitions of class A and B Waterbodies.

7.0 HABITAT MANAGEMENT

7.1 LANDSCAPE PLANNING AND HARVEST AREA DESIGN

PURPOSE

To implement timber operations in a manner that ensures landscapes maintain biodiversity and ecosystem function.

DISCUSSION

Forest companies are expected to manage the forest cover in a manner that maintains biodiversity and ecological integrity. The SHS approved in the FMP is the mechanism by which the forest cover is managed.

Within landscapes managed for timber production, landscape patterns, cover types and seral stages can be managed to produce a desired future forest. The coarse filter approach to maintaining biodiversity in managed landscapes involves managing for suitable amounts and patterns of all forest cover types and all seral stages, along with managing for inherent natural spatial and temporal variability.

The variability of natural disturbances shall be considered when planning harvest area size and shape. This variability will help to provide habitat for species that are dependent on natural disturbance regimes. The use of Alberta Vegetation Inventory (AVI) polygon boundaries will help to plan this variability. Use of natural features as harvest area boundaries is consistent with natural disturbance and shall be used whenever possible.

Landscape planning requires that targets be set that are measurable. Targets describe the amount of each landscape element that will be created, maintained, or managed, as well as the spatial and temporal variability (expressed as a range) of each. Creating variability in natural landscapes is important because element amounts vary between landscapes, and the requirements of biota also vary. Targets will be refined over time using analysis based on natural disturbances, natural succession processes, current and historical conditions within the region, sub-region and ecodistrict or ecoregion.

Wildlife species of special management concern are major considerations in the selection of the SHS in the FMP.

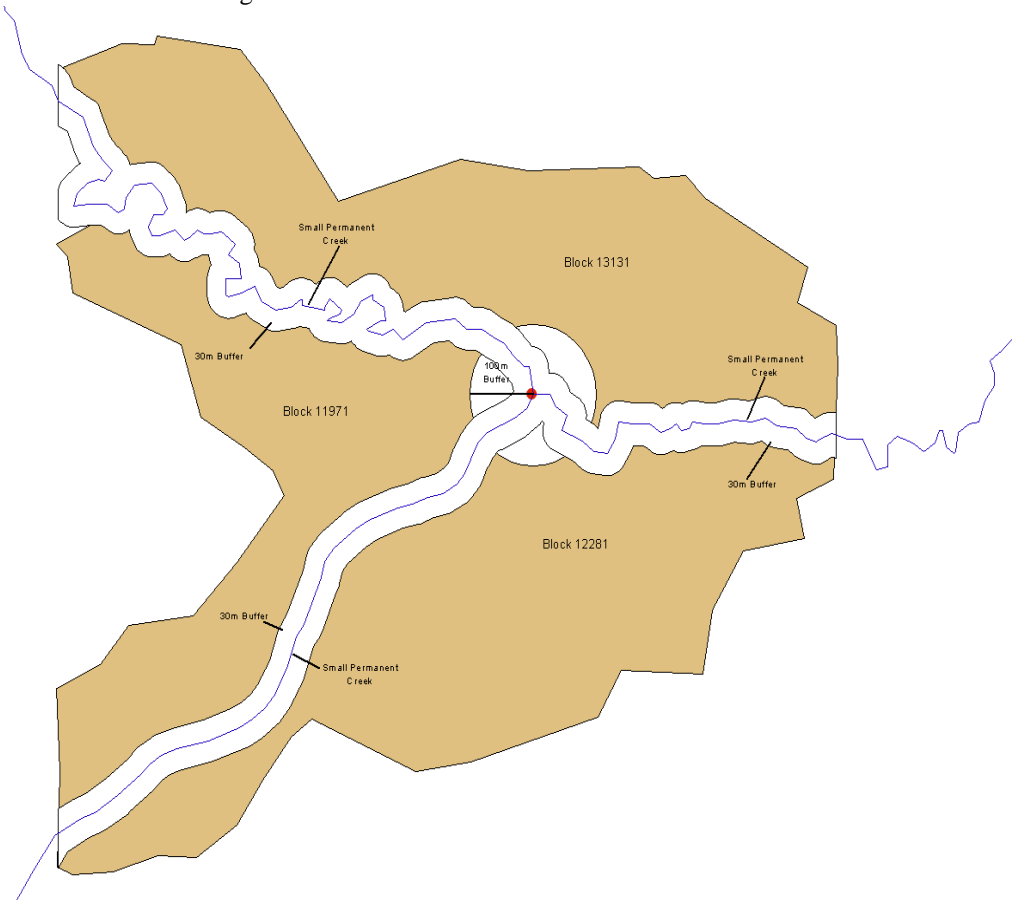
Wildlife movement corridors are required to ensure that animals with large home ranges find passage between and within managed landscapes. When planning for wildlife habitat and movement corridors, the following factors shall be considered: watercourse classification/ profile/ pattern and associated valley definition, timber types and proximity to watercourses, travel corridor width, harvesting method, harvest area shape, continuity of forest cover or adjacency/size of forest patches.

GROUND RULES

If not otherwise addressed in an approved FMP, SHS or structure retention strategy, the following ground rule shall apply:

- 7.1.1 Converging watersheds of small permanent watercourses shall have wildlife corridors of 100m around the converging point. This corridor should be focused on natural travel corridors and may contribute towards structure retention targets.**

Figure 2 – Wildlife Corridor Diagram



7.2 HARVEST AREA DESIGN AND LAYOUT

PURPOSE

To provide direction for designing harvest areas.

DISCUSSION

Detailed planning of harvest areas must address reforestation, wildlife habitat (e.g., line of sight, hiding cover, sensitive sites, and travel corridors), watercourse protection, integration with other land uses, understorey protection, structure retention, road development and reclamation, and visual quality.

The following items affect harvest area size and shape:

- current inventory polygon boundaries;
- tree species, age and silviculture characteristics;
- habitat requirements of species of management concern and species at risk;
- key wildlife zones;
- amount and distribution of non-productive lands and immature treed lands;
- location and size of watercourses and buffers;
- location of roads, pipelines and power lines;
- topographic features;

- presence of viable understorey;
- retention of shrub and tree patches;
- accessibility to all or part of the compartment;
- potential blowdown of peripheral and within-harvest area trees;
- insects and diseases; and
- visual sensitivity.

In the absence of an SHS, a preliminary harvest plan (PHP) will be required in addition to the FHP.

PRELIMINARY HARVEST PLAN

The primary components of the PHP include a verification of timber merchantability, accessibility, and condition and a preliminary harvest design outline showing all existing and proposed harvesting activity within a defined area.

The defined area, which should be consistent with the approved GDP, should also identify and classify all watercourses, and critical wildlife habitat, as well as existing trails, seismic, power lines, and access within the planning area.

During the development of the PHP, efforts shall be made by the operator to notify all overlapping disposition holders and stakeholders that may be affected by the proposed development.

GROUND RULES

In the absence of an SHS the following ground rules apply:

- 7.2.1 A PHP shall be developed and submitted for approval by Alberta which incorporates a two-pass harvest system, or multiple entry system where agreed to.**
 - 7.2.1.1 A PHP shall be completed and approved by Alberta in the absence of an SHS.**
 - 7.2.1.2 The PHP will identify merchantable and unmerchantable timber types.**
 - 7.2.1.3 Harvest area design and layout as in section 7.2.2**
 - 7.2.1.4 Maps shall accurately show the following information**
 - a) the approved forest inventory;**
 - b) all existing and proposed Class I, II or III roads within harvest areas and harvest area boundaries for all timber companies;**
 - c) all proposed Class IV roads within harvest areas;**
 - d) current dispositions and reserves (e.g., PSP locations);**
 - e) watercourses, their classifications and protective buffers;**
 - f) known springs, water source and seepage areas;**
 - g) planned watercourse crossing locations and watercourse crossing structure types;**
 - h) current information on previously harvested areas, existing trails, seismic lines, power lines, pipelines and access routes; and**
 - i) Key Wildlife and Biodiversity Zones as per section 7.7.**
 - 7.2.1.5 Road design and location shall be described for all roads joining harvest areas, and DLO roads to be constructed for extraction of timber from all proposed harvest areas. These road comments include the following:**
 - a) road design and classification;**

- b) choice of corridor location and width;
- c) considerations made for other road users;
- d) considerations made for non-timber users; and
- e) integration of existing roads into the design.

7.2.1.6 Where two or more overlapping timber dispositions shall be harvested, the respective companies shall cooperatively develop an integrated harvest plan (see section 5.1.1).

7.2.2 Where a two-pass harvest is planned, all timber stands in a timber disposition that currently meet the merchantability standards and are near, at, or older than rotation age shall be included in the harvest design. No more than 50% of the merchantable area shall be in first pass blocks.

7.2.2.1 Pine and Deciduous Harvest Area Sizes: Harvest areas in deciduous stands or in stands where pine comprises 40% or more of the merchantable timber volume (evenly distributed throughout the harvest area) may be up to 100 hectares in area unless otherwise approved by Alberta, but shall average no more than 60 hectares.

7.2.2.2 Spruce Cutblock Size: Cutblocks in spruce timber may be clearcut to a maximum area of 24 hectares in patches, or to a maximum area of 32 hectares in strips where no part of the harvest area is further than 150 m from a suitable seed source. When a forest operator with responsibility for reforestation commits in writing to treat and plant the harvest area within 24 months of harvesting the operator may increase the harvest area size to that allowed for pine and deciduous (see 7.2.2.1).

7.2.2.3 Subsequent-pass harvest areas may be approved for harvest when previously cut harvest areas are reforested to Survey Manual standards and the following height requirements are met:

- a) coniferous harvest areas: regeneration has reached 3 m where a two-pass harvest is planned.
- b) deciduous harvest areas: regeneration has reached 3 m in height and ten years have passed since the previous harvest pass.

7.2.3 Irregular or natural boundaries shall be employed in the PHP harvest area design. New harvest designs in areas previously harvested shall create natural boundaries.

Ground rules 7.2.4 – 7.2.8 apply to both a spatial FHP and a non-spatial harvest plan.

7.2.4 Unless otherwise approved, line of sight shall be minimized where harvest areas are adjacent to accessible permanent Class I, II or III roads. The company should strive to have a line of sight of 400 m or less from the road.

7.2.5 Unless otherwise approved by Alberta, roadside vegetation shall be protected in harvest areas to limit the line-of-sight distance across the harvest area. To minimize breaks in the vegetation screen, only one road entry point shall be commonly allowed into the harvest area.

7.2.6 Unless otherwise approved, the company should strive to have a direct distance to wildlife hiding cover not exceeding 200 m.

7.2.7 Timber harvesting shall not occur on any area where the soil water table increases may result in regeneration failures.

- 7.2.8 Alberta PSPs shall not be disturbed or harvested unless such action is approved by Alberta.

7.3 DEBRIS MANAGEMENT AND WILDFIRE PROTECTION

PURPOSE

To manage the amount and distribution of woody debris left in harvest areas to:

- minimize wildfire risk, particularly near communities;
- optimize ecological benefits;
- minimize the loss of productive landbase;
- and to improve fire suppression capability.

DISCUSSION

Debris or slash accumulation resulting from timber harvest operations must, as a priority, be redistributed or disposed of to minimize the risk of wildfire ignition and spread. However, it is recognized that some retention of debris is valuable from an ecological perspective, and that a reasonable amount of debris retention shall occur to emulate natural forest floor accumulations. Ecological benefits include microtine habitat, furbearer habitat (when piled), and soil nutrient inputs. When debris is maintained, it must be in such a distribution and amount to: 1) minimize wildfire risk as a priority, 2) minimize the amount of productive landbase loss by limiting lost area available for deciduous species suckering, or tree planting, and 3) provide ecological benefit (coarse filter vs. fine filter).

Landscape-level issues regarding the risk of large fires are addressed in the development of the SHS. The FMP shall develop objectives, strategies and tactics that consider the risk of occurrence and spread of fire at the stand and landscape levels.

Opportunities may exist to implement fuel reduction, isolation and conversion on the landscape while accounting for other values. Where applicable, forest companies shall follow the guidelines in the [FireSmart Protecting Your Community from Wildfire](#) manual.

Acceptable methods of reducing slash hazards are defined in the FPD policy [Debris Disposal Requirement for Logging Operations](#) (see Appendix 2). The intent of burning piles is to remove the fines and to reduce the coarse woody material from the pile, so that any remaining fuels are not contributing towards un-natural fire behaviour and spread.

GROUND RULES

- 7.3.1 **Slash accumulations resulting from timber harvesting, road, and campsite construction shall be disposed of within 24 months of skid clearance in a manner acceptable to Alberta.**
- 7.3.2 **Slash fuel accumulation is not permitted within 5 m of the perimeter of the harvest area. The bordering undisturbed forest floor shall be used as a benchmark to determine what constitutes a significant accumulation. Unacceptable accumulations include piles of trees or non-merchantable timber, and tops or branches deposited during logging that could create fuel ladders for fire bordering the stand.**

7.3.3 Burning operations shall :

- a) **not be conducted during the fire season, unless otherwise approved in the Fire Control Plan in the AOP;**
- b) **require a post-burn survey to ensure all holdover fires are extinguished; and**
- c) **strive for complete pile consumption and achieve a minimum of 80% of the pile consumed.**

7.3.4 The FHP shall comply with Community Firesmart Plans.

7.3.5 The fire control plan of the AOP shall contain the following:

- a) **duty roster;**
- b) **list of company woodlands personnel and their fire control training;**
- c) **key company contacts;**
- d) **heavy equipment resource list;**
- e) **small hand tool resource list and their location;**
- f) **company communication system and numbers and call-signs;**
- g) **fire prevention policies;**
- h) **fire prevention strategies;**
- i) **fire prevention priorities (high values at risk);**
- j) **fire operations schedule (i.e., harvesting and silviculture activities within the fire season);**
- k) **identification of barriers to fire spread; and**
- l) **location of decked volume.**

7.4 STRUCTURE RETENTION

PURPOSE

**To create temporary refuges for forest biota to re-colonize harvest areas.
To maintain snags and live residual trees in harvested areas for biota that depend on these structures following natural disturbances.
To provide wildlife thermal and hiding cover within harvest areas throughout the rotation.
To provide wildlife travel corridors within large harvest areas and compartments.**

DISCUSSION

Although many types of natural disturbance (fire, floods, avalanches, wind events, insects and disease infestations, and slumps) occur within Alberta's forests, fire is the most common. Virtually all trees within intense fires are killed, but following low and moderate-intensity fires many scattered live trees are present. In addition, within all fire types, fire "skips" or "islands" result in residual patches of live trees remaining within larger burned areas. Following other types of natural disturbances, even higher densities of live trees, and patches of live trees, are present.

The retention of single trees, snags and patches of large live trees in harvest areas makes the harvested areas more similar to burned areas. In addition, residual live trees may create some old forest attributes in young regenerating harvest areas. Retaining some large snags within harvest areas creates habitat for some biota associated with naturally disturbed habitat. Additional large snags may be created, by retaining large live trees, as some of these trees will die throughout the rotation. Residual tree patches should be located such that natural features, riparian areas, wildlife features, sensitive sites, stand structure and composition, and proximity to standing forests are taken into account to maximize their utility or usefulness by the biotic community. These types of

in block residual structure are achieved during harvest operations and the objectives should be described in each company's guides to stand structure.

Operators' stand structure can be augmented by larger, planned and laid out patches/polygons in the aggregated harvest plan system. Aggregated harvest strives to remove most of the merchantable stands in a single pass entry, imitating natural disturbance pattern, and creates larger cutblocks in the process. Research into natural disturbance patterns and processes suggests that more residuals and larger residual polygons should be left if opening size increases. Planned structure in aggregated plans is developed in the FHP process.

At the FHP level, unplanned merchantable stands (stands that are part of the SHS, but remain unplanned for various reasons, such as aesthetic or wildlife concerns, terrain etc.) can contribute to the planned stand structure as long as they are:

- merchantable;
- within the harvest area;
- attached to the boundary as a peninsula, where the length exceeds the widest portion reaching into the harvest area; and/or
- between harvest areas where the structure forms part of continuous merchantable timber: (e.g., attached to riparian buffers (not the TSA netdown buffer itself)).

GROUND RULES

- 7.4.1 For Alberta-Pacific, an average of 5% of the deciduous merchantable volume and 5% of the merchantable coniferous volume at the FMU level by quadrant will be retained in harvest areas. A harvest area may have zero structure but the FMU average shall be 5%. Non merchantable structure is not to be tracked as part of the 5%.**
- 7.4.2 Each company will have a standard operating procedure for structure retention that has been provided to ESRD for information purposes.**
- 7.4.3 Proximal retention can be utilized for wind firming stands, protection of understorey or for defined purposes/values (TLU, sensitive sites, etc.) and is identified in the FHP. Proximal retention is defined as touching the boundary and it will not make up more than 30% of the total retention per FMU level by quadrant. It must be excluded from being sequenced for at least 30 years from the skid clearance of the block it is in.**

Coniferous Quota Holders and the Miscellaneous Timber Use (MTU) Program

- 7.4.4 In blocks less than 24 hectares, retention will focus on snags, immature coniferous understories, non-merchantable stems and clumps to safeguard special features and/or other forest values – no specific target for merchantable structure.**
- 7.4.5 In Quota Holder and MTU harvest areas from 24 to 100 hectares, an average of 1% of the coniferous merchantable volume and 5% of the merchantable deciduous volume at the FMU level will be retained.**
- 7.4.6 In Quota Holder and MTU harvest areas greater than 100 hectares, an average of 5% of the coniferous merchantable volume and 5% of the merchantable deciduous volume at the FMU level will be retained.**
- 7.4.7 Forest companies shall retain structure in the following manner:**
- a) **leave as many individual stems of non-merchantable trees, shrubs and snags as operationally and silviculturally feasible.**

- I. Leaning snags or trees of non-merchantable species that are greater than 6 m in height that create a safety hazard may be felled to create safe working conditions.
- II. Snags within 2.5 tree lengths of roads, camps, landings, fence lines, power lines and machine maintenance areas may be felled to create safe working conditions

- 7.4.8 Forest companies may create high stumps within the harvested area to distinguish harvest area boundaries or for use as rub posts.
- 7.4.9 Stand structure shall not be retained in harvest areas where forest health issues warrant eradication of all affected mature tree species to combat infestations and diseases (e.g., pine beetle and mistletoe).
- 7.4.10 Where coniferous and deciduous harvest areas combine to exceed 100 hectares, an average of 5% of the deciduous merchantable volume and 5% of the merchantable coniferous volume shall be retained by all companies. This includes all blocks harvested within 1-5 years of each other.

