

MANAGEMENT PLAN 3

for Tree Farm Licence 48

held by Canadian Forest Products Ltd.

(Plan Period – October 15, 2001 – October 14, 2006)

Submitted for approval to the

**Provincial Chief Forester
British Columbia Ministry of Forests**

4th Floor, 595 Pandora Avenue
Victoria, BC V8W 3E7

by



Canadian Forest Products Ltd.

Peace Region
Chetwynd Operation
Chetwynd, BC
V0C 1J0

June 14, 2001

File: 19710-55/TFL 48 MP 3

September 20, 2001

Warren Jukes, R.P.F.
Management Forester, Peace Region
Canadian Forest Products Ltd.
P.O. Box 180
Chetwynd, British Columbia
V0C 1J0

Dear Warren Jukes:

Your proposed Management Plan (MP) No. 3 for Tree Farm Licence (TFL) No. 48, dated June 14, 2001, for the period October 15, 2001 to October 14, 2006, is hereby approved.

I have found the management plan to be very well written, particularly in respect of the framework of criteria and indicators. I am pleased to note that your strategies and commitments within that framework are generally explicit and measurable. It is apparent that your company has put a great deal of effort into this high-quality, very professional document.



I make the following observations and requests:

1. I note your commitment to complete the vegetation resources inventory, and I anticipate confirmed inventory parameters for the next allowable annual cut determination.
2. On or before March 31st of each year, please provide the Dawson Creek Forest District district manager with a schedule of operations to eliminate all remaining pre-1982 not-sufficiently-restocked (NSR) backlog areas by November 30, 2008.
3. With regard to the non-replaceable timber sale licences, please note that the district manager and the Licensee must agree upon areas of Schedule B land for forest development purposes, in accordance with paragraph 1.12 of the TFL 48 agreement.
4. In the timber supply analysis, I note that your estimate for non-recoverable losses is equivalent to approximately ten percent of the allowable annual cut. This is a significant factor, and I would ask that you work with the Dawson Creek Forest District district manager to confirm or vary this estimate in time for the next timber supply analysis.

Warren Jukes

5. I encourage you to continue working with the regional working group that is formulating recommendations on boreal mixed wood management in the northeast part of the province.
6. On an on-going basis, please provide the Dawson Creek Forest District district manager with copies of the minutes of meetings held by the Canadian Forest Products-Chetwynd Public Advisory Committee, for CSA Certification.

In accordance with Section 8 of the *Forest Act*, I have determined the allowable annual cut (AAC) for TFL 48 to be 580 000 m³, effective September 20, 2001. Of this AAC I attribute:

- 525 000 m³ to coniferous and deciduous trees within coniferous-leading stands; and
- 55 000 m³ to deciduous and coniferous trees within deciduous-leading stands.

The attached rationale describes the factors I considered in determining this new AAC. Also attached, is an AAC summary which projects up to the year 2006 and indicates the amount that the district manager is entitled to dispose of by way of non-replaceable timber sale licences.

Notwithstanding this approval of the new management plan, please note that if and when landscape unit objectives are established under authority of the *Forest Practices Code of BC Act*, it may be necessary to amend the plan to address any associated inadequacies. If you have any questions about this matter, please contact Charlie Klasen, Timber Tenures Forester with the Resource Tenures and Engineering Branch at (250) 387-1692.

Yours truly,



Ken Baker
Deputy Chief Forester

Attachments: 2

pc: Ministry of Forests:

Henry Benskin, Director, Research Branch
Jim Gowriluk, Acting Director, Resource Tenures and Engineering Branch
Gary Townsend, Director, Timber Supply Branch
Ray Schultz, Regional Manager, Prince George Forest Region
Danny Way, District Manager, Dawson Creek Forest District

Ministry of Water, Land and Air Protection:

Rod Backmeyer, Senior Habitat Biologist, Peace Subregion

Ministry of Sustainable Resource Management:

Jeff Monty, Acting Manager, Terrestrial Information Branch

TFL 48 AAC SUMMARY
MANAGEMENT PLAN NO. 3
CANADIAN FOREST PRODUCTS LTD.
 (cubic metres)

	2001 ^a (Prorated)	2002	2003	2004	2005	2006 ^b
TFL:	532 625	580 000	580 000	580 000	580 000	580 000
Schedule "B":	478 343	525 000	525 000	525 000	525 000	525 000
Partition to coniferous						
- Non-Replaceable Timber Sale Licences	58 630	58 630	58 630	58 630	58 630	58 630
- Licensee	419 713	466 370	466 370	466 370	466 370	466 370
Partition to deciduous:	54 282	55 000	55 000	55 000	55 000	55 000
Non-replaceable Timber Sale Licences						
Total Licensee	419 713	466 370	466 370	466 370	466 370	466 370

Notes:

^a For the year 2001, the AAC has been pro-rated to include the previous determination information up to and including September 19, 2001, and the new determination information effective September 20, 2001.

^b Section 8 of the *Forest Act* requires a new determination for TFL 48 by September 20, 2006. The AAC for the year 2006 will be pro-rated based on the existing AAC and the next AAC determination.

Note that the current 5-year cut control period began on January 1, 1997.

PREFACE

Management Plan 3 for the Chetwynd Tree Farm Licence 48 was prepared according to the TFL 48 licence agreement and considered the Licensee Manual for TFL Management Plan Preparation (British Columbia Ministry of Forests). This plan updates and builds upon two preceding editions of management plans or management and working plans.

Although this public document is intended to be useful to a wide variety of readers, emphasis is placed towards:

- Employees of Canadian Forest Products Ltd. who will use the plan to guide plans and activities;
- Government agency representatives involved in the approval process of this Management Plan 3.

Several authors and many reviewers contributed in developing key components of this plan. Preparation of this plan was coordinated by:

Warren Jukes, RPF
Management Forester, Peace Region

Andrew de Vries
Biologist / First Nation Coordinator, Peace Region

Don Rosen
Forest Inventory Supervisor, Chetwynd Operation

Dave Harrison, RPF
Manager: Strategic Issues,
Corporate Forestry and Environment

ACKNOWLEDGEMENTS

Many people contributed greatly in the successful completion of this plan. Development of this project began in January 1997. It was a complex undertaking involving key milestones for reports, strategies, sub-plans and products.

Specific individuals who provided valuable contributions throughout the development of this plan are shown below:

ALLAN, Andrew	ARSENAULT, Mike	BEAULAC, Ben
BEDARD, Dave	BEDARD, Wendy	BLAKEY, Graham
CODERRE, Mark	ERICKSON, Jon	FAZEKAS, Tony
GRINDAL, Scott	LEHR, Allen	MILLER, Mike
NELSON, Marie	NEUMEIER, Wes	NORRIS, Carol
PEASE, Wendy	PEDERSON, Aaron	SABOURIN, Dennis
SAUGSTAD, Evan	SAUGSTAD, Greg	SCHUETZ, Rob
TAYLOR, Guy	WALLIN, Gail	WOODING, Paul

We would like to thank the Public Advisory Committee members and advisors for their continued input to the CSA process and providing input on the draft document.

PHOTO CREDITS

CLARK, Mark	Photo 14
ERICKSON, Jon	Photo 7
LANDSONG HERITAGE CONSULTING	Photo 8
ROSEN, Don	Photo 5
TAYLOR, Guy	Photo 1
SABOURIN, Dennis	Photo 3, 12, and 13
SAUGSTAD, Evan	Photos 2, 4, 6, 9, 10, and 11

EXECUTIVE SUMMARY

The purpose of the Management Plan 3 (MP 3) document is to define the objectives, goals, commitments, and strategies for Tree Farm Licence (TFL) 48 for the period October 15, 2001 to October 14, 2006. Overall, MP 3 uses past performance towards predetermined milestones to measure success, involves the public to establish future objectives, and provides commitments and strategies to ensure those objectives are met. MP 3 represents a suite of tools that we can use to develop broad resource objectives to meet explicit site-specific expectations on TFL 48.

TFL 48, also known as the Chetwynd TFL, is held by Canadian Forest Products Ltd. (Canfor) and comprises five supply blocks in the western half of the Dawson Creek Forest District in the Prince George Forest Region. The blocks are clustered around the communities of Chetwynd, Hudson's Hope and Tumbler Ridge and cover approximately 643,500 hectares. For the most part, the blocks border the Dawson Creek Timber Supply Area (TSA), but they also share boundaries with the Mackenzie, Fort St. John and (for a very short distance) Prince George TSAs. Additionally, a substantial portion of the TFL (67 percent) overlaps the operating area of Pulpwood Agreement (PA) 13, issued to Louisiana-Pacific Canada Ltd.

In July of 1999, Canfor formally announced its commitment to seek sustainable forest management certification of the company's forestry operations under the Canadian Standards Association Sustainable Forest Management System standard CAN/CSA-Z809-96. The Sustainable Forest Management Plan presented within this document and its implementation is intended to fulfil that commitment for TFL 48. TFL 48 was registered to the CSA standard in July 2000.

The CSA standard CAN/CSA-Z809-96 requires that sustainable forest management planning be carried out in consultation with those directly affected by or interested in forest management on the defined forest area (DFA). Our Environment Policy commitment has been interpreted and extended to include the involvement of the public in the setting of local values, goals, indicators and objectives. The Chetwynd Public Advisory Committee is the body that has been developed to provide the necessary local input.

There have been some additional significant developments regarding the TFL during the term of the current Management Plan (MP 2). These include:

- The completion of many strategic inventories
- The inclusion of the Rice property to the TFL
- Changes to the landbase resulting from the acceptance of the LRMP
- A memorandum of understand between Louisiana-Pacific Canada Ltd. and Canfor regarding the management of deciduous leading stands
- The elimination of approximately 10,400 hectares of backlog NSR.

The estimated sustainable harvest levels indicate that there may be an additional increase attributable to the coniferous leading stands by 68,300 m³ to 528,300 m³ and that 54,000 m³ from deciduous leading stands can be maintained.

TABLE OF CONTENTS

PREFACE	III
ACKNOWLEDGEMENTS	V
PHOTO CREDITS	V
EXECUTIVE SUMMARY.....	VII
TABLE OF CONTENTS.....	IX
LIST OF FIGURES	XIII
LIST OF PHOTOGRAPHS.....	XIII
LIST OF TABLES	XIV
1 INTRODUCTION.....	1
1.1 PURPOSE	1
1.2 DESCRIPTION OF THE TFL	1
1.3 HISTORY	2
1.4 LICENCE HOLDER AND ADMINISTRATION.....	3
1.5 SUSTAINABLE FOREST MANAGEMENT	4
2 RESOURCE INVENTORIES.....	9
2.1 FOREST MANAGEMENT INFORMATION SYSTEMS	9
2.2 TFL 48 RESOURCE INVENTORIES	9
2.2.1 <i>Vegetation Resources Inventory</i>	9
2.2.2 <i>Terrestrial Ecosystem Mapping</i>	10
2.2.3 <i>Physical Operability</i>	11
2.2.4 <i>Biogeoclimatic Ecological Classification</i>	11
2.2.5 <i>Wildlife And Wildlife Habitat</i>	11
2.2.6 <i>Fish And Fish Habitat</i>	12
2.2.7 <i>TRIM II</i>	13
2.2.8 <i>Visual Landscape Inventory</i>	13
2.2.9 <i>Recreation</i>	14
2.2.10 <i>Cultural Heritage</i>	14
2.2.11 <i>Growth and Yield</i>	14
3 MANAGEMENT OBJECTIVES.....	17
3.1 CANFOR MANAGEMENT OBJECTIVES	17
3.2 CUSTOMER RELATIONS	17
3.3 SUSTAINABLE FOREST MANAGEMENT	17
3.4 SFM INDICATORS AND OBJECTIVES.....	18
3.4.1 <i>Forest Types and Seral Stage Distribution</i>	19
3.4.2 <i>Patch Size Distribution</i>	25
3.4.3 <i>Protected Area by Seral Stage</i>	27
3.4.4 <i>Species at Risk</i>	29
3.4.5 <i>Habitat Supply for Indicator Species</i>	32
3.4.6 <i>Disease Transmission to Sheep</i>	34
3.4.7 <i>Collection and Use of Registered Seed</i>	35
3.4.8 <i>Incidence of Fire, Windfall, Insects and Disease</i>	35

