

“DRAFT”
October 7,2005

SELKIRK TREE FARM LICENCE 55

MANAGEMENT PLAN 4
2006-2011

Louisiana Pacific Canada Ltd.

Malakwa

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ACKNOWLEDGEMENTS

Management Plan 4 has been prepared by the staff of Louisiana Pacific Canada Ltd. (L-P), Eagle River Division.

Professional Forester Certification

I certify that this work fulfilled accepted standards and that I did personally supervise the work.

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Map Folio (under separate cover)

TFL 55 Net Timber Harvesting Landbase
TFL 55 Biogeoclimatic Zones
TFL 55 20 Year Plan

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of Management Plan 4 (MP4) is to outline the objectives, goals and resource management strategies for Tree Farm Licence 55 (TFL) for the next five years. It integrates the harvesting of timber with the management of other forest resource. The period of the plan is May 1, 2006 to May 1, 2011, or when replaced by a Forest Stewardship Plan. Submission of this management plan fulfils the requirement of the tree farm licence document (Section 2) and the Forest Act (35 (1) (d)). (MP 3 approved by the provincial deputy chief forester on April 18, 2001 covered the period from May 1, 2001 to April 30, 2006)

The management strategies and practices outlined in MP4 are consistent with the legislative requirements of the tree farm licence, Forest Act, Forest Practices Code of BC Act and regulations and all other applicable legislation.

1.2 LOCATION AND DESCRIPTION

The gross area of the TFL is 55 is 92,706 hectares. Approximately 55,103 hectares of this or 59% is considered to be productive forest. (Table 1). The TFL is situated in the Selkirk Mountains north of Revelstoke National Park between Goldstream River and Mica Creek along the eastside of the Revelstoke Reservoir. The City of Revelstoke is the largest community in the region and is a service and government administrative centre for the local economy. Highway 23, which traverses along the eastside of the Revelstoke Reservoir to Mica townsite, provides the primary access to the tree farm licence. The southwest corner of the TFL at Goldstream River is 85 kilometres north of Revelstoke. The overview map (Figure 1) hilights the boundaries of the TFL in relation to the surrounding communities and regional features.

TFL 55 lies in the interior wet-belt and is covered in part by three biogeoclimatic zones: alpine tundra, interior cedar-hemlock and Englemann spruce-subalpine fir. The forests are mixtures of predominately hemlock, cedar, Douglas-fir types at lower elevations with balsam-spruce types at higher elevations. The climate is characterized by warm summers and cool winters, marked by characteristically heavy rainfall and high levels of winter snowfall.

Table 1-1: TFL 55 Landbase (hectares)

Gross area	92,706
Productive forest	
Operable Landbase	24,859
Inoperable	30,244
Total productive forest	55,103
Non-productive forest	36,801

1.3 LICENCE HOLDER

LP acquired TFL 55 in December 1999 from Evans Forest Products (Evans).

Evans acquired TFL 55 in June 1993 from Westshore Terminals Ltd. The TFL was originally created in 1992 from the subdivision of TFL 23 into two tree farm licences. The area north of Revelstoke was subdivided again into TFL 55 and TFL 56 while the area south east of Revelstoke became the remaining TFL 23. TFL 56 is held by the Revelstoke Community Forest Corporation.

Today the company operates a LVL plant and plywood plant at Golden. There is also an electricity co-generation plant associated with the plywood plant at the Golden site. The company's Malakwa Forest Resources Division employs 85 people, of which 8 are salaried and the remainder are contractors.

Revisions were made to the TFL boundary in 1998 and 1999. The previous boundary was based on a manual interpretation of the metes and bounds description of the topographic features. Current government mapping standards use height of land line-work from the TRIM Watershed Atlas as well as Crown Lands (CDMS) cadastral mapping and TRIM planimetric features. The revisions to the TFL 55 boundary are the result of changes in mapping standards only; the intent of the boundaries and their true location on the ground has not changed. The revisions resulted in a change of gross area from 92,227 hectares to 92,700 hectares, an increase of 478 hectares.

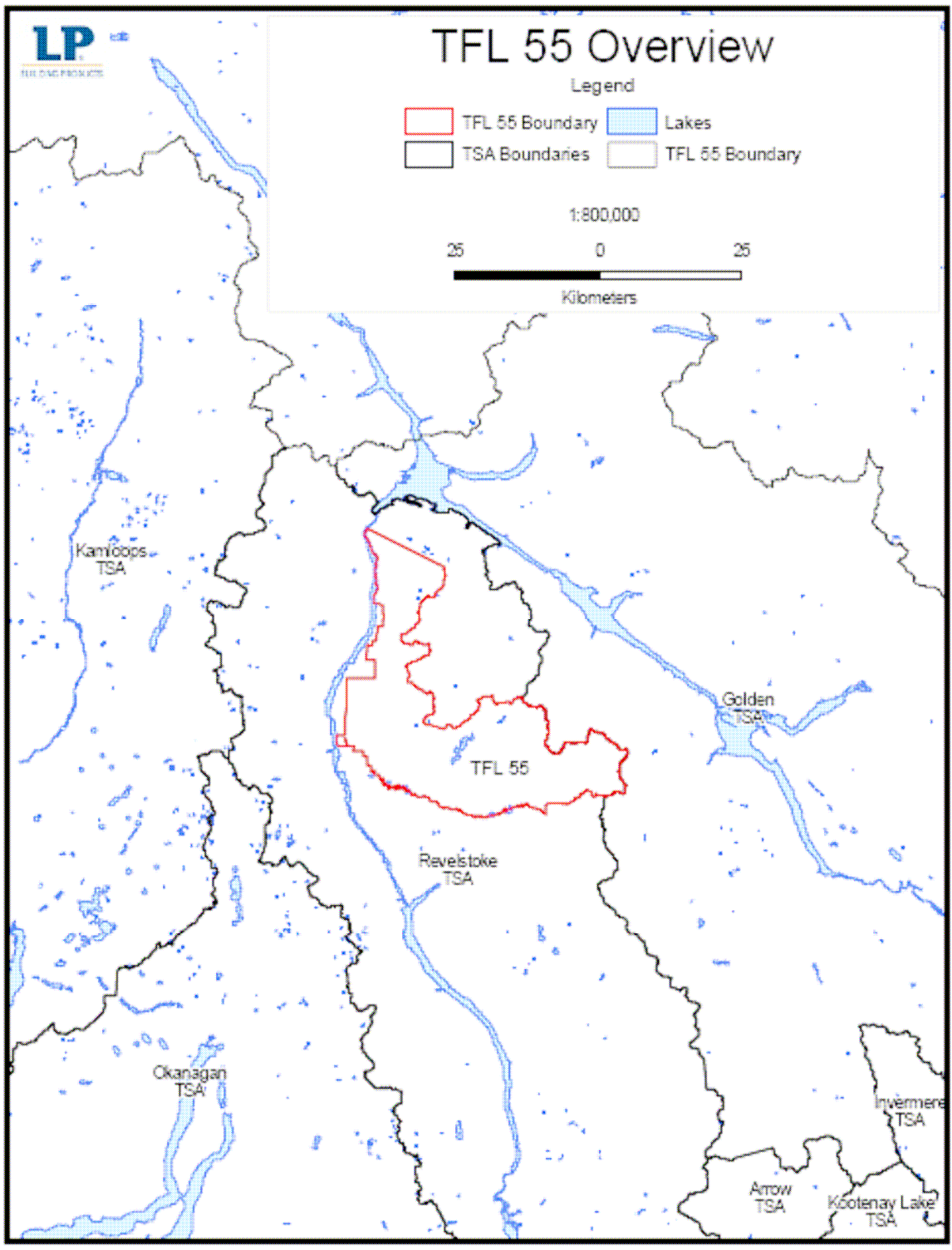


Figure 1 Overview map of TFL

1.4 TENURE ADMINISTRATION

TFL 55 is in the Columbia Forest District of the Southern Interior Forest Region.

The Ministry of Forests is the legislative authority responsible for the administration of the provincial forests through the Forest Act, Forest Practices Code of BC Act, Forest and Range Practices Act and its regulations. Ministry of Environment is mandated to administer provincial legislation pertaining to water, wildlife, fisheries resources and pesticide use on Crown lands primarily through the Wildlife Act, Water Act, Pesticide Control Act and Waste Management Act. The federal DFO is responsible for administering federal legislation regarding fish-bearing waters to ensure that aquatic habitat is protected. The Fisheries Act is the primary legislation for the protection of aquatic habitat. Parks Canada is an interested third party in the management of the TFL in view of the national parks in the Selkirk Mountains.

L-P administers the TFL from its Malakwa division office. Five staff members are assigned to the managing the operational activities. All timber harvesting and road construction are undertaken by independent logging contractors. The company also retains forestry services contractors to provide a full range of forest engineering, forest management, silviculture and protection activities. Approximately 40 people are employed in the operation of the TFL.

1.5 BC TIMBER SALE PROGRAM

The British Columbia Timber Sales Program (BCTS), formally Small Business Forest Enterprise Program (SBFEP) has an assigned allowable annual cut (AAC) of 17,675 cubic meters within TFL 55.

Prior to the Bill 28 reallocation process the BCTS cut on the TFL was 11,675m³. The amount of cut reallocated from the TFL to BCTS was 6000 m³ as per Ministers Order #3(2) 14-1.

Under the reallocation process, BCTS operating areas may be removed from the TFL landbase.

The BCTS is responsible for fire control, reforestation, road maintenance and deactivation activities associated with the timber sale licences (TSL) within BCTS operating area on TFL 55. Although the MoF actively administers these TSLs, these areas remain within the tree farm licence.

A summary of BCTS harvest volumes during the period of MP 3 to the end of 2004 is in the history section (Appendix I(b)).

2.0 LAND USE PLAN

2.1 MINISTERS ADVISORY COMMITTEE PLAN

In November 1994, the Commission on Resources and Environment tabled the Kootenay-Boundary Land Use Plan to the provincial government, which recommends a land use zonation framework and management practices for biodiversity, caribou, ungulate winter range and other resource values. The plan predicted as much as a 40% reduction in timber supply for the Revelstoke area. The citizens of Revelstoke found the impacts of the CORE report to be unacceptable and demanded an opportunity to develop alternative land use strategies and recommendations. With government approval a Ministers Advisory Committee (MAC) was formed to develop a local land use plan.

Over a period of four years the MAC committee prepared recommendations concerning forestland zonation, harvesting guidelines for caribou habitat areas, biodiversity emphasis areas and ungulate winter range. The MAC plan attempts to balance environmental and socio-economic needs. Through a process of public consultation, the assistance of a technical & economic team and representatives from the MELP, the MAC plan has developed guidelines and zoning to protect and balance key wildlife habitat, biodiversity and economic interests for the Revelstoke area.

The MAC report, which was submitted to the Minister of Forests in October of 1999, recommended that specific sections of the report be designated higher level plan status and that any AAC reductions for both tree farm licences (TFL 55 and 56) be borne, at least equally, if not fully, by the BCTS (formerly SBFEP) AAC apportionments for these the licences. L-P supports the MAC committee in this initiative to ensure that the impacts of the implementation of the land use plan are appropriately distributed.

The Revelstoke Higher Level Plan Order took effect March 25, 2005. This order contains objectives for Caribou, biodiversity and Grizzly Bear management.

2.2 LANDSCAPE UNITS

TFL 55 is contained within two landscape units as depicted in figure 2.

R17 – Mica Creek / Bigmouth

R5 – Goldstream / Stitt creek

These landscape units are defined in the MAC plan.