Stand Structure Monitoring and Analysis

- 7.4.11 Each company shall have a monitoring program acceptable to Alberta for determining the amount of merchantable volume retained within blocks.

Stand Structure Reporting

- 7.4.12 Stand structure monitoring results will be reported annually by FMU in the forest companies' GDP and/or AOP. Alberta ESRD is responsible for MTU monitoring through their AOPs.
- 7.4.13 Each company and the MTU program will independently report their annual results.
- 7.4.14 The actual merchantable volume left will be reconciled with the targets over a 5 year Cut-Control-Quadrant, allowing variation between years.
- 7.4.15 The forest companies' stand structure monitoring results will also be collated and reported every 5 years in the FMA Area Forest Companies' Stewardship report.
- 7.4.16 Outside of the Alberta-Pacific FMA area the following table describes the average number of patches of residual structure that shall be left within harvest areas. The average number of patches per hectare shall be calculated and implemented at the compartment level. There may be zero patches of residual structure in any particular harvest area as long as there is compensation in other harvest areas to meet the compartment average. There is an acceptable variance of 10% of total area in residual structure by harvest area size class for the compartment.

Harvest Area Size	Patch Type	Average Patches/ha in Compartment
2-20 ha	Small Patch	2
20-60 ha	Small Patch	1
	Large Patch	0.05

60-100 ha	Small Patch	1
	Large Patch	0.1
>100 ha	Small Patch	1
	Large Patch	0.2

7.5 UNDERSTOREY PROTECTION

PURPOSE

To protect white spruce understorey during timber harvesting and reforestation operations.

DISCUSSION

The main objective of this ground rule is to protect coniferous understoreys that will contribute to coniferous growing stock. Understorey protection must be practiced in all stand types containing white spruce understorey. Techniques will vary depending on stems per hectare (sph) of pre-harvest acceptable stems (see 7.5.1).

Two understorey protection techniques will be utilized:

- **Avoidance Method** – Used in deciduous harvesting containing less than 600 sph of pre-harvest acceptable stems or harvesting that contain greater than or equal to 600 sph of pre-harvest acceptable stems or in coniferous harvesting containing understorey. Wind buffering tactics and pre-planning not specifically required. The objective is to identify and retain understoreys through either non-harvesting areas with understorey, or harvesting of the overstorey with protection from direct harvest impact of the understoreys at the harvest, skidding and reforestation phases.
- **Protection Method (High Effort Understorey Protection)**– Used in deciduous harvesting containing patches greater than or equal to 600 sph of pre-harvest acceptable stems that are in blocks 10 hectares or larger. Wind buffering tactics utilizing structure retention, pre-planned strip harvest/skid trails.

High stumps may be left around clumps of understorey or along skid trails as rub stumps to protect the understorey during operations. The majority of merchantable volume left as extra structure undergoing “protection methods” is expected to be available during the subsequent harvest of the block. Merchantable understorey (15 metres or greater in height) will be harvested and treated as incidental volume or left on site within stand structure.

The “protection method” will retain at least 50% of the pre-harvest acceptable stems in the understorey without harvest damage (see 7.5.2) when the opening will be declared post-harvest to Coniferous/Deciduous, CD. When the opening will be declared post - harvest to Deciduous/Coniferous, DC, the “protection method” will retain at least 30% but less than 50% of the pre-harvest acceptable stems in the understorey without harvest damage. “Protection method” will be performed in the areas where a pre-harvest survey has verified that it contains the acceptable stems of understorey and density. A monitoring program sampling a portion of stands harvested using understorey protection will be done to provide information on the success. Success of understorey protection will be reviewed for the stewardship report to ensure the assumptions in the FMP are being achieved.

The SHS will specify which deciduous openings are targeted for understorey protection. Deciduous openings identified through the Alberta Vegetation Inventory (AVI) process as containing understoreys sufficient for “protection methods” are assumed based on area to transition post-harvest to; 40 percent to CD, 40 percent to DC and 20 percent to Deciduous, D. This is a Timber Supply Analysis (TSA) assumption.

Post-harvest acceptable stems have 50% or more live crown and less than 25% of the crown lost due to top breakage, bole scars (bark removed to the cambium) less than 10 cm (vertical length) and less than 20% of the bole circumference, and are white spruce.

The following factors shall be considered when planning for protection of white spruce understories:

1. **Landbase Assignment From Approved FMP** – coniferous or deciduous
2. **Understorey Characteristics** - density and height, distribution, the health and vigour of the understorey, the size and wind permeability of the crown, height-diameter ratio (slenderness coefficient)
3. **Site Conditions** – soil conditions that may limit rooting (e.g., depth to water table), topographic features that may enhance or diminish wind-firmness or hamper effectiveness of operations, adjacent stand features and impacts on understorey wind firmness.

GROUND RULES

- 7.5.1 **Pre-harvest acceptable stems are non-merchantable, two metres or more in height, are within 75% of the average understorey stand height, have 50% or more live crown, are of good health and vigour, and are white spruce as determined by the understorey assessment survey. For blocks meeting 7.5.4, the results of this assessment are to be provided for information at least 10 days prior to harvest.**
- 7.5.2 **Understorey discovered in the field, but not previously identified in the SHS shall be protected as per 7.5.3 and 7.5.4.**
- 7.5.3 **Avoidance methods' shall be used to protect the white spruce understorey in deciduous harvesting containing less than 600 stems per hectare (sph) of pre-harvest acceptable stems or where they contain greater than or equal to 600 sph of pre-harvest acceptable stems but the blocks are less than 10 hectares in size or in coniferous blocks containing understorey.**
- 7.5.4 **Unless approved by Alberta, deciduous blocks 10 hectares or larger in size containing patches greater than 2ha with at least 600 sph of pre-harvest acceptable stems, shall utilize 'protection methods' to protect the white spruce understorey.**
- 7.5.5 **Stands identified as containing understorey but lacking 600 sph of pre-harvest acceptable stems shall be protected using 'avoidance methods'.**
- 7.5.6 **The FHP shall specify harvest areas that require a detailed block plan for coniferous understorey as per 3.4.10.**
- 7.5.7 **Openings undergoing 'protection methods' shall have an approved aerial assessment. The assessment will validate if the treatment objectives from the DBP have been met.**

7.6 FISHERIES AND THE AQUATIC ENVIRONMENT

PURPOSE

To conduct timber operations in a manner that shall minimally affect:

- the health, diversity and natural distribution of aquatic biota;
- the quantity and productive capacity of the aquatic environment, including fish habitat; and
- fisheries management objectives identified in the FMP.

DISCUSSION

Current provincial and federal legislation require that the aquatic environment and fisheries resources in Alberta must be protected.

Timber operations can directly affect the aquatic environment and fish habitat in a number of ways. Tree removal in riparian areas and along stream banks can alter light intensity, nutrient supply, sediment inputs, water temperatures, stream bank stability and recruitment of large woody debris to the watercourse. Watercourse crossings, if not properly designed, can create physical barriers to the movement of fish and other aquatic biota along watercourses. Roads and ditches can intercept and transport sediments from the upland source to crossing sites where they are deposited in the watercourse. Upland timber harvesting can also affect watershed water yield and flow regimes. These effects can lead to changes in aquatic primary productivity, food-web pathways, aquatic species abundance and distribution, and channel morphology.

The primary strategy for maintenance and protection of the aquatic environment and fish habitat values is to maintain treed buffers along watercourses and water bodies and adopt rigorous watercourse crossing and erosion control measures. Alternate management proposals for riparian areas would be considered to support aquatic environment and fisheries management objectives in the area, where acceptable to Alberta.

Authorizations by Alberta do not imply authorization under federal legislation and requirements, notably the federal Fisheries Act. The proponent must seek advice and approvals of the federal agencies (Department of Fisheries and Oceans) regarding federal legislation requirements.

Additional ground rules for any work carried out in and around watercourses are found in section 11.4 – Watercourse Crossings.

GROUND RULES

7.6.1 All waterbodies and watercourses are presumed to be fish bearing or support fish-bearing habitat. However, the company may confirm the distribution of fish and fish habitat within the planning areas by:

- a) checking the Fisheries and Wildlife Management Information System (FWMIS), Water Act Codes of Practice and fisheries inventory data, or
- b) conducting new inventories, or
- c) consulting with the appropriate Fisheries Biologist.

7.6.2 For any activity that disturbs or alters the bed and banks of a fish-bearing waterbody, an assessment of the potential effects on fish and fish habitat must be conducted by an individual with expertise in fisheries and aquatic assessment methods and habitat mitigation measures. For assessment requirements and methods, refer to Schedule 4 of the Code of Practice for Watercourse Crossings

7.7 SPECIES OF SPECIAL MANAGEMENT CONCERN

PURPOSE

To conduct planning and timber operations in a manner that shall:

- conserve and plan for an agreed upon level of effective habitat for species of special management concern including woodland caribou, trumpeter swan and others as determined by Alberta from time to time;
- maintain the effective habitats for ungulates in river valley environments.

Ground Rules

7.7.1 Woodland Caribou and Ungulate Habitat in River Valleys

7.7.1.1 To the extent possible, all new access roads must follow existing disturbances, unless doing so will compromise options for subsequent access management.

7.7.1.2 Preference shall be given to development and use of winter (frozen ground) roads since this reduces negative impacts on wildlife, permits minimization of long-term infrastructure, and facilities reclamation.

7.7.1.3 It is recognized that in some cases work will occur throughout the winter season to take advantage of frozen ground access. Frozen ground operations using frozen ground roads take precedent over early-in/early-out. Completing operations in ungulate habitat areas early in the winter season remains a management objective.

7.7.1.4 As an alternative to winter (frozen ground) roads, summer roads may be developed and used, subject to the following:

- a) Road width and grade shall be minimized. Preferentially, summer roads shall be temporary “dry weather” routes, with use suspended when ground conditions are unfavourable.
- b) Summer harvesting areas shall preferentially be located outside of caribou range as well as outside of ungulate habitat in river valleys, or as an alternative, in proximity to previously existing all-weather access roads to assist in reducing the need for new summer access routes. As an alternative, summer harvesting in more remote areas shall have hauling deferred to take advantage of frozen ground conditions.

7.7.1.5 Except where identified and agreed upon within the FHP, only temporary access roads shall be used (see Table 3A).

7.7.1.6 Main access roads shall be built no sooner than one year prior to harvesting operations. In-block roads shall be re-contoured and reclaimed (and potentially reforested) within 18 months of completion of harvesting and hauling operations, unless otherwise agreed to in the operating schedule.

7.7.1.7 As agreed to between the company and Alberta, effective forms of public access control for highway vehicles shall be maintained. Options for access management on routes must be considered during the CA or FHP. The

need for options to manage off highway vehicle traffic must be considered in the CA or FHP (see section 11.5 for more detail on Access Management).

7.7.1.8 Reclamation techniques used on access routes must strive to prevent highway vehicle use and limit off-highway vehicle use.

Woodland Caribou

DISCUSSION

The FMP strategies and SHS shall describe the harvesting program that will create the desired future forest, taking into consideration the full range of values including habitat for species of special management concern.

Woodland caribou are classified as a “Threatened” species under both the *Alberta Wildlife Act* and the National COSEWIC/RENEW system. The Federal *Species at Risk Act* (SARA) shall apply to woodland caribou in Alberta. The “1996/97 Operating Guidelines for Industrial Activity in Caribou Ranges in West Central Alberta” and the “2001 Boreal Caribou Committee Strategic Plan and Industrial Guidelines for Boreal Caribou Ranges in Northern Alberta” provide background and intent for managing industrial work on caribou range. Both national and provincial woodland caribou recovery processes have been initiated which may have implications for timber harvesting in Alberta. Woodland caribou range is delineated on Provincial Land Management Referral Maps.

Timber operations and management in caribou range can affect caribou populations and habitat directly or indirectly and in four main ways: 1) creating and maintaining public access routes, 2) altering natural and human caused mortality rates on caribou populations (both through access route development and habitat changes), 3) altering the amount, quality, and effectiveness of caribou habitat, and 4) displacing and causing undue sensory disturbance to individual caribou. All of the four factors are consequential for caribou conservation; however, predation rates and habitat changes are of primary concern.

The negative effects of creating and maintaining access routes (public travel, predation, reduced habitat effectiveness, disturbance and displacement) shall be managed by planning the amount, tenure and class of new access routes (roads), and by reviewing and acting upon management options (i.e., access management, abandonment, reclamation) for existing routes.

GROUND RULES

7.7.2 Woodland Caribou

Planning

7.7.2.1 If required as per 3.2, a CA must be completed that addresses the following issues:

- a) provide an agreed upon habitat supply forecast including the amount, type, and spatial arrangement of caribou habitat;**
- b) the location of all proposed harvest areas;**
- c) options for partial harvest systems;**
- d) the amount, alignment, standard (road type) and longevity (tenure) of the forest companies access roads;**
- e) use of, and improvements to existing access roads;**
- f) access road reclamation plan and schedule, which shall also consider options for reforestation of roads. This shall take into account reclamation options for existing (“traditional”) access routes;**

- g) measures to achieve public and industrial access management;
 - h) operating schedule (road construction, harvesting, and silviculture);
 - i) protection of key caribou habitat features (as identified by Alberta and company);
 - j) terrestrial lichen management strategies (in relation to both harvesting system and silviculture prescription); and
 - k) proposed summer operations.
- 7.7.2.2 Silviculture prescriptions shall strive to protect existing terrestrial lichens, and facilitate terrestrial lichen regeneration (see section 8.0 for silviculture prescription requirements).
- 7.7.2.3 Harvesting operations shall be “concentrated” spatially within caribou range. Harvesting within previously existing two or three-pass harvest designs within caribou range shall occur prior to new harvest areas being opened up.
- 7.7.2.4 Retention patches shall be used in large harvest areas to protect areas of concentrated terrestrial lichen growth, and reduce watershed, aesthetic, and wildlife related concerns.
- 7.7.2.5 Areas of concentrated terrestrial lichen growth (where terrestrial lichens are the predominant ground cover) within proposed harvest areas must be delineated in the FHP. DBPs which identify protection measures must be provided to the operator for these areas. Structure retention in harvest areas within the caribou range should focus on these lichen areas. Alberta may request a review of these plans at any time.
- 7.7.2.6 Winter operations are preferred to protect existing terrestrial lichen growth within harvest areas, and to retain lichen propagules.
- 7.7.2.7 Table 3A provides guidance for the building of roads within the caribou zone. The goal is for development of temporary access to minimize grade development but should not compromise safety.
- 7.7.2.8 Summer harvesting areas shall preferentially be located outside of caribou range or if within caribou range, be located in proximity to previously existing all-weather access roads to assist in reducing the need for new summer access routes. As an alternative, summer harvesting in more remote areas shall have hauling deferred to take advantage of frozen ground conditions.

Trumpeter Swan

DISCUSSION

The SHS and FMP shall describe the harvesting program that will create the desired future forest, taking into consideration the full range of values including habitat for species of special management concern.

Trumpeter swans are classified as a “Species of Special Concern” species under the *Alberta Wildlife Act*. The Recommended Land Use Guidelines for Trumpeter Swan Habitat in Alberta provides background, intent, and specific direction for managing industrial work near trumpeter swan breeding wetlands. Locations of breeding wetlands are mostly found on provincial land use referral maps. A provincial trumpeter swan recovery process has been initiated which may have implications for timber harvest in Alberta.

Trumpeter swans are sensitive to human disturbance, and human activity in breeding areas may decrease survival of eggs or cygnets. Trumpeter swans that are disturbed may not nest or may abandon an existing nest. Therefore, the breeding population continues to be dependent on current management practices and habitat protection.

Timber harvest planning and operating ground rules must reflect the sensitive nature of this species. These operating rules serve three primary purposes:

- a) protection of the long-term integrity and productivity of trumpeter swan breeding habitat;
- b) avoidance of industrial disturbance to trumpeter swans during nesting and rearing of cygnets; and
- c) minimize the access created near swan lakes to reduce the potential for secondary disturbance of trumpeter swans from recreational use.

During the breeding season (April 1 to September 30), low-level (<2000') aircraft flights may disturb trumpeter swans. Low-level aircraft flights are discouraged over identified trumpeter swan lakes or water bodies.

GROUND RULES

7.7.4 Trumpeter Swan

7.7.4.1 From April 1 to September 30, there shall be no harvesting, hauling, road building or scarification activity within 800 m of the high water mark on identified trumpeter swan lakes or water bodies.

7.7.4.2 There shall be no timber harvesting within 200 m of the high water mark on identified trumpeter swan lakes or water bodies.

7.7.4.3 An area 200-500 m from the high water mark on identified trumpeter swan water bodies shall be managed in a manner that provides additional protection for the swans. Special measures shall be determined on a site-specific basis during the FHP. Special measures within this zone shall include site preparation that reduces the potential for future vehicular access, no general application of herbicides, and attempts to limit maximum line of sight to 100 m. Attempts to retain sufficient structure to contribute to a "forested" habitat in this zone are encouraged. Techniques that limit line of sight and contribute to the treed buffer of the wetland are encouraged.

7.7.4.4 There shall be no development of long-term infrastructure (roads and camps) within 500 m of the high water mark on identified trumpeter swan water bodies. Only seasonal winter routes shall be permitted within the 500 m buffer.

Key Wildlife and Biodiversity Zone

DISCUSSION

The SHS and FMP describes the harvesting program that will create the desired future forest, taking into consideration the full range of values including habitat for species of special management concern.

For deer, elk and moose in Alberta, key winter range is often found in river valleys. These landforms contain the topographic variation and site productivity conditions that provide winter foraging conditions in proximity to forest and topographic cover. Also, south-facing valley slopes

have relatively lower snow accumulations and warmer bedding sites. The valley landform itself provides protection from high wind chills. Traditional, high use and high quality winter ranges have been identified on the Wildlife Sensitivity Maps on the basis of several decades of winter aerial population surveys, supplemented by habitat assessments using aerial photo interpretation and ground surveys.

Key ungulate winter ranges play a disproportionately large role, given their localized size and distribution, in maintaining the overall productivity of regional ungulate populations. These ranges ensure that a significant proportion of the breeding population survives to the next year.

Habitat effectiveness, including maintenance of thermal cover, foraging areas and escape cover is important for ungulates. Timber operations within and adjacent to key wintering areas adds stress and increases energy drain for animals. They may be forced to move about unnecessarily and even relocate to less favourable habitat. This becomes an increasingly significant factor as winter progresses. Activities associated with timber harvest may also create temporary and permanent access that exposes animals to additional non-industrial disturbances, increased levels of harvest from licensed and non-licensed hunting, and to increased predator efficiency.