3.4.9	<i>Percent of a Harvested Area Reforested</i>	36
3.4.10	<i>Minimum Harvest Age</i>	37
3.4.11	<i>Wildlife Tree Patches</i>	38
3.4.12	<i>Old Growth Management Areas</i>	39
3.4.13	<i>Coarse Woody Debris</i>	40
3.4.14	<i>Habitat Connectivity</i>	41
3.4.15	<i>Area of the TFL Occupied by Permanent Access Structures</i>	42
3.4.16	<i>Number of Reportable Spills</i>	43
3.4.17	<i>Use of Environmentally Friendly Lubricants</i>	45
3.4.18	<i>Soil Productivity Measures</i>	45
3.4.19	<i>Soil Degradation</i>	46
3.4.20	<i>Seedling Growth or Establishment</i>	47
3.4.21	<i>Soil Disturbance Surveys</i>	48
3.4.22	<i>Area in Cutblock Managed as RRZ or RMZ</i>	49
3.4.23	<i>Area of a Stream Affected by Harvesting and Road Construction</i>	51
3.4.24	<i>Sediment Levels</i>	52
3.4.25	<i>Stream Flows</i>	53
3.4.26	<i>Forest Health</i>	54
3.4.27	<i>Allowable Annual Cut</i>	54
3.4.28	<i>Sawmill LRF, CRF and Shipment of Mini-Chips</i>	55
3.4.29	<i>Harvest Levels / Volumes</i>	56
3.4.30	<i>Waste</i>	57
3.4.31	<i>Timber Harvesting Utilization Standards</i>	58
3.4.32	<i>Area of Forested Land</i>	59
3.4.33	<i>Investment in New Technology, Capital Maintenance and Construction</i>	60
3.4.34	<i>Economic Contribution to Local Communities and Contractors</i>	61
3.4.35	<i>Animal Unit Months</i>	63
3.4.36	<i>Visual Landscape Inventory</i>	64
3.4.37	<i>Level of Public Acceptance</i>	65
3.4.38	<i>Back Country Condition</i>	67
3.4.39	<i>Habitat Supply for Botanical Forest Products</i>	69
3.4.40	<i>Public Advisory Committee</i>	70
3.4.41	<i>Participation in LRMP</i>	71
3.4.42	<i>LRMP and Land Use Plans</i>	72
3.4.43	<i>Proactive Consultation Process</i>	72
3.4.44	<i>Archaeological Impact Assessments</i>	73
3.4.45	<i>Aboriginal Liaison</i>	74
3.4.46	<i>Incorporate Objectives of Klin Se Za into FDP and MP</i>	75
3.4.47	<i>Aboriginal Employment</i>	75
3.4.48	<i>FDP, PMP and MP</i>	75
3.4.49	<i>Public Enquiry Forms</i>	77
3.4.50	<i>Level of Public Comments</i>	77
3.4.51	<i>Spatial and Temporal Models</i>	79
3.4.52	<i>Number of Recreational Trails and Campsites</i>	81
3.5	MANAGEMENT AND UTILIZATION OF THE TIMBER RESOURCE	82
3.5.1	<i>Management Goals</i>	82
3.5.2	<i>Physical Operability</i>	82
3.5.3	<i>Harvesting Methods</i>	84
3.5.4	<i>Felling, Bucking and Utilization Specifications</i>	86
3.5.5	<i>Economic Operability</i>	86
3.5.6	<i>Proposed AAC</i>	87
3.5.7	<i>Mixed Wood Fibre Strategy</i>	89
3.5.8	<i>Integration with SBFEP</i>	90
3.6	FOREST FIRE	90
3.6.1	<i>Prevention and Suppression</i>	90

3.6.2	<i>Prescribed Fire</i>	91
3.6.3	<i>Fuel Management</i>	91
3.7	FOREST HEALTH.....	91
3.7.1	<i>Disease Management</i>	91
3.7.2	<i>Pest Management</i>	91
3.8	SILVICULTURE	92
3.8.1	<i>Silviculture Systems</i>	92
3.8.2	<i>Basic Silviculture</i>	93
3.8.3	<i>Elimination of Pre-1982 Backlog Areas</i>	98
3.8.4	<i>Site Rehabilitation</i>	98
3.9	ROADS	99
3.9.1	<i>Construction</i>	99
3.9.2	<i>Maintenance</i>	99
3.9.3	<i>Deactivation</i>	99
3.9.4	<i>Road Rehabilitation</i>	99
3.10	RESEARCH AND DEVELOPMENT.....	99
3.10.1	<i>Wildlife Research</i>	99
3.10.2	<i>CFS /NSERC /SSHRC Forest Research Partnership</i>	100
4	OTHER RESOURCE USERS	103
4.1	CONSULTATION.....	103
4.2	ROLES AND RESPONSIBILITIES OF OIL, GAS AND MINING	103
5	COMPARISON SUMMARY BETWEEN MP 2 AND MP 3	105
5.1	INVENTORIES.....	105
5.2	RICE PROPERTY.....	105
5.3	LANDBASE.....	106
5.4	CSA CERTIFICATION	106
5.5	MANAGEMENT OF DECIDUOUS LEADING STANDS.....	106
5.6	INTEGRATION WITH SBFEP.....	106
5.7	HARVEST LEVELS (CURRENT AND PROJECTED)	106
5.8	ECONOMIC OPPORTUNITIES	107
5.9	THE PROTECTION AND CONSERVATION OF NON-TIMBER VALUES.....	107
6	IMPACT SUMMARY OF IMPLEMENTING MP 3	109
6.1	HARVEST LEVELS.....	109
6.2	ECONOMIC OPPORTUNITIES	109
6.3	EMPLOYEES AND CONTRACTORS	109
6.4	NON-TIMBER VALUES	109
7	PUBLIC REVIEW STRATEGY FOR MP 3	111
7.1	PUBLIC AND AGENCY INVOLVEMENT	111
7.1.1	<i>Summary of comments received from the assessment of MP 2</i>	111
7.1.2	<i>Public Advisory Committee</i>	111
7.1.3	<i>Summary of comments received from the assessment of draft MP 3</i>	112
8	REFERENCES	113
8.1	LITERATURE.....	113
8.2	PERSONAL COMMUNICATIONS	113
9	APPENDICES.....	115
9.1	SUSTAINABLE FOREST MANAGEMENT MATRIX	
9.2	TERMS OF REFERENCE FOR CHETWYND PUBLIC ADVISORY COMMITTEE	
9.3	VEGETATION RESOURCE INVENTORY GROUND SAMPLING PLAN	
9.4	PHYSICAL OPERABILITY MAPPING AND STABILITY INDEX	

- 9.5 (ACCEPTED) TIMBER SUPPLY ANALYSIS INFORMATION PACKAGE
- 9.6 STREAM CLASSIFICATION TOOL - TFL 48
- 9.7 REPORT ON THE VISUAL LANDSCAPE INVENTORY FOR TFL 48
- 9.8 RECREATION LANDSCAPE ANALYSIS REPORT FOR TFL 48
- 9.9 CROSS REFERENCE OF MOF AND CSA REQUIREMENTS
- 9.10 WILDLIFE SPECIES KNOWN OR EXPECTED IN TFL 48
- 9.11 TIMBER SUPPLY ANALYSIS
- 9.12 TWENTY YEAR PLAN
- 9.13 AGENCY AND PUBLIC REVIEW
- 9.14 MANAGEMENT OF DECIDUOUS LEADING STANDS – MOU WITH LP
- 9.15 PRE – 1982 BACKLOG SILVICULTURE STRATEGY
- 9.16 TFL 48 2000 FDP OLD SERAL MANAGEMENT STRATEGY
- 9.17 SFM ANNUAL REPORT
- 9.18 MAP FOLIO
 - 9.18.1 *TFL 48 Overview*
 - 9.18.2 *Biogeoclimatic Information (e.g. Zone, Subzone and Variant)*
 - 9.18.3 *LRMP Resource Management Zones*
 - 9.18.4 *Protected Area Strategy Information for TFL 48*
 - 9.18.5 *Draft Landscape Unit and Biodiversity Emphasis Options*
 - 9.18.6 *ALR and Range Tenures*
 - 9.18.7 *Trapper and Guide Areas*
 - 9.18.8 *Recreation / Landscape Inventory (1994)*
 - 9.18.9 *Recreation Inventory*
 - 9.18.10 *Visual Landscape Inventory (2000)*
 - 9.18.11 *Terrain Classification*
 - 9.18.12 *Physical Operability*
 - 9.18.13 *Terrain Stability (SINDEX)*
 - 9.18.14 *Seral Stages 1960 – 2000 – 2020*

LIST OF FIGURES

Figure 1: Tree Farm Licence 48	2
Figure 2: Canfor's Operations.....	4
Figure 3: Canfor's Mission Statement	5
Figure 4: Canfor's Environment Policy.....	6
Figure 5: Canfor's Forestry Principles	7
Figure 6: Early Seral Patch Summary for TFL 48.....	26
Figure 7: 1960-2000-2020 Seral Stage Summary for TFL 48	40

LIST OF PHOTOGRAPHS

Photo 1: Grizzly bear is one of 12 species being modeled on the TFL.	11
Photo 2: Alternative silviculture systems may be used to sustain seral stage targets.	21
Photo 3: Temporary roads are rehabilitated to minimize reductions from the landbase.	43
Photo 4: Harvesting prescriptions are developed for Riparian Areas.....	50
Photo 5: Utilization of timber at our Chetwynd facility is important.....	56
Photo 6: Selective logging minimizes impact on visual resources.....	67
Photo 7: Backcountry conditions exist throughout the TFL.....	68
Photo 8: Elder Max Desjarlais Coring a Blazed Tree	73
Photo 9: Grapple yarding is used to address steep or sensitive sites.	84
Photo 10: Sortyards are used to eliminate landings.	85
Photo 11: Irregular shelterwood is one of the many silvicultural systems used on the TFL.	93
Photo 12: We reforest all our harvested areas within on average two years.	95
Photo 13: Sheep grazing is one of several brush control treatments.	97
Photo 14: The Rice Property will be returned to predominantly coniferous forests in the TFL.	105

LIST OF TABLES

Table 1: Species Selected for Habitat Modeling and Some Of the Criteria for Their Selection	12
Table 2: Growth and Yield Plots on TFL 48	15
Table 3: Description of Forest Types	19
Table 4: Forest Types March 2000	19
Table 5: Seral Stage Distribution by Proposed Dawson Creek Forest District Landscape Unit Boundaries	23
Table 6: LUPG Patch Size by Natural Disturbance Type Targets	25
Table 7: Early Seral Patch Size 1960 – 2000 – 2020	26
Table 8: Current Status of Seral Stages Within Protected Areas as of July 2000	28
Table 9: Wildlife and Vascular Plant Species of Concern in Canadian Forest Products Ltd. TFL 48	30
Table 10: Summary of Alternative Silviculture Systems in the 2000-2005 FDP	33
Table 11: Summary of large scale disturbances in the 2000-2005 FDP	33
Table 12: Permanent Access Structures in TFL 48	42
Table 13: Spill Reporting Levels	44
Table 14: Average Site Index by Leading Species	45
Table 15: Free to Grow Status as of April 2000	47
Table 16: Recommended Allowable Soil Disturbance Within the Net Area to be Reforested (NAR)	48
Table 17: Peak Flows Hazard Index as determined by IWAPs	51
Table 18: Planned Watershed Restoration Works For 2000	52
Table 19: Potential Sediment Monitoring Methodologies	53
Table 20: Annual Allowable Cut and Long-Term Harvest Level	55
Table 21: Actual Recorded and Allowable Annual Cut Summary	57
Table 22: Close Utilization Standards	58
Table 23: Reductions to Land Base Due to Other Uses (Excluding Roads)	59
Table 24: Canfor's Contribution to Local Communities	61
Table 25: Animal Unit Months on TFL 48	63
Table 26: Area of ROS Class by PAS and SMZ's	69
Table 27: Physical Operability by Slope Class and Harvest System	82
Table 28: Physical Operability by Slope Class and Gross Area (ha)	83
Table 29: Utilization Specifications	86
Table 30: Low Site Exclusion Limits	86
Table 31: Problem Forest Types	87
Table 32: Total Area Harvested to March 2000 from Deciduous Leading Stands	89
Table 33: Forest Type Distribution Within TFL 48	89
Table 34: Landbase Comparison between MP 2 and MP 3	106

1 INTRODUCTION

1.1 PURPOSE

The purpose of the Management Plan 3 (MP 3) document is to define the objectives, goals, commitments, and strategies for TFL 48 for the period October 15, 2001 to October 14, 2006. Overall, MP 3 uses past performance towards predetermined milestones to measure success, involves the public to establish future objectives, and provides commitments and strategies to ensure those objectives are met. MP 3 represents a suite of tools that we can use to develop broad resource objectives to meet explicit site-specific expectations on TFL 48.

MP 3 is organized according to the following sections:

- *Section 1 introduces MP 3 and TFL 48.*
- *Section 2 describes and summarises the various inventories for the TFL.*
- *Section 3 outlines management objectives and articulates Canfor's vision to manage TFL 48 in accordance with responsible and sustainable forest management.*
- *Section 4 specifies consultation with other resource users.*
- *Section 5 summarises the changes between MP 2 and MP 3.*
- *Section 6 discusses the impact of implementing MP 3.*
- *Section 7 summarises public and agency involvement during the development of MP 3.*
- *Section 8 provides a list of references and literature cited.*
- *Section 9 - Appendices provide background and support the initiatives, standards and procedures discussed in the plan.*

1.2 DESCRIPTION OF THE TFL

TFL 48, also known as the Chetwynd TFL, is held by Canadian Forest Products Ltd. (Canfor) and comprises five supply blocks in the western half of the Dawson Creek Forest District in the Prince George Forest Region. The blocks are clustered around the communities of Chetwynd, Hudson's Hope and Tumbler Ridge and cover approximately 643,500 hectares. For the most part, the blocks border the Dawson Creek Timber Supply Area (TSA), but they also share boundaries with the Mackenzie, Fort St. John and (for a very short distance) Prince George TSAs. Additionally, a substantial portion of the TFL (67 percent) overlaps the operating area of Pulpwood Agreement (PA) 13, issued to Louisiana-Pacific Canada Ltd.

The TFL ranges from 54° to 56° longitude and 120° to 122° latitude with the eastern portions of the TFL located in the Alberta Plateau while the western portion is within the Rocky Mountains. The northeastern parts of the TFL lie on flat or gently rolling terrain in the Boreal White and Black Spruce biogeoclimatic zone. Further west and south the licence area enters the lee side of the Rocky Mountains, and the more rugged terrain there falls in the Engelmann Spruce-Subalpine Fir, Sub-Boreal Spruce and Alpine Tundra biogeoclimatic zones. This diversity of terrain and climate has led to considerable variation in tree species and productivity. The principal commercial species are white spruce and aspen in the northeast, and white spruce, lodgepole pine, subalpine fir, aspen and cottonwood in the mountainous areas to the west and south.