TFL 55 Landscape Units

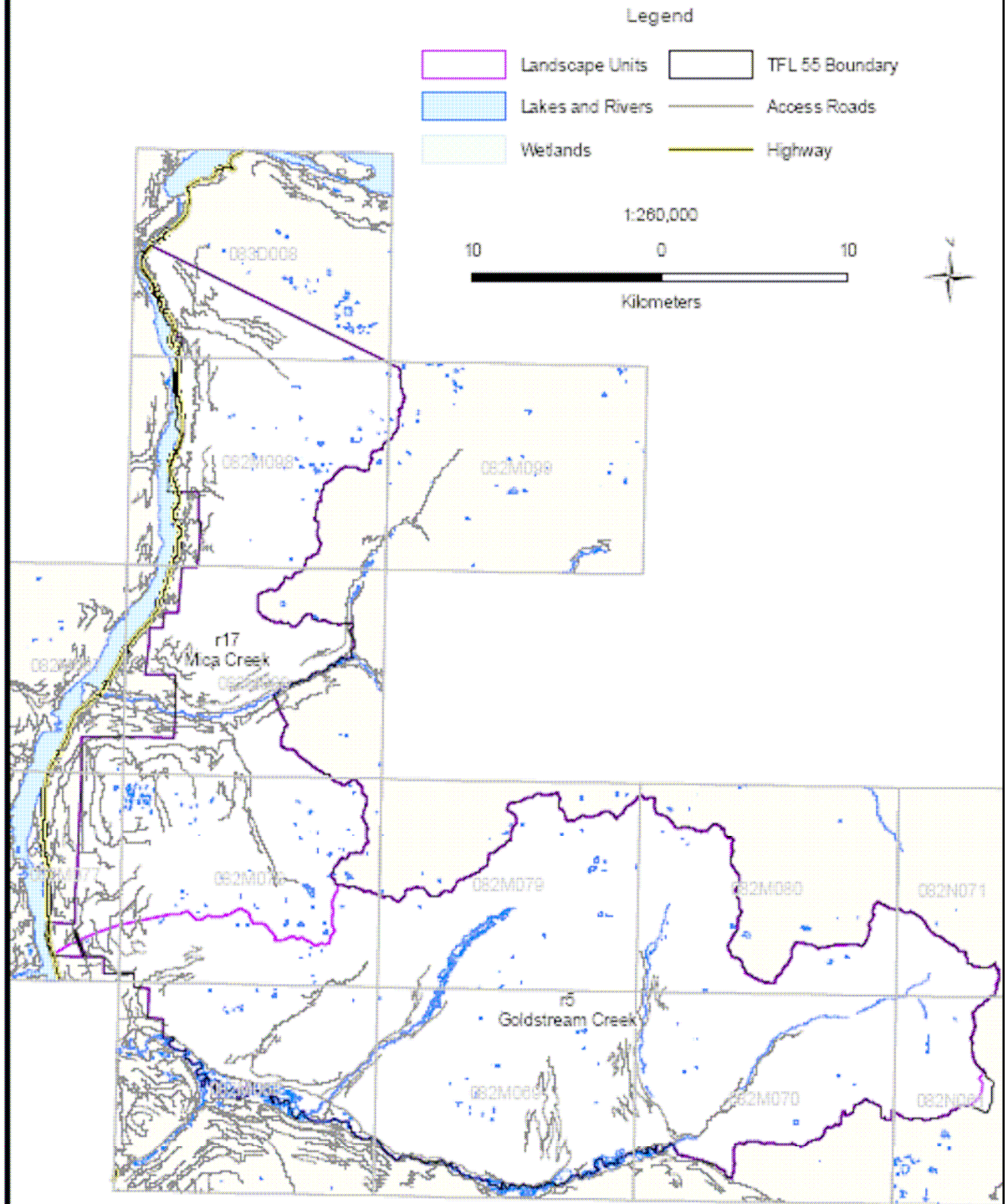


Figure 2 Landscape Units

3.0 GOALS AND COMMITMENTS

3.1 SUMMARY OF GOALS AND COMMITMENT FOR MP4

Table 3.1-1 outlines the goals and commitments made in this plan.

3.2 SIMILARITIES AND DIFFERENCES BETWEEN MP 3 AND MP4.

Harvest Level

L-P is proposing a MP4 AAC of TBD m³.

Land Base	MP 3	MP4
Gross area	92,227 ha	92,706 ha
Net operable	19,783 ha	21,444 ha
Long term harvest level	61,410 m ³ /yr	TBD m ³ /yr
AAC	90,000 m ³	TBD m ³

Economic Opportunities

The economic opportunities are anticipated to remain stable for the term of MP 4.

Protection and Conservation of Non-timber Values

A new Vegetative Resource Inventory was recently completed on the TFL, also we are currently completing Ecosystem Mapping for the productive forest landbase. These two improved inventories will provide better information to assist in management of non-timber values. LP is committed to manage consistent with the MAC Plan and Revelstoke Higher Level Plan Order.

Employment and Contractors

L-P currently employs approximately 500 people in its woodlands and manufacturing facilities in Malakwa and Golden. This employment level consists of both permanent employees and contractors / consultants. Employment should remain relatively stable, assuming no market-related shutdowns are required. A slight reduction in the contractor workforce at Malakwa is anticipated as a result of the decrease in AAC from Bill 28.

Table 3.1-1: Goals and Commitments in Management Plan 4 TFL 55

Section	Goals	Commitments
6.1.2 Timber Inventory	Periodically update the timber inventory to permit proper strategic and operational level planning.	<ul style="list-style-type: none"> • Ensure timber inventory database is updated for MP 5.
6.2.2 Harvest Planning	Develop strategic and operational level plans that permit the harvesting of timber in consideration of corporate economic goals, regulatory requirements, silvicultural systems, and integrated resource management strategies.	<ul style="list-style-type: none"> • Ensure that five year harvest goals are achieved. • Incorporate second pass cutting into harvest planning where possible. • Include some alternate partial cut silviculture systems in caribou emphasis areas of the TFL.
6.2.3 Harvest Methods in Season	Use a variety of harvest methods that are economically feasible, safe for workers and minimizes environmental impacts.	<ul style="list-style-type: none"> • Continue to investigate opportunities for a variety of harvesting systems that incorporate other integrated resource values and minimize soil disturbance.
6.2.4 Harvesting Priority and Patterns	Ensure harvesting priorities and patterns consider forest health and log profile objectives in order to create balanced age classes stands in the long term.	<ul style="list-style-type: none"> • Ensure harvesting schedules achieve long term stand structure objectives. • Continue to incorporate total resource planning into harvesting priorities and patterns.
6.2.5 Utilization Standards	Ensure that log utilization meets, manufacturing plant log profile needs, market conditions and coarse woody debris objectives.	<ul style="list-style-type: none"> • Meet government and company utilization standards.
6.2.6 Special Forest Products	Utilize special commercial forest products to create employment and business opportunities.	<ul style="list-style-type: none"> • Explore opportunities for maximizing economic fibre recovery.
6.3 Road Network	Develop and maintain a transportation network that minimizes environmental impacts and provides for safe industrial, commercial and public use.	
6.3.1 New Construction		<ul style="list-style-type: none"> • Construct roads to ensure one year ahead of developed timber.

Table 3.1-1: Goals and Commitments in Management Plan 4 TFL 55

Section	Goals	Commitments
6.3.2 Road Maintenance		<ul style="list-style-type: none"> Maintain all active road networks for company, commercial and public use Minimize the environmental impacts of existing road and bridges.
6.3.3 Road Deactivation		<ul style="list-style-type: none"> Ensure that the level of deactivation is consistent with future road use. Ensure that road deactivation minimizes potential impacts on the environment.
6.4.1 Basic Silviculture	Establish and tend stands of ecologically suitable species that maintain site productivity and ensure sustainable timber production while meeting integrated resource objectives.	<ul style="list-style-type: none"> Maintain a regeneration delay period of 2.5 years for appraisal blocks. Continue to regenerate backlog NSR areas subject to available FIA funding or Forests for Tomorrow Funding..
6.4.1.1 Reforestation Methods	Apply the most cost effective reforestation methods that ensure that all harvested blocks are restocked with ecologically suitable coniferous tree species.	<ul style="list-style-type: none"> Maintain stand establishment strategies that focus on prompt reforestation following harvesting. Evaluate alternative reforestation methods through experimental trials.
6.4.1.2 Seed Supply	Maintain a 10 year inventory of ecologically appropriate seed to meet projected seedling requirements for those species not available from the seed orchard program.	<ul style="list-style-type: none"> Annually determine the seed requirements for reforestation.
6.4.1.3 Site Preparation	Ensure that the most ecologically suitable methods of site preparation are used to prepare harvested areas for reforestation or to reduce fire hazard.	<ul style="list-style-type: none"> Continue to use site preparation methods that are ecologically sound and economically viable to meet silvicultural objectives.
6.4.1.4 Silviculture Surveys	Monitor regenerated stands to ensure that the appropriate species and stocking standards are achieved by the free growing stage.	<ul style="list-style-type: none"> Carryout applicable silviculture surveys to ensure that harvested cutblocks and backlog NSR (subject to FIA Funding) areas are satisfactory regenerated and reach free growing stage with the regulatory timeframes.

Table 3.1-1: Goals and Commitments in Management Plan 4 TFL 55

Section	Goals	Commitments
6.4.1.5 Brushing	Temporarily control the growth of competing woody and herbaceous vegetation to ensure adequate survival and growth of preferred crop trees.	<ul style="list-style-type: none"> • Ensure that brushing methods used comply with legislative and regulatory requirements. • Continue to identify cutblocks with potential brush competition prior to harvesting.
6.4.1.6 Forest Investment Account	Ensure that all backlog NSR area and industry outstanding NSR areas achieve free growing status.	<ul style="list-style-type: none"> • Complete reforestation of remaining NSR backlog areas.
6.4.2 Enhanced Silviculture	Enhance second growth stand quality and forest productivity to meet timber harvesting and other forest resource objectives.	<ul style="list-style-type: none"> • Identify potential candidate stands for an enhanced silviculture program subject to FIA or other funding.
6.4.3 Western White Pine Management	Establish disease resistant western white pine stands that meet timber production objectives.	<ul style="list-style-type: none"> • Continue the establishment of western white pine stands in the reforestation program for TFL 55.
6.5 Forest Health	Monitor incidence of insects and disease to protect and enhance short and long term forest productivity of the forest resource.	<ul style="list-style-type: none"> • Continue to assess annually the forest health of the TFL and take control action where required.
6.5.1 Detection	Ensure the early detection of forest pests and disease activity.	<ul style="list-style-type: none"> • Continue with an on-going stand level detection of forest health issues.
6.5.2 Prevention	Maintain their incidence of forest pests and disease at an endemic level by preventing conditions that favour disease build-up and spread.	<ul style="list-style-type: none"> • Continue forest practices that minimize the impact of forest pests and insects.
6.5.3 Control	Focus forest health efforts on stand level detection and control actions in the absence of a district-wide forest health plan.	<ul style="list-style-type: none"> • Continue on-going stand level control actions of pest and disease.
6.6 Fire Protection	Minimize the damage from fire in the working forest and to maximize salvage of timber from fire-damaged stands.	<ul style="list-style-type: none"> • Conduct operations in accordance with current fire regulations.
6.6.1 Fire Prevention	Maintain proper planning and training of employees and contractors to minimize the impact of wildfires.	<ul style="list-style-type: none"> • Continue on-going fire preparedness planning and training program.