In the interest of maintaining productive ungulate populations, operating ground rules must reflect an understanding of the biology of these animals and the importance of their key winter ranges. These must serve two primary purposes:

- a) protection of the long term integrity and productivity of key ungulate winter ranges; and
- b) avoidance of direct and indirect disturbance to animals that are using these winter ranges during the mid-to late-winter period.

Ground Rules

7.7.5 Key Wildlife and Biodiversity Zone

7.7.5.1 The FMP and SHS shall provide direction on the location/adjacency of harvest areas and retention areas, and on rate of harvest.

7.7.5.2 The amount, tenure and class of new forest company access roads shall be minimized and consistent with the land use objectives in regionally defined key wildlife zones (Landscape Analysis Tool (LAT)). Access development will strive to minimize new human infrastructure.

7.7.5.3 The alignment and standard of new long-term and permanent access roads must be identified and agreed upon within the long-term access plan. New long-term and permanent access roads shall not be developed below the valley “breaks” of rivers, except in isolated cases for river crossings.

7.7.5.4 Any proposed new crossings of rivers and creeks must be identified and agreed upon within the Access Management Plan; new permanent crossings shall be avoided.

7.7.5.5 Where possible all access roads shall avoid known key habitat features.

7.7.5.6 Use of existing access roads must be described in the FHP, with particular reference to public access management, any proposed road improvements and ongoing maintenance. Potential opportunities for partial or complete route closure and/or reclamation following planned harvesting and silviculture shall be discussed.

7.7.5.7 Unless otherwise agreed to in the AOP, timber operations should be conducted outside of the period January 15 to April 30.

7.7.5.8 Unless approved by Alberta, broadcast application of herbicide shall not occur within this zone.

7.7.5.9 Mechanical thinning and selective use of herbicide as approved by Alberta may occur within this zone.

7.7.5.10 In order to maintain browse availability, mechanical stand tending activities shall only remove competing vegetative growth that interferes with the Reforestation Standard of Alberta (RSA) targets.

Other Species

DISCUSSION

Additional habitats of selected wildlife species require maintenance of undisturbed habitats (e.g., breeding or denning locations). These species require specific sites in order to complete all or part of their life cycles.

7.7.6 Other Species

7.7.6.1 Sensitive sites listed below shall be protected by retention of an undisturbed, forested buffer (or other management technique) from the edge of the opening associated with these sites, or from the centre of sites without openings. Both Alberta and the forest operator shall make a reasonable effort to identify sensitive sites in the FHP. Sites discovered in the field shall receive the same buffer as those sites previously identified in planning. Buffer widths and duration shall be agreed to in the FHP.

7.7.6.2 In the event that site-specific buffers or other management techniques are not approved in the FMP and FHP, the following buffer widths shall apply. In the event that a sensitive site not previously identified during layout is encountered during harvest activities, whatever remains of the appropriate buffer shall be retained.

Sensitive Site	Width of terrestrial vegetated
<u>Buffer</u>	
Breeding Sites and Hibernacula of Species At Risk (Salamanders, Amphibians and Reptiles)	100 m
Bat Hibernacula	100 m
Colonial Bird Nesting Area	100 m
Sandhill Crane Nesting Area	100 m
Wolverine Den	100 m
Mineral Licks	100 m
Raptor Nest Tree	100 m
Natural Springs and Beaver Ponds with no outflow channel	20 m

8.0 SILVICULTURE

PURPOSE

To plan and implement silvicultural practices that result in reforested stands that meet approved regeneration standards.

DISCUSSION

A reforestation program is required by Alberta under TMR 143.1. The reforestation program is a component of the AOP and contains reforestation prescriptions by strata, and a schedule of treatments for the upcoming year. The proposed reforestation program provides a link between reforestation operations and the FMP. The reforestation program must be based on the most current knowledge of treatments (by strata) which lead to reforestation success in terms of reforestation standards. Reforestation prescriptions are a critical point in the sustainable forest management planning system where growth and yield strata targets from the FMP are delivered through well-planned silviculture treatments. Knowledge of how sites respond to different treatments result in better treatments, and greater probability of success in meeting growth and yield strata targets, for height, stocking, density and ultimately, strata volumes.

An acceptable silvicultural process includes:

- site assessment (pre or post-harvest) based on ecosite classification;
- a prescription table or 'matrix' of silviculture treatments or tactics for specific strata;
- regeneration standards based on yield curve strata targets;
- an annual treatment schedule of activities; and
- an assessment/survey system, and feedback mechanisms to ensure regeneration data is used to refine the prescription matrix and, in conjunction with all data sources (including PSP information), the regeneration standards and post-harvest growth and yield assumptions.

GROUND RULES

8.1 PLANNING

- 8.1.1 Harvest layouts bordering previously reforested areas shall avoid damaging regeneration. This includes reopening of reforested access (see 5.1.2).**
- 8.1.2 Reforestation timelines prescribed by Alberta shall begin at the start of the timber year following the end of the timber year when the harvest area has received skid clearance from Alberta, or from a company representative pursuant to a self-inspection agreement between the company and Alberta.**
- 8.1.3 Reforestation prescriptions shall be based on site assessments (pre or post-harvest) that include considerations specific to the site (e.g., Ecosite field guide for Alberta).**

8.2 REFORESTATION PROGRAM

- 8.2.1 The reforestation program shall be submitted:**
 - a) **before March 1 for silviculture operations commencing between May 1 and October 31; and**
 - b) **before September 1 for silviculture operations commencing between November 1 and April 30; or**

c) as otherwise specified in an FMA, or at a time agreed to by Alberta.

8.2.2 Openings shall be clearly identified (e.g., maps, spatial files, or delineation on the ground through visual markings).

8.2.3 The reforestation program shall include the following components and information:

- a) silviculture prescription;
- b) proposed silviculture treatment schedule;
- c) maps as requested by Alberta;
- d) proposed blocks for declaration in lieu of survey and re-treatment; and

a) Silviculture Prescription

The FMP contains a Silviculture Strategy table for prescriptions specific to different forest stratum. Changes to the approved strategy in the FMP are outlined in the AOP.

Proposals for herbicide application shall be submitted for approval in accordance with approved vegetation management strategies and Alberta requirements (see Herbicide Reference Manual). Herbicide proposals are a component of the reforestation program in the AOP, but may be submitted separately from the AOP.

Commercial thinning proposals shall be submitted for approval as part of the AOP unless otherwise agreed by Alberta, in accordance with Alberta's requirements.

b) Proposed Silviculture Treatment Schedule

The Silviculture Treatment Schedule shall contain the following information:

- opening number;
- a list of harvest areas and the estimated area (ha) to be treated;
- the reforestation strata standard for each harvest area (see below for more detail); and
- season or date of activity – summer vs. winter.

The following proposed reforestation activities for each harvest area (or opening) shall be listed:

- I. Site Preparation – mechanical or chemical treatment;
- II. Planting – primary species, density range, and notification if outside approved seed zone;
- III. Seeding – species and notification if outside approved seed zone;
- IV. Leave for Natural – species;
- V. Manual Tending – type (cleaning vs. spacing or combination);
- VI. Fertilization – type of fertilizer;
- VII. Herbicide/Insecticide application – type of chemical and method (ground vs. aerial) and target species for insecticide;
- VIII. Commercial Thinning;
- IX. Regeneration surveys – establishment and performance;
- X. Cone/cuttings collection – (Alberta shall be notified regarding collections as per the 'Alberta Forest Genetic Resource Management and Conservation Standards); and
- XI. Let it grow as a retreatment strategy.

Should the proposed reforestation activities for a harvest area change after AOP approval, the following items require a major amendment to the AOP:

- changing to a treatment not approved in the silviculture strategy table for the specific strata

- addition of blocks to the silviculture plan which require reforestation activities in the field during the term of the Silviculture Plan

The following requires only notification to Alberta:

- any other changes require notification to Alberta through ARIS.

Note that proposals to deploy seed or vegetative material outside the seed zone or breeding region require prior approval of the Provincial Seed Officer at the Alberta Tree Improvement and Seed Centre.

Sample Silviculture Treatment Schedule

Opening Number (ARIS)	Harvest Area (ha)	Preliminary Strata Declaration	Activity	Activity Area (ha)	Season	Comment
HARN004-001	10	C	Mounding	4	Winter	

c) Map

As part of the reforestation program, a map may be requested (at Alberta’s discretion, the FHP map may be used) that identifies:

- I. All harvest areas to be treated, and all roads and stream crossings to be constructed or used (designating their season of use).
- II. The reforestation map shall include all harvest areas from integrated operations.

d) A listing of harvest areas where a declaration is proposed in lieu of a survey for areas not likely to meet regeneration standards (per TMR 141.9) and harvest areas where re-treatment is proposed (per TMR 142.1.)

- I. Blocks where ‘let it grow’ is the retreatment strategy will require survey information supporting re-treatment rationale.
- II. May be submitted for review and approval at any time throughout the year for approval to ensure timeliness of treatments.

8.3 SILVICULTURE OPERATIONS

- 8.3.1 Site preparation and other silviculture activities must follow the same AOP conditions and ground rule standards which apply to timber operations (i.e., stream crossing requirements, watercourse buffers, tree/understorey retention, and Forest Soils Conservation Guidelines). Where watercourses are adversely affected, crossings are required for silviculture access including quad access.
- 8.3.2 Pesticide use shall be performed in accordance with Alberta requirements.
- 8.3.3 Site preparation equipment shall be cleaned and free of restricted and noxious weed seed or plant parts before entry into the working area or before mobilizing between projects according to Directive 2001-06.
- 8.3.4 Site preparation creating linear disturbance patterns, shall be oriented to minimize channelling of water downslope.
- 8.3.5 Planting boxes shall be disposed of within 24 months of logging (skid clearance). Boxes must be secured in bundles for disposal by incineration or removed and landfilled. All plastic shall be removed from boxes and disposed of at an approved

waste disposal site prior to burning. Based on past operator performance to this ground rule, Alberta may condition the AOP for removal of all boxes.

9.0 SOILS

PURPOSE

To conduct timber harvest, road construction, reforestation and reclamation operations in a way that shall:

- minimize the potential for soil erosion;
- prevent soil, logging debris and deleterious substances from entering watercourses;
- ensure that the capability of the site to support healthy forest tree growth is maintained.

DISCUSSION

Minimizing soil displacement, compaction and rutting/puddling during road construction, harvesting, and silvicultural operations is a primary concern. Soils are most at risk of compaction and rutting/puddling when the soil is moist or wet, with the more poorly drained soils remaining wetter longer. The soils are equally at risk in the winter months if they are wet and the soil has not frozen, which is a common occurrence. Rehabilitation of compacted soil in harvest areas (off – road) is seldom an option because they are generally wet and additional machine traffic will often cause more soil damage. Therefore, protection of soil is best achieved in choice of equipment, staff training and advanced planning of operations. In terms of advanced planning, it is recommended that a pre-harvest site assessment include the evaluation of soil drainage class across the harvest area delineating sensitive areas with imperfectly and poorly drained soils. Management of field operations shall involve operating on soils when they are as dry as possible. The weather and percentage of sensitive areas in the harvest area shall be taken into account when scheduling areas for harvesting. Following a long dry period in summer, the sensitive sites shall be scheduled accordingly.

GROUND RULES

Pre-harvest planning

- 9.0.1 Areas susceptible to rutting, puddling or compaction shall be avoided when planning temporary roads, decks, landings and skidding patterns.
- 9.0.2 Areas susceptible to rutting, puddling or compaction shall be harvested during dry or frozen conditions (e.g., harvest areas with predominantly imperfectly-poorly drained soils).

Harvesting

- 9.0.3 The total area covered by temporary roads, bared processing areas, and soil displaced during timber harvesting operations shall not exceed five percent of each harvest area without Alberta's approval. Blocks less than 7 ha or narrow blocks may exceed 5% with these blocks reported on the as-built. This ground rule does not apply when the company has an approved silvicultural strategy to reclaim these disturbed areas.
- 9.0.4 Skidding and road construction operations shall not occur during heavy rainfall or when soil conditions are above field capacity (saturated).
- 9.0.5 Minimize the machine traffic on sensitive areas, depending on soil susceptibility to disturbance according to the results of a hand test. (see figure 2).
- 9.0.6 Operations shall cease when instances of multiple ruts in a limited area are created that are clearly related to operations during unfavourable ground conditions.

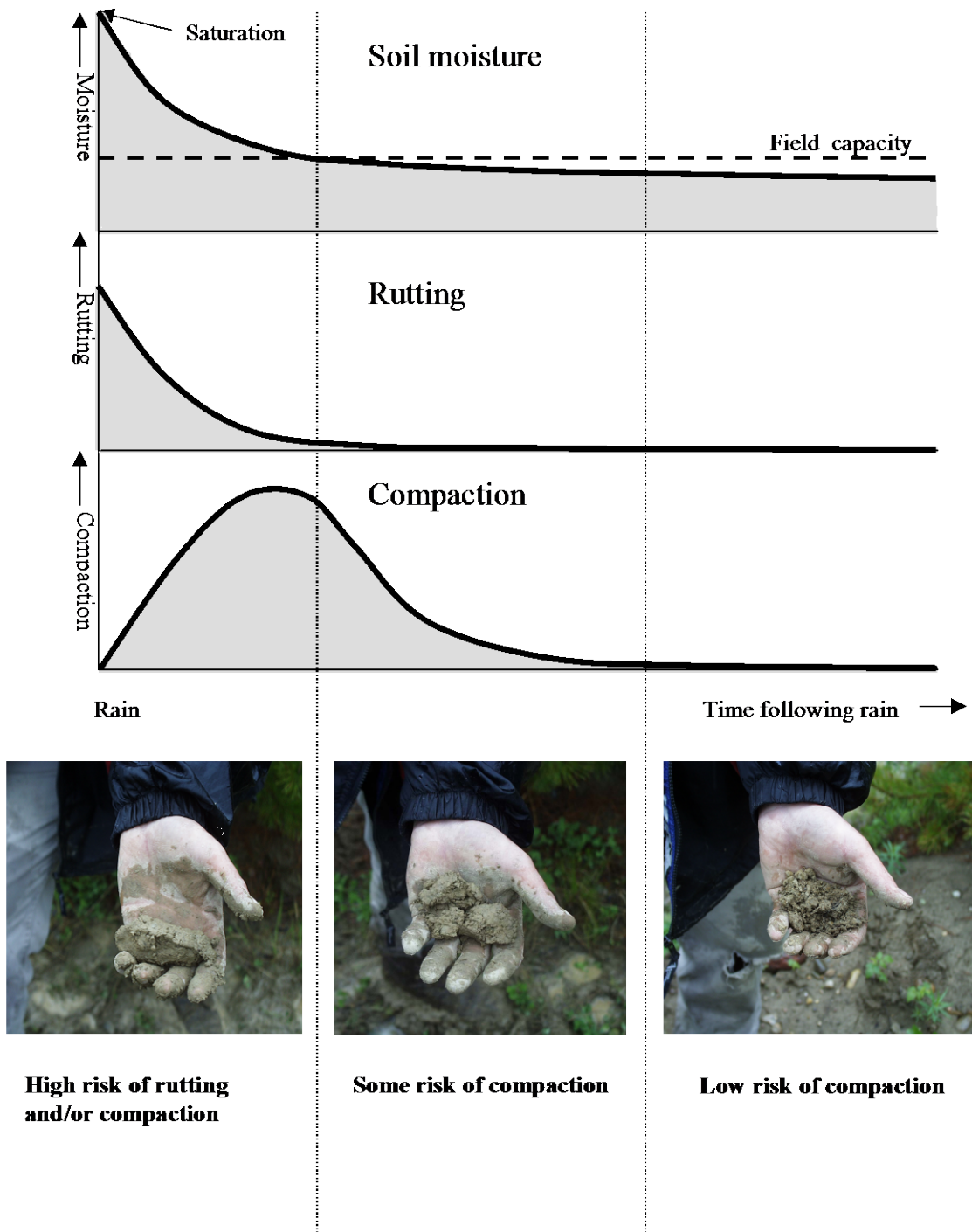
9.0.7 Temporary road construction methods shall retain organic matter for redistribution during reclamation to reduce erosion and maintain nutrients.

Post-harvest reclamation/reforestation

9.0.8 Roads within harvest areas that are no longer required shall be reclaimed and reforested.

Figure 2:

Change in soil moisture and susceptibility to compaction and rutting following rainfall



Courtesy of Andrei Startsev, Alberta Research Council

10.0 FOREST HEALTH/ PROTECTION

10.1 INSECT AND DISEASE

PURPOSE

**To minimize the risk of occurrence, and spread of insects and disease, which have the potential to impact forest management objectives.
To prioritize the salvage of timber damaged by insects and disease.**

DISCUSSION

The impact of certain insects and diseases shall be addressed when planning harvesting, silviculture operations, and surveys. Several biotic and abiotic forest health agents affect the growth and survival of trees. Each agent poses a threat to the forest. Priority for management shall be given to those agents that have the greatest impact or could potentially cause the most damage by:

- a) increasing the wildfire hazard;
- b) reduction or loss of merchantable volume;
- c) detracting from landscape aesthetics.

The following ground rules do not supersede the management strategies of species of special management concern. Alberta will provide direction where insects or disease concerns overlap with strategies for species of special management concern.

Documents concerning Mountain Pine Beetle can be found on the Alberta Environment and Sustainable Resource Development website (esrd.alberta.ca).

GROUND RULES

10.1.1 Harvest plans and operations shall be prioritized in stands with insect and disease issues. Variance from the SHS to address insect or disease issues may be acceptable if approved by Alberta. Infected and infested stands shall be ranked based on the type and intensity of insect and disease present, or the presence of dead trees. Stands or trees shall be ranked for treatment or harvest as follows:

Rank 1: Stands or trees with the presence of mountain pine beetles or spruce beetles.

Rank 2: Stands with a significant number of dead or dying trees resulting from fire, insects or disease, and windthrow.

Rank 3: Stands infected with mistletoe, spruce budworm, forest tent caterpillar, root disease (Tomentosis, Armillaria) or jack pine budworm.

Rank 4: Stands infected with needle cast, Western gall rust, root collar weevils, Atropellis or other miscellaneous forest health agents.

10.1.2 Management tactics are based on the Forest Protection ranking as follows:

Rank 1 stands or trees: Control Measures must be undertaken before adult beetles take flight, either through harvest or single tree treatment. Alberta and forest companies shall work co-operatively to prevent spread through aggressive action.