The communities in the area are Chetwynd (over 3000), Tumbler Ridge (over 2300), Hudson's Hope (over 1,100), Saulteau (over 180), West Moberly (approximately 70) and Moberly Lake (over 100). Of these, Chetwynd, the site of Canfor's sawmill, is the most economically dependent upon harvesting operations in TFL 48. Other economic activities in the area include oil and gas, mining, hydroelectric power generation, agriculture, trapping, outdoor recreation and public service.

A requirement of the CSA standard CAN/CSA-Z809-96 (CSA 1996) is to define "a specific area of forest, land and water delineated for the purposes of registration of the Sustainable Forest Management System". Canfor has chosen to define TFL 48 as the Defined Forest Area (DFA) for the purposes of certification. The terms DFA and TFL will be used interchangeably throughout this document.

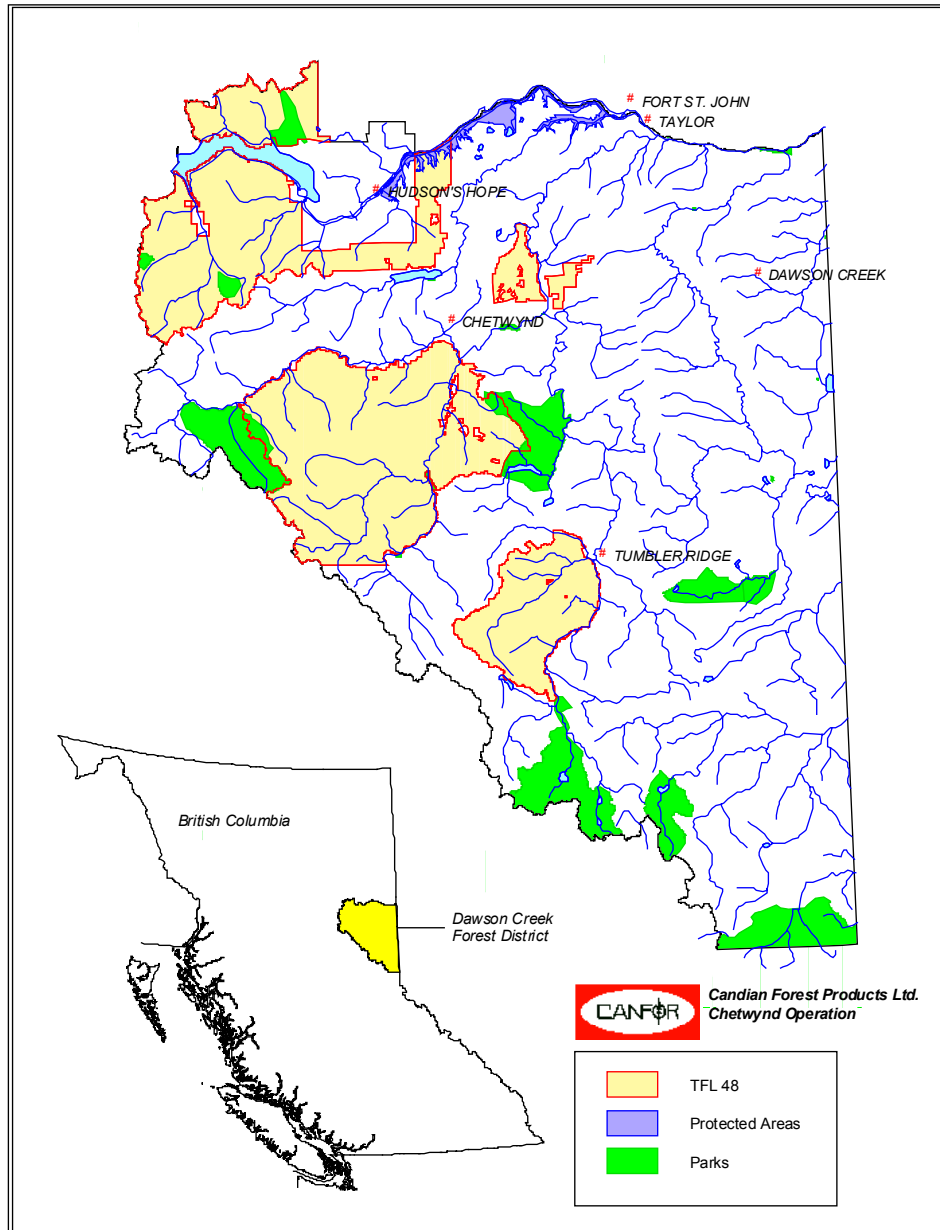


Figure 1: Tree Farm Licence 48

1.3 HISTORY

TFL 48 was first awarded to Canfor on December 1, 1988 and was replaced on December 1, 1998. The most recent replacement Tree Farm Licence (TFL) 48 agreement came into effect on March 1, 1999. The document has been amended (Instrument 4) April 1, 2000 to reflect changing government policy.

As part of the granting of TFL 48 to Canfor, Canfor committed to eliminating specified pre-1982 backlog areas on the TFL no later than November 30, 2008.

Canfor manages the area according to a long term strategic plan. Our continuous improvement approach allows us to periodically revisit regulatory changes, determine new resource needs, identify information deficiencies, review our management goals and objectives, and develop a forecast that sustains the harvest level over several rotations. The key to this approach is to make our assumptions explicit so they can be measured, monitored and adjusted to reflect future management strategies.

Canfor continues to conduct operations on TFL 48 according to the approach described in the current Management Plan 2. MP 2 was approved for a five year planning period from October 15, 1996 to October 14, 2001.

A number of significant forest management initiatives of local, provincial, and national importance have developed since the approval of MP 2 including:

- Dawson Creek Land and Resource Management Plan
- Forest Practices Code Revisions
- TFL 48 Resource Inventory Program
- Forest Renewal BC
- Delgamu'ukw Decision
- Ministry of Forests' Provincial Timber Supply Review 1
- Canfor's Forestry Principles
- Canadian Standards Association/International Standards Organization (CSA/ISO) Sustainable Forestry Program
- TFL 48 Replacement Document

These developments directly impact our management approach and our productive land base allocation. Management Plan 3 will address these changing economic, social and environmental needs.

In April 1997 Canfor purchased the Rice Property for inclusion into TFL 48. In August 1998, the Ministry of Forests approved the transfer of land into TFL 48 and the conversion to coniferous forests. The addition of the Rice Property (5,773 ha gross) will increase the operable landbase through the conversion of marginal agricultural land, mature deciduous stands and logged over coniferous sites to sustainable coniferous forest management. The inclusion of the Rice Property into the operable Schedule B lands of TFL 48 will potentially increase the coniferous rate of harvest by 15,000m³ to 20,000m³ per year.

The LRMP has not been declared a higher level plan under the Forest Practices Code of BC Act. However, Canfor is committed to manage to the spirit and intent of the LRMP and a number of objectives related to the LRMP have been developed (see Sections 3.4.41, 3.4.42, 3.4.38, 3.4.46)

The following new protected areas have been designated within the TFL:

Butler Ridge	July 14, 2000
Bocock Peak	July 13, 2000
Gwillim Lake	July 17, 2000
Pine – LeMoray	July 19, 2000
Klin-Se-Za	
Peace Boudreau	

(see Sections 3.4.3 and 3.4.38)

In 2001 Louisiana-Pacific Canada Ltd. and Canadian Forest Products Ltd. have signed a memorandum of understanding pertaining the management of deciduous leading stands within the common boundaries of TFL 48 and PA's 10 and 13.

1.4 LICENCE HOLDER AND ADMINISTRATION

Canfor Corporation is a leading Canadian integrated forest products company based in Vancouver, BC. The company employs approximately 6,550 people - 5,800 directly, and 750 through affiliated companies.

The majority of Canfor's woodlands operations and manufacturing facilities are in British Columbia and Alberta. The company is a producer and supplier of lumber, plywood, kraft pulp and kraft paper. Canfor also produces remanufactured lumber products, hardboard paneling and a range of specialized wood products, including baled fibre and fibre mat. Howe Sound Pulp and Paper Limited, owned equally by Canfor and Oji Paper Co. Ltd., produces bleached kraft pulp and newsprint.

Canfor (CFP) is listed on the Toronto Stock Exchange. The main operating company is Canadian Forest Products Ltd., from which the name Canfor is derived.



Figure 2: Canfor's Operations

1.5 SUSTAINABLE FOREST MANAGEMENT

In July of 1999 Canfor formally announced its commitment to seek sustainable forest management certification of the company's forestry operations under the Canadian Standards Association Sustainable Forest Management System standard CAN/CSA-Z809-96. The Sustainable Forest Management Plan presented within this document and its implementation is intended to fulfil that commitment for TFL 48. TFL 48 was registered to the CSA Standard in July 2000.

As a preparatory step to sustainable forest management certification, Canfor developed an environmental management system (EMS) for the company's woodlands operations. In December 1999 this environmental management system was certified to the ISO 14001 standard developed by the International Organization for Standardization. The Company EMS provides a platform on which to build the sustainable forest management elements required to meet CAN/CSA-Z809-96.

In the past few years, Canfor has released a number of public statements that define the mission, vision, policies and guiding principles for the company. They include Canfor's Mission Statement, Environment Policy and Forestry Principles (Figures 3, 4, 5). These commitments have been used to guide the development of MP 3 and our Sustainable Forest Management Plan. They commit us to the continual improvement of our performance in implementing the plan under the principles of adaptive management.

Canfor's Environment Policy includes a commitment to "Create opportunities for interested parties to have input to our forest planning activities." The CSA standard requires that sustainable forest management planning be carried out in consultation with those directly affected by or interested in forest management on the defined forest area (DFA). Our Environment Policy commitment has been interpreted and extended to include the involvement of the public in the setting of local values, goals, indicators and objectives, and this also includes Aboriginal peoples with respect to their rights and interests.

The Chetwynd Public Advisory Committee is the body that has been developed to provide the necessary local input (Appendix 9.1), and the Terms of Reference for this group are included in Appendix 9.2.

Figure 3: Canfor's Mission Statement



Canfor's Mission


We will be a highly successful competitor in the global forest products industry, managing with integrity the resources entrusted to our care.

We will be characterized by:

- Employing and developing highly motivated, empowered and committed people who enjoy their work.
- Consistently satisfying customer needs with quality products and services
- Enhancing the forest resource, ensuring responsible stewardship of the environment, and protecting human health and safety.
- Encouraging, recognizing and rewarding excellence in all our endeavours, with an emphasis on innovation and results.
- Increasing value for shareholders.

We will be guided by the core values of integrity, trust, openness and respect for people.

Figure 4: Canfor's Environment Policy



Environment Policy


We are committed to responsible stewardship of the environment throughout our operations.

We will:

- Comply with or surpass legal requirements.
- Comply with other environmental requirements to which the company is committed.
- Set and review environmental objectives and targets to prevent pollution and to achieve continual improvement in our environmental performance.
- Create opportunities for interested parties to have input to our forest planning activities.
- Practice forest management that recognizes ecological processes and diversity and supports integrated use of the forest.
- Promote environmental awareness throughout our operations.
- Conduct regular audits of our environmental management system.
- Communicate our environmental performance to our Board of Directors, shareholders, employees, customers and other interested parties.

D.L. Emerson
President and Chief Executive Officer

P.J.G. Bentley
Chairman



July 21, 1999

Figure 5: Canfor's Forestry Principles

Canfor's Forestry Principles

Ecosystem Management
We will use the best available science to develop an understanding of ecological responses to natural and human-caused disturbances. We will incorporate this knowledge into higher level and operational plans by applying ecosystem management principles to achieve desired future forest conditions.

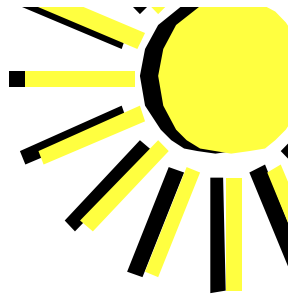
Scale
We will define objectives over a variety of time intervals (temporal scales), and at spatial scales of stand, landscape and forest.


Adaptive Management
We will use adaptive management to continually improve forest ecosystem management. This will require the development and implementation of collaborative research and monitoring programs.

Old Growth
We will include old growth and old growth attributes as part of our management strategies and philosophy in the forests where we operate.

Timber Resource
Canfor will ensure a continuous supply of affordable timber in order to carry out its business of harvesting, manufacturing and marketing forest products. Canfor will strive to maximize the net value of the fibre extracted for sustained economic benefits for employees, communities and shareholders.

Forest Land Base
We advocate the maintenance of the forest land base as an asset for the future.





Health and Safety
We will operate in a manner that protects human health and safety.

Aboriginal Peoples
We will pursue business partnerships and cooperative working arrangements with aboriginal people to provide mutual social, cultural and economic benefits and address mutual interests.

Communities
We will engage members of the public, communities and other stakeholders in the delivery of the Forestry Principles. The process will be open, transparent and accountable.

Accountability
We will be accountable to the public for managing the forest to achieve present and future values. We will use credible, internationally recognized, third party verification of our forestry operations as one way of demonstrating our performance.