Table 3.1-1: Goals and Commitments in Management Plan 4 TFL 55

Section	Goals	Commitments
6.6.2 Fire Detection	Ensure that all fires are detected and reported with a minimum of delay.	<ul style="list-style-type: none"> Continue on-going measures for detection of fire.
6.6.3 Fire Control	Develop fire control strategies to minimize the spread of fire.	<ul style="list-style-type: none"> Continue on-going fire control strategies.
7.0 Integrated Management Strategies	Maintain forest ecosystems and biological diversity that ensures harvest sustainability and long term forest productivity while incorporating the values of stakeholders and aboriginal people.	<ul style="list-style-type: none"> Continue to complete and upgrade resource inventory information for the TFL.
7.1 Visual / Landscape	Incorporate visual management strategies within the TFL in the absence of designated visual quality objectives.	<ul style="list-style-type: none"> Continue to assess visually sensitive viewsapes in consultation with commercial heli skiing operators.
7.2 Cultural and Heritage Values	To identify and protect previously unknown heritage sites through consultation with interested parties including aboriginal people.	<ul style="list-style-type: none"> Protect sites of cultural and archaeological significance.
7.4 Biological Diversity	Maintain sustainable forest ecosystems throughout the TFL that will accommodate all native species.	<ul style="list-style-type: none"> A new VRI has been completed. Complete OGMA placement.
7.5 Soils	Minimize the impact of development and operations on forest soils.	<ul style="list-style-type: none"> Terrain stability hazard mapping (level D) has been complete for operable areas.
7.6 Water	Maintain water quality and quantity of streams with the TFL.	<ul style="list-style-type: none"> Minimize the impact of woodlands operational activities on water quality and quantity.
7.7 Recreation	Ensure that a range of recreational opportunities is available for public use and enjoyment.	<ul style="list-style-type: none"> Co-operate with the MoF and commercial operators to enhance recreational opportunities.
7.8 Wildlife Habitat	Maintain a range of ecosystems and habitats necessary to sustain a diversity of wildlife.	<ul style="list-style-type: none"> Incorporate MAC guidelines into operational plans.
7.9 Fish Habitat	Ensure that the productive capacity of fish-bearing streams is maintained.	<ul style="list-style-type: none"> Continue to co-operate with agency initiated fish habitat enhancement

Table 3.1-1: Goals and Commitments in Management Plan 4 TFL 55

Section	Goals	Commitments
8.0 Public Consultation	Ensure that the stakeholders and First Nations have adequate opportunities for input into strategic and operational plans.	projects. • Continue ongoing public consultation processes.
9.0 Employment and Economic Opportunities	Provide stable sustainable economic opportunities for employees, contractors and communities.	• Maintain economic opportunities.

3.3 STATUS OF MANAGEMENT PLAN MP 3

The management issues that applied to TFL 55, which were a concern to the MoF at that time MP 3 was approved, in 2001 have been largely resolved. A brief summary of the status is described below:

- A new VRI was completed to update the inventory on TFL 55.
- A new operability line assessment has been completed.
- The TFL Annual Reports summarize the performance in the non-conventional areas defined in MP 3. All non-conventional areas engineered in the field for harvesting have been access through conventional logging methods.
- The timber supply analysis contains revised estimates for roads, trail and landings base upon localized information. We will be conducting a more detailed analysis for roads, trails and landings for MP 5.
- Revised minimum harvest ages and merchantability standards are included in MP 4 timber supply information package.
- Regeneration modelling reflects current practice.
- Management practices within riparian areas have been updated to reflect current management practice in the timber supply information package.
- Non-merchantable exclusion criteria reflect current practice over a five-year economic cycle.
- A site productivity study has been completed which provides better local site index data for managed stands.

4.0 MANAGEMENT ISSUES

The list of issues outlined below were used to guide the assessment of strategies in preparing MP4.

4.1 OPERABILITY MAPPING

The operable cutline (OCL) has become outdated. Development planning and harvesting outside and above the OCL has increased in the five past years.

Revised operability mapping is presently being undertaken for MP4. This will be completed in co-operation with Columbia Forest District staff.

The new operability mapping has been completed. The OCL was adjusted to take into account areas above the current OCL where the company had demonstrated performance in harvesting these areas or was field verified as conventionally accessible areas.

4.2 SITE PRODUCTIVITY

The height growth of post harvest regenerated stands on the TFL is potentially under estimated, as a result the mid to long-term timber supply may be under estimated.

A site productivity study is being completed for MP 4 on the ICH and lower elevation of the ESSF on TFL 55.

The site index study is completed, we will have improved site index estimates for managed stands on TFL 55, which will be incorporated into the timber supply analysis.

4.3 FOREST INVENTORY

A new Vegetative Resource Inventory was completed in 2005, this included the Net Volume Adjustment Factor phase.

This new inventory forms the basis for the MP 4 timber supply analysis.

4.4 BC TIMBER SALE OPERATING AREA

Bill 28 affected TFL 55 with the reallocation of 6000m³ AAC to BCTS. Phase 2 of the process is complete with LP and BCTS agreeing to the BCTS operating areas on the TFL.

4.5 MAC PLAN AND HIGHER LEVEL PLAN ORDER

The MAC plan provides guidelines for management decisions on TFL 55. The Revelstoke Higher Level Plan Order (March 2005) establishes legal objectives for biodiversity, Caribou and Grizzly Bear habitat.

5.0 FOREST MANAGEMENT OBJECTIVES

For this management plan L-P will continue with a commitment to responsible forestland stewardship. This corporate commitment reflects recognition of integrated resource management principles that apply to Crown forestland in the province. Forestland use has become a dynamic and increasingly complex issue. Public interest in management of forest resources and their expectation on how it should be managed has heightened although it remains diverse. The company will maintain an open communicative management style with the public.

Corporate Policy on Protection of Environment

Louisiana-Pacific Corporation strives to:

- Meet or surpass the requirements of environmental laws and regulations and to improve the environment.
- Manage natural resources in a responsible and sustainable manner.
- Be environmentally conscious stewards of the land.
- Meet, as verified by third-party audits, the principles recommended to foster multiple-use and the sustainability of world forest resources.
- Conserve non-renewable resources through efficient use and careful planning.
- Properly manage and minimize waste through pollution prevention programs.
- Fully account for environmental considerations in corporate planning, policies and decision-making.
- Continuously improve environmental programs.

Sustainable Forest Management

Louisiana Pacific is committed to responsible forest stewardship and sustainable forest management. 2001 LP's BC operations including TFL 55 were certified to the Sustainable Forestry Initiative standards. In 2005, the LP Western Canada operations were re-certified to the SFI 2005-2009 standard.

Public Consultation

Be open and accessible to the public concerning management of the TFL and provide regular opportunities for them to comment on operational plans. Maintain an open working relationship with local first nations bands.

Timber

Harvest the AAC using economic logging techniques that comply with applicable utilization standards while accommodating non-timber resource values.

Adopt harvest and reforestation strategies to sustain the long-term timber supply and productivity of the working forest.

Forest Health

Maintain the forest in a healthy condition by reducing the activity and outbreaks of pest Infestations and disease.

Fire Protection

Maintain a fire protection program that minimizes losses from wildfires.

Silviculture

Maintain a basic silviculture program that reforests all logged areas in accordance with the Forest Practices Code.

Water Quality

Minimize the potential for any adverse effects of forestry practices on the stream network as it pertains to water quality, quantity, fish and wildlife habitat, recreation and designated water users.

Fish and Wildlife

Ensure that wildlife and fish habitat essential for maintaining and supporting existing species are protected as described by the Forest Practices Code.

Maintain the aquatic biological productivity of streams with resident fish.

Recreation

Ensure that the current broad range of recreational opportunities continue to be available to the public through consultation during the forest development plan review process.

Continue to co-operate with commercial backcountry lodge operators in the delivery of their recreational program offerings.

6.0 TIMBER MANAGEMENT GOALS, COMMITMENTS AND STRATEGIES

This chapter outlines the goal(s), commitments and strategies for timber management. Goals represent the overall goals for each timber management program. The commitments represent the commitments planned to apply during the period of MP4 while strategies represent the action plans for implementing program commitments.

6.1 PROPOSED RATE OF HARVEST

6.1.1 Allowable Annual Cut

The timber supply analysis completed for this management plan provides a basis for the AAC proposed to the provincial Chief Forester. It also shows a projection of timber availability from TFL 55 for the next 250 years. The specifics of the analysis approach including an explanation of the data inputs, yield curves and management assumptions are described in the data information package (Appendix III). The results will be outlined in the Timber Supply Analysis Report.

The net timber harvesting landbase proposed under MP 4 for TFL 55 is 21,444 hectares, or 39% of the productive forest area. The present AAC is 90,000 cubic metres.

From the gross productive forest landbase of 55,103 hectares it is biologically possible to achieve a sustainable, even flow harvest level of about TBD cubic metres per year. After landbase netdowns have been applied, and all the management requirements embodied in the Forest Practices Code and the recommendations from the Minister's Advisory Committee (MAC) report have been applied, the long run harvest level is TBD.

6.1.2 Timber Inventory

The timber inventory has been maintained and updated to December 2004 and was used for the timber supply analysis for this plan.

A new Vegetative Resource Inventory was completed in 2005. This new inventory forms the basis for the MP 4 timber supply analysis.

A site productivity study is being completed for MP 4 on the ICH and lower elevation of the ESSF on TFL 55. The height growth of post harvest regenerated stands on the TFL is potentially under estimated, as a result the mid to long-term timber supply may be under estimated. Once this site index study is completed, we will have improved site index estimates for managed stands on TFL 55, which will be incorporated into the MP 4 timber supply analysis.

See Timber Supply Information Package in Appendix III for Productive Forest Area by Age Class and Productive Forest Volume by Age Class.

6.2 HARVESTING

6.2.1 Twenty Year Plan

A twenty-year plan will be completed with the MP 4 timber supply analysis. It is a strategic level plan that illustrates spatially one feasible harvest option based on the results of the timber supply analysis. The plan includes the BCTS operating areas within TFL 55.

The plan provides a link between the non-spatial assumptions used in the yield analysis for MP 4 and the forest management practices, forest cover constraints and planning guidelines of the Forest Practices Code and the MAC recommendations.

The twenty-year plan confirmed the results of the timber supply analysis for the current management option. The target volumes were successfully located while meeting adjacency and green-up rules. These volumes were achieved in addition to the volumes to be harvested from salvage blocks. The accompanying map illustrates by colour-code the spatial distribution of the proposed openings and the associated road development.

As described in the twenty -year plan report in Appendix VI, the results demonstrate that at the proposed AAC level there is sufficient flexibility to satisfy annual volume requirements and the planning guidelines of the Code. The harvested level illustrated is not constrained by the resource management factors addressed in the plan.

Table 6.2.1.-1: 20-year Plan Harvest Projection

TBD

Period	Landscape Unit		Total Volume (m ³)
	R5 Goldstream	R17 Bigmouth/mica	
1			
2			
3			
4			
Total			

6.2.2 Harvest Planning

Goal

To develop strategic and operational level plans that permit the harvesting of timber in consideration of corporate economic goals, regulatory requirements, silvicultural systems, and integrated resource management strategies.

Commitments

- Ensure that five-year harvest goals are achieved.
- Incorporate second pass cutting into harvest planning where possible.
- Include some alternate partial cut silviculture systems in caribou emphasis areas of the TFL.