Rank 2 stands: Shall be addressed through salvage planning process (see section 3.6, Salvage Planning). Highly unpredictable spread therefore, salvage planning is initiated.

Rank 3 stands: To manage dwarf mistletoe companies shall:

- create a 20 m wide non-host buffer beside the harvest area perimeter, or

- reforest the harvest area to a non-host species.

Any structure retention patches shall consist of non-pine species where possible. For other pests, contact Alberta.

Rank 4 stands: Generally, no control is required for mature stands. Regenerated stands affected by Western gall rust or root collar weevils may require site treatments. Contact Alberta.

10.1.3 Insect and disease assessment information shall be utilized in the CA. Where a CA is not required, the assessment information will be used to develop the GDP. Where new infestations are found, or for known infestations already sequenced through the SHS, they shall be addressed in the FHP.

10.1.4 Any infestation of Rank 1 agents and all data must be reported to Alberta immediately.

10.1.5 Where dues relief is requested, mistletoe infected stands must be surveyed using an acceptable rating system (e.g., Hawksworth system).

10.2 WEED MANAGEMENT

PURPOSE

To minimize the impact of non-native, restricted, and noxious weeds, in the Green Area.

DISCUSSION

The invasion of restricted and noxious weeds in the forested area of Alberta negatively affects the integrity of the ecosystem. The invasive weeds alter natural processes and displace organisms that naturally occur in the area.

Under Alberta statutes, the occupant (or owner if there is no occupant) must destroy all restricted weeds, control all noxious weeds and prevent the spread or scattering of nuisance seeds.

GROUND RULE

10.2.1 Forest companies shall follow Alberta's requirements (Directive 2001-06) for weed management related to timber operations (see Appendix 3).

11.0 ROADS

11.1 ROAD CLASSIFICATION

PURPOSE

To define a road classification system that provides guidelines to all forest companies and potentially all resource users in the Ground Rule Zones.

DISCUSSION

As roads are one of the most significant components of forest harvesting operations, forest companies along with Alberta shall co-ordinate and integrate road planning and construction plans with other resource companies. This classification system will provide consistent working guidelines to be used in planning and operations to facilitate integration. It is important to identify not only construction schedules but closure and reclamation timelines as well. Long term planning of access roads is a significant tactic to address landscape access issues. All AOP non DLO roads

need to be reclaimed as soon as timber operations are complete to mitigate impacts on streams through sedimentation and on habitat through fragmentation. Weather, ground conditions and large volume planning units may impact a company's ability to complete timber operations and reclaim the road system as per 11.1.2 and 11.2.3.1. Alberta will consider these factors when reviewing AOPs and issuing approvals.

GROUND RULES

- 11.1.1 The operator shall utilize the classification system described in Table 3 during planning and operations.**
- 11.1.2 Roads, with a lifespan of greater than three years shall be built under the authority of a DLO.**

Table 3. Road Classification and Design

Road Description and Tenure	Planning Requirements	Layout ¹	Design and Construction Descriptions ¹		Borrow Pits ¹	Timber Salvage ¹	Debris ¹	Erosion Control ¹
			Right of Way					
			Clearing Width	Road Surface Width				
<p>Class I</p> <p>Primary Permanent</p> <p>All Weather</p> <p>20+ Years</p>	<p>Identified in higher-order plans, i.e., long term access plans.</p> <p>Phased planning approach shall be followed.</p> <p>DLO required.</p> <p>Detailed design plan (see “guidelines”).</p>	<p>Centre line marked. Side ribbons required.</p>	<p>30-40 m</p>	<p>8 – 12 m</p>	<p>As per 11.3.2.5.</p>	<p>As per TM Regulations and EFR under DLO.</p>	<p>Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.</p>	<p>Progressive reclamation concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Drainage water to be diverted off the ROW in as short a distance as possible.</p>
<p>Class II</p> <p>Secondary Permanent</p> <p>All Weather or Dry Weather</p> <p>5 – 20 + years</p>	<p>Identified in higher-order plans, i.e., long term access plans.</p> <p>DLO required.</p> <p>Detailed design plan: through route selection process a need for detail shall be assessed, i.e., need for cross-sectional profiles based on sensitive area identification.</p>	<p>Centre line marked. Side ribbons may be required for DLO roads and sensitive sites.</p>	<p>20 – 30 m</p>	<p>5 – 10 m</p>	<p>As per 11.3.2.5.</p>	<p>As per TM Regulations and EFR under DLO.</p>	<p>Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.</p>	<p>Progressive reclamation concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Drainage water to be diverted off the ROW in as short a distance as possible.</p>

Table 3. Road Classification and Design (continued)

Road Description and Tenure	Planning Requirements	Layout ¹	Design and Construction Descriptions ¹		Borrow Pits ¹	Timber Salvage ¹	Debris ¹	Erosion Control ¹
			Right of Way					
			Clearing Width	Road Surface				
<p>Class III</p> <p>Tertiary Permanent</p> <p>Winter or Dry Weather</p> <p>Up to 20 Years</p>	<p>Phased planning approach must be followed if road is to be used for more than three years.</p> <p>DLO Required if > than 3 years.</p>	<p>Centre line marked. Side ribbons may be required for DLO roads and sensitive sites.</p>	7 – 20 m	5-10 m	As per 11.3.2.5.	As per TM Regulations and EFR under DLO.	<p>Total disposal. Stripping and fine debris to be retained for erosion control by spreading on cuts and fills and any other critical area.</p>	<p>Progressive reclamation concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Drainage water to be diverted off the ROW in as short a distance as possible.</p>
<p>Class IV</p> <p>Temporary</p> <p>Winter or Dry Conditions</p> <p>Up to three Years</p>	<p>Details to be addressed in development plans.</p> <p>Approved under the cover of an AOP.</p>	<p>Centre line marked.</p> <p>Reporting as per 11.2.3.1.</p> <p>Harvest area access roads mapped.</p>	7 - 20 m	5 – 10 m	As per 11.3.2.5.	As per FHP.	<p>Partial disposal. Mechanical or manual cutting of slash and debris to reduce fire hazard to acceptable levels.</p>	<p>Progressive reclamation concurrent with construction. Cross drains and ditch blocks dictated by slope and soil conditions. Drainage water to be diverted off the ROW in as short a distance as possible.</p>

¹ For Department License of Occupation (DLO) roads, actual specifications and/or requirements may be different in approved Disposition document.

Table 3A - Road Classification for the Caribou Area

All other criteria from Table 3 apply to the roads in Table 3A

Road Description and Tenure	Season Of Operation	Clearing Width	Road Surface	Grade Description
Class III <3 years	Dry or Frozen Ground	Maximum of 20 m, with variable allowance for *terrain conditions, to a maximum of 30 m. Any request to exceed 30 m requires Alberta's approval.	6 to 8 m maximum. Less than 8 m will require pullouts. Spot gravelling acceptable. Blanket gravelling requires Alberta's approval.	Grade to be minimized. Maximum 1.0 m; depending on site specific *terrain conditions.
Class IV <3 years	Dry or Frozen Ground	Maximum of 15 m, with variable allowance for *terrain conditions to a maximum of 20 m. Any request to exceed 20 m requires Alberta's approval.	6 to 8 m maximum Less than 8 m will require pullouts. Spot gravelling acceptable. Blanket gravelling requires Alberta's approval.	Grade to be minimized. 0.5 m maximum

*This table is not precluding the building of higher grade roads within the Caribou Zone. However, higher grade roads will only be approved by Alberta when they have been identified through an access planning process acceptable to Alberta.

*Terrain conditions are comprised of short steep slopes and potentially corners.

11.2 ROAD PLANNING AND DESIGN

PURPOSE

To outline the plan to construct, maintain and reclaim roads.

DISCUSSION

The impacts of roads shall be recognized as long-term. It is therefore important that the initial placement of roads be carefully examined. Resource values shall be assessed during the process in order to best mitigate impacts or enhance benefits associated with those values.

Long term road corridor plans shall be developed in the FMP that meet the requirements of Phase 1 corridor plans as identified below in section 11.2.2. All road construction, maintenance and reclamation shall be directed by strategies outlined in the FMP.

The submission of road plans will assist Alberta to facilitate the integration of access management among all resource users (e.g., oil and gas industry). Road plans shall forecast corridor development linking all compartments and other industrial developments.

Safety needs to be addressed throughout the road planning process.

GROUND RULES

11.2.1 Long-Term Roads (Class I, II, III)

Road Planning

11.2.1.1 Forest companies shall annually submit a road corridor plan with a construction schedule in the GDP. Proposed changes from the FMP long-term corridor plan require Alberta's approval. The minimum scope of the road construction schedule shall be a five-year forecast with the content requirements being:

Map showing:

- existing forest company permanent roads by class;
- other existing permanent roads if the digital information is available;
- proposed forest company corridors, including corridors approved in the FHP;
- access control points (see section 11.5 Access Control); and
- when approved by Alberta, a Class IV road may be changed to a Class III. These roads need not be shown on the corridor map.

Tables describing proposed road targets, current status and completed activities and reclamation (examples below).

Proposed Road Schedule

Comp./ Ops. Area	Road Identifier	Phase 1 Submission	Phase 1 Approval	Phase 2 Submission	Phase 2 Approval	Phase 3 Construction	Tenure
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Current Road Status

Comp./ Ops. Area	DLO Number	Road Class	Status	Length	Crossings	Access Control	Tenure
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Completed Road Construction (for previous year)

Comp./ Ops. Area	DLO Number	Activity	Date	Comments
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11.2.2 Phased Planning Process

Phase 1: Corridor Planning

11.2.2.1 The corridor planning process may commence at any time during the year provided that the corridor has been identified in the road plan and dialogue with Alberta has been initiated.

11.2.2.2 The Phase 1 corridor plan for new road proposals requires the forest company to work with Alberta to:

- a) **Identify the corridor and potential alternatives**
- b) **Identify other overlapping industrial users and work towards an integrated access/corridor strategy**
- c) **Rationalize the corridor based on timber considerations (i.e., summer vs. winter access)**
- d) **Highlight potential impacts on other forest resources, such as:**
 - **watercourses;**
 - **fish and wildlife habitat;**
 - **grazing dispositions;**
 - **soils;**
 - **trappers;**
 - **protected areas; and**
 - **recreation areas.**
- e) **Identify measures designed to mitigate impacts (e.g., timing constraints during construction) and access control requirements.**

11.2.2.3 The corridor plan shall be submitted prior to road construction in a time frame acceptable to Alberta.

11.2.2.4 Forest companies with overlapping tenures shall consult each other to ensure consistency in their corridor planning.

11.2.2.5 Forest companies should advise other known affected industrial disposition holders of their road plans and strive to integrate road access with those companies.

11.2.2.6 Corridor plans shall follow the direction in strategic land use plans and policies.

11.2.2.7 Unless otherwise approved by Alberta, the review and approval process is as follows:

- a) **Two months for review by Alberta –comments back to the forest company;**
- b) **Forest companies shall address any concerns prior to resubmission.**
- c) **Alberta shall approve within one month of final submission provided no deficiencies exist; and**
- d) **Alberta may identify in the approval additional requirements to be submitted with Phase 2, based on site sensitivity.**

11.2.2.8 Exceptions to this process may arise (e.g., a salvage scenario). A written proposed action plan to vary from the indicated timelines must be submitted by the forest company documenting the reasons for the modified review and approval process. Both the forest company and Alberta recognize that time may be of the essence.

Phase 2: Detailed Planning

11.2.2.9 In order to reduce submissions and avoid duplication, Phase 2 shall consist of the DLO application process on the Phase 1 corridor.

Phase 3: Construction

11.2.2.10 Road construction shall be carried out as per Table 3 as well as conditions specified in the letter of authority for the DLO.

11.2.2.11 Upon request by Alberta, the road centre-line, as-built, in a format acceptable to Alberta, shall be submitted to Alberta by the forest company within 90 days of construction.

11.2.3 **Temporary Roads: Class IV (with life spans up to three years from start of construction).**

11.2.3.1 These roads shall be built as per the approved AOP. Only roads with FHP approvals shall be included in the AOP submission. Any road exceeding the timeline in 11.1.2 shall be put under DLO or reclaimed during that timber year.

11.3 ROAD CONSTRUCTION, MAINTENANCE AND RECLAMATION

PURPOSE

The roads shall be constructed, maintained and reclaimed in a timely manner to minimize environmental impacts.

DISCUSSION

Existing access (e.g., seismic lines, trails, existing roads), shall be used as a priority wherever practical and feasible. Road ROWs shall be cleared according to standards established in Table 3, road comments, and any additional conditions approved in the FHP.

The placement of merchantable pieces during the reclamation phase is permitted to stabilize erodible soils and slopes, minimize surface water flow, and contribute to the course woody debris and nutrient cycling on the reclaimed site, as long as the timber production is reported to Alberta. The volume will be based on an estimate supplied by the company.

GROUND RULES

11.3.1 General

11.3.1.1 Roads and landings shall be constructed to avoid:

- a) **damaging unstable soils, water source areas, springs and seepage areas;**
- and**

- b) creating disturbed, compacted or bared soils that exceed the amount specified in section 9.03 – Soils.

11.3.1.2 Temporary road construction activities that are required outside an approved ROW can be considered incidental to construction and will be approved as part of the AOP provided the following is met:

- a) Be immediately adjacent to AOP approved disposition (temporary road and associated ROW only);
- b) Be reclaimed or reforested in the same fashion as the adjacent AOP approved disposition (if applicable);
- c) Be without conflict of existing dispositions and/or adjacent land uses; and
- d) Be an activity type and within the parameters as described below:
 - Log Decks or Decking Areas:
 - i. ≤ 0.18 hectares in size;
 - ii. Located on average ≥ 400 metres apart
 - Bank Stabilization:
 - i. Related to hill cuts impacted during construction;
 - Push Outs:
 - i. ≤ 0.04 hectares in size;
 - ii. Located on average ≥ 800 metres apart. Where this distance is not feasible due to operational constraints, line of sight between push outs should be minimized.

11.3.2 Construction

11.3.2.1 Roads, skid trails and landings shall be placed in locations and constructed so that soil erosion, damage to streambeds and sedimentation of watercourses are minimized.

11.3.2.2 On those parts of the ROW not used for grade construction, disturbance to the duff and organic soil shall be minimized to reduce damage to the roots of bordering trees and to provide a protective soil cover.

11.3.2.3 Trees with root systems seriously damaged by road construction activities shall be removed from the edge of a road cut.

11.3.2.4 The fill required for road construction shall be taken from the ROW when feasible.

11.3.2.5 All borrow pits required off the ROW must be authorized by Alberta with an appropriate disposition before they are developed.

11.3.2.6 All sand and gravel pits off the ROW must be authorized under an appropriate disposition.

11.3.2.7 Removal of sand and gravel from within the channel or floodplain of any watercourse is prohibited.

11.3.3 Erosion Control/Prevention

11.3.3.1 Erosion control shall be implemented as per Table 3.

11.3.3.2 Initial erosion control measures shall be concurrent with grade construction. .

11.3.3.3 Constructed roads require erosion control and stabilization of disturbed soils.

11.3.3.4 Water from roads, ditches and bared soil surfaces shall not be permitted to drain directly into watercourses. Where vegetated buffers alone do not retard water and sediment movement effectively, appropriate obstructions (e.g., logs, rocks, mounds) or sediment control structures shall be installed to dissipate the flow of water and capture sediment prior to entering the watercourse.

11.3.3.5 Cross-drainage culverts and other drainage devices shall be installed as road sub-grade construction progresses. Cross-drainage structures shall:

- a) reduce water movement along ditches;
- b) divert water from the ROW into the surrounding vegetation directly as possible;
- c) provide cross movement for water from seeps and springs; and
- d) be installed with adequate spillways or downspouts where they drain onto unstable or bare soil.

11.3.3.6 Re-vegetation shall be completed concurrent with operations or as soon as soil conditions permit. Existing ditch vegetation shall be protected during road maintenance wherever possible and re-established where necessary.

11.3.3.7 A portion of the debris from clearing and strippings from road and landing construction shall be retained and used for re-vegetation and erosion control on disturbed areas.

11.3.4 Reclamation

11.3.4.1 Roads not under DLO that are no longer required shall be reclaimed, have crossings removed, and their condition monitored until they are considered satisfactorily stabilized (see 11.3.4.6).

11.3.4.2 Certified weed free seed shall be used when seeding is used for reclamation.

11.3.4.3 Roads under DLO that are no longer required shall be reclaimed, and require a Letter of Clearance.

11.3.4.4 All borrow and gravel pits no longer required must be reclaimed (re-contoured to stable slopes and re-vegetated) unless approval has been given to allow water to fill the pit for wildlife or wildfire purposes.

Seasonal Reclamation

11.3.4.5 Certain roads that are not used continuously throughout the year may require intermediate erosion control measures such as:

- a) shallow surface cross ditches based on slope and soil type;
- b) re-established drainage;
- c) slope stabilization;
- d) rut-free driving surface establishment; and

- e) access control measures.

Partial Reclamation

11.3.4.6 Roads that are not immediately required but necessary for future operations shall be reclaimed to the following standards unless otherwise approved in the AOP:

- a) **Watercourse crossing and drainage structures that have a high risk of erosion or failure are removed, and stream banks and approaches reclaimed;**
- b) **All potentially erodible slopes are stabilized through rollback, seeded to approved vegetation species, and cross-ditched to disperse runoff and suspended sediment into undisturbed areas; and**
- c) **Access closure structures are installed where required.**

Total Reclamation

11.3.4.7 Roads and associated bared areas that are no longer required, shall be permanently reclaimed by completing all of the following:

- a) **Returning them to an acceptable landform and where compacted, decompacting the road surface;**
- b) **Removing all watercourse crossing and drainage structures and reclaiming stream banks and approaches (see section 11.4.28);**
- c) **Cross-ditching, rolling back topsoil (including slash and logging debris) and re-vegetating a minimum of 80% ground coverage of erodible bared surface areas;**
- d) **Reforestation of disturbed areas inside harvest areas and where mutually agreed to, outside of the harvest area; and**
- e) **On new or upgraded access adjacent to class 1 or 2 roads, access closure is required to restrict on highway vehicles, unless otherwise approved in writing by Alberta.**

11.4 WATERCOURSE CROSSINGS

PURPOSE

To provide guidance so that crossings are constructed, maintained and reclaimed in a manner that ensures negative environmental impacts are minimized and fish and fish habitat are protected.