2 RESOURCE INVENTORIES

The TFL 48 Licence agreement requires that we develop and maintain timber and non-timber inventories for the TFL.

In the AAC Rationale Statement for TFL 48 dated October 15, 1996, the Chief Forester directed Canfor to "...complete a comprehensive inventory of the TFL lands."

To this end Canfor has embarked on an aggressive inventory program covering: Vegetation Resource Inventory (VRI), Terrestrial Ecosystem Mapping (TEM), Fish and Fish Habitat Inventories, Wildlife Habitat Inventories, a Visual Landscape Inventory, and Growth and Yield projects. Each inventory will be described in more detail in the following sections.

2.1 FOREST MANAGEMENT INFORMATION SYSTEMS

Our Forest Management Information Systems (FMIS) allow us to create maps, to analyze and report on inventory data for strategic, tactical and operational planning projects and to monitor the forests within TFL 48 to estimate the quality and quantity of future wood supply.

The FMIS applies integrated hardware technologies with stable data platforms and software solutions such as Geographic Information Systems (GIS) database applications. We can now store, retrieve, manage and analyze resource information more efficiently.

When delivered in concert through our Wide Area Network (WAN), the integrated approach provides field people and resource planners immediate access to spatially explicit data in support of operational decisions while application development and product enhancement takes place at a corporate level.

During the term of MP 2, Canfor's FMIS has been fully implemented at the Chetwynd Operation and our staff are continuing to explore the benefits of working with a full spatially explicit data management system. Spatial and attribute data can now be kept concurrently for cutblock development, silviculture activities and access management.

All datasets are structured to support operational, tactical and strategic planning requirements.

As well Canfor participates in a digital data exchange agreement with the Ministry of Forests.

2.2 TFL 48 RESOURCE INVENTORIES

Following is a summary of the current resource inventories being developed for TFL 48:

2.2.1 *Vegetation Resources Inventory*

The Vegetation Resources Inventory uses three processes to assess BC's vegetation resources:

1. photo-interpreted estimates (Phase I)
2. ground-sample measurements (Phase II)
3. statistical analysis and adjustment of the original estimates

The photo-interpretation process shows where timber and other kinds of vegetation are located. It involves using aerial photos to identify the location of timber and other vegetation resources throughout the province.

Ground sampling measures how much timber, vegetation, and woody debris is present within a given area. It describes both the quantity and quality of vegetation in sample areas.

Statistical analysis involves using the ground sample measurements to adjust the photo-interpreted estimates to remove interpretation bias.

The current forest cover inventory is based on two re-inventory programs implemented by Canfor during the term of MP 2. The inventory conforms to Resource Inventory Committee (RIC) standards and exists in the form of a Vegetation Resource Inventory (VRI). The photography for this inventory was taken in 1993/94 for Blocks 4 and 5 and 1997 for Blocks 1, 2, and 3 of the TFL. The attributes within this VRI differ somewhat from the attributes found in the original MoF Forest Inventory and Planning (FIP) files.

The VRI has been updated to account for all harvesting activities and silviculture surveys completed up to March 2000. All constructed roads were buffered and removed from the forest landbase. Trails, seismic lines, pipelines, and transmission lines based on the TRIM II (1996) update were buffered and netted out from the forest landbase. Canfor's spatial block tracking, silviculture and road management system was used as the source for the update and done through automated GIS routines.

We will continue to refine our re-inventory program by adjusting the classification through the use of VRI Phase II sample data and using MoF Resources Inventory Branch approved methodologies. In 1998, we completed 65 VRI Phase II timber emphasis plots on the TFL. The data obtained from these samples will form the basis for additional Phase II sampling on the TFL. Results of the initial 65 samples in the TFL compared to the new VRI Phase I are included in Appendix 9.3.

Appendix 9.3 includes the Vegetation Resources Inventory Sampling Plan for TFL 48. The Inventory Branch approved this sample plan on September 28, 2000. The main objectives of the VRI Phase II sampling are to:

1. Adjust the Phase I estimates to provide statistically valid timber volumes in the TFL to support timber supply analysis.
2. Provide baseline ecology and coarse-woody debris data to support other projects in the TFL including predictive ecosystem mapping, site index ecological correlation's, monitoring, and certification.

2.2.2 Terrestrial Ecosystem Mapping

Terrestrial Ecosystem Mapping (TEM) has been completed for the Burnt River Landscape Unit (LU) (1997) and Lower Sukunka LU (2000), approximately one third of the TFL area.

The scope of the TEM has been modified to include a Landslide Inventory. The results were then used to calibrate the Stability Index MAPing (SINMAP) model to produce a terrain hazard map for the entire TFL. The output will provide the basis for deriving physical and then economic operability. Further detail can be found in the Appendix 9.4 Physical Operability Mapping and Stability Index Mapping for TFL 48.

The terrain mapping was completed at a 1:20,000 resolution with a TEM Level 5 field intensity or Terrain Stability Inventory Level D over the remainder of the TFL. There were 474 ground inspection forms and 1,955 visuals for a total of 2,429 ground checks completed.

The scope of the TEM project was also modified to include a field program designed to adjust the Biogeoclimatic Ecological Classes (BEC) within the TFL. The work formed the basis of conducting a Predictive Ecosystem Mapping (PEM) project for the remainder of the TFL, which was completed in March 2001. This work was not incorporated into the timber supply analysis because of its late completion date. Reclassification of BEC lines was conducted by the Prince George Regional Ecologist based on fieldwork conducted by Canfor.

2.2.3 Physical Operability

Using the terrain components of the TEM work completed for the Burnt River LU and the Lower Sukunka LU, the terrain mapping for the remainder of the TFL, and the Landslide Inventory Terrain Stability Classes were derived for the entire TFL using the Stability Index MAPing (SINMAP) model. PACK Geoengineering completed this work.

The SINDEX map is then further analyzed and classified into physical operability classes. Further detail can be found in the Appendix 9.4 Physical Operability Mapping and Stability Index Mapping for TFL 48 and Section 3.5.2

2.2.4 Biogeoclimatic Ecological Classification

As part of the TEM/Terrain Mapping described above, detailed plot data was collected to refine the Biogeoclimatic Ecological Classification (BEC) across TFL 48. The new lines were based on field data collected in the 1998 and 1999 seasons.

Further work sponsored by Canfor was conducted in concert with MoF Regional staff to review the existing inventory during the 2000 field season and additional refinements were made in the fall of 2000 as required. These revised BEC lines were incorporated in the timber supply analysis and used to model for the biodiversity targets across the whole TFL.

The new BEC inventory now includes areas of previously unmapped variants ESSFwc3, ESSFwcp3, ESSFmvp2, ESSFmv4, ESSFmvp4 and BWBSwk2 for the TFL.

2.2.5 Wildlife And Wildlife Habitat

Since 1996, Canfor has undertaken a series of measures to address wildlife and wildlife habitat. These measures include wildlife habitat modeling (Table 1), wildlife inventories, habitat monitoring and wildlife research.



Photo 1: Grizzly bear is one of 12 species being modeled on the TFL.

Wildlife habitat modeling on TFL 48 began in 1997. The species chosen for habitat modeling (Table 1) were selected relative to their importance as defined in the LRMP, and to their provincial or federally listed status. The list was presented to Canfor's Public Advisory Committee (PAC) in April-May 2000 and was revised to include the wolverine and Three-toed Woodpecker. Models have been completed for each of these species but were not available for MP 3 analysis. We expect to implement the use of these models in MP 4 by combining them with timber forecasts to forecast wildlife habitat availability over time, and possibly areas requiring specific management needs.

Table 1: Species Selected for Habitat Modeling and Some Of the Criteria for Their Selection

Species	National Status	Provincial Status	LRMP/Local Use
Grizzly Bear	Vulnerable	Blue/Identified	Locally Important/Hunting
Marten			Trapping
Fisher		Blue/Identified	Trapping
Wolverine	Vulnerable	Blue	Trapping
Caribou	Vulnerable	Blue	Hunting
Moose			Hunting
Elk			Hunting
Mountain Goat		Identified	Locally Important/Hunting
Black-throated Green Warbler		Red	Locally Important
Trumpeter Swan		Blue/Identified	Locally Important
Northern Goshawk		Identified	
Three-toed Woodpecker			Primary cavity nester

All models have been developed through the cooperative efforts of Canfor, MELP and Forest Renewal BC. The models are based on the relationships between a site series (as identified by Predictive Ecosystem Modeling (PEM) or Terrestrial Ecosystem Mapping (TEM)), and the structural stage of the forest as derived from Vegetation Resources Inventory (VRI). The animals' relationship to its habitat is based on the literature including local studies and environmental impact assessments wherever possible. Detailed ground sampling throughout the TFL as part of the TEM and Terrain mapping processes was used to assist in developing the species habitat relationships.

In addition to the modeling work, multi-species inventories (e.g., rare plants, breeding birds, shorebirds, waterfowl, owls, small mammals, bats, bears) were conducted in the Burnt River Landscape Unit (97,000 ha) and Rice Property (6,000 ha) in 1997/98. These inventories provide more complete information on wildlife species presence/absence and abundance and help establish habitat use patterns. Species specific inventories and research have been conducted for marten (1997-2001), Harlequin Duck (1997/98) and Northern Goshawk (2000-2001).

2.2.6 Fish And Fish Habitat

Since 1995, Canfor has been conducting 1:20,000 reconnaissance level RIC standard fish and fish habitat surveys within TFL 48.

Initially, work was limited to the cutblock or small watershed level. As the process became defined, the scale of the program was successfully increased to address larger watersheds.

In 1997, the program was further expanded to the landscape level and sampling was conducted in the Burnt River and Carbon Creek Landscape Units. To accommodate the increase in scale, the aggregation process reduced the effectiveness of the program to meet tactical and operational objectives.

RIC standard reconnaissance level fish and fish habitat inventories have been completed across the TFL. Fish inventories will continue to be required on an operational basis (e.g., cutblock and road planning).

Data from the RIC standard surveys has been used to develop a Stream Classification Tool to predict stream class for timber supply analysis purposes (see Section 3.4.22 and Appendix 9.6).

2.2.7 TRIM II

Canfor has played a lead role in the development and implementation of the regional TRIM II program.

At Chetwynd, we have used orthophotos derived from the program to gain fieldwork efficiencies.

TRIM II-defined roads formed the basis for the creation of the road network used in Canfor's Forest Road Management System. Similarly, spatially explicit cutblocks from TRIM II were also used as the digital data source for populating all backlog blocks into our FMIS.

2.2.8 Visual Landscape Inventory

In 1999/2000, Canfor completed an update of the Visual Landscape Inventory (VLI) for TFL 48. The VLI was done at a scale of 1:50,000 using the provincial Visual Landscape Inventory Procedures and Standards Manual (RIC May 1997).

Work completed included the following:

- An update of the VLI for the **Peace Williston Lake Area** for all areas visible from Williston Lake, navigable inlets, Dunlevy road, Dunlevy campground, and Bennett Dam Lookouts,
- An update of inventory line work to include all areas visible from the highway corridors along **Highways 29 and 97** within TFL 48,
- An update of the VLI for the **Murray River Forest Service Road** from Tumbler Ridge to Monkman Lake Park,
- An update of the VLI for **Sukunka Falls Park**,
- A completion of the VLI for the **Twin Sisters Resource Management Zone**.

The report on the Visual Landscape Inventory for TFL 48 – February 2000 can be found in Appendix 9.7.

The 1994 Visual Landscape Inventory was used to determine the base case for MP 3 as the recently completed inventory described above has not yet been fully reviewed by the MoF and made known under the Forest Practices Act of British Columbia.

2.2.9 Recreation

The Recreation Inventory for TFL 48 was completed in December 1994 and subsequently approved by the MoF in January of 1995.

The Report on the Recreation/Landscape Analysis Report for Canadian Forest Products Ltd. TFL 48 – December 1994 can be found in Appendix 9.8.

2.2.10 Cultural Heritage

Canfor obtained GIS coverages for the Archaeological Overview Assessment (AOA) and Archaeological Site Information for the Dawson Creek Forest District from the Ministry of Small Business Tourism and Culture (MSBTC) in June 1999. The data is maintained under a Confidentiality Agreement with the MSBTC. Canfor must request periodic updates to keep the data current.

At the time of timber supply analysis there were 20 known heritage sites within the TFL, six of these sites occurred within new Protected Areas and up to six of the known sites were expected to occur in riparian management areas.

We have completed over 50 Archaeological Impact Assessments (AIAs) for forest roads and cutblocks since 1995. To date we have not found any Heritage Resources during these surveys. Canfor expects that heritage resources will be identified and protected on specific sites in the future.

2.2.11 Growth and Yield

Accurate growth and yield data is an essential part of forest management planning. Within a provincial forest productivity matrix, field sample plots provide periodic data. Stand projection models based on this data helps us predict the total increase in volume over a given period (growth), as well as the accumulated volume of a stand at any given age (yield).

In March 1997 a Growth and Yield Strategy and Work plan for TFL 48 was developed in consultation with the regional Growth and Yield Forester. Our target is for a total of 280 plots within the TFL. The following table (Table 2) shows the number of plots currently on the TFL to date. Detailed ecological assessments were completed on plots established in 1997 - 2000.

Table 2: Growth and Yield Plots on TFL 48

Year of Establishment	# of Plots
1991	2
1992	18
1993	14
1994	16
1995	6
1996	0
1997	13
1998	25
1999	25
2000	20
Total	139

3 MANAGEMENT OBJECTIVES

3.1 CANFOR MANAGEMENT OBJECTIVES

Canfor's management goals for TFL 48 reflect our strong commitment to our employees, shareholders, community, and the environment.