Strategies

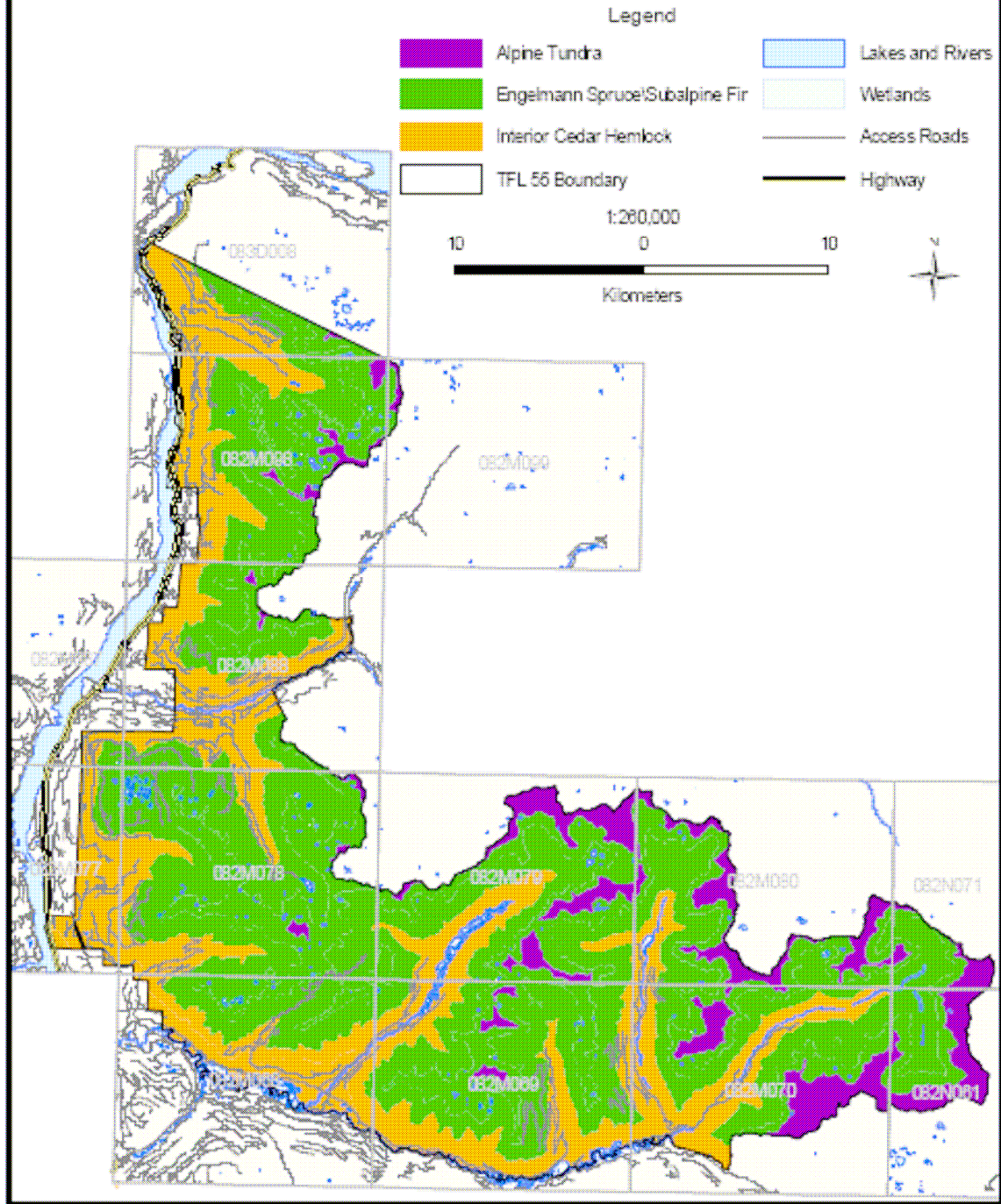
- Incorporate integrated resource management strategies into harvest planning.
- Maintain an open planning process that includes consultation with stakeholders and the public.
- Ensure that all operational plans where required are reviewed by the appropriate government agencies prior to being finalized
- Ensure that planning meets the requirements of the Code and the specific requirements of the MAC plan.
- Ensure that strategic and operational level planning continues to meet harvesting and other resource objectives.
- Incorporate Natural Disturbance Type (NDT 1) planning objectives within the landscape units as per the biodiversity guidebook.

Harvest planning is carried out to achieve a variety of opening sizes. The objective of NDT 1 disturbance type is to maintain a range of small to large (up to 250 ha) similarly aged forest patches on the landscape. The forest patch size distribution applies to both harvest units and the leave areas in the landscape units. Partial cutting and some small clearcuts can be used in NDT 1. Complete reliance on small, dispersed clearcuts and small leave areas, leads to excessive forest fragmentation. Therefore, some larger patches will be cut to create larger openings.

Currently the preferred silviculture system is clearcut with reserves, which represents approximately 90% of the harvest volume. In the Caribou Zone some alternate silviculture systems will be implemented in consultation with Caribou Biologists recommendations.

The Revelstoke HLPO (March 2005) contains legal objectives for planning within Caribou and Grizzly Bear habitat and objectives for biodiversity.

TFL 55 Biogeoclimatic Zones



6.2.3 Harvesting Methods and Season

Goal

To use a variety of harvest methods that are economically feasible, safe for workers and minimizes environmental impacts.

Commitment

- Continue to investigate opportunities for a variety of harvesting systems that incorporate other integrated resource values and minimize soil disturbance.

Strategies

- Continue to use the most appropriate harvesting method while considering terrain, operating season, economic feasibility and integrated resource values and regeneration requirements
- Continue to investigate the economic opportunities for alternative harvesting systems such as multi-span and helicopter to access areas that are not otherwise inaccessible to harvest by conventional methods
- Harvest cutblocks with sensitive soils in the appropriate season using suitable harvest equipment.

The allowable annual cut is harvested by logging contractors using various equipment configurations:

Ground based systems

- Tractor skidding low ground pressure.
- Rubber-tired skidder
- Excavator, hoe chucking

Cable yarding systems

- Hilead tower
- Grapple yarding
- Long line yarding

Helicopter

- Helicopter

Most of the logging is a combination of handfalling and either log length or tree length yarding. Currently about 70 % of the annual harvest is logged by cable systems, 15 % by ground-based systems, 10% from right-of-way logging and 5% by longline and helicopter systems.

6.2.4 Harvesting Priority And Patterns

Goal

To ensure harvesting priorities and patterns consider forest health and log profile objectives in order to create balanced age classes stands in the long term.

Commitments

- Ensure harvesting schedules achieve long term stand structure objectives.
- Continue to incorporate total resource planning into harvesting priorities and patterns.

Strategies

- Design cutblocks to minimize edge blowdown on adjacent leave areas.
- Continue to harvest areas of problem forest types of overmature cedar/hemlock during the term of MP4.
- Disperse harvest operations throughout the TFL where possible.
- Priorize harvesting in areas with insect infestations, disease, fire and blowdown.
- Continue to harvest stands on steep slopes.

6.2.5 Utilization Standards

Goal

Ensure that log utilization meets, manufacturing plant log profile needs, market conditions and coarse woody debris objectives.

Commitment

- Meet efficient economic utilization standards.

Strategies

- Ensure that log utilization standards are met in accordance with the Interior Scaling Regulation (BC Reg 563/78).
- Utilize hardwood species such as cottonwood, and birch if economically feasible.
- Conduct waste surveys of logged blocks to ensure that the utilization levels are met.

Table 6.2.5-1: Utilization Standards

Parameter	Coniferous species
Maximum stump height	30 cm
Diameter stump height	20.0 cm
Diameter breast height	17.5 cm
Minimum top diameter	10.0
Minimum top diameter (Cw>140/year)	15.0
Minimum log length	3.0

6.2.6 Special Forest Products

Goal

Utilize special commercial forest products to create employment and business opportunities.

Commitment

- Explore opportunities for maximizing fibre recovery.

Strategies

- Continue to identify cutblocks and debris piles post harvest for the salvage of incidental cedar volumes suitable for shake blocks.

6.3 Road Network

Goal

To develop and maintain a transportation network that minimizes environmental impacts and provides for safe industrial, commercial and public use.

6.3.1 New Construction

Commitment

- Construct roads to target one year ahead of developed timber.

Strategies

- Ensure that road and bridge design and construction meet regulatory requirements
- Ensure that road and bridges are constructed with full consideration for riparian, hazardous terrain and other resource values
- Ensure proper construction techniques are applied to prevent soil erosion, maintain existing drainage patterns and protect other resource values

Main road access within the TFL has been largely completed except for the tributaries to Big Fish Creek. During the past five years main roads were constructed into the French Creek, Caribou Creek, Stitt Creek, Old Camp and McCulloch Creek drainages. The existing road network and land features are depicted in Figure 3. The detailed locations of roads and bridges existing and planned are displayed on the 1:20,000 scale forest development plan maps. Logs are trucked from the TFL along Highway 23 to Revelstoke and the Trans-Canada highway to various destinations.

6.3.2 Road Maintenance

Commitments

- Maintain all active road networks for company, commercial and public use.
- Minimize the environmental impacts of existing road and bridges.

Strategies

- Continue to maintain a monitoring and inspection program for existing roads and bridges.
- Inspect temporary and semi-permanent deactivated roads annually or at a frequency based on an assessment of risk
- Ensure remedial maintenance work is scheduled to minimize environmental impacts and within designated in-stream timing windows
- Inspect bridges as per regulations using a qualified inspector

Maintenance includes grading road surfaces, clearing ditches and cleaning culverts to ensure adequate water flow, inspecting and maintaining bridge crossings, removing slide and slough material, brushing and stabilizing road banks. Frequency of road maintenance is dependent on the frequency of usage and weather conditions.

In compliance with the MOF open-road policy, public access and road usage is free and at one's own risk. Posted signs advise the public to take safety precautions when using active logging roads. There is a joint-use access agreement with Beaumont Timber, whose private timberlands adjoin the TFL boundary at several points.

6.3.3 Road Deactivation

Commitments

- Ensure that the level of deactivation is consistent with future road use.
- Ensure that road deactivation minimizes potential impacts on the environment.

Strategies

- Ensure that temporary deactivation is carried out on roads that are planned to have regular use suspended for a period of less than five years.
- Ensure semi-permanent or permanent deactivation is carried out on roads that are located on terrain with a moderate or high likelihood of landslides and will

not be used for more than five years or as determined by a qualified professional.

- Review road deactivation plans with the MOF and MELP where required by regulations.

Deactivation plans are prepared specifically for each road system. A program to carry out semi-permanent and permanent deactivation on old road systems commenced with Forest Renewal BC funding in 1998. These road systems were constructed pre-Code and posed a risk to streams within the TFL and along Highway 23 north. This program was completed in 2001.

6.4 SILVICULTURE

6.4.1 Basic Silviculture

Goal

Establish and tend stands of ecologically suitable species that maintain site productivity and ensure sustainable timber production while meeting integrated resource objectives.

Commitments

- Maintain a regeneration delay period of 2.5 years for appraisal blocks.
- Continue to regenerate backlog NSR areas, subject to available FIA Funding

Strategies

- Comply with the Regulations in meeting free growing regeneration standards.
- Continue to achieve regeneration delay within regulatory timeframes.
- Design and implement silviculture regimes to minimize the time required to meet green-up and free growing status, without compromising other goals.
- Establish regeneration with mixtures of species ecologically suited to the growing site.
- Utilize A Class seed where available.
- Use regeneration techniques and practices that will maintain or increase productivity.

Basic silviculture will be completed for all cutblocks harvested after October 1, 1987 in accordance with applicable silviculture regulations. Reforestation costs for this

program are paid by L-P. Silviculture treatments for cutblocks harvested prior to October 1, 1987 will be paid for by the MOF, through funding sources such as FIA.

Achievements of the basic silviculture program will be outlined in the TFL annual report. On completion of silviculture activities on an appraisal area, L-P will submit RESULTS reports to the MOF. Between 1999 and 2004 946.4 hectares were harvested and 989.3 hectares were planted.

Opening NSR balance at Dec 31, 1999: 435.2 ha.

Backlog:	135.1 ha
Appraisal:	300.1 ha

Closing NSR balance at Dec 31, 2004: 347.5 ha.

Backlog:	106.4 ha
Appraisal:	241.1 ha

6.4.1.1 Reforestation Methods

Goal

Apply the most cost effective reforestation methods that ensure that all harvested blocks are restocked with ecologically suitable coniferous tree species.

Commitments

- Maintain stand establishment strategies that focus on prompt reforestation following harvesting.
- Evaluate alternative reforestation methods through experimental trials.
- Evaluate the use of alternative ecologically suitable tree species such as western larch and indigenous broad leaf species.