DISCUSSION

It is important to implement watercourse crossings of acceptable standards to meet the needs of all users. Of primary importance is protection of the aquatic environment. It is intended that water quality, fish passage, bank stability and aquatic fauna habitat are not compromised during watercourse crossing construction, maintenance and reclamation.

The planning of watercourse crossings must consider tenure, user integration, timing constraints, existing plans and assessments, and pertinent policy and legislation. Watercourse crossings shall be designed, installed, maintained and deactivated in accordance with all applicable policy and legislation. See Section 7.6 for additional information from other legislation.

GROUND RULES

11.4.1 Table 4 – acceptable crossings structures identifies acceptable for a particular stream classification. :

Table 4 – Acceptable Crossing Structures

Stream Classification	Acceptable Structure	
	Non-Frozen	Frozen
Ephemeral	Log Fill	Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
	Low Profile Crossing	Bridge
		Low Profile Crossing
Intermittent	*Modified Log Fill	Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
		Bridge
		Low Profile Crossing
Transitional Small Permanent	* Modified Log Fill	Log Fill
	Culvert	Snow Fill
	Bridge	Culvert
		Bridge
Small Permanent	* Modified Log Fill	Snow Fill
	Culvert	Log Fill – no flow
	Bridge	Culvert
		Bridge
Large Permanent	Bridge	Bridge

* Flow is not impeded.

- Notification of the crossing type to ESRD is required on the first block status report after installation for all crossings.
- Low profile crossings are used where bank protection is achieved through simple freezing in during frozen conditions or levelling the road in non-frozen conditions.
- Modified log fill can be used on streams less than 1.5m wide. It consists of a pipe supported by logs and constructed as defined in 11.4.21.
- Bridge includes native timber bridge, temporary bridge decks and ice bridges.

11.4.2 Intermittent and higher-order streams shall be classified in the FHP.

11.4.3 Proposed channelled watercourse crossing locations shall be identified in the FHP as per 3.4.6.

11.4.4 Unless otherwise approved, watercourse crossings shall:

- a) Allow fish passage on fish bearing water courses;
- b) minimize erosion and sedimentation;
- c) have stable approaches;
- d) whenever possible, be at right angles to the watercourse;
- e) be at locations where the channels are well defined, unobstructed and straight;
- f) be at a narrow point along the watercourse;

- g) allow room for direct gentle approaches;
 - h) have no direct drainage from either the road surface or ditches; and
 - i) have erosion control structures during construction.
- 11.4.5 Watercourse crossings shall accommodate peak stream flows at the following levels as measured using a method acceptable to Alberta:**
- a) long-term roads (Class I – III) – shall be designed for a minimum of 1: 50 year flood levels; and
 - b) temporary roads (Class IV) – shall be designed for a minimum of 1:25 year flood levels with the exception of temporary winter crossings that are removed before break-up.
- 11.4.6 On approaches to watercourse crossings, the organic soil layer and lesser vegetation shall not be stripped from portions of the ROW not needed for the road grade.**
- 11.4.7 Any in-stream activities shall be scheduled to avoid migration, spawning and incubation periods of migratory or resident fish species (restricted activity periods). Mitigative measures approved by Alberta may allow for deviations from the in-stream timing constraints.**
- 11.4.8 Upstream fish passage for migratory or resident species must be maintained at all watercourse crossings on fish-bearing waterbodies.**
- 11.4.9 The flow of the watercourse must be maintained at all times when carrying out in-stream activities, unless otherwise approved under the Water Act.**
- 11.4.10 Measures must be implemented to minimize the duration and amount of disturbance of the bed and banks of the watercourse or waterbody. Where damage to the bed and banks of a watercourse occur, appropriate measures to restore the bed and banks must be undertaken.**
- 11.4.11 During timber operations measures must be implemented to prevent the deposition of soil, logging debris or other deleterious substances and materials that are toxic, or an immediate threat to fish and other aquatic organisms into any watercourse. Any such substances or materials unavoidably deposited in a watercourse must be removed immediately and reported to Alberta.**
- 11.4.12 Measures must be implemented to prevent the transfer of biota that are not indigenous to the environment at the watercourse-crossing site.**
- 11.4.13 Stream crossings shall be kept free of accumulated debris. Culverts plugged with ice shall be reopened to prevent flooding during spring thaw.**
- 11.4.14 Interim erosion control measures (e.g., silt fences, matting, or gravel check dams) must be implemented and maintained until permanent vegetation and erosion control measures are established where necessary.**
- 11.4.15 Stream crossings that fail shall be reclaimed or replaced (if necessary) with more appropriate crossing structures as soon as possible.**
- 11.4.16 Bridge abutments shall not constrict the normal stream channel. Where stream banks must be built up to construct a bridge abutment, soil shall be brought in and deposited from the end of the grade – no equipment shall enter the stream channel. Bridge spans must extend beyond stream banks and abutment walls.**

- 11.4.17** The use of bridges is preferred on fish-bearing streams; however, steel culverts may be permitted where they will not restrict upstream passage of fish.
- 11.4.18** Culverts for all classes of streams must be designed, properly sized and installed to prevent erosion at both the inflow and outflow ends of the structure. Culverts shall be of sufficient length beyond the fill with the overburden properly backsloped and stabilized to prevent sediment from entering the watercourse, and the ends of the culvert open at all times. Any culvert that becomes a hanging culvert must be correctly re-installed as soon as possible.
- 11.4.19** Properly constructed logfills (see 11.4.21 below) on temporary roads may be used as per table 4. As soon as the temporary road is no longer required, logfills shall be removed so that no soil is allowed into the water channel. Logfills installed during frozen periods shall be removed before the spring thaw. A bottom layer of logs may be left in place when removing the logfill to provide for summer crossing of ephemeral watercourses.
- 11.4.20** Crossing intermittent or ephemeral watercourses within harvest areas shall be avoided when possible. When the crossings are necessary, they shall be constructed at specified locations using appropriate watercourse crossing structures.
- 11.4.21** A properly constructed logfill has all of the following:
- a) flow is maintained;
 - b) enough logs to adequately fill an ephemeral draw or watercourse channel so that when the logs are removed there is little or no damage to the banks or channel bottom;
 - c) logs are removed prior to breakup on intermittent or higher watercourses;
 - d) logs delimbed and bucked to at least 1.5 m longer than the grade fill at each end; and
 - e) logs covered by a layer of suitable material that separates the soil from the logs, which shall permit total removal of the soil cap;
- 11.4.22** In fish-bearing watercourses, any negative impacts on the stability and fish habitat values of stream banks must be minimized. Any damage to streambanks and the corrective measures taken by the company shall be reported to Alberta within 7 days of the occurrence.
- 11.4.23** A native timber bridge may be used on watercourses as per table 4, provided that all of these requirements are met:
- a) bridge abutments do not restrict stream channel;
 - b) a brow log is installed on both sides of the bridge deck to prevent soil from entering the stream;
 - c) no equipment enters the stream channel;
 - d) timber of suitable size and strength is available for construction;
 - e) the span extends beyond stream bank and abutment walls;
 - f) a separation layer is used between soil cap and timber;
 - g) the soil cap and separation layer is removed as soon as harvest and hauling is complete; and
 - h) the remainder of the structure is removed as soon as harvest and hauling operations are completed unless a proposal to leave crossing structures in place after hauling is approved by Alberta and an acceptable monitoring program is in place.
- 11.4.24** Snow-fills and low profile crossings may be used on watercourses as per table 4 during frozen conditions, provided that all of the following requirements are met:

- a) sufficient clean snow exists to fill creek channel;
- b) bank integrity is maintained;
- c) any soil cap installed over the snow is removed prior to break-up;
- d) measures are in place to prevent soil or other debris from entering stream channel or ice surface; and
- e) stream flows are not impeded.

11.4.25 Ice bridges may be used during frozen conditions provided that all of the following requirements are met:

- a) no capping material is used on the bridge;
- b) winter stream flows are not impeded;
- c) approaches of snow and ice constructed of sufficient thickness to protect the stream bank;
- d) appropriate ice thickness exists to bear necessary load requirements; and
- e) no alterations to streambed or bank are required;

11.4.26 The placement of merchantable pieces for corduroy is permitted as long as the timber production is reported to Alberta. The volume will be based on an estimate supplied by the company. These may be left in place as long as water movement is not inhibited.

11.4.27 Each operator shall establish a monitoring program acceptable to Alberta, for their watercourse crossings. Documentation as to condition at time of inspection, repair requirements, or removal dates of the crossing structures must be maintained and made available to Alberta upon request.

11.4.28 Watercourse crossings that are no longer required shall be reclaimed with the objective of minimizing any sediment from entering the watercourse. Their condition shall be monitored annually until they are satisfactorily stabilized meeting the following requirements.

- a) Removing all watercourse crossing and drainage structures and reclaiming stream banks and approaches; and
- b) Cross-ditching approaches, rolling back topsoil (including slash and logging debris) and within the following year re-vegetating erodible bared surface areas with vegetation capable of maintaining bank stability (e.g., this may include the use of sedges and willow cuttings).

11.5 ACCESS CONTROL

PURPOSE

To manage existing and proposed surface access recognizing key resource values.

DISCUSSION

The impacts of roads on resource values may require mitigation through access control measures. Wildlife, sensitive areas (i.e., historical sites, soils), protection of road quality and safety are reasons for implementing access control. A number of strategies and tactics are available for controlling or restricting access.

Access control measures for long-term roads shall be identified through the submission and review of the phased planning process. For temporary roads, the CA or GDP, and FHP shall be the mechanisms used in identifying access control requirements.

The following list of access control methods identifies a number of options that may be implemented:

- Physical Barriers (e.g., gates; barricades, pilings, crossing removal)
- Road Condition (e.g., berms, ditches, road standard, selective grade removal, roll-back, no snow removal)
- Regulatory (e.g., sanctuaries, timing restrictions, signage)

GROUND RULES

- 11.5.1 Where access control has been identified as an objective in strategic land use plans, Alberta shall consult with the forest operator to determine an access control strategy. In the event that a strategic land use plan has not been developed, the FHP shall describe specific access control measures identified in the GDP or FMP (see section 3.4).**
- 11.5.2 In designated areas, Alberta may direct forest companies to restrict road access during specified periods, implemented in accordance with Alberta policy. Restricted access issues shall be dealt with differently depending on whether the road is new access or is existing access.**

11.6 CAMPS AND FACILITIES

PURPOSE

To give guidance to forest companies so that the planning, construction, maintenance and reclamation of camps and miscellaneous facilities is done in a manner that minimizes negative impacts on the forest environment.

DISCUSSION

Camps and other facilities are often a necessary part of operations in remote areas. Forest companies require that such facilities operate in an efficient and cost-effective manner and are implemented without compromising the integrity of the environment.

Some of the best practices for camps and facilities include:

- Place sites in existing man-made non-forested openings (i.e., gravel and borrow pit openings);
- Place sites out of visual and auditory range from mineral licks and key wildlife areas or use a default of one kilometre;
- Safe camp locations are a priority. Therefore, an evaluation of all potential risks shall be conducted prior to selecting a final camp location;
- Camps and fuel storage sites shall be identified in the annual fire control plan when proposed locations are known;
- Camps shall be kept clean. Proper mechanisms for the disposal of hazardous and non-hazardous waste shall be implemented; and
- Camp food and garbage storage shall minimize the potential for problems with wildlife. Recommend following the Bear Smart guidelines for specific mitigation relating to bears. Problems with wildlife shall be dealt with in consultation with Alberta.

GROUND RULES

- 11.6.1 Any facility or camp that shall be in place for more than twelve consecutive months requires an appropriate disposition under the *Public Lands Act*. Temporary field authorities (TFAs) are required for camps to be in place less than twelve consecutive months.**
- 11.6.2 Any facility or camp must adhere to all provincial regulations related to the camp (i.e., *Public Health Act – Work Camp Regulation*).**
- 11.6.3 Where feasible, forest operators shall utilize existing clearings (i.e., gravel and borrow pits) for establishment of temporary camps and/or other facilities;**
- 11.6.4 Temporary fuel storage sites shall not be located within 100 m of any flowing watercourse.**

12.0 REPORTING

PURPOSE

To ensure that timber operation activities are reported to Alberta in order to maintain an accurate and current database across the Province.

DISCUSSION

Silviculture and harvest operations reporting and monitoring is necessary to ensure legislated requirements are met in all treatment areas. Ground rules governing operations reporting are required to ensure consistency among forest companies. The intent of activity reporting is to communicate that a given activity has occurred, where it occurred and when it occurred. This information shall also be used for annual and stewardship reports and shall be RFP validated as per Appendix 1 of Annex 4.

GROUND RULES

SILVICULTURE AND HARVEST ACTIVITY REPORTING

- 12.0.1 Forest companies who conduct silviculture work on their disposition shall report the details of all work completed in the previous year annually into ARIS no later than May 15. The required information is outlined in the ARIS Industry Operations Manual. Information shall be submitted in accordance with all requirements of the manual and associated policy directives.**
- 12.0.2 Alberta may require additional reporting for forest management activities such as thinning, pesticide spraying, or fertilization. Alberta shall consult with the company on the appropriate format of such reports. Reporting of herbicide projects are as per Alberta requirements.**
- 12.03 Companies harvesting more than 30,000 m³/yr shall have self-inspection agreements in place and shall carry out periodic inspections of active timber operations and report the information to Alberta in a format acceptable to Alberta. Reports based on the 2006-04 directive shall be submitted to Alberta once per month or at agreed to intervals.**
- 12.04 As built harvest area maps and shape files along with a block listing shall be submitted to Alberta at an agreed upon time or by September 1 each year showing all harvest areas, roads and crossings from the previous timber year's operations.**

Appendix 1 - Role of Regulated Forestry Professionals² (RFP) in Forest Management

The Alberta government is committed to sustainable management of forests on public land to provide benefits and opportunities for Albertans. Alberta relies on the professional integrity of RFPs to enhance the effectiveness of forest resource management planning, implementation and harvest activity, while recognizing the interdisciplinary nature of forest management planning.

Alberta requires a RFP to submit the components of forest management plans, annual operating plans and harvest activity reporting, as identified in this annex, for approval.

1.0 Validation by a RFP

RFPs shall validate their submitted work by one of the following methods:

- i. Signing using their professional title and registration number, or
- ii. Stamping and signing using the seal provided by a *College*, or
- iii. Using other mechanisms approved by Alberta.

1.1 Significance of RFP Validation

RFP *validation* provides assurance to Alberta that work is *accurate* and has been prepared with *due diligence*. Government RFPs shall review *validated work* by conducting a reasonable assessment for accuracy and shall take appropriate *corrective actions* where *validated work* is not *accurate*.

The documentation required to demonstrate *due diligence* is viewed as a significant source for validating accuracy. Alberta will not accept inadequate documentation and may refer such occurrences to the Complaints Director of the appropriate *College*.

1.2 Approval of Validated Work

Alberta's approval does not transfer the accountability for the plan or its implementation from the Organization or the submitting RFP to Alberta or its staff. Government RFPs who review submissions are accountable for their reviews and any direction provided to the Organization. *Approval of validated work* shall be addressed as described below.

1.2.1 Appraisal

Work with far-reaching and significant potential effect if inaccurate (such as but not limited to timber supply analysis, GDP). *Validation* of this type of work demonstrates confidence the work is *accurate*; however, due to its potential significance, it is both necessary and important to examine the work carefully. Approval shall be granted after the work has been reviewed by appropriate RFPs to assess accuracy. The timeline for this shall be established by Alberta and will vary depending on the nature of the *validated work*. Those preparing work for appraisal are advised to communicate with the reviewing government RFPs regularly and effectively to minimize confusion over the standards expected of the work.

1.2.2 Acceptance

Work with a more limited potential effect (such as, but not limited to silviculture reports, operations inspections). The work is considered approved on the date Alberta acknowledges receipt of the work. Alberta shall notify the organization by acknowledging receipt within 5 working days of submission. The notification date will be documented by Alberta as the start date for FHP approval. Alberta shall periodically check the work and supporting documentation to verify its accuracy.

² Refer to Alberta Definitions

2.0 Work Validated by a RFP

All entities that conduct timber harvesting or silvicultural activities on public land, except those harvesting less than 30,000 m³ annually from public land, must validate the items described below (the list of work to be validated may be amended from time to time by Alberta to adapt to change).

2.1 Forest Management Plans

The entire *forest management plan* shall be approved through an appraisal and must be validated by the senior RFP responsible for its preparation.

The following components must be validated by the RFP most directly responsible for their preparation. A RFP validated checklist describing the extent of compliance with applicable standards for each component shall be included with each submission:

- i. Yield projections and all associated data and analyses – for appraisal
- ii. Vegetation inventory data – for appraisal
- iii. Landbase description (analysis and report) – for appraisal
- iv. Silviculture strategies (refer to Annex 1, standard 5.5 on managed assumptions)– for appraisal
- v. Forecasting (timber supply analysis) – for appraisal
- vi. Harvest planning (*spatial harvest sequence*) - for appraisal
- vii. Monitoring reports - annual - for acceptance; stewardship – for appraisal

2.2 Annual Operating Plans³

The minimum *validation* requirements are as follows:

- i. General Development Plan – for appraisal
- ii. Compartment Assessments - for appraisal
- iii. Forest Harvest Plan – for acceptance
- iv. Road Plan and Fire Control Plan – for acceptance
- v. Reforestation Program – for acceptance⁴

2.3 Harvesting and Reforestation Activities

Accurate and timely submission of timber production and sales information is important and must be validated. The activities related to reporting timber production and sales must be approved by the senior RFP responsible for the submission.

The following components of timber production and sales must be validated by the RFP directly responsible for their preparation:

- i. Scaling populations (TM262) – for appraisal
- ii. Timber production audits – for acceptance
- iii. Letters of Understanding – for appraisal
- iv. Statutory Declarations of production – for appraisal
- v. Harvest tenure standings – for acceptance
- vi. Timber production reporting – for appraisal
- vii. Silviculture information - regeneration surveys, ARIS submissions and silviculture operations reports, regeneration strata balance/swap/trade summaries – for acceptance
- viii. Field operations inspection reports – for acceptance
- ix. Herbicide reports – for acceptance

³ AOPs are approved subject to a review by Alberta. Where a compartment assessment has been completed the CA, FHP and AOP shall be appraised by Alberta.

⁴ Where thinning plans, herbicide plans, and reforestation prescriptions vary from FMP silviculture strategies the silviculture program shall be appraised by Alberta.

¹ AOPs are approved subject to an appraisal by Alberta. Where a compartment assessment has been completed the CA, FHP and AOP shall be appraised by Alberta.