We provide attractive investment returns to our shareholders. Our overall business strategy is to maximize profitability by reducing costs, improving efficiencies, developing new market opportunities, and merchandising products according to our customers' specific needs.

We maintain a stable employment base and contribute to the development of our local communities.

We protect existing forest values as we grow our future forests to sustain a maximum supply of quality timber to processing facilities in British Columbia.

When developing longer term management strategies and shorter term operational plans, we balance economic, social and environmental objectives.

3.2 CUSTOMER RELATIONS

We will ensure a continuous supply of affordable timber in order to carry out our business of harvesting, manufacturing and marketing forest products.

We will strive to maximize the net value of the fibre extracted for sustained economic benefits for employees, communities and shareholders.

We will seek and maintain certification under the International Organization for Standardization Environmental Management System Standard (ISO 14001) and Canadian Standards Association Sustainable Forest Management System Standard (CAN/CSA-Z809-96).

3.3 SUSTAINABLE FOREST MANAGEMENT

This Management Plan was written to meet both the Ministry of Forests Provincial Guidelines (1998) and the Canadian Standard Association (CSA) standard for sustainable forest management (CAN/CSA-Z809-96). In general this plan follows the guidelines provided by the Ministry of Forests. However, there was substantial overlap between some of the Ministry's Guidelines and the CSA standard. In this section we have followed a format which more closely resembles that of CSA. Users of this plan who are interested in MoF guidelines for:

- Protection and conservation of non-timber values
- Integration of harvesting activities with non-timber users
- Consultation with non-timber users, and
- Higher Level Plans

should refer to Appendix 9.9 "Cross Reference between MoF and CSA Requirements" to find which subsections of this Sustainable Forest Management section address their interests.

Canfor used the 6 criteria and 21 critical elements from the Canadian Standards Association Sustainable Forest Management System Standard and input from a Public Advisory Committee (PAC) to set Values, Goals, Indicators and Objectives in the development of MP 3.

The six criteria are:

1. Conservation of Biological Diversity
2. Maintenance and Enhancement of Forest Ecosystem Condition and Productivity
3. Conservation of Soil and Water Resources
4. Forest Ecosystem Contributions to Global Ecological Cycles

- 5. Multiple Benefits to Society
- 6. Accepting Society's Responsibility for Sustainable Development

These criteria, their critical elements and the Values, Goals, Indicators, and Objectives developed by the Public Advisory Committee form the basis of the following sections, and are summarized in the Sustainable Forest Management Matrix (Appendix 9.1).

The PAC recognized the importance of spatial and temporal scale relationships occurring within ecosystems. Unless otherwise noted, the natural limits of variation of a particular resource (e.g., water flows vary daily, seasonally, etc.) are expected to occur within the TFL over time.

Unless otherwise specifically noted, it is expected that all plans on the TFL (e.g., Forest Development Plan, Pest Management Plan) will meet the objectives set out within this Management Plan.

Part of the CSA SFM System Standard is to produce an annual report, which reports on progress, performance and appropriateness of each of the indicators and objectives developed for the TFL. The first annual report produced for TFL 48 to the CSA Standard is included in Appendix 9.17.

3.4 SFM INDICATORS AND OBJECTIVES

X.X INDICATOR

Indicator:	Objective:
#. A reiteration of the indicator as identified in the SFM matrix.	A reiteration of the Objective as identified in the SFM matrix.

ACCEPTABLE VARIANCE

This provides the acceptable variance from the desired level of the Indicator.

CURRENT STATUS

The information provided under this heading summarizes the current state (if known) and objective levels of the quantifiable indicator. This information will usually be summarized in table format by Landscape Unit and BEC variant, or whatever scale at which the objective is to be met. Where current and quantitative information is available for the indicator, that information will be presented here.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

CSA specifies that: a) quantitative and long-term projections of expected future indicator levels have been prepared for each indicator; b) that the assumptions and analytic methods used in forecasting have been specified; and c) the public participation process was used to select the preferred forecast.

Where possible and when they exist, this section provides a summary of the forecasting assumptions and analytical methods used to project a variety of possible future forest conditions that could result from present forest management activities.

FOREST MANAGEMENT ACTIVITIES

The information provided under this heading summarize the actions required to meet the objectives, or to quantify the current state of the indicators. This will often include cross-reference to past Management Plans of TFL 48, obligations under the Forest Practices Code laws and regulations, or Canfor's initiatives beyond regulated management practices (e.g., Environment Policy, Forestry Principles, and Environmental Management System (EMS) obligations.

IMPLEMENTATION SCHEDULE

The information provided under this heading summarizes the level of implementation or the timeline to show progress towards achieving the objective for the indicator.

MONITORING PROCEDURE

The information provided under this heading summarizes the sources of monitoring information, timing and frequency of monitoring to ensure that Canfor meets the objectives.

3.4.1 Forest Types and Seral Stage Distribution

Indicator:	Objective:
1. Forest type and seral stage distribution	1-1 We will sustain forest types over time. 1-2 We will sustain seral stage within the natural range over time.

3.4.1-1 Forest Types Over Time

For the purposes of this document forest types are described in four categories. The selection of these categories is to facilitate easy reporting from the RIC standard VRI completed for TFL 48 and consistency with the BC Land Cover Classification Scheme.

Table 3: Description of Forest Types

Forest Type	Description
Coniferous*	Greater than 75% of total tree cover is coniferous.
Mixed-Coniferous*	Greater than 50% but less than 75% of total tree cover is coniferous.
Mixed-Deciduous**	Greater than 50% but less than 75% of total tree cover is deciduous.
Deciduous**	Greater than 75% of total tree cover is deciduous.

* Contributes to Coniferous Timber Harvesting Landbase

** Contributes to Deciduous Timber Harvesting Landbase

ACCEPTABLE VARIANCE

The range of variance is +/- 10% of area of current forest type over time.

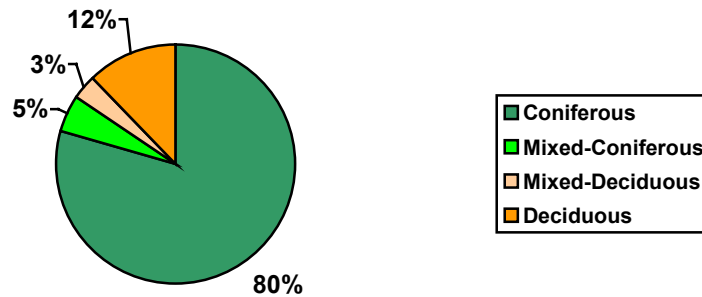
CURRENT STATUS

Table 4 shows the status of the total forested landbase over the TFL.

Table 4: Forest Types March 2000

Forest Type	Area ('000 ha)	%
Coniferous	455	80%
Mixed-Coniferous	28	5%
Mixed-Deciduous	19	3%
Deciduous	69	12%
Totals	571	100%

Source: VRI 1999



FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Forest types were calculated using the most recent VRI data files updated to spring 2000 for disturbance. Timber supply regeneration assumptions are that mixed deciduous and mixed coniferous stands will be regenerated to the area weighted average species composition for the analysis unit. The remaining analysis units regenerate in accordance to their current forest type. Details are shown in Table 32 of the Timber Supply Analysis Information Package in Support of MP 3. The exception to this will be the Rice portion of the TFL. Portions of this area will be converted from an early deciduous type to a conifer or conifer-mixed forest type. This is consistent with the previous mature forest types that were present prior to agricultural land clearing and inclusion of this landbase under a sustainable forest management regime.

FOREST MANAGEMENT ACTIVITIES

Regeneration activities will be conducted to ensure that the same forest type percentages will exist on the landbase over time. Additional area may be added to the conifer or conifer-mixed forest types through conversion of non-treed sites to the treed conifer landbase. Individual stands may shift from one forest type to another for specific management objectives such as forest health but the overall forest type percentages will be within the acceptable variance for the TFL.

IMPLEMENTATION SCHEDULE

Canfor is currently managing the coniferous landbase to regenerate to conifer. During the term of MP 3 Canfor's strategy is to plan, permit and make available for sale, all commercial deciduous species from deciduous leading stands (as determined by the individual block cruise), up to the deciduous harvest level as determined by the Chief Forester (presently 54,000m³ annually). See Section 3.5.7 Mixedwood Fibre Strategy.

MONITORING PROCEDURE

During the term of Management Plan 3, Canfor will develop a monitoring and tracking procedure to ensure that the forest types as described can be tracked and the balance maintained. The amount of area within each forest type will be monitored and reported at each Management Plan and Timber Supply Analysis.

3.4.1-2 Seral Stage Over Time

This indicator addresses seral stage distribution over time. The intention is to identify a seral stage distribution baseline in 1960 for the TFL. Further work will be required to establish the natural range of variability in order to determine acceptable variance over time. See Section 3.4.51 for information on the research initiative "Exploring, Forecasting and Visualizing the Sustainability of Alternative Ecosystem Management Scenarios". The 1960 baseline was chosen because no major timber harvesting had occurred yet on the TFL, and it was after major fires (e.g., Dunlevy, Burnt, Brazion, Wolverine); it would be difficult to determine the ages of trees which had burnt because fire may burn forests of varying ages.

The seral stage targets for “old” will be used as per the Landscape Unit Planning Guide (March 1999) (LUPG). The 1960, 2000 and 2020 seral stages “early”, “juvenile”, “mature” and “old” are reported in Table 5.



Photo 2: Alternative silviculture systems may be used to sustain seral stage targets.

ACCEPTABLE VARIANCE

The acceptable variance of the “old” seral stage target will be one third of LUPG target. Because the biodiversity emphasis option (BEO) for each Landscape Unit has not been declared a weighted 45% low/45% intermediate/10% high average for the target was used (See Appendix C of Appendix 9.5 for details on how the targets were calculated). Currently approved blocks will not be changed. The existing 2000 FDP outlines a rationale and strategy for those units where the target is not met. See Appendix 9.16 for TFL 48 2000 FDP Old Seral Management Strategy.

CURRENT STATUS

Seral stage distributions are reported for 1960, 2000 and 2020. The 2020 seral stage distribution is based on the 20-year plan submitted in support of MP 3 (see Appendix 9.12) by the draft Dawson Creek Forest District Landscape Unit boundaries in Table 5. Since the completion of the 2000 FDP for TFL 48, the proposed Landscape Unit boundaries have been adjusted to be coincident with the TFL boundaries. Appendix 9.16 – TFL 48 2000 FDP Old Seral Management Strategy refers to the previous version of the Landscape Units. The next submission of the FDP for the TFL will reflect the new proposed Landscape Units.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

To backdate the VRI to 1960 the following assumptions and analytical methods were used.

Ages were reset to 1960 based on the new VRI inventory, which had been projected to 2000 but not updated for disturbance. The leading species ages were set back by 40 years. All areas with a negative age were then flagged for assessment. These areas were then manually checked and the seral stage adjusted to be consistent with the surrounding timber types. I.e. if an area was flagged with a negative age and surrounded by mature timber types in 1960 then the disturbed area was assumed to be mature.

For the Ran fire (1985) and Dunlevy fire (1983) areas, the 1970 original forest cover inventory was used as a guide to help determine the ages of these areas in 1960.

Old seral stage constraints were factored into the MP 3 timber supply analysis over a 140-year period, as per direction from Timber Supply Branch. The calculations are based on *Appendix III Incorporating Biodiversity and Landscape Units into the Timber Supply Review*, found in the *Provincial Guide for the Submission of Timber Supply Analysis Information Packages for Tree Farm Licenses* Version 3 February 1998. One third of the percent area target for old growth must occur immediately (or no harvesting is permitted in the area within the group). Similarly, sixty-six percent of the old growth requirement must be met by age 70 through in-growth and one hundred percent must be met 140 years from present.

See Table 40 Forest Cover Constraints – Biodiversity of Appendix 9.5 Timber Supply Analysis Information Package for a detailed description of how the seral stage targets were applied in the analysis.

FOREST MANAGEMENT ACTIVITIES

When sufficient amounts of old seral stage are not available, new proposed harvesting of “old” seral stages will be deferred until the desired level of “old” seral stage is achieved. Harvesting of approved blocks will proceed. Harvesting of “mature” seral stage will be planned so as not to compromise recruitment of old seral stage. After replacement stands develop into old seral stage (from mature), then stands that were deferred are available for harvest.

See Appendix 9.16 for TFL 48 2000 FDP Old Seral Management Strategy.

IMPLEMENTATION SCHEDULE

Canfor’s proposed forest development plan (2000-2005) has been analyzed to ensure that operations do not compromise “old” seral stage targets. Canfor has identified seral stage distribution using a 1960 baseline. The natural range of variation targets will require further analysis. See Section 3.4.51 for information on the research initiative “Exploring, Forecasting and Visualizing the Sustainability of Alternative Ecosystem Management Scenarios”. The 20-year plan has incorporated the timber supply analysis base case seral stage targets.

MONITORING PROCEDURE

TFL seral stages as modeled in the timber supply analysis base case will be monitored and reported with the submission of each forest development plan.