Strategies

- Ensure reforestation scheduling is consistent with site series as identified in Site Plans and/or Silviculture Prescriptions.
- Ensure all cutblocks are restocked to target stocking standards with a mixture of ecologically suitable coniferous species.

- Ensure cutblocks with significant potential brush competition are planted within one growing season of harvesting.
- Ensure all cutblocks are restocked within two to three growing seasons following harvesting.
- Consider alternative reforestation trials such as include cluster planting or other non-uniform spacing.
- Evaluate district MoF western larch trials to determine if this species has potential for use on the TFL.
- Select planting stock based on an evaluation of site forest health condition such as spruce terminal weevil and Armillaria root disease.

Supplementary natural regeneration fill-in, which occurs on many sites, will be recognized providing that this regeneration consists of preferred or acceptable species. Alternative reforestation trials, which would involve cluster planting or other non-uniform spacing, would be experimental and would not be large enough to affect the status of any plantation. Experience gained from these trials may be implemented operationally.

A variety of conifer species will be planted to ensure that a mixture of species is reforested both by planting and through the recruitment of natural regeneration. It will result in a change in species order re-established in the regenerated stands compared to the natural stands. Generally, this species conversion is projected to result in a shift in type groups and a wider mixture of species in regenerated stands, as illustrated in Table 6.4.1.1-1

Table 6.4.1.1-1: Regenerated Species/Type Group

Natural stand	Regenerated stand	
	Planted	Natural regeneration
Fir/hemlock	Fir/Cedar/White Pine	Hemlock/spruce/ birch/aspens
Hemlock/cedar	Fir/Spruce/White Pine/Cedar	Hemlock/Cedar/Birch/Aspen
Balsam/spruce	Spruce/Balsam/Mountain Hemlock	Mountain Hemlock/Balsam
Cedar/hemlock	Spruce/Fir/White pine/Cedar	Hemlock/Cottonwood/Birch/Aspen

The distribution of tree species to be planted will be approximately: spruce 50%, red cedar 20%, Douglas-fir 15%, Western white pine 10%, balsam (subalpine fir) 5%. Natural regeneration of hemlock, subalpine fir and red cedar will continue to complement stocking in plantations. Western larch is currently being planted on a trial basis in the

Columbia Forest District. L-P will review the results and participate in trial planting of larch if results seem favourable, and appropriate sites can be identified.

Reports of spruce terminal weevil (*Pissodes strobi*) damaging older spruce plantations suggest that extensive planting of homogeneous stands of spruce should be questioned. Species selection will also need to consider the presence of Armillaria root disease. Where root disease infection has been noted, preference will be given to planting species that are less susceptible. This includes, for example, practices such as planting Western larch (noted above) and Cedar in mixture with other species, only planting Douglas Fir in specific microsites in order to avoid areas of high risk. Broadleaves, specifically paper birch (*Betula papyifera*) will also be considered. When tree species to be planted deviate from the Nelson region stocking standards, the justification for this will be reviewed with the MOF. It is not intended to undertake wide scale planting of species not covered by the present stocking standards.

Broadleaf species grow extremely well in some site series in the interior cedar/hemlock subzones. The range of site series for which broadleaves are suitable is noted in the stocking standards. Black cottonwood, paper birch and trembling aspen can have an important role as a seral species in and around riparian zones. Other species may be acceptable in silviculture prescriptions although they may not contribute to free growing density. Retaining or establishing broadleaf species, either as pure species groups or mixed in with conifer regeneration, contributes to maintaining vegetation diversity and wildlife habitat. It is not intended to re-establish cutblocks exclusively with broadleaf species.

Once a cutblock has met its regeneration delay milestone, the subsequent establishment and growth of the young regenerated stand will be monitored over a period of 5 to 15 years by silviculture surveys, until free growing status is reached.

6.4.1.2 Seed Supply

Goal

Maintain a suitable inventory of ecologically appropriate seed to meet projected seedling requirements for those species not available from the seed orchard program.

Commitment

- Annually determine the seed requirements for reforestation.

Strategies

- Continue to purchase seed orchard seed (Class A) from the MoF, to use the best seed available, and achieve the highest possible genetic gains.
- Monitor cone crops annually to determine abundance and seed viability
- Co-ordinate monitoring and collection with MoF and/or other licensees where complimentary programs can be identified
- Ensure cone collections are made in accordance with the Tree Cone and Tree Seed Regulation (BC Reg 284/82).
- Continue to use genetically improved seed for most spruce and Western White pine planting. Continue to make cone collections or seed purchases to ensure appropriate seed availability.

The seed supply goal will provide an adequate seed inventory to cover fluctuations in cone crops. Seed year periodicity varies from two to eight years depending on the species. Since 1996 almost all of the spruce seed has been supplied from Class A seed orchard. Douglas-fir seed orchard is expected to be operationally available soon. Limited quantities of Fdi are available now, but not enough to meet any program needs. Western larch seed became available initially in 2000. L-P will not attempt to keep an inventory of seed that duplicates a seed orchard supply. Currently, monitoring is ongoing for balsam (*Abies lasiocarpa*).

Table 6.4.1.2-1 summarizes the seed inventory as of Oct, 2005 for the Malakwa Location of Louisiana-Pacific Canada Ltd. This table does not include two Cw seedlots and one Fdi seedlot, which were picked this year (2005) and have not been tested and registered yet.

Table 6.4.1.2-1: Seed Inventory

Species	Seed Class	Elevation Range (m) Seedlots	Elevation Range (m) Covered	# Seedlots*	Potential Seedlings (000's)
Fdi	B	600-1200	400-1500	9	3,069
Cw	B	675-1100	475-1400	8	2,454
Pli	B	650-1400	550-1700	5	728
Pli	B+	900	700-1200	1	185
Pw	B	670-775	1-1475	2	737
Pw	A	950	1-1400	1	184
Sx	B	746-1550	546-1950	10	16,245
Sx	B+	450	1-1000	1	87
Bl	B	1400-1800	1200-2100	6	1,282
Hm	B	1300-1500	1100-1800	2	445
Lw	B	600	400-900	1	140
Ep	B	550	350-850	1	89
Total				47	25,645
Usable Total					8,515

6.4.1.3 Site Preparation

Goal

Ensure that the most ecologically suitable methods of site preparation are used to prepare harvested areas for reforestation or to reduce fire hazard.

Commitment

- Continue to use site preparation methods that are ecologically sound and economically viable to meet silvicultural objectives.

Strategies

- Incorporate a variety of site preparation methods such as spot burning, broadcast burning, mechanical site preparation or chemical treatments.
- Ensure that site preparation treatments consider forage species and other habitat attributes important for wildlife use are retained.
- Ensure that mechanical site preparation treatments comply with site disturbance guidelines prescribed in a Site Plan.
- Ensure that slash loading and distribution are properly evaluated when using burning (spot or broadcast) to meet silviculture objectives.

As a general practice, there has been a reduction in the use of burning on the licence area both to recruit natural regeneration and so that forage species and other habitat attributes important for wildlife use are retained. Some Site Plans now require that large woody or organic debris and wildlife trees, singly or in clumps, be retained and that hardwoods be left standing.

Mechanical site preparation creates plantable spots, breaks up woody debris and reduces the fire hazard. It will normally be used on clearcut sites considered sensitive to burning or where weather conditions negate burning. There are few sites on the TFL suitable for mechanical treatment due to slope constraints and sensitive site conditions prevalent in the interior wetbelt.

6.4.1.4 Silviculture Surveys

Goal

Monitor regenerated stands to ensure that the appropriate species and stocking standards are achieved by the free growing stage.

Commitment

- Carryout applicable silviculture surveys to ensure that harvested cutblocks and backlog NSR areas are satisfactory regenerated and reach free growing stage with the regulatory timeframes.

Strategies

- Ensure that the status and survey results for each cutblock are entered into the silviculture record management system to monitor the status and stocking of regeneration as well as progress towards completing basic silviculture obligations.
- Ensure that the attainment of regeneration delay and the fulfilment of freegrowing is reported to RESULTS as an ESF submission.

Silviculture surveys will be done at various stages of the stand establishment phase. The survey results are also used to plan any additional treatments to ensure that basic silviculture objectives are achieved. The following silviculture surveys will be undertaken to ensure that regenerated stands reach free-growing status.

Table 6.4.1.3 Silviculture Surveys

Survey	Purpose	Timing	Intensity
Plantability	Assess site prep needs, confirm or modify planting prescription	First season after harvesting	Walk through to estimate plantable spots
Regeneration	Assess natural regen species and stocking. All sites scheduled for natural regen.	At midpoint of regen delay	One plot / ha or > on small blocks
Regen/Survival	Assess survival and regen status of plantations to determine replanting and brushing.	6 months, 1 year, 3 years after planting. 5 years	Walk through, modified plots Formal survey
Brushing	Determine brush competition oft pre-identified brush hazard sites.	Scheduled as necessary after regen/survival surveys.	Walkthrough in spring, minimum 5 plots/stratum
Regen Performance Assessment	Preliminary assessment of free growing status at all sites	Three years before early free growing date.	Variable, depending on the stand.
Free Growing	Determine free growing status.	Between early and late FG dates in SP	Minimum 5 plots/stratum and one plot/3ha.

Free Growing

This is the final survey used to assess free growing status of a cutblock. The dates for the earliest and latest possible free growing survey are given in each Site Plan. For TFL 55 this is commonly 9 to 15 years after the start of harvesting. If free-growing standards have been met, the basic silviculture obligations have been completed. If not, further silviculture treatments may be prescribed. The results of free growing surveys will be reported to the MoF within six months of completion. A summary of free growing status will be included in the TFL annual report.

6.4.1.5 Brushing

Goal

Temporarily control the growth of competing woody and herbaceous vegetation to ensure adequate survival and growth of preferred crop trees.

Commitments

- Ensure that brushing methods used comply with legislative and regulatory requirements.
- Continue to identify cutblocks with potential brush competition prior to harvesting.

Strategies

- Identify potential brush competition in the site plan.
- Conduct brushing surveys during the first three growing seasons after stand establishment of all potential cutblocks requiring brushing to develop timely brush control treatments.
- Develop strategies to reduce the potential need for brushing by:
 - Identification and monitoring of potential brush problem sites.
 - Immediate site preparation and planting.
 - Planting of large sturdy seedlings.
 - Use of 'time of planting' fertilizer, where appropriate.
- Experiment with vegetation management techniques and timing.
- Ensure brushing treatments near riparian areas are carefully planned.
- Incorporate community values and minimize chemical use when considering chemical herbicides.

The re-growth of hardwoods and woody brush species after harvesting can be considered as part of the natural vegetative diversity that occurs during the re-vegetation phase. The vegetation complexes also serve as preferred habitat and browse for wildlife, particularly bears, deer, moose and birds, and provide shade for fish streams. Shrub species, such as mountain box, red osier dogwood, willow and huckleberry, are important food sources for wildlife. Brush control prescriptions, to the extent possible, will allow for the retention of forage species that do not adversely affect the establishment of the conifer crop.

Brushing treatments commonly used include:

- Manual brushing and girdling
- Mechanical clearing
- Herbicide application by aerial and ground spraying

L-P prefers to use manual or mechanical treatments before selecting a herbicide treatment. However, it is recognized that the judicious use of herbicides has a role in vegetation management and is often the most efficient and effective treatment option. For the most part, herbicide treatment is more likely to be spot brushing within a cutblock, rather than a broadcast application.

6.4.1.6 Forest Investment Account (FIA)

Goal

Ensure that all backlog NSR area and industry outstanding NSR areas achieve free growing status.

Commitment

- Complete reforestation of remaining NSR backlog areas, subject to provision of government funding, as the financial responsibility rests with the government.

Strategy

- Continue to survey, and treat regenerated backlog areas where appropriate.