Appendix 2 - Debris Disposal Policy

BRANCH: WILDFIRE MANAGEMENT	MARCH 15, 2010
SECTION: WILDFIRE PREVENTION	
DEBRIS MANAGEMENT STANDARDS FOR TIMBER HARVEST OPERATIONS	
<p>1. AUTHORITY</p> <ul style="list-style-type: none"> ○ Alberta Environment and Sustainable Resource Development (ESRD) <p>2. PURPOSE</p> <ul style="list-style-type: none"> ● To provide standards for debris management in timber harvesting operations in compliance with the <i>Forest and Prairie Protection Act</i> (FPPA) and the <i>Forests Act</i>. Compliance will reduce the threat of wildfire to communities and other values within the Forest Protection Area. <p>3. POLICY</p> <ul style="list-style-type: none"> ○ The FPPA defines debris management standards for debris produced from timber harvest operations. Timber and reforestation activities must comply with the FPPA and the <i>Forests Act</i>. The standards will be enforced. ○ The <i>Debris Management Standards for Timber Harvest Operations</i> policy is effective March 1, 2010 and may be revised. In addition to the management of debris through disposal, this policy also applies to debris retained for reforestation, wildlife habitat or other landscape management objectives. <p>4. <u>APPLICATION AND IMPLEMENTATION OF THE DEBRIS MANAGEMENT STANDARDS</u></p> <ul style="list-style-type: none"> ● Debris management strategies must be linked to landscape objectives and must not conflict with the FPPA. The loss of productive land base resulting from timber harvest operations (debris piles, roads, landings) within the harvest area must not exceed the specifications outlined in applicable Operating Ground Rules. (As per the Timber Management Regulations of the <i>Forests Act</i>.) <p>A. Level II Mountain Pine Beetle Control Debris Management Standards The standards specified under sections B, C, or D and the FPPA apply.</p> <p>B. FireSmart Debris Management Standards During harvest operations, there is a need to manage debris to minimize the risk of wildfire to communities or other values at risk. In order to minimize this risk, the following standards shall be applied:</p> <ul style="list-style-type: none"> I. Within the FireSmart Community Zone (Generally a 10 kilometre buffer of the community's 	

development centre.), debris management strategies, for any purpose, must not include the retention of debris piles for reforestation, wildlife habitat or other landscape management objectives.

- II. Outside of the FireSmart Community Zone, debris pile retention for reforestation, wildlife habitat or other landscape management objectives may be considered an acceptable debris management strategy. Retention is subject to SRD Forestry Program Manager approval through the Annual Operating Plan and in accordance with the standards described herein.

C. Wildlife Habitat and Biodiversity Debris Management Standards

Debris piles that are retained in the harvest area outside the FireSmart Community Zone for wildlife habitat or landscape biodiversity objectives must adhere to the following guidelines:

- I. If the strategy involves random scattered piles throughout the harvest area, the following standards apply:
 - Height of piles must not exceed 2 metres
 - Base diameter of piles must be no greater than 3 metres
 - Distance between piles must be no less than 25 metres
 - Distance from block edge must be no less than 25 metres
- II. If the strategy involves random scattered piles made up of chip residue from chipping operations throughout the harvest area, the following apply:
 - Height of piles must not exceed 2 metres
 - Base diameter of piles must be no greater than 3 metres
 - Distance between piles must be no less than 15 metres
 - Distance from block edge must be no less than 25 metres
- III. If the strategy involves piling of debris at roadside, piles must meet the following standards:
 - Piles can only be left along roads scheduled for reclamation and abandonment following the completion of reforestation (i.e. scarification, planting)
 - Piles must be compacted to a maximum of 2 metres in height, 3 metres in width, 12 metres in length and perpendicular to the road
 - A group of piles may consist of a maximum of 5 piles with a spacing of 6 metres of slash free area between each pile within the group
 - Pile groups must be separated by a 50 metre slash free spacing

D. Reforestation Debris Management Standards

Debris piles or windrows created from reforestation operations must adhere to the following specifications:

- I. If the strategy results in debris piles, the following standards apply:
 - Height of piles must not exceed 2 metres
 - Base diameter of piles must be no greater than 3 metres
 - Distance between piles must be no less than 25 metres
 - Distance from block edge must be no less than 25 metres
- II. If the strategy results in windrows (large logs, humus, and duff), the following standards apply:

- Windrows must not be greater than 2 metres in height
- Windrows must not be greater than 3 metres in width
- Windrows must not exceed an average of 75 metres in length and must have slash free spacing of 8 metres
- Distance from block edge must be no less than 25 metres

E. Enforcement / Approval

SRD will serve as the "one window" for industry contact and approval and will complete field inspections as required.

Debris piles to be disposed of must be in conjunction with the terms of these standards and the two year timeline set out in the FPPA. SRD will issue an "Order to Reduce or Remove a Fire Hazard" when debris piles have not been properly disposed of in accordance with this Policy and the Annual Operating Plan approved by the department.

Forest Industry may apply to SRD for a one-year extension where drought conditions have prevented them from completing disposal through burning operations. The SRD Forestry Program Manager must approve the extension.

Where debris disposal by burning is the strategy, Industry must report all burning locations to SRD one month before the start of the fire season.

F. Review Process

Research will be carried out by FPInnovations to assess the threat of wildfire associated with debris resulting from timber harvest operations. If findings indicate that standards within this policy directive are not sufficient to support wildfire hazard reduction, the standards and policy will be modified.

G. Cross Reference

Forest and Prairie Protection Act
 Forest and Prairie Protection Regulations, Part I and Part II

H. Contact

Hugh Boyd, Director
 Wildfire Prevention Section
 780-427-7811

DATE:

APPROVED BY:

 Bruce Mayer, Executive Director, Wildfire Management
 Branch

Appendix 3 - Directive for Weed Management

Directive No. 2001-06

Subject Weed Management in Forestry Operations

Purpose **To implement effective weed management programs administered by holders of *Forests Act* dispositions engaged in forestry operations. This policy applies only to *Forests Act* dispositions.**

Policy Section 60 of the *Public Lands Act* sets out a disposition holder's responsibility with respect to noxious and restricted weeds on dispositions issued under that Act. Similarly, Section 31 of the *Weed Control Act* requires that the occupant (or if the land is unoccupied, the owner) of land destroy all restricted weeds, control all noxious weeds and prevent the spread or scattering of nuisance weeds.

The weed control duties on holders of dispositions issued pursuant to the *Public Lands Act* are reasonably clear and would apply to such dispositions that are issued in relation to forestry operations (e.g. camps, roads, processing sites and other associated land uses). It is, however, not entirely certain as to how the courts would interpret and apply the definition of "occupant" under the *Weed Control Act* in respect of timber dispositions issued under the *Forests Act*.

In terms of forestry operations, the vast majority of weed management situations should fall under either the *Public Lands Act* or the *Weed Control Act*. This Directive attempts to address weed management, in a forest operations context, where neither of these two Acts apply.

The Crown's goal is to address weed management issues on a landscape level, as opposed to on a disposition by disposition level. To accomplish this, a two step approach will be taken. Firstly, the disposition document and annual operating plans (AOP) will be used to describe the disposition holder's obligations with respect to weed management activities. Secondly, the Land and Forest Service (LFS) (and ideally, municipalities) will establish landscape level, co-operative weed management groups, with a mandate to developing a single management plan for all stakeholders involved.

Invasive weeds can alter the ecosystem's natural processes and displace native, threatened, and endangered vegetation and habitat. For these reasons, forest companies are expected to assist in managing weeds in the forested area of Alberta.

Procedure

Amendment of Annual Operating Plans and Dispositions

In order to address situations that fall outside the requirements of either the *Public Lands Act* or the *Weed Control Act* all AOPs prepared and submitted for timber dispositions are to include the following condition. Additionally, this statement is to be incorporated into the disposition itself upon issuance or renewal.

“{*Disposition holder*} shall, with respect to the land contained in this timber disposition, prevent the establishment of and control all noxious and restricted weeds to which the *Weed Control Act* applies, in a manner acceptable to the Minister.”

The Minister will consider the “*Recommended Standards of Good Practice for Prevention*”, described in the **Guidelines** section to be the minimum level of performance for all disposition holders. Where a disposition holder or weed management group (as described below) prepares a plan outlining weed management, the commitments in that plan will become the standards to which the disposition holder or parties to the group will be expected to meet. This plan will be approved, where appropriate, by the Regional Director.

Co-operative Weed Management Groups

The LFS will establish co-operative weed management groups where willing participants are identified. The specific purpose of the groups will depend on the level of current involvement the individual participants have in weed management. Where participants are currently managing weeds, the purpose of the group may be to review individual existing weed management plans to identify opportunities for co-operative management. Where participants are not currently involved in weed management the purpose of the group may be to develop a single weed management plan for all group participants, or to assist individuals in the development of individual plans if desired.

The role and degree of involvement of LFS staff on these groups will depend on the make-up and desires of each individual group. Typically, the LFS will convene and co-ordinate weed management group meetings, in addition to other roles defined by the group. Forest Management Division staff will work with Forest Area staff to develop provincially consistent Terms of Reference for each group, and provide technical expertise and support where possible. Each group will select its own chairperson and define the roles for each member.

Weed management plans should address inventory, control, education, and prevention. Once a co-operative or individual weed management plan is agreed to, that plan will be implemented through the individual’s AOP. The results of this implementation will be used as the benchmark to which the Minister’s satisfaction for weed control and prevention is measured (i.e. vis-à-vis the AOP clause described above).

Guidelines

To assist in determining whether a disposition holder’s weed management activities are acceptable to the Minister, the following guidelines describe the four essential aspects of weed management: goals, prevention, inventory and control. All of these should be considered when developing weed management activities and plans.

A. Goals

The goals should be specific to noxious and restricted weed prevention, inventory and control. They can be short-term and long-term, as is the nature of weed management.

B. Recommended Good Standards of Practice for Prevention

1. Limit Soil Disturbances

To limit the establishment of weed infestations, prevent unnecessary soil disturbances wherever possible.

2. Clean Equipment

Practice due diligence by ensuring that all equipment and vehicles are free of weed seeds and plant parts before arriving on a job site. All agricultural implements or any equipment knowingly exposed to weeds are to be pressure washed prior to use in forested areas.

3. The Use of Straw Bales for Erosion Control

The use of straw bales for erosion control is discouraged in the Green Area. Unlike hay, it is very difficult to determine if the straw bales are free of weed seeds. Therefore, certified “weed free” hay bales acquired from producers with a “Certificate of Inspection” should be used for erosion control.

4. Use Certified “Weed Free” Seed for Re-vegetation of Disturbed Sites

Canada #1 Seed, approved under the *Canada Seed Act*, *may not be* weed free. To ensure a seed mix is virtually weed free, a purchaser can request a “Certificate of Seed Analysis.” To get a more detailed “Certificate of Seed Analysis”, the purchaser can request a larger seed sample analyzed, rather than the typical 25g sample to improve the confidence of the analysis. Alternatively, one can start with pure seed and then prepare the seed mix manually.

5. Rapid Response to Weed Infestations

Because a single plant and small infestations are easier to control than large infestations, it is important to manage weeds proactively. To do this effectively, industry and LFS field staff should be trained in the identification of restricted and noxious weeds, and the importance of destroying individual weed plants and reporting new infestations.

C. Inventory

A weed management program is most effective with an accurate account of existing weed infestations. Inventorying is most effective during the months of June through September, when most plants are in bloom and are the most easily recognized. “Noxious” and “Restricted” weed species to be surveyed are listed in the *Weed Designation Regulation (138/80)*. Additionally, the *Weed Control Act* provides municipalities with the authority to designate other species of local concern as restricted or noxious. For this reason weed surveyors should obtain a list of restricted and noxious weeds from the municipal district(s) within which they are surveying.

D. Prioritizing Areas for Control Measures

As some areas within which weeds are managed consist of a large land base, control throughout the entire area is not feasible. Specific areas should be targeted each year,

based on priorities. When prioritizing areas for control treatments, many factors must be considered to deliver the most effective and efficient control program. The following example criteria are not ranked in order of importance, with exception of *Restricted and Noxious*:

1. Restricted vs. Noxious

Target restricted weed infestations over noxious weed infestations. Control of restricted weeds should be implemented immediately following their discovery.

2. Location of Infestation

Target infestations in highly traveled areas over those in isolated areas, thereby limiting the threat of seeds or plant parts being Tran located.

3. Size of Infestation

Target small infestations before large ones, as it is easier to gain control of small infestations. This also applies to outlying pockets of larger infestations, which should be controlled prior to tackling the larger infestation. When dealing with a large infestation, a “contain and control” strategy (targeting outlying pockets, and/or the perimeter of the infestations) is an excellent option when resources are not available to control an entire infestation.

4. Weed Species

To prevent their establishment, target weed species that are less abundant on a regional basis. When controlling infestations, target the weed species with the greatest ecological impacts. In many situations this may be difficult to quantify, although generally speaking it can be done. For instance, a weed infestation encroaching on a habitat of an endangered plant species would have a higher priority than an infestation among common or non-native vegetation.

5. Co-operative Control Opportunities

Co-operative control is the most effective and efficient method to control weed infestations that span multiple dispositions or border of responsibility. Unless one is adopting a “contain and control” strategy, generally it is not a good idea to control only part of an infestation.

E. Control Options

When selecting a control method, it is important to note that different species respond differently to each method. The most efficient programs will have an integrated control plan that includes both prevention and one or more of the following control methods:

- ◆ **Mowing / Cutting** - Effective for perennial weeds. Careful monitoring and proper timing are necessary for this to be a viable option. If a site is mowed over several years, well-developed root systems can eventually be depleted. Weeds should not be mowed once seed set has occurred, as this will aid in spreading seed.
- ◆ **Hand Pulling** - Effective for annual or biennial weeds, especially when dealing with small infestations or individual plants. Hand pulling may have to be done annually (before seed set) for several years, as dormant seeds in the soil may continue to germinate. If any weeds are pulled when in flower, they must be bagged and burned, as they will set seed if they are left on the ground.
- ◆ **Herbicide Application** - Very effective but will not guarantee 100% control. Sites may have to be revisited again the next year for follow-up treatments.

Several herbicides are effective for each weed species. Chemical selection should be determined by site, weed species, existing desirable vegetation, and whether or not a residual effect is wanted. Assistance with selecting a herbicide and application rate can be obtained through a Municipal District, County Agricultural Fieldman, or Certified Pesticide Applicator.

- ◆ **Biological Control** - This method of control is the introduction of insects or diseases that attack or infect a specific weed species. Biological control agents can be difficult to obtain, and in some cases they are in the testing phase to determine effectiveness. Information regarding the biological control of weeds can be obtained through the Alberta Research Council in Vegreville, Alberta.

Authorities **Weed Control Act** - provincial legislation describing weed control and management requirements.

Weed Designation Regulation - lists weed species designated as restricted, noxious and nuisance in Alberta.

Forests Act - describes the requirements with respect to forest allocation.

Cross - Reference ◆ **FPD Policy 16.0 - Restricted and Noxious Weed Management Jurisdiction**
◆ **Land and Forest Service “Forest Management Herbicide Reference Manual”**

Contacts Doug Sklar 422-4590
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Approved

Appendix 4 – FHP/AOP Checklists

Forest Harvest Plan (FHP) Checklist		
Planning Unit _____	Disposition Number _____	
Company _____	Submission Date _____	
Forest Harvest Plan (FHP) Checklist		
APPROVAL ITEM	YES/NO	INITIAL/DATE
* Validated by RFP		
* Deletions and deferrals <20% of SHS area by cover type in the FHP		
* Area does not exceed 100% of SHS by cover type in the FHP		
** Adheres to all Ground Rules (if "NO", see OGR Variance portion of the harvest design report)		
* Compartment assessment not required		
* Plan agreed to in writing by affected forest companies		
<small>*: Appraisal of the FHP is required as per 3.4.1 of the OGRs if "No" has been indicated on these Approval Items. **: Appraisal of deviations is required if "No" has been indicated on this Approval Item.</small>		Company _____ (Y,N,N/A)
Administrative Considerations		
Copies required as per FMA, regional OGR or agreement with ESRD.		_____
FHP consistent with approved higher order plans (DFMP, SHS, GDP)		_____
Required disposition been issued and approved		_____
FHP complete and legible		_____
- maps		_____
- block tables		_____
- blocks requiring detailed block plans identified		_____
- reforestation program		_____
Ground Rule Deviations (see OGR Variance portion of the harvest design report)		
All blocks containing ground rule deviations have been identified		_____
Justification provided for all ground rule deviations		_____
Utilization		
SHS Variance reported in FHP		_____
Deviations from utilization standards identified, explained and justified		_____
Utilization standard matches license document (if not, Company has approval documentation for temporary deviation)		_____
Integration with Other Users		
Trappers have been identified and contacted		_____
Trapper information and concerns, where applicable, have been integrated into the plan		_____
Forest recreation groups identified and contacted		_____
GTA completed and grazing disposition holders have been contacted (Directive 2011-03)		_____
Historical resources integrated into the plan		_____
Any issues raised by other users or the public have been documented		_____
Potential land use conflicts have been documented and mitigated (PNT, CNT, road use agreements, etc.)		_____
Access Management		
Access management, including control measures have been described and identified (location, timing, signage, etc) (7.7.1.7 & 7.7.5.6)		_____

FHP Checklist continued on next page

FHP Checklist Page

2

Sensitive Sites		Company
Aesthetic/recreation concerns addressed		_____
Water source areas identified and potential impacts mitigated		_____
Road Design		
Location and design have been identified		_____
List of channeled watercourse crossings including watercourse classification, map identifier, etc		_____
Crossings not exempt under the <i>Water Act</i> are identified		_____
Any proposed permanent access in Caribou zones has been identified		_____
Access opened for layout under TFA is incorporated into road design		_____
Existing access and DLOs integrated into the plan are identified (if "N/A", these must be identified in the AOP)		_____
Location and design have been identified		_____
Removal and reclamation of old crossings is identified (if "N/A", this must be identified in the AOP)		_____
Wildlife		
Wildlife zones within the planning area are identified and addressed		_____
FWMIS search completed and the issues identified have been addressed		_____
Harvest areas with timing restrictions identified		_____
For Woodland Caribou zone, areas of concentrated terrestrial lichen growth have been delineated and DBPs are proposed		_____
All known sensitive wildlife sites have been addressed (mineral licks, raptor nests, den sites, etc)		_____
Insect, Disease & Fire		
FireSmart tactics are identified and described		_____
Known infestations of insect and disease are identified and mitigation is described		_____
Debris disposal methods identified		_____
Silviculture		
Pre-harvest strata declaration is included		_____
Watercourse crossings maintained for silviculture purposes are identified (if "N/A", these crossings must be identified in the AOP)		_____
<p>-FHP's are approved through acceptance and will be considered approved on the date Alberta acknowledges receipt of the work. -Alberta shall notify the organization by acknowledging receipt within 5 working days of submission. -The notification date will be documented by Alberta as the start date for FHP approval. -Alberta shall periodically check the work and supporting documentation to verify its accuracy. -At any time, approval can be revoked where Alberta learns the FHP is inaccurate or deficient in content</p>		
Company Sign Off		
_____	_____	_____
Submitting RFP Validation	Company	Date
_____	_____	_____
Submitting RFP Validation (for integrated plans)	Company (Integrated operator)	Date
SRD Sign Off		
_____		_____
Reviewing RFP Validation		Date

Appendix 4 – FHP/AOP Checklists (cont.)