Table 5: Seral Stage Distribution by Proposed Dawson Creek Forest District Landscape Unit Boundaries

Seral Stage % of Total Forest by Landscape Unit / BEC Variant for 1960 – 2000 - 2020		Seral Stage												Total Forested Area (ha)	Net THLB Area (ha)	
		Early			Juvenile			Mature			Old					Base Case Targets Time 0*
Landscape Unit	BEC	1960	2000	2020	1960	2000	2020	1960	2000	2020	1960	2000	2020			
BOUCHER	BWBSmw 1-C	39.5%	12.7%	18.7%	50.8%	46.6%	38.2%	8.4%	33.7%	25.5%	1.3%	6.9%	17.6%	8.2%	11,327	8,281
	BWBSmw 1-D	25.7%	1.0%	14.2%	65.2%	55.2%	27.0%	8.5%	18.6%	28.5%	0.6%	25.2%	30.3%	9.7%	16,074	10,130
	BWBSwk 1-C	22.3%	8.4%	38.0%	70.8%	26.1%	18.6%	6.7%	58.8%	23.8%	0.2%	6.7%	19.5%	8.2%	5,264	4,953
	BWBSwk 1-D	38.5%	0.5%	9.3%	54.8%	47.2%	32.9%	6.7%	28.5%	14.0%	0.1%	23.8%	43.8%	9.7%	1,810	914
	SBS wk 2	93.2%	0.6%	0.5%	4.2%	92.5%	92.5%	2.6%	7.0%	7.0%	0.0%	0.0%	0.0%	6.7%	953	702
BOUCHER Total		32.1%	5.8%	18.6%	59.3%	48.7%	31.4%	7.9%	29.6%	25.5%	0.7%	15.9%	24.5%		35,428	24,979
BURNT-LEMORAY	AT	7.9%	6.4%	0.0%	66.8%	67.5%	73.9%	25.4%	26.1%	26.1%	0.0%	0.0%	0.0%	N/A	114	-
	BWBSmw 1-C	0.0%	0.0%	0.0%	20.2%	20.1%	0.0%	79.8%	0.1%	20.1%	0.0%	79.8%	79.9%	8.2%	8	8
	BWBSmw 1-D	2.5%	0.0%	0.0%	36.9%	2.5%	2.5%	10.2%	4.0%	0.0%	50.4%	93.4%	97.5%	9.7%	43	14
	ESSFwc 3	9.9%	4.8%	1.8%	52.6%	39.3%	32.8%	33.9%	47.4%	54.4%	3.6%	8.4%	11.0%	14.2%	41,602	9,386
	ESSFwcp3	9.1%	2.0%	0.0%	88.7%	87.5%	85.7%	2.2%	10.5%	14.3%	0.0%	0.0%	0.0%	N/A	2,902	-
	ESSFwk 2	9.1%	10.7%	15.9%	41.7%	33.1%	23.3%	35.0%	38.1%	42.1%	14.2%	18.2%	18.7%	14.2%	39,086	24,546
	SBS wk 2	12.9%	9.0%	16.9%	57.5%	36.4%	14.8%	21.2%	49.0%	61.3%	8.4%	5.7%	6.9%	6.7%	23,045	14,090
BURNT-LEMORAY Total		10.2%	7.8%	10.2%	50.6%	37.7%	26.9%	30.7%	43.3%	50.2%	8.4%	11.2%	12.7%		106,801	48,044
CARBON	AT	6.5%	0.0%	0.0%	92.9%	99.3%	98.5%	0.7%	0.7%	1.5%	0.0%	0.0%	0.0%	N/A	214	-
	BWBSmw 1-C	46.2%	0.0%	0.0%	53.8%	46.2%	46.2%	0.0%	53.8%	53.8%	0.0%	0.0%	0.0%	8.2%	10	1
	BWBSmw 1-D	29.8%	0.0%	0.0%	70.2%	29.8%	29.8%	0.0%	0.0%	0.0%	0.0%	70.2%	70.2%	9.7%	17	0
	ESSFmv 2	4.3%	3.1%	9.9%	47.1%	30.0%	19.3%	45.9%	58.8%	61.0%	2.6%	8.2%	9.8%	6.7%	46,165	17,750
	ESSFmvp2	8.5%	0.6%	0.0%	77.8%	76.7%	73.7%	13.7%	22.7%	25.7%	0.0%	0.0%	0.7%	N/A	3,125	-
	ESSFwc 3	6.1%	0.0%	2.1%	23.1%	16.0%	14.2%	67.9%	65.9%	53.9%	3.0%	18.2%	29.8%	14.2%	9,694	2,201
	ESSFwcp3	12.1%	0.0%	0.0%	65.7%	62.7%	57.4%	22.2%	37.0%	38.1%	0.0%	0.3%	4.5%	N/A	1,413	-
	ESSFwk 2	1.7%	0.9%	15.6%	12.0%	6.8%	6.1%	70.3%	48.9%	26.4%	16.1%	43.4%	51.9%	14.2%	4,361	2,418
	SBS wk 2	2.6%	16.8%	29.9%	31.8%	5.0%	3.0%	64.0%	73.4%	61.0%	1.7%	4.8%	6.1%	6.7%	15,235	10,155
CARBON Total		4.4%	5.0%	12.5%	41.0%	24.9%	17.9%	51.6%	59.9%	56.3%	3.1%	10.2%	13.3%		80,234	32,526
DUNLEVY	AT	19.8%	0.5%	0.0%	79.7%	79.1%	79.3%	0.4%	20.4%	20.7%	0.0%	0.0%	0.0%	N/A	94	-
	BWBSmw 1-C	31.4%	14.2%	11.8%	54.0%	28.1%	32.7%	12.5%	45.5%	22.2%	2.1%	12.2%	33.3%	8.2%	10,363	6,555
	BWBSmw 1-D	44.3%	6.2%	4.2%	40.9%	49.1%	43.7%	12.7%	6.8%	11.5%	2.1%	37.9%	40.6%	9.7%	9,163	2,865
	BWBSwk 2-C	41.5%	16.1%	13.0%	44.6%	33.1%	42.0%	12.1%	38.9%	22.9%	1.8%	11.9%	22.2%	8.2%	7,402	5,396
	BWBSwk 2-D	19.3%	0.2%	9.0%	72.1%	27.8%	19.8%	8.4%	14.1%	8.1%	0.2%	57.9%	63.1%	9.7%	5,119	2,206
	ESSFmv 4	38.5%	9.8%	8.5%	52.2%	59.7%	48.3%	9.3%	30.3%	43.0%	0.0%	0.2%	0.2%	6.7%	11,728	5,426
	ESSFmvp4	30.1%	2.7%	0.0%	66.4%	61.6%	60.3%	3.5%	35.4%	39.5%	0.0%	0.2%	0.2%	N/A	1,422	-
DUNLEVY Total		36.1%	9.8%	8.9%	51.8%	42.5%	40.0%	10.9%	28.7%	24.5%	1.2%	19.0%	26.7%		45,291	22,448
EAST PINE	BWBSmw 1-C	4.6%	14.0%	36.1%	85.1%	5.0%	8.9%	10.2%	77.1%	21.1%	0.0%	4.0%	33.9%	8.2%	5,743	10,039
	BWBSmw 1-D	13.7%	7.7%	10.9%	55.1%	36.2%	33.2%	30.7%	5.0%	9.5%	0.5%	51.2%	46.5%	9.7%	13,895	6,644
EAST PINE Total		10.8%	9.5%	18.2%	64.7%	27.1%	26.1%	24.1%	25.9%	12.8%	0.3%	37.5%	42.8%		19,638	16,683

Management Plan 3 - TFL 48



Serai Stage % of Total Forest by Landscape Unit / BEC Variant for 1960 – 2000 - 2020		Serai Stage												Total Forested Area (ha)	Net THLB Area (ha)	
		Early			Juvenile			Mature			Old					Base Case Targets Time 0*
Landscape Unit	BEC	1960	2000	2020	1960	2000	2020	1960	2000	2020	1960	2000	2020			
GETHING	BWBSmw 1-C	7.7%	27.7%	36.7%	29.2%	8.5%	8.9%	39.3%	28.0%	7.5%	23.8%	35.8%	46.9%	8.2%	8,924	6,933
	BWBSmw 1-D	7.5%	17.4%	2.7%	23.9%	11.3%	26.2%	37.0%	1.2%	2.3%	31.6%	70.1%	68.8%	9.7%	2,672	879
	ESSFmv 2	1.2%	8.8%	20.3%	55.0%	14.6%	9.3%	39.8%	75.4%	67.1%	4.0%	1.1%	3.3%	6.7%	24,059	14,503
	ESSFmvp2	7.7%	0.0%	0.0%	92.3%	92.4%	88.2%	0.0%	7.6%	11.8%	0.0%	0.0%	0.0%	N/A	106	-
	SBS wk 2	2.9%	22.2%	35.6%	24.1%	5.0%	5.2%	61.3%	72.0%	56.8%	11.6%	0.9%	2.4%	6.7%	20,153	15,053
GETHING Total		3.2%	17.0%	27.5%	38.3%	10.1%	8.7%	47.3%	62.9%	50.7%	11.3%	9.9%	13.0%		55,915	37,368
HIGHHAT	BWBSmw 1-C	17.8%	3.4%	9.7%	57.6%	35.7%	17.8%	22.6%	37.2%	31.9%	1.9%	23.8%	40.6%	8.2%	7,667	5,650
	BWBSmw 1-D	4.0%	1.1%	10.8%	82.3%	19.1%	7.4%	9.0%	45.8%	12.1%	4.8%	34.0%	69.6%	9.7%	8,598	5,053
	BWBSwk 1-C	0.0%	13.9%	13.9%	18.2%	0.0%	0.0%	81.8%	4.5%	0.0%	0.0%	81.6%	86.1%	8.2%	10	7
	ESSFmv 2	8.1%	6.4%	14.0%	70.5%	48.1%	33.4%	19.1%	42.3%	49.4%	2.4%	3.2%	3.2%	9.7%	31,318	20,794
	ESSFwc 3	6.2%	0.0%	0.0%	89.3%	91.6%	55.8%	4.6%	8.4%	44.2%	0.0%	0.0%	0.0%	14.2%	8	2
	ESSFwk 2	1.1%	0.0%	14.9%	77.7%	57.0%	36.7%	17.2%	37.8%	44.6%	4.1%	5.1%	3.7%	14.2%	2,543	1,759
	SBS wk 2	10.5%	6.0%	15.6%	58.8%	40.4%	11.9%	27.4%	50.2%	70.0%	3.2%	3.4%	2.5%	6.7%	37,473	26,946
HIGHHAT Total		9.4%	5.3%	14.0%	65.7%	41.1%	20.4%	21.9%	45.4%	52.8%	3.0%	8.2%	12.7%		87,618	60,212
MARTIN CREEK	BWBSmw 1-C	16.3%	15.1%	24.6%	51.8%	30.4%	17.3%	29.3%	34.7%	26.1%	2.6%	19.8%	32.1%	8.2%	12,471	10,230
	BWBSmw 1-D	9.7%	1.8%	11.4%	67.2%	27.4%	12.4%	16.2%	29.9%	15.2%	6.9%	40.9%	61.0%	9.7%	10,870	5,332
	BWBSwk 1-C	12.9%	7.7%	17.2%	64.1%	26.8%	13.5%	18.5%	47.7%	34.2%	4.5%	17.9%	35.1%	8.2%	18,704	15,115
	BWBSwk 1-D	10.5%	2.2%	7.1%	72.6%	39.8%	17.0%	14.7%	38.0%	24.7%	2.2%	20.1%	51.1%	9.7%	2,186	1,245
	ESSFmv 2	4.6%	0.6%	8.8%	74.8%	52.1%	24.2%	19.7%	45.7%	64.2%	0.8%	1.6%	2.8%	6.7%	13,481	7,197
MARTIN CREEK Total		11.0%	6.3%	15.4%	64.9%	34.1%	16.8%	20.5%	40.7%	35.5%	3.6%	18.9%	32.4%		57,712	39,119
WOLVERINE	AT	7.5%	1.3%	0.0%	92.4%	98.1%	98.5%	0.1%	0.6%	1.5%	0.0%	0.0%	0.0%	N/A	651	-
	BWBSmw 1-C	9.5%	11.3%	18.1%	44.2%	18.5%	10.2%	43.4%	31.1%	18.7%	3.0%	39.2%	53.0%	8.2%	4,095	3,041
	BWBSmw 1-D	6.9%	0.6%	0.3%	59.8%	32.0%	9.8%	27.0%	24.1%	22.7%	6.3%	43.3%	67.1%	9.7%	1,469	677
	BWBSwk 1-C	18.3%	7.8%	15.3%	29.4%	28.2%	18.3%	45.7%	18.8%	17.4%	6.5%	45.2%	49.0%	8.2%	5,263	4,139
	BWBSwk 1-D	6.1%	0.3%	1.2%	67.9%	63.1%	10.9%	17.0%	10.6%	52.4%	9.0%	26.1%	35.5%	9.7%	1,451	369
	ESSFmv 2	28.8%	14.4%	6.4%	45.2%	50.4%	46.9%	21.4%	27.9%	38.4%	4.6%	7.3%	8.3%	6.7%	34,319	17,829
	ESSFmvp2	11.8%	5.0%	0.0%	76.8%	65.8%	62.5%	11.4%	29.1%	36.6%	0.0%	0.2%	0.9%	N/A	3,103	-
	ESSFwc 3	3.0%	1.0%	5.4%	30.1%	16.1%	14.4%	56.6%	62.1%	58.5%	10.3%	20.9%	21.7%	14.2%	5,592	1,757
	ESSFwcp3	7.9%	0.0%	0.0%	71.5%	63.1%	62.0%	20.6%	34.9%	35.7%	0.0%	2.1%	2.3%	N/A	1,810	-
	ESSFwk 2	1.5%	9.1%	17.9%	15.5%	12.7%	11.8%	41.9%	35.6%	30.4%	41.0%	42.6%	39.9%	14.2%	6,786	3,840
	SBS wk 2	26.9%	12.9%	10.0%	49.2%	54.8%	29.9%	20.5%	27.7%	54.6%	3.4%	4.6%	5.6%	6.7%	13,119	8,547
WOLVERINE Total		20.4%	10.8%	8.5%	44.1%	43.4%	34.8%	27.7%	30.2%	38.9%	7.8%	15.7%	17.8%		77,658	40,198
Grand Total		13.4%	8.3%	13.8%	52.1%	34.8%	24.2%	29.3%	43.2%	43.6%	5.2%	13.7%	18.4%		566,295	321,576

*Targets as per TFL 48 Base Case Timber Supply Analysis (See Table 40 and Appendix C of Info Pack)

Source: VRI – 1960 baseline, 2000 and 20-year plan submitted in support of MP 3

3.4.2 Patch Size Distribution

Indicator:	Objective:
2. Patch size distribution	We will maintain a patch size consistent with natural disturbance types.