The Forest Renewal Initiative started by Westar Timber Ltd in 1990 is essentially complete; all the outstanding backlog has been surveyed or regenerated by 1999. The current backlog NSR is 106 hectares. Most of this area will probably be reclassified after surveying, as wildlife/riparian constraints preclude severe and expensive reforestation

treatments that would be required to increase conifer stocking to target levels. The effect of not increasing stocking on these blocks will be taken into account in the timber supply review. Surveys and treatments will continue and diminish over the period of MP4. Free growing survey results will be reported in the annual report as they are completed.

6.4.2 Enhanced Silviculture

Goals

To enhance second growth stand quality and forest productivity to meet timber harvesting and other forest resource objectives.

Commitment

- Identify potential candidate stands for an enhanced silviculture program.

Strategies

- Secure Enhanced Forestry Program funds (whenever such funds are available) for stands that quality.
- Identify candidate stands and develop potential stand tending treatments that can include:
 - Spacing of juvenile stands less than 40 years of age to reduce excessive stocking level, improve subsequent growth and increase preferred species composition.
 - Pathological pruning of white pine juvenile stands either as an independent treatment or in conjunction with other stand treatments, to minimize losses from white pine blister rust infestation (*Cronartium ribicola*).
 - Pruning of other coniferous species to increase stand value.
 - Conifer release to improve the growth of the intended crop trees.

Enhanced Silviculture refers to stand treatments that will shorten rotation age, increase volume harvested and increase quality beyond that achieved through basic silviculture. Stand treatments may include juvenile spacing, pruning, fertilization and tree improvement. These treatments are optional, not being legislated or mandated anywhere.



Projects will be undertaken subject to funding from FIA or any available funding source. Candidate stand information will be reviewed and updated as required in order to utilize the funds in a manner which best meets the objectives of any available funding program, and follows regional guidance for enhanced forestry priority setting. The focus will be to determine benefits that can be realized at a stand level and that affect the long-term sustained yield positively. The mandate of FIA is also to consider social and employment implications of projects meeting the priority setting criteria based on forest management criteria.

6.4.3 Western White Pine Management

Goal

Establish disease resistant western white pine stands that meet timber production objectives.

Commitment

- Continue the establishment of western white pine stands in the reforestation program for TFL 55.

Strategy

- Evaluate the availability and suitability of the white pine resistant seed from MOF and Canadian Forestry Service for the TFL reforestation program

Western white pine (*Pinus monticola*) is highly valued as a commercial conifer species. Trees regenerated from 'natural stand' seed are susceptible to white pine blister rust (*Cronartium ribicola*), which has limited its use in reforestation. Blister rust 'resistant' seed is currently purchased from Moscow, Idaho, and is being used in the reforestation program for the TFL. The MOF and Canadian Forest Service also have a white pine tree improvement program with 'resistant' trees in their seed orchard now producing, with seed occasionally available to purchase.

6.5 FOREST HEALTH

Status

A variety of insects and pests are found in the forests in the licence area. The incidence and level of endemic activity is higher in old growth stands. Periodic outbreaks have been a concern but, to date, TFL 55 has not suffered major volume losses from outbreaks of pests or disease. Hemlock looper was active in the southern section of the Columbia Forest District during 1992-93 and again in 2001/2002, only minor incidence was noted on TFL 55. Root disease, in particular Armillaria, is thought to be widespread throughout the Columbia district and is having an influence on operational practices. Douglas fir bark beetle has been noted in isolated areas in the Mica Creek drainage.

In regenerated forests there has been no noticeable increase in pests or disease. White pine blister rust infects western white pine regeneration and is the most notable pathogen. Root collar disease and black army cutworm have periodically caused mortality problems periodically in new plantations. Spruce terminal weevil is a potential problem in spruce plantations. It is recognized that, generally as regenerated stands get older, pest activity could increase.

Goal

Monitor incidence of insects and disease to protect and enhance short and long term forest productivity of the forest resource.

Commitment

- Continue to assess annually the forest health of the TFL and take control action where required.

Strategies

- Ensure that the forest health status is monitored annually and that control measures and activities planned
- Continue to monitor forest health conditions in regenerated cutblocks.
- Ensure that forest health issues continue to be incorporated in the planning of harvesting activities.

6.5.1 Detection

Goal

To ensure the early detection of forest pests and disease activity.

Commitment

- Continue with an on-going stand level detection of forest health issues

Strategies

- Co-operation and consultation with MoF specialist forest health staff. This will ensure pooling of knowledge, exchange of data and technology transfer.
- Conduct an annual assessment of the forest health condition in conjunction with other monitoring activities.
- Initial reconnaissance of proposed cutblocks will include data collection on present and potential pest activity. The information will be used in preparing site plans and harvesting plans.
- Carry out surveys of infected area for monitoring pest activity or for use in preparing control plans and site plans. Silvicultural surveys will also include collecting information on the forest health status of cutblocks.

6.5.2 Prevention

Goal

To maintain their incidence of forest pests and disease at an endemic level by preventing conditions that favour disease build-up and spread.

Commitment

- Continue forest practices that minimize the impact of forest pests and insects.

Strategies

- Practising biological control techniques when available.
- Reducing inoculum potential through salvage logging and slash disposal.
- Reforestation with a mixture of species ecologically suited to the site.
- Maintaining knowledge of advances in pest control technology.

6.5.3 Control

Goal

Focus forest health efforts on stand level detection and control actions in the absence of a district-wide forest health plan.

Commitment

- Continue on-going stand level control actions of pest and disease.

Strategies

- Control/Salvage plans will be drawn up in response to a build-up or outbreak of pest activity.
- Priority will be given to salvage harvesting or clean-up of blowdown patches since blowdown in mature stands can be the cause of outbreaks of bark beetle infestation.
- Establish plantations with mixed species rather than with pure spruce since spruce terminal weevil has the potential to become problematic in spruce plantations at lower elevations.
- Delay conifer release until spruce plantations has surpassed the height range considered most susceptible to attack.
- Identify high risk plantations and conduct surveys to monitor infestation levels.

Experience with techniques to control root rots in plantations is limited. Presently the company plants a mixture of species as well as planting more susceptible species further away from potentially infected stumps. Species which have been shown to slow the spread or root rot, such as Paper Birch, or which are able to more effectively resist root rot such as Cedar will be managed where appropriate to minimize the losses.

6.6 FIRE PROTECTION

Historically the Columbia Forest District and the Upper Columbia region in general, have a high incidence of wildfires. The region experiences a high incidence of lightning associated with significant rainfall resulting in small average fire size.

Goal

Minimize the damage from fire in the working forest and to maximize salvage of timber from fire-damaged stands.

Commitment

- Continue the fire protection program to protect the licence area from damage caused by uncontrolled wildfires.

Strategies

- Ensure fire management and prevention measures are in accordance with the Forest Fire Prevention and Suppression Regulation (*BC Regulation 169/95*)

6.6.1 Fire Prevention

Goal

Maintain proper planning and training of employees and contractors to minimize the impact of wildfires.

Commitment

- Continue on-going fire preparedness planning and training program.

Strategies

- Ensure that an updated fire protection pre-organization plan is prepared and made available to the South-East Fire Control Centre every year. The plan must include:
 - Organization and command of division and contract personnel.

- Communication network, including the MOF.
- Location of fire equipment and logistical support.
- Company personnel weekend contact list.
- Initial reporting action after being notified of a fire.
- Ensure that protection awareness and preparedness is reflected in all operational activities including planning, harvesting, road construction and silviculture.
- Continue the high standard of fibre recovery to minimize the build-up of woody debris.
- Assess cutblocks for fuel loading and roadside accumulations following harvesting.
- Consider prescribed burning as a fuel management tool.

6.6.2 Fire Detection

Goal

Ensure that all fires are detected and reported with a minimum of delay.

Commitment

- Continue on-going measures for detection of fire.

Strategies

- Monitor the fire weather index and fire danger class (DGR) to track fire hazard conditions during the fire season.
- Conduct operations within danger classes according to regulations.

6.6.3 Fire Control

Goal

Develop fire control strategies to minimize the spread of fire.

Commitment

- Continue on-going fire control strategies.

Strategies

- Ensure fire tool caches are properly stocked.
- Ensure contractors carry the tools required by fire regulations.
- Ensure all fire equipment is maintained in good operating condition throughout the fire season.
- Ensure fire control efforts are co-ordinated with the MOF.

Fire tool caches are maintained in Malakwa and Golden, which store an array of pumps, hoses, tools and other fire fighting equipment. Prior to commencement of the fire season, each year the inventory will be checked and replenished, as necessary.

Initial fire attacks are handled by the MoF. At the request of the MoF, the company will assist with either initial attack or the continued fighting of an existing fire. Operational fires are attacked immediately by L-P and its contractors.

7.0 INTEGRATED RESOURCE MANAGEMENT GOALS, COMMITMENTS and STRATEGIES

Goal

Maintain forest ecosystems and biological diversity that ensures harvest sustainability and long term forest productivity while incorporating the values of stakeholders and aboriginal people.

Commitment

- Continue to complete and upgrade resource inventory information for the TFL.

Strategies

- Ensure that strategic and operational planning meet legislative and regulatory requirements
- Consider public and first nations values in strategic and operational planning
- Ensure that planning incorporates the most recent resource inventory information
- Plan woodlands operational activities minimize to impact on other forest resources

7.1 VISUAL/LANDSCAPE

Goal

Incorporate visual management strategies in specific locations of the TFL.

Commitments

- Continue to assess visually sensitive viewsapes in consultation with commercial heli skiing operators.

Strategies

- Design cutblocks visible from the heli-skiing lodges to manage visual impacts while providing skiing opportunities.

- Continue consultation with commercial recreation businesses in the integration of timber harvesting with heli-skiing activities.

The MAC plan does not make recommendations for scenic area designations within TFL 55. The Goldstream valley and its side drainages continue to be popular for commercial heli-skiing.

7.2 CULTURAL AND HERITAGE

Goal

To identify and protect previously unknown heritage sites through consultation with interested parties including aboriginal people.

Commitment

- Protect sites of cultural and archaeological significance.

Strategy

- Refer Forest Development Plans to applicable First Nations groups as identified by the MoF. Archaeological assessments will be carried out on specific area as identified during information sharing process.
- Notify the appropriate government agencies in the event that archaeological or historic sites are discovered.

Heritage values are associated with the activities of the native peoples that used the Upper Columbia area and the early exploration and settlement by Europeans. In the 1880's and 1890's a placer gold mine was operated at French Creek. There was other mining activity around the Groundhog Basin area. These sites are now attracting some local attention for their historic significance.

Sites of cultural and archaeological significance were identified as part of the original recreation inventory. However, it cannot be certain that all sites have been identified. Archaeological and historic sites are protected under the Heritage Conservation Act. The discovery of more unknown historic sites is possible.

7.3 MINERALS

Levels of Mining activity have been cyclical over the past 30 years on the TFL. Recently placer gold mining is active again in the French Creek area. There has also been renewed interest in gold mining in the Groundhog Basin area. It is expected that the MoF will advise L-P on any new exploration, mining plans or proposed new mine road development.

7.4 BIOLOGICAL DIVERSITY

Goal

Maintain sustainable forest ecosystems throughout the TFL that will accommodate all native species.

Commitments

- A new VRI was completed for the TFL.

Strategies

- Develop total resource plans for operational areas
- Incorporate the principles of the Biodiversity guidebook in operational planning
- Ensure planning and harvesting activities maintain large organic debris, wildlife tree patches (WTP) and snags where safe to do so
- Maintain a variety of silvicultural systems such as clearcutting with reserves
- Ensure planning and harvesting activities respect riparian habitats and maintain water quality
- Incorporate the recommendations of the MAC plan and Revelstoke Higher Level Plan Order.
- Maintain diverse species in reforested cutblocks (natural and planted)

7.5 SOILS

Goal

Minimize the impact of development and operations on forest soils

Commitment

- Terrain stability hazard mapping (level D) for operable areas has been done.