Annual Operating Plan (AOP) Checklist	
Administrative and Timber Production Information	
Company/Disposition Holder _____	Disposition Number(s) _____
Submission Date _____	Manufacturing Facility _____
Effective Period _____	QAAC _____
Date Disposition Issued _____	Quadrant Production to Date _____
Date Disposition Expires _____	Quadrant Volume Remaining _____
Scaling Methodology _____	Proposed Production (this year) _____
	Company (Y, N, N/A)
-Plan is signed off and validated by RFP	_____
-Digital and paper copies of AOP (including maps) submitted to appropriate ESRD representative(s)	_____
-The Final AOP submitted prior to submission deadline	_____
-Delegation of signing authority included where required	_____
-Company is requesting dues relief, explanation and justification provided	_____
-Utilization standard matches tenure document or documentation for other approvals has been provided	_____
-Deviations from utilization standards are identified and justified (rub posts, high stumps, retention, etc.)	_____
-Proposed volumes to be harvested have been listed by disposition	_____
-Road Use agreements have been included in plan (CTP's only)	_____
Operating Schedule (as per section 3.5.4 c)	
-Block table submitted for all blocks scheduled for harvest including area & covertype volumes (i.e. D, Sw, Fj, Sb) with totals	_____
-List of non-DLO roads proposed for construction & reclamation, except spur roads	_____
-List of channeled watercourse crossings to be built or installed or removed/maintained (Can be quarterly Update in Road Schedule)	_____
-Outstanding operational items have been declared, or there is an agreement with Alberta on reporting	_____
-Debris disposal methods are identified and approved methods (variances to policy) are identified for appraisal	_____
Applicable Final Harvest Plans (as per section 3.4)	
-All Forest Harvest Plans (FHPs) identified in the Operating Schedule have been submitted and approved (as per section 3.4)	_____
-Annual update on the progress of all FHPs is included	_____
Reforestation Program (as per section 8.2)	
Due to the submission timing of the spring and fall reforestation program schedules, the checklist content of the Reforestation Program section of the AOP checklist can be submitted as an addendum. A signed and validated Reforestation Program Checklist is to be included along with each silviculture plan submission.	
Fire Control Plan (as per section 7.3)	
-Fire Control plan is complete and meets the ground rule requirements listed under section 7.3.5	_____
Road Plan (as per section 11.2)	
-Existing access and DLOs integrated into the plan are identified	_____
-All roads regardless of class, with a lifespan of >3 years have been built under the authority of an DLO	_____
-All watercourse crossings are documented in a monitoring program as per section 11.4.27	_____
-Road reclamation/abandonment plan complete	_____
-Roads identified for disturbance monitoring/outstanding and anticipated reclamation on DLO roads and crossings (3.3.7.1 d)	_____

AOP Checklist continued on next page

AOP Checklist Page 2

General Development Plan (as per section 3.3)		
-The Final GDP was submitted prior to submission deadline (3.3.1)		_____
-As required under sections 3.3.2, the GDP describes the following:		
Road standards and construction schedule		_____
Reclamation activities for non DLO and DLO roads		_____
-GDP is signed off by all affected forest companies (3.3.3)		_____
-The GDP submission includes the following schedules & maps as per section 3.3.6:		
Planned five year volume supply by harvest area by year (i.e. Planning Unit/License)		_____
Timber Disposition Production Summary table by year (3.3.6.1 b)		_____
Class I, II and III road development/requirements corridor plan and construction schedule (3.3.6.1 c) (11.2.1)		_____
Status of DLO applications		_____
Un-scaled volumes in satellite yards are identified (3.3.6.1 e)		_____
FMU level - 5 year summary of variance as per section 4.1		_____
-The GDP map(s) submitted include information required as per (3.3.6.2):		
Mill site location(s)		_____
Planning Unit Level Access (proposed construction and reclamation)		_____
Satellite yard locations		_____
Timber dispositions to be operated		_____
Key ungulate and Caribou areas		_____
-Operational tactics to mitigate impacts to recreation and tourism have been identified (5.2.1)		_____
-Stand Structure Reporting requirements have been addressed (7.4.11)		_____
-Access control measures have been identified (11.5.1)		_____
-Fish and wildlife issues within the planning area have been addressed		_____
-Consultation on the GDP as per the First Nations Consultation Guidelines have been done		_____
Company Sign Off		
_____	_____	_____
Submitting RFP Validation	Company	Date
_____	_____	_____
Submitting RFP Validation (for integrated plans)	Company (Integrated operator)	Date
SRD Sign Off		
_____		_____
Reviewing RFP Validation		Date

Note: The AOP shall be appraised by Alberta in accordance by the AOP checklist, with approval subject to the outcome of the appraisal.

AOP Checklist - Reforestation Program Component

Reforestation Program (as per section 8.2)

Company/Disposition Holder			
Disposition Number(s)			
Submission Date			
			Company (Y, N, N/A)

Silviculture Plan Components

-Reforestation Program submitted by deadline (8.2.1)			
-Openings clearly identified (8.2.2) (i.e. Submission of the As-built Plan)			
-Reforestation Program includes following components as per (8.2.3)			
Silviculture prescriptions are acceptable as per the Silviculture table and all variances are identified for appraisal			
Herbicide Proposal follows Alberta requirements			
Commercial Thinning proposal satisfies Alberta requirements			
Proposed silviculture treatment schedule meets ground rule requirements outlined in 8.2.3 b			
Planned out of zone Seedling or Seed Deployment variances have been approved			
Seed amounts are sufficient as per Alberta Forest Genetic Resource Management and Conservation Standards			
Any requested silviculture map(s) have been submitted and meet requirements of (8.2.3 c)			
-Forest Health concerns identified and mitigated (insect, disease, weed management)			

Silviculture Report Components

-Summaries of stratum declarations, stratum changes, final stratum, QAC adjustments (8.2.3 d)			
-Includes summary of annual QAC adjustment			
-Proposed blocks are listed for declaration in lieu of survey & re-treatment			

Company Sign Off			

Submitting RFP Validation		Company	Date

Submitting RFP Validation (for integrated plans)		Company (Integrated operator)	Date

SRD Sign Off			
Reviewing RFP Validation			Date

Note: The AOP Checklist - Reforestation Program Component shall be submitted with each and every silviculture submission.

GLOSSARY

Alberta	The Department of Environment and Sustainable Resource Development, including the Public Lands and Forests Division, Fish and Wildlife Division, and Forest Protection Division or as amended from time to time.
Alberta Vegetation Inventory (AVI)	An inventory of vegetation and forest stands including non-vegetated areas.
Analysis	A detailed examination of a body of data, a series of decisions, or the implications of one or more policies, and a determination of what this examination reveals about the nature, function and/or relationships in effect.
Annual allowable cut (AAC)	The volume of timber that can be harvested under sustained-yield management in any one year, as stipulated in the pertinent approved forest management plan. In Alberta it is the quadrant cut divided by the number of years in that quadrant, usually five.
Annual Operating Plan (AOP)	A plan prepared and submitted by the forest operator each year, which provides the authorization to harvest. An AOP is a requirement of the Timber Management Regulation. (See section B 1.4)
Approval	Issued by Alberta. Approval Decision is prepared outlining significant items considered in plan approval and outlining conditions to be met within specified time periods by the Organization or a decision made by Alberta on an AOP.
ARIS	Alberta Regeneration Information System
As built harvest area map	An opening number accompanied by a spatial depiction of the harvest area generated either from cutover photography or from GPS technology capable of 3m or better accuracy
Audit	An official examination and verification of records, activities, accounts, actions, operations, etc., against stated standards of performance and compliance.
Bared soil	Any soil where the organic layers and vegetation have been removed.
Bell Hole	Small ditches made with an excavator in low areas not associated with any watercourses. They are used to divert water away from AOP roads to assist drying. Water cannot be diverted into a watercourse.
Block form	A map and harvest area comments for each laid-out harvest area. The map depicts the harvest area boundary, road location, anthropogenic features within the block, and any internal buffers.
Borrow pit	A small quarry or excavation, which provides material for use in the construction project. [Revised from Dunster]
Buck	To cut a felled or downed tree into shorter lengths.
Buffer	Used in several contexts. 1 In protecting critical nesting habitat areas, the buffer is an area of forest land that reduces the impacts of adjacent activities on the critical area. The dangers associated with adjacent disturbances might include wind-throw or wind damage to nest trees and young birds in the nest, increased predation and loss of interior forest conditions. 2 A strip of land between two areas under different management regimes. Pesticide buffer zones are used to limit the possible drift, run-off or leachate of pesticide from a site into other areas, such as waterbodies or creeks. Streamside buffers are used to limit the effects of logging on creeks, such as siltation, loss of shading, loss of nutrient inputs from trees and degradation of riparian zones. The size and composition of the buffer zone depends on its intended function. 3 An area maintained around a sample or experimental plot to ensure that the latter is not affected by any treatment applied to the area beyond the buffer. 4 In GIS work, a new polygon computed on distance from a point, line or existing polygon. 5 In managing biosphere reserves, an area or edge of a protected area. Examples of compatible activities might include tourism, forestry, agroforestry, etc. The objective of the buffer zone is to provide added protection for the core reserve area. [Dunster]
Channelled Watercourse	Watercourses from intermittent to higher order.
Clearcutting	A regeneration system where all or most of the merchantable trees in a defined area are harvested in one cutting with reproduction obtained through artificial or natural means.
College	The College of Alberta Professional Foresters (CAPF) or the College of Alberta Professional Forest Technologists (CAPFT).
Commercial Thinning	A partial cut where trees of a merchantable size and value are removed to provide an interim

	harvest while maintaining a high rate of growth on the remaining, well-spaced, final crop trees. Used to capture volume likely to succumb to competition pressures and be lost to disease, insect, or dieback.
Commercial timber permit (CTP)	A timber disposition issued under Section 22 of the Forests Act authorizing the permittee to harvest public timber.
Compaction	A transfer of wheel pressure to soils causing collapse of large air-filled pores, a type of disturbance when tire imprint is often invisible under the duff layer. Soil susceptibility to compaction is maximal when soil is at field capacity, which can be detected by stability of hand cast. Most of soil compaction occurs during the first passes of equipment because soil gains strength with each additional pass.
Connectivity	A measure of how well different areas (patches or a landscape are connected by linkages, such as habitat patches, single or multiple corridors, or "stepping stones" of like vegetation. The extent to which conditions among late successional/climax forest areas provide habitat for breeding, feeding, dispersal and movement of late successional - or climax-dependent wildlife or fish species. Natural landscapes often tend to be better connected than those that have been heavily influenced and disturbed by human activities. Consequently, there is a body of opinion that the best way to avoid fragmentation of landscapes is to maintain, or re-establish, a network of landscape linkages. At a landscape level, the connectivity of ecosystem functions and processes is of equal importance to the connectivity of habitats. [Dunster]
Constraints	The restriction, limiting, or regulation of an activity, quality or state of being to a predetermined or prescribed course of action or inaction. Constraints can be a result of policies or political will; management direction, attitudes and perceptions; or budget, time personnel and data availability limitations; or, more typically, a complex interaction of all these factors. [Dunster]
Corridor	1 A physical linkage connecting two areas of habitat and differing from the habitat on either side. Corridors are used by organisms to move around without having to leave the preferred habitat. A linear habitat patch through which a species must travel to reach habitat more suitable for reproduction and other life sustaining needs. Many corridors, linking several patches of habitat, form a network of habitats. The functional effectiveness of corridors depends on the type of species, the type of movement, the strength of the edge effects and its shape. 2 An area of uniform width bordering both or one side of a lineal feature, such as a stream or route. [Dunster]
Cross-drainage structures	Culverts or other drainage structures that permit water to move from one side of a road to the other, normally under the road grade.
Deactivation	Taking a road out of active use through implementation of erosion control measures, road blocks and/or other methods.
Delegated Authority	The ESRD personnel located at the Regional or Area level charged with supervision of all forest management activities in a defined Region or Area. It can also mean someone who is authorized to approve an AOP.
Deleterious material	Section 34(1) of the Fisheries Act defines "deleterious substance" as: (a) any substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or (b) any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.
Department License of Occupation (DLO)	A disposition issued by Alberta (ESRD) authorizing occupation of a linear corridor, often for an access road.
Desired Future Forest	A spatially explicit projected range of conditions of the forest landscape 100+ years into the future. The range of forest conditions defines the goal towards which forest management will be directed. It is our best guess today on the arrangement of forest age classes, roads and habitats that will provide for a set of objectives and desired outcomes that have been identified

	for the area.
Detailed forest management plan (DFMP)	A long-term plan used to outline higher-level management objectives, sustainability and timber production assumptions for a Forest Management Agreement (FMA).
Displaced soil	Mixed mineral, surface and sub-surface horizons that have been deposited off the road or disturbed surface to a depth of 15 cm or greater.
Disturbance patterns	The spatial and temporal arrangement of disturbances.
Ditch blocks	Barriers constructed across ditches to retard water flow, to redirect water from the ditch or to form a small catch basin.
Downed woody debris	Woody material >1cm in diameter, stumps and snags < 1.3 m tall and dead trees leaning >45 degrees. The woody material left on site after logging including both pre-existing and harvest-generated material (downed boles, limbs, tops and stumps). Includes highly decomposed and vegetated material as long as it is recognizable as woody.
Drought	Extended period of below average precipitation causing a lowering of the water table. Generally occurs over several years but locally may happen seasonally. Signs would be lowering of lake levels and drying of streams that would normally flow all year.
Due Diligence	<ul style="list-style-type: none"> - taking and documenting steps to ensure that the desired outcome is achieved or that the chances of a negative consequence or outcome is minimized. - ensuring completeness, correctness, consistency and repeatability. - demonstrating how conclusions were reached. - using mechanisms, such as but not limited to checklists and standard operating procedures, to demonstrate that appropriate procedures were followed and to ensure that no relevant steps or considerations were missed. - keeping and maintaining appropriate files and filing systems as well as document retention policies and practices.
Duff layer	The organic horizons of the soil profile (LFH). Commonly referred to as the forest floor.
Ecological integrity	The quality of a natural, unmanaged or managed ecosystem in which the natural ecological processes are sustained, with genetic, species and ecosystem diversity assured for the future. [Dunster]
Embedded operators	Includes quota holders, permittees and other industrial operators with dispositions located within a Forest Management Agreement Area.
Exterior Road	Inter-block road that exists outside block boundary.
Features	The features represented on a map which describe the physical aspects of the harvest design. E.g. harvest area boundaries, roads, buffers, wildlife habitat.
FireSmart Community Zone	A standard 10 kilometre radius around the community extending from the Wildland Urban Interface Zone. A unique data set will be gathered for this zone for community protection planning to provide a fundamental linkage between FireSmart Communities and FireSmart Landscapes
FireSmart Landscape Zone	This zone extends beyond the FireSmart Community Zone overlapping multiple jurisdictions at a broad landscape level. This zone focuses on mitigating the likelihood of large, high intensity, high severity fires. Fire, Forest and Land Management planning are integrated and designed to reduce the negative ecological, economic and social impacts of wildfire while maximizing the positive attributes of wildfire.
FireSmart Landscapes	The philosophy that seeks to mitigate the likelihood of large, high intensity and high severity fires. FireSmart landscapes are designed to recognize the interaction between ecological, economic and social impacts, hence maximize the positive ecological impacts and minimize the negative economic and social impacts.
Fisheries & Wildlife Management Information System (FWMIS)	The Fisheries and Wildlife Management Information System (FWMIS) is a Government of Alberta database that provides a central repository for which government, industry, and the public can store and access extensive and reliable fish and wildlife inventory data.
Floodplains	Flat land bordering a stream or river onto which a flood will spread. The underlying materials are typically unconsolidated and derived from past stream transportation activity. The extent of the floodplain varies according to the volume of water, and its 50-year-old floodplain would be defined by the largest flood that would, on average, occur once within a 50-year-period,

	estimated from historic stream flow records. [Dunster]
Forest Health	A condition of the forest; a forest is considered healthy if it can sustain itself to meet the specific forest land management objectives of today or in the future.
Forest Management Agreement (FMA)	A contract between the province of Alberta and the FMA holder whereby the province provides an area-based Crown timber supply. In return, the FMA holder commits to the following: Managing the timber resource on a perpetual sustained yield basis, taking into consideration a broad range of forest values in determining forest management practices. Meeting defined economic objectives, including capital investment and job creation, and seeking out new business opportunities that provide measurable economic benefits for both the province and the FMA holder. The FMA gives the FMA holder the right to access Crown fibre. In return, the FMA holder commits to forest management responsibilities, which may change from time to time.
Forest Management Plan	Generic term for Preliminary Forest Management Plans, Detailed Forest Management Plans, Forest Management Unit Plans, General Development Plans, Annual Operating Plans.
Forest Management Unit (FMU)	An administrative unit of forest land designated by the Minister, as authorized under Section 14(1) of the <i>Forests Act</i> .
Forest officer	An employee of Alberta appointed in accordance with the Public Service Act who represents the Minister in the administration of the Forests Act, the Timber Management Regulation, the Public Lands Act, and the Forest and Prairie Protection Act and Regulations on public forested lands.
Forest operations	Includes all activities related to timber harvesting, including site assessments, planning, road construction, harvesting, hauling, reclamation and reforestation.
Forest operator	The timber disposition holder or person responsible for controlling harvest planning and operations in the timber disposition. It also refers to those persons working on behalf of the disposition holder while conducting forest operations.
Forest tent caterpillar	<i>Malacosoma disstria</i>
Forests Act, the	The legislative statute that authorizes the Minister to administer and manage the forested lands of Alberta.
Full Review	An evaluation of the acceptability for approval of a submitted document involving referrals to government departments, independent experts, or others as appropriate, and a risk analysis prior to Alberta granting approval to the submitting Organization.
Genetic Diversity	The genetic variability within a population or a species; the number and relative abundance of alleles. Genetic diversity can be assessed at three levels: Diversity within breeding populations, Diversity between breeding populations within any one geographic area, Diversity within the species
Grazing disposition	An authorization issued by Alberta for the purpose of domestic livestock grazing on public land (i.e., lease, license or permit).
Ground Rules	Standards for operational planning and field practices that must be measurable and auditable and based forest management plan objectives.
Guideline	A preferred or advisable course of action respecting land and resource management. Guidelines imply a degree of flexibility, based on administrative judgment or feasibility of applying the guideline, and are consequently not normally enforceable through legal means.
Harvest area	A specified land area with defined boundaries where timber harvesting is scheduled, or has occurred. (commonly referred to as a cut block)
Hiding cover	See “ <i>sight distance</i> .”
High-water mark	Stream course water levels corresponding to the top of the unvegetated channel or lakeshore where the terrestrial vegetation starts.
Historical resource	Any work of nature or man that is primarily of value for its paleontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest, including, but not limited to, the structure or object and its surrounding site.
Interpretive Bulletin	Document issued from time to time by Alberta describing protocols, standards, methods or other applicable to forest management planning.
Harvest Level	A volume or area of timber determined through timber supply analysis available for harvest on an annual sustainable basis within a DFA. A harvest level is not an AAC unless approved by