The intent of this indicator is to be a measure of natural disturbance trends over time. If the size and distribution of patches are consistent within the natural ranges then connectivity, edge and interior habitats are conserved.

There are a number of studies that have documented the patch size distribution in natural and/or managed landscapes for forests in northern British Columbia (DeLong and Tanner 1996, DeLong 1998). In general these studies have demonstrated that the current patch size objectives recommended in the “Biodiversity Guidebook” over represent mid-sized patches (i.e., 40-250 ha) and under represent large patches (i.e., > 250 ha) (DeLong unpublished manuscript).

This trend is further confirmed with the early seral patch size report done for 1960 on TFL 48 and shown in Table 7 and Figure 6.

Canfor has initiated a Natural Disturbance /Fire Regime study. This work will form the basis for establishing natural disturbance frequencies, patterns and sizes and will be considered to set targets.

Table 6: LUPG Patch Size by Natural Disturbance Type Targets

	Patch Size (ha)	% Forest Area
NDT1 & 2 Patch Size Targets*	<40	30-40
	40-80	30-40
	80-250	20-40
NDT3 Patch Size Targets*	<40	10-20
	40-250	10-20
	250-1000	60-80

*Source Forest Practices Code of BC Landscape Unit Planning Guide (March 1999)

ACCEPTABLE VARIANCE

+/- 10% of interim targets due to forest management activities.

Future variances may be specified for Landscape Units where it will not be possible to achieve the full range of natural disturbance. Examples of this may be in visually sensitive areas, landscape units with small representation of a particular NDT, or low social acceptance of large disturbances.

CURRENT STATUS

Patch size by Landscape Unit is shown in Table 7

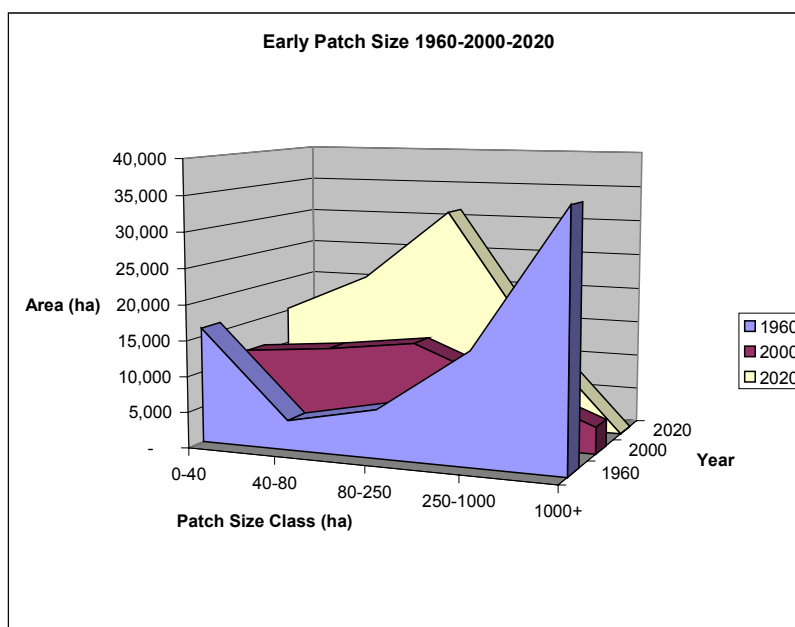
As timber harvesting progresses from 1960 to 2020 several trends are noted. Across the TFL patches within the 0-40 ha range stay within the range of variation expressed in the 1960 baseline. The area of patches in 40-80 ha and 80-250 ha steadily increases while the area in patches greater than 250 ha steadily decreases.

Table 7: Early Seral Patch Size 1960 – 2000 – 2020

Landscape Unit Name	Patch Size Class (% area by Class)														
	0-40 ha			40-80 ha			80-250 ha			250-1000 ha			1000+ ha		
	1960	2000	2020	1960	2000	2020	1960	2000	2020	1960	2000	2020	1960	2000	2020
BOUCHER	12%	32%	13%	5%	13%	22%	8%	34%	32%	16%	22%	34%	59%	0%	0%
BURNT-LEMORAY	24%	14%	18%	2%	19%	29%	5%	39%	37%	10%	28%	16%	60%	0%	0%
CARBON	43%	34%	29%	14%	48%	29%	23%	18%	42%	21%	0%	0%	0%	0%	0%
DUNLEVY	6%	17%	21%	2%	10%	25%	7%	21%	39%	11%	52%	15%	75%	0%	0%
EAST PINE	35%	47%	20%	5%	41%	15%	16%	12%	57%	44%	0%	8%	0%	0%	0%
GETHING	25%	13%	14%	6%	34%	30%	0%	22%	41%	68%	14%	15%	0%	18%	0%
HIGHHAT	28%	33%	18%	7%	29%	25%	17%	38%	35%	35%	0%	21%	13%	0%	0%
MARTIN CREEK	47%	33%	15%	15%	21%	21%	16%	36%	35%	21%	9%	29%	0%	0%	0%
WOLVERINE	19%	19%	29%	4%	13%	24%	2%	25%	39%	22%	20%	8%	53%	23%	0%
TFL Total	21%	22%	19%	5%	25%	26%	9%	28%	39%	20%	18%	16%	45%	8%	0%

Source VRI, 1960, 2000, 20-year plan

Figure 6: Early Seral Patch Summary for TFL 48



FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Patch size was reported in draft MP 3. It was noted during the CSA SFM registration audit that the methodology used to determine patch size appeared to indicate a much higher proportion of smaller patches than expected based on field review.

A revised methodology has been used for monitoring patch size in early seral stages. In the original analysis roads, trails and seismic lines were buffered and removed from the forested landbase resulting in small patches being reported. For this new analysis, disturbances less than 10m wide were amalgamated back into the early seral patch.

Patch size is reported only at the Landscape Unit level. The Landscape Unit or NDT boundary transects did not artificially split patches. Patches that crossed a Landscape Unit boundary are reported by the Landscape Unit in which the largest portion of the patch exists.

FOREST MANAGEMENT ACTIVITIES

Harvesting plans will be developed which will aim to achieve a natural patch size distribution when appropriate targets are set.

IMPLEMENTATION SCHEDULE

Current forest development plans are analyzed to ensure consistency with the LUPG patch size distribution targets. These values represent a vision of the desired future conditions and will not necessarily be initially achievable. It is anticipated that patch size targets will be achieved in 140 years in conjunction with seral stage targets. Research on spatial and temporal models (see 3.4.51) will be used to set and implement targets by 2003.

MONITORING PROCEDURE

Landscape Unit patch size distribution for the early seral stage for each Forest Development Plan will be summarized.

3.4.3 Protected Area by Seral Stage

Indicator:	Objective:
3. Protected area by seral stage	We will identify seral stage distribution in Protected Areas within the TFL.

ACCEPTABLE VARIANCE

None through Canfor management activities.

CURRENT STATUS

Table 8 shows current seral stage distribution of the Protected Areas within the TFL.

Table 8: Current Status of Seral Stages Within Protected Areas as of July 2000

Protected Area		Seral Stage of Vegetated Treed Areas								Total Area
		Existing				+ 5 Years				
		Early	Juvenile	Mature	Old	Early	Juvenile	Mature	Old	
Bocock Peak	ESSF wc3		91	317	29	-	79	328	30	437
	ESSF wk2		22	91	81	-	22	91	81	194
Bocock Peak Total			113	408	110	-	101	419	111	631
Butler Ridge	BWBS mw1 C	3	128	480	98	3	128	480	98	709
	BWBS mw1 D	179	322	64	461		389	71	461	1,026
	BWBS wk2 C		156	279	21	-	156	279	21	456
	BWBS wk2 D		103	15	74	-	219	43	74	192
	ESSF mv4	60	2,362	218	-		2,352	228	-	2,640
Butler Ridge Total		242	3,071	1,056	654	168	3,244	1,101	654	5,023
Gwillim Lake	BWBS mw1 C		-	22	4	-	-	20	6	26
	BWBS mw1 D		-	-	5	-	-	-	5	5
	BWBS wk1 C		193	304	126	-	174	310	139	623
	BWBS wk1 D	11	27	52	27		13	65	28	117
	ESSF mv2	7	880	660	94	7	784	756	94	1,641
Gwillim Lake Total		18	1,100	1,038	256	18	971	1,151	272	2,412
Klin Se Za	ESSF wc3		219	761	70	-	191	787	72	1,050
	ESSF wk2		8	32	28	-	8	32	28	68
Klin Se Za Total			227	793	98	-	199	819	100	1,118
Peace Boudreau	BWBS mw1 C		301	97	22	-	301	97	22	420
	BWBS mw1 D		1,190	442	47	-	1,190	442	47	1,679
Peace Boudreau Total			1,491	539	69	-	1,491	539	69	2,099
Pine – LeMoray	ESSF wc3		445	1,278	261	-	349	1,316	319	1,984
	ESSF wk2		136	135	142	-	134	77	202	413
	SBS wk2		54	-	-	-	1	53	-	54
Pine – LeMoray Total			635	1,413	403	-	484	1,446	521	2,451
Grand Total		260	6,637	5,247	1,590	186	6,490	5,475	1,727	13,734

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

These Protected Areas, although not harvested, contribute to other ecological values on the landbase (e.g., seral stages). Seral stages are calculated as per the Landscape Unit Planning Guide (1999). Forecasting assumptions for the Protected Areas are: 1) that these areas will follow natural succession patterns, 2) they will contribute to seral stage targets for the TFL and 3) they are not available for harvest.

FOREST MANAGEMENT ACTIVITIES

Ensure no Canfor management activities occur in these Protected Areas unless otherwise requested. Plots for scientific studies may be established.

IMPLEMENTATION SCHEDULE

Draft Protected Areas were identified in the Dawson Creek LRMP. Butler Ridge, Bocock Peak, Gwillim Lake and Pine – LeMoray were declared Parks in July 2000. Canfor has conducted no operations in these areas since this time. The timber supply analysis for MP 3 will incorporate the removal of these areas from the timber harvesting landbase, however they will contribute to biodiversity targets.

MONITORING PROCEDURE

The seral stage distribution will be monitored for each Management Plan.

3.4.4 Species at Risk

Indicator:	Objective:
4. Number of forest dependent plant species, plant associations, fish and wildlife classified as threatened, endangered or vulnerable within the TFL	We will ensure no species is uplisted as a result of Canfor management activities within the TFL.

ACCEPTABLE VARIANCE

Zero for activities directly related to Canfor. The listing processes often have broader provincial and federal level concerns and may result in the status of species changing independent of Canfor management activities.

CURRENT STATUS

There are 49 species/species associations at risk in the TFL. There are 6 mammals, 15 birds, 2 fish, 22 plants and 4 plant associations (see Table 9). These species include those listed federally, provincially (red or blue) and as Identified Wildlife under the Forest Practices Code. Some species can appear on all 3 lists; for example, grizzly bear is federally listed as Vulnerable, Blue-listed provincially and is Identified Wildlife under the Forest Practices Code.

Changes from Management Plan 2: Since the last management plan, 2 wildlife species have been uplisted (Yellow Rail and Woodland Caribou), and no species downlisted federally. At the provincial level, 2 wildlife species have been uplisted (Short-eared Owl and Black Throated Green Warbler), and 8 species downlisted (Table 9 and Appendix 9.10). Vascular plants were not tracked during Management Plan 2.

Uplisted Species: The Yellow Rail is not expected to occur in British Columbia but has been documented on the TFL during the spring of June 1997 (Settington and de Vries 1997). The change in federal status is not a result of Canfor management activities.

Woodland Caribou are dependent on mature coniferous habitats and are sensitive to habitat alteration. In addition, increasing road access may contribute to disturbance by humans and increased predation by wolves. In the 1970's caribou numbers in the Dawson Creek Forest District crashed and increased until the late 1980's (Harper 1988). The current population trend in the Dawson Creek Forest District is unknown (Heard and Vagt 1998). The federal listing change to "Threatened" was a result of national changes in population trends (D. Fraser, pers. comm.) and not directly related to activities on TFL 48. Caribou management will require landscape level analysis (see forecasting below).

The Short-eared Owl is a range dependant species; the change in status was not related to Canfor management activities.