Strategies

- Ensure that terrain stability field assessments are carried out for all unstable areas noted in the FDP and unstable areas identified in the field.
- Ensure that road design and construction provide adequate measures to stabilize cut and fill slopes using grass seeding, armouring or other stabilizing measures.
- Ensure operational activities meet the required soil disturbance guidelines.

7.6 WATER

Goals

Maintain water quality and quantity of streams with the TFL.

Commitment

- Minimize the impact of woodlands operational activities on water quality and quantity.

Strategies

- Install drainage structures concurrent with subgrade construction where practicable to maintain existing watercourses.
- Ensure techniques such as hay bales, silt fences and other sediment control methods are used in constructing roads where runoff may impact on fish streams.
- Curtail operational activities during periods of heavy precipitation where runoff may impact on streams.
- Ensure culverts are properly installed with catch basins, ditch blocks and armouring of outflows fillslopes to minimize sediment transfer
- Ensure that installation of bridges and culverts that require in-stream construction work have agency approval or are consistent with local guidelines.
- Consult hydrologists and geotechnical specialists for areas where stream flow and water production may be affected by operational activities



There are no community watersheds or domestic water licence users within the TFL. There are four industrial use water licences adjacent to the TFL. (Appendix IIc) Rivers and streams within the TFL at present are not important as domestic water supply sources nor are they popular for recreational fishing. Recreational fishing is concentrated along the Revelstoke Reservoir.

7.7 RECREATION

Goals

Ensure that a range of recreational opportunities is available for public use and enjoyment.

Commitment

- Co-operate with the Ministry of Tourism, Sport & the Arts, Recreation, Sites & Trails Section (MoTSA) and commercial operators to enhance recreational opportunities.

Strategies

- Consider recreation values in planning development activities.
- Communicate with heli-ski operators regarding harvesting plans.

The MoTSA provides and maintains all recreation sites within the TFL and the Columbia Forest District.

The recreation opportunity spectrum was updated for MP3 to reflect increased in access and to incorporate changes in feature related recreational activities. (Appendix V.)

Recreation use by local people has remained consistently low. The main activities by local residents is hunting, fishing and camping. The use of recreation sites and trails, and self-directed dispersed activities, is expected to increase modestly during the next five years. The most notable recreational use is by the commercial operator, Canadian Mountain Holidays who have lodges. Heli-skiing through the winter and heli-hiking during the summer have increased in popularity with international tourists.

7.8 WILDLIFE HABITAT

Goals

Maintain a range of ecosystems and habitats necessary to sustain a diversity of wildlife.

Commitments

- Incorporate MAC and Revelstoke Higher Level Plan Order wildlife guidelines into operational plans.
- Note – Ungulate Winter Range has been removed from TFL 55, because Wildlife Management concerns are now focused on Caribou.

Strategies

- Ensure that silviculture systems contribute to wildlife management objectives
- Incorporate *Identified Wildlife Management Strategy* associated with endangered, threatened or regionally important species within the TFL.
- Ensure Caribou Habitat retention is consistent with Revelstoke HLPO. Work with Caribou Biologist to identify highest value caribou retention areas.

There is an abundance of wildlife throughout the TFL that range from small rodents and furbearers to big game species. Registered trapline holders continue to be concerned with maintaining sustainable harvest levels of furbearing animals. L-P will continue to refer plans to trappers during the preparation of forest development plans. A list of registered trapline holders is in Appendix II(b).

Total resource plans will continue to be developed where required for critical wildlife species (eg: Caribou). This will ensure that blocks are spatially and temporarily distributed with networks of mature timbered areas.

7.9 FISH HABITAT

Goal

Ensure that the productive capacity of fish-bearing streams is maintained

Commitment

- Continue to cooperate with agency initiated fish habitat enhancement projects.

Strategies

- Continue to upgrade stream classification and fisheries inventory information in areas planned for development.
- Incorporate a range of basal area retention to protect and maintain riparian management areas
- Apply Riparian Management Area Guidebook strategies where appropriate
- Ensure in-stream timing windows are adhered to during construction of bridges or culverts over fish streams.

MoE and DFO are responsible for managing the fisheries resource. L-P will continue the co-operative working relationship with these agencies during the period of MP4.

TFL 55 Back Country Recreation



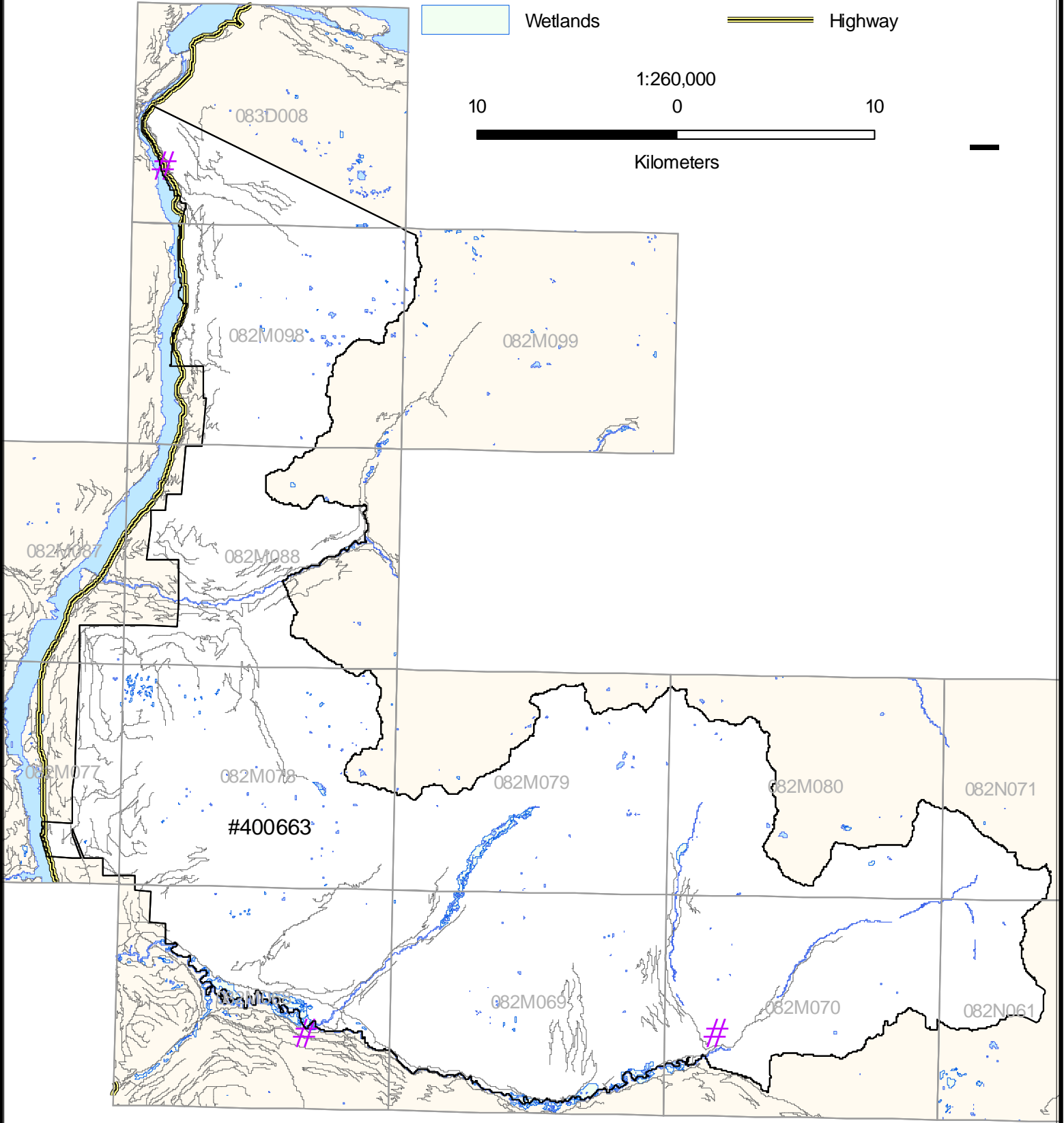
Legend

- # CMH Heli-skiing Lodge
- Lakes and Rivers
- Wetlands
- TFL 55 Boundary
- Access Roads
- Highway

1:260,000

10 0 10

Kilometers



8.0 PUBLIC CONSULTATION

Goal

Ensure that the stakeholders and First Nations have adequate opportunities for input into strategic and operational plans.

Commitment

- Continue ongoing referral and information sharing processes.

Strategies

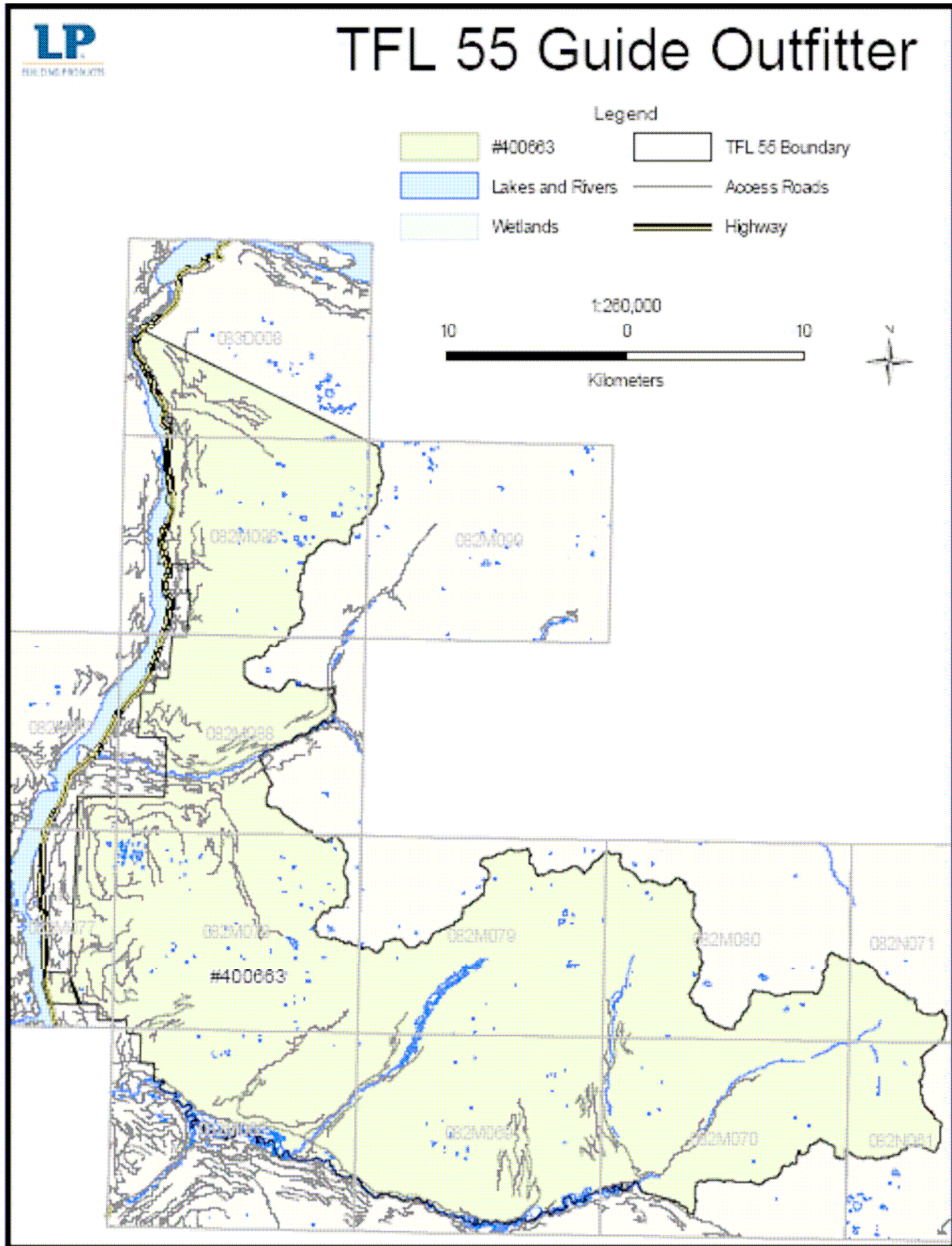
- Maintain existing review and referral process for forest development plans and management plans.
- Maintain contact with community resource groups.
- Participate in an educational liaison program with other forest companies.