	the Minister.
Inter-block Road	Any temporary road that extends through a block to reach another block. It ends at the edge of the last block connected to the road.
Inoperable	Classification of a forest site based on the potential to harvest timber on that site, as affected by physiographic characteristics, moisture regime and harvesting equipment/technology.
Insects and Diseases	Biological, physiological, and environmental agents that have an adverse effect on the health of the forest. These agents include insects; nematodes; micro-organisms (viruses, bacteria, fungi); parasitic plants; mammals; birds; and non-infectious disorders caused by climate, soil, applied chemicals, air pollutants and other physiographic conditions.
Integrated resource plan	A regional plan developed by provincial government agencies in consultation with the public and local government bodies. It provides strategic policy direction for the use of public land and its resources within the prescribed planning area. It is used as a guide for resource planners, industry and publics with responsibilities or interests in the area.
Jack pine budworm	<i>Choristoneura pinus</i>
Landing	Any area bared to mineral soil where logs are gathered for processing or further transport to a mill site.
Landscape	A landscape (or LMU) is a heterogeneous area in which the pattern of the mosaic of local ecosystems or land uses is repeated in similar form throughout kilometres wide area (after Forman 1986). Landscapes may coincide with a climatic, physiographic or ecological boundary. However, landscapes are not strictly ecologically based and include human use and modification of the area.
Large residual tree	A residual tree with a diameter measured at breast height (DBH) greater than the approximate average merchantable tree DBH of the harvest area.
Logfill	Stream crossings constructed with logs placed in a streambed parallel to the flow of the water.
Logging slash	The unusable trees, shrubs or portions thereof that result after tree felling, skidding and processing at the harvest site.
Machine-free zone	The area protected from machinery which would cause soil damage.
Mass-wasting	Movement of large masses of land, soil or regolith (i.e., slumping, landslides, rock slides and massive undercut erosion).
Mature stands	Stands that have reached rotation age or have a decreasing growth rate.
Mixedwood forest	A forest type in which the softwood component is between 20% and 80% by crown closure.
Mountain pine beetle	<i>Dendroctonus ponderosae</i>
Noxious Weed	A plant designated under the Weed Regulation (AR 171/2001) of the Weed Control Act.
Opening	A harvest area that has a unique covergroup declaration as tracked in ARIS.
Organization	The proponent charged with developing the FMP. This may be a corporation, cooperative, or a public agency.
Partial cutting	A treatment where significantly less than 100% of the trees are harvested from a stand or area. It includes commercial thinning, even when the intention is leading to a final clearcut.
Pattern	The arrangement of forest stands or harvest units.
Permanent roads	Roads that will be in use for more than five years.
Permanent sample plots (PSP)	A fixed or variable area plot established for (forest) sampling and measurement purposes, and designed for remeasurement.
Planning Unit (Compartment)	A FMU that may be further subdivided by operator.
Pre-commercial Thinning	A silvicultural treatment to reduce tree density in young stands, carried out before the stems reach merchantable size. The intent is to concentrate the site's growth potential on fewer trees thereby accelerating stand development and reducing the time to final harvest, retaining more live crown, creating opportunities for future commercial thinning activities and improving stand operability.
Prescribed burn	The planned use of carefully controlled fire to accomplish predetermined management goals (e.g., site preparation for planting, reduction of fire hazards or pest problems, improvement of the ease with which the site can be traversed, and creation of better quality browse for wildlife). [Dunster]
Prohibited debris	Any flammable debris or waste material that, when burned, may result in the release of dense smoke, offensive odours or toxic air contaminants. It includes:

	(a) Garbage or refuse from commercial or industrial operations (b) Rubber or plastic, or anything containing or coated with rubber or plastic or similar substances (c) Used oil from internal combustion engines, hydraulic oil and lubricants (d) Motor vehicle tires.
Quota	The timber quota is a share of the allowable cut of coniferous timber within a forest management unit.
Reclamation of roads	Permanent removal of watercourse crossings; re-contouring of road crown and ditches; reseeding or planting of the former right-of-way.
Recreationalist	A person who participates in outdoor activities in the forest, such as horseback riding, ATV riding, snowmobiling, hiking, cross-country skiing, wilderness area experience, hunting, fishing, berry-picking, wildlife viewing, photography, camping, canoeing, etc. These persons have the right to recreate on public land but have no authority over the land.
Recreation Site	Includes areas designated by Alberta as Ecological Reserves, Wilderness Areas, Wildland Parks, Provincial Parks, Heritage Rangelands, Natural Areas, and Recreation Areas.
Regeneration	The renewal of a tree crop by natural or artificial means. It may also refer to the young crop itself.
Regulated Forestry Professional	A Registered Professional Forester (RPF) on the Registered Professional Forester Register of the College of Alberta Professional Foresters (CAPF) or a Registered Professional Forest Technologist (RFPT) on the Registered Professional Forest Technologist Register of the College of Alberta Professional Forest Technologists (CAPFT).
Reserve	In its strictest sense, an area of land designated as being off-limits to any exploitive activities that might change the nature of the area. Not all reserves are so tightly controlled. [Dunster]
Residual structure	Standing structure that is taller than 2 m, within a harvested area. Areas buffered for sensitive ecological or wildlife habitat may be included for residuals. Required buffers for lakes and small and large permanent streams are not included. This includes non-merchantable trees and shrubs, live merchantable trees, snags and stubs.
Residual tree	A live canopy tree that is spatially within a harvested area. Areas buffered for sensitive ecological or wildlife habitat may be included for residuals. Required buffers for lakes, small and large permanent streams are not included.
Resources	Physical and intrinsic features of the land, including but not limited to timber, wildlife, water and soil.
Restricted Weed	A plant designated under the Weed Regulation (AR 171/2001) of the Weed Control Act.
Review	Acceptance or appraisal conducted by Alberta
Right-of-way (ROW)	A cleared area, usually linear, containing a road and its associated features such as shoulders, ditches, cut and fill slopes, or the area cleared for the passage of utility corridors containing power lines or over- or under-ground pipelines. Typically, the right-of-way is a specially designated area of land having very specific rights of usage attached. Rights-of-way may be owned by someone else. [Dunster]
Riparian area or management zone	(1) The band of land that has a significant influence on a stream ecosystem or is significantly affected by the stream. It often has specialized plant and animal communities associated with it. [Anon] (2) 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. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows. The riparian zone is influenced by, and exerts an influence on, the associated aquatic ecosystem. [Dunster]
Root collar weevils	<i>Hylobius</i> spp.
Rotation	The period of years required to establish and grow even-aged timber crops to a specified condition of maturity.
Ruts	Machine depressions in the soil which are determined by depth and length: where the depth of the organic dark humus material is greater than 30 cm, a rut is a depression that shears the organic layer of soil (a sheared organic will expose a vertical face greater than 20 cm of the organic layer).

	<p>Where the depth of the organic material is less than 30 cm, a rut is a depression exceeding 10 cm into the mineral soil.</p> <p>Length: An impacted area meeting the rut depth criteria that is greater than 4 m long. A continuous track with a rut less than 4 m because of stumps, logs or rocks lifting the vehicle will still count as a rut if the total length of the smaller holes is greater than 4 m.</p>
Rutting/ puddling	A paste-like behaviour of wet soil when most of the soil pores are filled with water and soil literally flows from underneath the wheel to the sides and upward forming visible tire imprint into the mineral soil. Intensity/depth of rutting is directly related to the number of equipment passes. Soil is considered susceptible to rutting when it forms a stable hand cast.
Sensitive sites	Sites that have soil, water, slope, aesthetic, vegetation or wildlife characteristics that require special protection beyond the normal precautions described in the ground rules. They may be complex if many values or issues are involved.
Sensitive soil site	Any site that may be prone to soil movement, soil erosion, mass wasting or siltation due to steep slopes, wet ground, seepage areas, springs, fine textured soils or soils prone to mass wasting.
Seral stages	A stage in succession. A series of plant community conditions that develop during ecological succession from a major disturbance to the climax stage. Most common characteristics/classifications include tree species and age.
Sight distance	The distance at which 90% or more of an adult big game animal is hidden from the view of a human. This distance may vary from one stand to another.
Silt fence	Permeable fabric barriers installed along the contour to filter surface water runoff and trap sediment from sheet or overland flow and prevent it from entering streams.
Silviculture	The theory and practice of controlling the establishment, composition, health, structure and growth of forests in order to achieve specified management objectives.
Site preparation	Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment favourable for survival of suitable trees during the first growing season. Altering the ground cover, soil or microsite conditions can create this environment; using biological, mechanical or manual clearing; prescribed burns; herbicides or a combination of methods. [Dunster]
Skid trail	An unimproved temporary forest trail suitable for use by equipment such as bulldozers and skidders in bringing trees or logs to a landing or road.
Snag	A dead tree that is taller than 2 m.
Soil Displacement	A loss of nutrient-rich organic layers, and top mineral soil as a result of harvesting activities. Bare mineral soil is susceptible to raindrop impact causing soil crusting, increased surface runoff, and erosion.
Soil disturbance	In the context of the 5% maximum allowable area within a harvest area, includes bared landing areas, temporary roads, displaced soils or ruts.
Soil productivity	The capacity of a soil to provide for growth.
Species at risk	Any species known to be “at risk” after formal detailed status assessment and designation as “Endangered” or “Threatened” in Alberta. The list of species is maintained by Alberta.
Species of management concern	Species within the forest management planning area that have an identified value (social, economic, ecological) and are managed to ensure their continued protection and/or use. This includes species that are hunted or trapped, as well as those that are endangered or threatened.
Spruce beetle	<i>Dendroctonus rufipennis</i>
Stand	A community of trees sufficiently uniform in species, age, arrangement or condition as to be distinguishable as a group in the forest or other growth in the area. A stand may also be that polygon as defined in the AVI or Phase III inventory.
Strippings	Layers of humus-bearing topsoil and fine woody material above mineral soil that have been stripped off during road or landing construction.
Stub	A large residual tree that has been “topped off” at approximately 6 m to create an artificial snag.
Subgrade	The road base.
Subsequent pass	Any harvest occurring after the first harvest pass.
Suppression capability	The effectiveness of traditional fire suppression tactics. It is an objective evaluation of initial attack response time, access for ground support resources, water availability and terrain which

	might adversely impact movement of resources.
Sustainable forest management (SMF)	Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations.
Temporal	Of, or limited by, time. [Webster's]
Temporary field authority (TFA)	An authority issued under Section 19 of the Public Lands Act by an Alberta officer to grant short-term land use activities on public land in the White or Green Areas. The TFA may or may not be related to an existing disposition that has also been issued under the Public Lands Act. The concept is to provide field-level service to an applicant, with access to public land for a specific purpose/use/activity, for a term of less than or equal to one year.
Spur road	Roads built off of the interblock roads to provide access and decking space within a block., and are built, used and reclaimed before expiry of the Annual Operating Plan (AOP) or reclaimed within five years of construction.
Terrestrial Vegetation	Look Up in Dunster – hydrophytic veg ends
The Company	Refers to any company operating under these ground rules as defined geographically in the signature page.
Thermal cover	Generally, an area of at least 10 ha having a coniferous canopy at least 10 m in height, with at least 70% crown closure and a minimum width of 200 m. This cover is used by animals to assist in their temperature regulation during extreme weather conditions.
Timber disposition	Licenses and permits that allow forest operators to harvest from Crown lands.
Timber Management Regulation	The legislative statute that describes the mechanism and regulations by which the forested lands of Alberta are managed. The Regulation is associated with the Forests Act.
Timber Operations	Includes all activities related to timber harvesting including site assessments, planning, road construction, harvesting, reclamation and reforestation.
Timber supply analysis (TSA)	Calculations/computer models with built-in assumptions regarding forest growth patterns, used to determine the annual allowable cut (AAC).
Timing constraints	A restriction or limitation on when an activity may be carried out.
Trapper	Holder of a trapping license.
Understorey	The trees and other woody species growing under the canopies of larger adjacent trees and other woody growth. [Dunster]
Unstable slope	Slopes of loose or poorly consolidated materials beyond the angle of repose, geological features having a high probability of failure, or soils that will not support loads.
Utilization	The portion of the stand or individual tree used for manufacture of wood products, defined in terms of piece length and diameter at each end. Minimum standards for utilization are defined in the timber disposition.
Validated work (Validation)	Work that has been prepared by, or reviewed and approved by an RFP. These professionals are subject to an enforceable code of ethics and standards of practice and are expected to complete their work with due diligence to ensure such work is accurate. The RFPs who validate the work may have done the work themselves, contracted the work to be done, or supervised those who did the work, but in any case, the validating RFPs are accountable for the work being prepared with due diligence and being accurate. If more than one RFP is involved in preparing the work, the RFP that is most directly involved in the work is to validate the work.
Values at risk	A listing of values which may be at risk of being reduced by wildfire. In order to complete a spatial “priority” evaluation, information regarding values is required.
Variance (SHS)	Any deletion to a stand scheduled in the spatial harvest sequence. Additions to stands identified in the spatial harvest sequence are not considered variance but are tracked in section 3.4.1 of the ground rules.
Viable understorey	Trees of desirable merchantable species that are windfirm and of sufficient vigour that they will continue to grow after harvest.
Visual impact analysis (VIA)	Estimates visual impact potential, determines acceptable design and layout, and guides measures to be taken during and upon completion of operations to reduce visual contrast.
Visual quality objectives (VQO)	Broad objectives for visual resource management that set limits considered acceptable to the average viewer, as to the form and scale of visible alteration.
Visual resource assessment (VRA)	A relatively intensive reconnaissance of a landscape or parts of a landscape. A forest management planning framework for assessing Alberta's visual resource base in a consistent

	and systematic manner. Consists of four planning phases: visual resource inventory, visual quality objectives, visual impact analysis and total resource design.
Visual resource inventory (VRI)	A quick and simple process of recording the expanses of viewable area, noting key features, their prominence and sensitivity in order to better direct proposed harvesting operations in scenic or visually important areas.
Water regime	Timing of water flow.
Water source area	That portion of a watershed where soils are water-saturated and surface flow occurs and contributes directly to streamflow. The area of saturated interflow associated with a stream.
Watercourse	The bed, bank or shore of a river, stream, creek or lake or other natural body of water, whether it contains or conveys water continuously or intermittently.
Watershed	An area of land, which may or may not be under forest cover, that drains water, organic matter, dissolved nutrients and sediments into a lake or stream. The topographic boundary, usually a height of land, that marks the dividing line from which surface streams flow in two different directions. [Dunster]
Western gall rust	<i>Endocronartium harknesii</i>
Wetland	Land greater than 1 ha saturated with water for a period long enough to promote wetland or aquatic processes as indicated by the poorly drained soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to a wet environment.
Wildland Urban Interface Zone	The area where various structures and other human developments meet or are intermingled with the forest and other vegetative fuel types.
Wildlife	Any species of amphibian, bird, fish, mammal and reptile found in the wild, living unrestrained or free roaming and not domesticated. Some definitions include plants, fungi, algae and bacteria. [Dunster]
Wildlife corridor	A strip of forest with a minimum width of 100m that connects two forested areas.
Wildlife zone	As defined on Fish and Wildlife Referral Maps.
Windfirm boundaries	Harvest area boundaries established at locations that are stable and that minimize the potential for timber losses from wind.
Yield Curve	Graphical representation of a yield table.

List of Initialisms

AAC	Annual Allowable Cut
AOP	Annual Operating Plan
ARIS	Alberta Regeneration Information System
CAPF	College of Alberta Professional Foresters
CAPFT	College of Alberta Professional Forest Technologists
CT	Commercial Thinning
CTP	Commercial Timber Permit
DHAP	Detailed Harvest Area Plan
DFMP	Detailed Forest Management Plan
ESRD	Environment and Sustainable Resource Development
FHP	Forest Harvest Plan
FMA	Forest Management Agreement
FMP	See definitions - Forest Management Plans (generic)
FMU	Forest Management Unit
FWMIS	Fisheries and Wildlife Management Information System
GDP	General Development Plan
GPS	Global Positioning System
HA	Hectares
IRM	Integrated Resource Management
IRP	Integrated Resource Management Plan
MOSA	Mineable Oilsands Area
MTU	Miscellaneous Timber Use
OGR	Operating Ground Rules
PCT	Pre-commercial Thinning

PHP	Preliminary Harvest Plan
PSP	Permanent Sample Plot
QAC	Quadrant Allowable Cut
RFMA	Registered Fur Management Area
RFP	Regulated Forestry Professional
ROW	Right Of Way
RPF	Registered Professional Forester
RPFT	Registered Professional Forest Technologist
RSA	Regeneration standard of Alberta
SARA	Species at Risk Act
SFM	Sustainable Forest Management
SHS	Spatial Harvest Sequence
TFA	Temporary Field Authority
TM	Timber Management
TMR	Timber Management Regulation made under the Forests Act
TSA	Timber Supply Analysis
VQA	Visual Quality Objectives
VRA	Visual Resource Assessment
VRI	Visual Resource Inventory