L-P recognises the interest from the communities in the issues identified through the MAC and KBLUP planning processes. The company will continue to be open and accessible to the public concerning information on the management of TFL 55 and to hold public planning information meetings when needed.

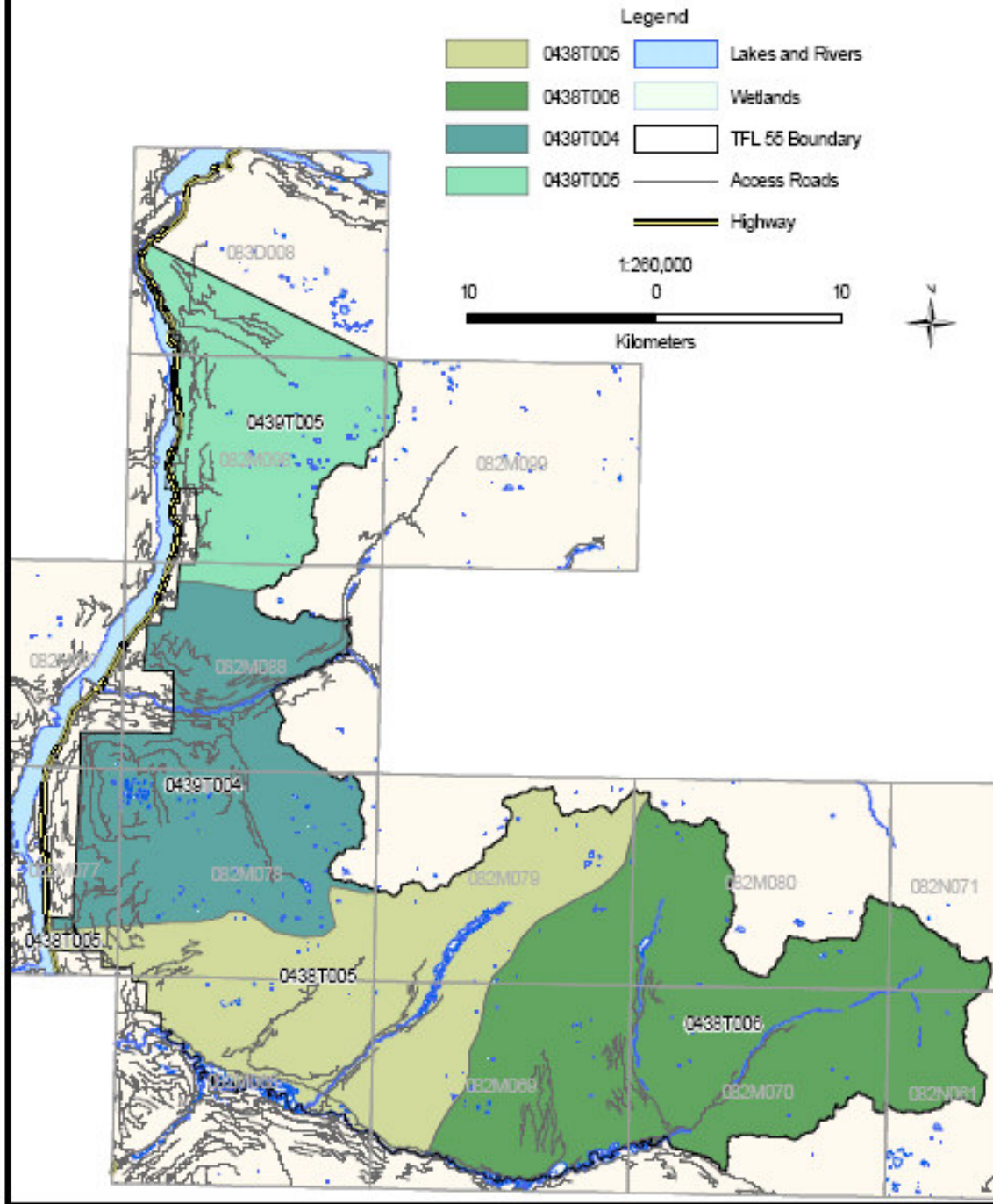
8.1 LICENCED RESOURCE USERS

Non-timber crown tenure holders within the TFL include a commercial backcountry lodge operator, trappers and a guide outfitter. These tenure holders are provided with an opportunity to review and comment on MP 4 and Forest Development plans and amendments.

Figure 5: Guide Outfitters



TFL 55 Trapper



8.2 FIRST NATIONS

The Ministry of Forests has provided a list of First Nations that have expressed an interest in the area surrounding the TFL. There are three tribal councils, Ktunaxa/Kinbasket Tribal Council, Shuswap Nation Tribal Council and the Okanagan Nation Alliance. Additionally there are three bands, Akisqnuq First Nation, Okanagan Indian Band, and the Shuswap Band that will be included in the information sharing process. As part of the information sharing process reasonable efforts will be made to meet with the affected First Nations to review the plan and solicit comments prior to the plan finalization. The Ministry of Forests will be invited to participate in any meetings between LP and the First Nation groups. Any written comments will be considered in the final plan and the First Nation will be informed of how the comments were considered. A summary will be provided to the Ministry of Forests regarding meetings, comments received and how the comments were considered in the final plan.

8.3 REVIEW STRATEGY

MP 4 is advertised locally in Revelstoke and Sicamous and the plan is available to review and comment for a 60 day period. Any comments will be considered and incorporated into the final plan where appropriate. A summary of comment is in appendix VI.

9.0 EMPLOYMENT AND ECONOMIC OPPORTUNITIES

Goal

Provide economic opportunities for employees, contractors and communities

Commitment

- Maintain economic opportunities

Strategies

- Preference for employment will be given to qualified local residents if available when vacancy arise.
- Preference for employment will be given to local forestry consultants except when specialized services are required that are not available locally.
- Provide employment opportunities for qualified First Nations.

9.1 CURRENT EMPLOYMENT

L-P is a major employer in the Revelstoke and Golden region. It is committed to stable employment and community well-being provided by its business activities. Its business provides employment in manufacturing and woodlands operations. L-P operates a laminated veneer lumber, plywood and veneer plants and an electricity co-generation plant at Golden.

The TFL is an important source of logs for this plant. About 5% of the logs used in the Golden plant come from the TFL the remainder of the profile is used for log trades or sold on the open market.

New employment opportunities in the company's operations are generated primarily through employee turnover. For the past five years a First Nations contractor has been employed in road maintenance/construction operations. Approximately 500 people are directly employed by L-P in the Golden and Malakwa operations .

Table 9.1-1: Current Employment

Job Category	Permanent	Contractors/ Consultants
Golden plant	450	2
Malakwa		
Construction, logging & hauling	2	80
Forest management	6	10
Silviculture	1	25
Subtotal	9	115
TOTAL	459	117

10.0 RESOURCE INVENTORIES

Resource inventories have been revised and updated by L-P during the past five years. The updating is a result of collating existing information and collecting new information. All resource inventories have been entered in the digital inventory database for use in the timber supply analysis. This section describes the present status of resource inventories. A summary of resource inventories is set out in table 10-1.

- a) Timber
The new Vegetative Resource Inventory including Net Volume Adjustment Factor was complete in 2005.
- b) Terrain
Terrain stability hazard mapping (Level D) covering much of the operable, productive landbase was completed in 1998.
- c) Fisheries
Stream classification of main and secondary streams was completed in 1998. Remaining unclassified streams are generally greater than 20% gradient and are updated based on sampling for operational plans.
- d) Wildlife
Complete coverage of caribou habitat has been provided by the MAC plan.
- e) Visual Landscape Management
Since no scenic areas have been designated within the TFL under the MAC plan a visual landscape inventory is not required.
- g) Recreation
The existing recreation inventory was updated with MP 3.
- h) Cultural/Heritage
No cultural or heritage features have been identified within the TFL at this time. Mapping of archaeological sites was done within the Columbia River basin but many of these sites were later flooded by the creation of the Mica reservoir (Kinbasket Lake).
- i) Range
There is no significant range use within TFL 55.

Table 10-1: Status of Resource Inventories

RESOURCE	HAVE?	COVER NAME	SPECIFICATION	DATA SOURCE	DATA FORMAT	COVERAGE%
Anadromous Fish	Yes	MC_Fish	LP_Operational	Mirkwood/LP	digital	100%
Archaeological Overview	No					
Biogeoclimatic Classification	Yes	BIOGEO	Zones, subzones & variants	MoF	digital	100%
Community Watershed	No					
Environmentally Sensitive Area	Yes	in FIP files	MoF standard inventory	MoF	digital	100%
Forest Cover - VRI	Yes	VRI	MoF standard inventory	2004 Updated by LP	digital	100%
Guides / Trappers	Yes	TRAP	MELP		digital	100%
Landscape Units	Yes	MAC_LU		From the Mac coverage	digital	100%
Minerals	Yes		Ministry of Energy & Mines	MINFILE	digital	100%
Operability Classification	Yes	OPER	2005 update	LP	digital	100%
Planning Cells	Yes	PLANCELL	MoF standard inventory	MoF	digital	100%
Recreation Inventory Update	Yes	REC	MoF standard inventory	SWG 1999	digital	100%
Recreation Resource Inventory	Yes	REC	MoF standard inventory	SWG 1999	digital	100%
Recreation Sites & Trails	No					
Streams	Yes	MC_Fish	2005 Update	LP	digital	100%
Terrain Hazard Classification	Yes	TERRAIN	Level D Terrain Stability Hazard		digital	100%
TRIM Contours	Yes	CONTOUR	1:20 scale			
Visual Inventory	No					
Wildlife	Yes	MAC	Caribou	From the Mac coverages	digital	100%

11.0 ANNUAL REPORT

An annual report is prepared detailing the accomplishments for the calendar year. It describes harvesting, road construction, forestry and silviculture, resource assessments, protection, recreation.

Copies of the annual report are distributed to the provincial chief forester, MoF regional manager and Columbia Forest District Manager.

12.0 REVISIONS

During the period of MP4, situations or events may arise that require a change to this management plan. The company may prepare amendments to the plan on its own initiative. Also, as provided for in section 2.34 of the tree farm licence document, the provincial chief forester may require amendments or revisions due to circumstances that render a management plan inadequate. This may include situations where there is:

- Damage to the timber from natural forces.
- Approval and/or replacement of a land and resource management plan.
- Serious or unforeseen damage to the natural environment.
- A change in AAC or other special circumstances.

13.0 IMPLEMENTATION

MP4 provides guidance for a forest development plan, other operational plans and related resource projects. It is through these plans that the goals and strategies are delivered. Performance is monitored through the TFL annual report. Quality assurance concerning compliance with the Code is provided through L-P's Sustainable Forestry Initiative Program.

APPENDICES



APPENDIX I

History of Selkirk Tree Farm Licence 55



APPENDIX II

TFL 55 Operability



APPENDIX II(a)

List of Water Licences



APPENDIX III

Information Package for Timber Supply Analysis



APPENDIX III(a)

Timber Supply Analysis Report



APPENDIX IV

Twenty-year Development Plan



APPENDIX V

Recreation Inventory



APPENDIX VI

Public Consultation Report



Appendix VII

Net Volume Adjustment Factor Phase 2 Report