The Black-throated Green Warbler is found primarily in mature and old-growth mixedwoods and was recommended for uplisting because of concerns regarding habitat alteration through timber harvesting on Crown and private land in the Dawson Creek, Ft. St. John and Ft. Nelson Forest Districts (Cooper *et al.* 1997).

On TFL 48 there are currently 101,142 ha of old and mature coniferous and deciduous forests in the BWBS, 30,715 ha of this is classed as mixedwood. Modeling the proposed harvest in the 2000-2005 FDP the total old and mature coniferous and deciduous forests will be 101,106 ha. Species specific habitat modeling is required but it is unlikely that the proposed levels of harvest will have large affects on Black-throated Green Warbler habitat

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Forecasting for species at risk will be done through wildlife habitat modeling for selected species (see Section 3.4.5). In particular, both caribou and Black-throated Green warbler will require landscape level analysis. Canfor is modeling both caribou and Black-throated Green Warbler habitat toward this goal.

FOREST MANAGEMENT ACTIVITIES

If required, coarse (e.g., seral stage) and fine filter (e.g., provision of coarse woody debris) strategies will be changed to ensure the Company's operations do not adversely affect the habitat for species at risk.

IMPLEMENTATION SCHEDULE

Federal and provincial species lists have been tracked annually since 1995. Formal reporting begins in this management plan (see above).

MONITORING PROCEDURE

Track federal and provincial rare species status annually.

Table 9: Wildlife and Vascular Plant Species of Concern in Canadian Forest Products Ltd. TFL 48

Colour coding indicates current provincial status (i.e., red or blue listed).

Common Name	Scientific Name	Current Status*	Previous Status (1995)
Mammals (n=6)			
Caribou (Mountain ecotype)	<i>Rangifer tarandus caribou</i>	Threatened	Red/Vulnerable
Caribou (Northern ecotype)		Threatened	yellow
Mountain Goat	<i>Oreamnos americanus</i>	Identified	
Grizzly Bear	<i>Ursus arctos</i>	Vulnerable, Identified	blue
Wolverine	<i>Gulo gulo</i>	Vulnerable	blue
Fisher	<i>Martes pennanti</i>	Identified	blue
Northern Long-eared Myotis	<i>Myotis septentrionalis</i>		red
Birds (n=15)			
Western Grebe	<i>Aechmophorus occidentalis</i>	Identified	red
American Bittern	<i>Botaurus lentiginosus</i>	Identified	blue
Trumpeter Swan	<i>Cygnus buccinator</i>	Identified	blue
Northern Goshawk	<i>Accipiter gentilis</i>	Identified	
Broad-winged Hawk	<i>Buteo platypterus</i>		red
Yellow Rail	<i>Coturnicops noveboracensis</i>	Vulnerable	unlisted federally
Sandhill Crane	<i>Grus canadensis</i>	Identified	blue
Short-eared Owl	<i>Asio flammeus</i>	Vulnerable	yellow
Purple Martin	<i>Progne subis</i>		red
Philadelphia Vireo	<i>Vireo philadelphicus</i>		blue
Cape May Warbler	<i>Dendroica tigrina</i>		red
Black-throated Green Warbler	<i>Dendroica virens</i>		yellow
Bay-breasted Warbler	<i>Dendroica castanea</i>		red
Connecticut Warbler	<i>Oporornis agilis</i>		red
Canada Warbler	<i>Wilsonia canadensis</i>		blue
Fish (n=2)			
Bull Trout	<i>Salvelinus confluentus</i>	Identified	blue
Arctic Grayling (Williston pop.)	<i>Thymallus arcticus</i>		red
Vascular Plants (n=22)			
Canada anemone	<i>Anemone canadensis</i>		
Woody-branched rockcress	<i>Arabis lignifera</i>		

Common Name	Scientific Name	Current Status*	Previous Status (1995)
Slender sedge	<i>Carex tenera</i>		
Dry-land sedge	<i>Carex xerantica</i>		
Boreal paintbrush	<i>Castilleja fulva</i>		
Austrian draba	<i>Draba fladnizensis</i>		
Milky draba	<i>Draba lactea</i>		
Small-flowered willowherb	<i>Epilobium leptocarpum</i>		
Nuttall's sunflower	<i>Helianthus nuttallii</i> var. <i>nuttallii</i>		
Spike oat	<i>Helictotrichon hookeri</i>		
Fennel-leaved desert-parsley	<i>Lomatium foeniculaceum</i> var. <i>foeniculaceum</i>		
Smith's melic	<i>Melica smithii</i>		
Jordal's locoweed	<i>Oxytropis jordalii</i> ssp. <i>davisii</i>		
Seneca-root	<i>Polygala senega</i>		
Purple rattlesnake-root	<i>Prenanthes racemosa</i> ssp. <i>multiflora</i>		
White wintergreen	<i>Pyrola elliptica</i>		
Heart-leaved buttercup	<i>Ranunculus cardiophyllus</i>		
	<i>Ranunculus pedatifidus</i> ssp. <i>affinis</i>		
Prairie buttercup	<i>Ranunculus rhomboideus</i>		
	<i>Rosa arkansana</i> var. <i>arkansana</i>		
Meadow willow	<i>Salix petiolaris</i>		
Autumn willow	<i>Salix serissima</i>		
Plant Associations			
Subalpine Fir/Black Spruce/Labrador Tea	<i>Abies lasiocarpa/Picea mariana/Ledum groenlandicum</i> (ESSFmv2/03)		
Arctic rush/Nuttall's Alkaligrass/	<i>Juncus arcticus/Puccinellia nuttalliana/Suaeda calceoliformis</i> (BWBSmw1/00)		
/Arctic rush/	<i>Muhlenbergia richardsonis/Juncus arcticus/Poa secunda</i> ssp. <i>juncifolia</i> (BWBSmw1/00)		
Black spruce/Black huckleberry/coltsfoot	<i>Picea mariana/Vaccinium membranaceum/Petasites</i> (SBSwk2/04)		

- Current status based on Conservation Data Centre Provincial Vertebrate Animal and Vascular Plant Tracking List (June 2000), Identified Wildlife Management Strategy (Feb 1999), and COSEWIC (April 1999).

3.4.5 Habitat Supply for Indicator Species

Indicator:	Objective:
5. Habitat supply for indicator species	<p>5-1 We will ensure distribution of habitat for indicator species across the TFL.</p> <p>5-2 We will ensure sufficient furbearer habitat on a drainage-by-drainage basis exists to enable the maintenance of populations.</p>

3.4.5-1 Wildlife Models

ACCEPTABLE VARIANCE

Unknown. Habitat must be classed across the TFL to determine current ranges of variation.

CURRENT STATUS

Terrestrial Ecosystem Mapping based wildlife models have been developed for 12 species of wildlife (see Section 2.2.5 Wildlife and Wildlife Habitat Inventories).

The original 10 species models have been applied to the Burnt River landscape unit. In addition, the Goshawk model has been applied to the Lower Sukunka landscape unit, and the marten model has been applied to the Rice Property. Fieldwork to date indicates that the Goshawk model can predict nesting habitat and the grizzly bear model can predict spring and fall feeding habitats. The marten model under predicted suitable habitat in young (<20 year old) aspen habitat.

Until the models have been applied to the entire TFL there are several interim strategies to sustain wildlife habitat and minimize disturbance to wildlife.

Road Deactivation: There are currently 642 km of deactivated in-block and other roads which limit road use to walking (141 km) or quad (501 km) access only. These types of deactivation limit disturbance and hunter access to species such as grizzly, wolverine, caribou, moose and elk.

Coarse Woody Debris (CWD): Coarse woody debris is retained in cutblocks to provide habitat and food for species such as marten, fisher and grizzly bear (see Section 3.4.13).

Wildlife Tree Patches: WTPs are retained to provide habitat for species such as grizzly bear, marten, fisher, wolverine, moose, and elk (see Section 3.4.11).

Riparian Management Zones: Riparian management zones are retained to provide habitat for each of the species that Canfor is managing (see Section 3.4.22).

No-Harvest Buffers: Buffers are provided on a variety of wildlife features including stick nests, bear dens, marten dens, and wildlife licks. Buffers vary in size depending on the feature and proposed silviculture system. E.g., a bear den in an irregular shelterwood system may include a small buffer in a retained strip while a bear den would likely be excluded from a proposed clear-cut system.

In 1999 we identified two bear dens and excluded 1 from the harvesting area and 1 was buffered. Five (5) marten dens were buffered from shearing activities on the Rice Property. To date in 2000 one (1) bat roosting site was excluded from silviculture activities and two (2) goshawk nests were identified. The goshawk nests are not in proposed harvesting areas for the 2000-2005 development plan. They will be monitored to determine if they continue to be active and require buffering.

Temporal Buffers: Activities such as harvesting, road building and aerial herbicide application may be delayed in the vicinity of nest sites during breeding season of species such as Northern Goshawks or Trumpeter Swans. To date these activities have always been a sufficient distance (e.g., > 1km) from these sites that activities have not had to been shut down.

Herbicide Application: The current Pest Management Plan (PMP June 1, 2000 - May 31, 2005) defines Habitat Management Zones for species such as grizzly bear and moose which limit the area that can be treated without referral to MELP to 200 ha within a 10 square kilometer area. This limitation provides a variety of available forage for these species over time and space.

Alternative Silviculture Systems: Using alternative silviculture systems such as patch-cut, shelterwood and selection systems retains habitat for a variety of species. For example, Black-throated Green warblers are known to continue to use patch cuts in the BWBS (Settington and Boulanger 2000) while irregular shelterwood systems likely provide a good combination of forage and cover for grizzly bears in the ESSF (T. Hamilton, pers. comm.). The number of alternative silviculture systems proposed for the 2000-2005 FDP are summarized in Table 10.

Table 10: Summary of Alternative Silviculture Systems in the 2000-2005 FDP

BEC Zone	# of Blocks Using Alternative Silv. Systems	Total # of Blocks/BEC
ESSF wk2	53	81
ESSF mv2	21	66
SBS wk2	12	55
BWBS wk1	1	19
BWBS mw1	15	57
Total	102	278

Large Scale Disturbances: In habitats where large natural disturbances originally shaped the forest (e.g., BWBS) it may be appropriate to conduct larger clearings to provide large patches of interior forest in the future. Species such as caribou and Black-throated Green Warbler likely require a degree of large natural disturbances to provide future habitat. The number of large-scale disturbances proposed in the 2000-2005 development plan is summarized in Table 11.

Table 11: Summary of large scale disturbances in the 2000-2005 FDP.

BEC Zone	# of Blocks > 100 ha	Total # of Blocks/BEC
ESSF wk2	4	81
ESSF mv2	13	66
SBS wk2	4	55
BWBS wk1	0	19
BWBS mw1	7	57
Total	28	278

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

TEM based models will be used to quantify available habitat across the DFA. Habitat supply will be examined in relation to timber supply models at 0, 10, 20, 50, 100 and 200 years.

FOREST MANAGEMENT ACTIVITIES

If required, coarse (e.g., seral stage) and fine filter (e.g., provision of coarse woody debris) strategies will be changed to ensure the Company's operations do not adversely affect the habitat for indicator species.

IMPLEMENTATION SCHEDULE

Habitat models had been developed for 10 species, models were also be developed for wolverine and three-toed woodpecker by March 31, 2001. Models will be applied across the TFL by July 15, 2001 to establish a baseline.

MONITORING PROCEDURE

Habitat models will be analyzed in each Management Plan.

3.4.5-2 Furbearer Habitat Availability

Work on furbearer habitat availability will follow the timelines outlined above for habitat supply for indicator species.

3.4.6 Disease Transmission to Sheep

Indicator:	Objective:
6. Disease transmission from domestic sheep grazing activities	No disease transmission from domestic sheep to wild sheep populations from domestic sheep use in Canfor activities.

ACCEPTABLE VARIANCE

Zero due to Canfor management activities.

CURRENT STATUS

There has been no known transmission of disease from domestic sheep to wild sheep.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Canfor will liaise annually with BC Environment to determine if any incidences of disease transmission have occurred.

FOREST MANAGEMENT ACTIVITIES

Domestic sheep grazing will follow provincial guidelines that limit sheep grazing in habitat used by wild sheep populations.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Canfor will liaise annually with BC Environment to determine if any incidences of disease transmission have occurred.

3.4.7 Collection and Use of Registered Seed

Indicator:	Objective:
7. Collection and use of registered seed for coniferous planted species	All seeds registered.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

100% of seeds grown to be planted within the TFL are registered in accordance with the Tree Cone, Seed and Vegetative Material regulation.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Seeds will be collected and planted in accordance with the Tree Cone, Seed and Vegetative Material regulation. Based upon the seedlot registration information seeds are planted only where they are genetically and ecologically appropriate for the site.

IMPLEMENTATION SCHEDULE

All seeds have been registered since 1995.

MONITORING PROCEDURE

Seedlots are tracked and recorded for every area planted.

3.4.8 Incidence of Fire, Windfall, Insects and Disease

Indicator:	Objective:
8. Area and severity of incidence of fire, windfall, insects and disease	<p>8-1 We will minimize Non-Recoverable Losses to less than 10% of AAC based on a 10 year rolling average.</p> <p>8-2 We will salvage 90% of merchantable timber volumes within the THLB damaged by fire, windfall, insects and disease within 18 months of occurrence.</p>

3.4.8-1 Minimize Non-Recoverable Losses

ACCEPTABLE VARIANCE

+/- 2% of the AAC.

CURRENT STATUS

The data package for Management Plan 2 had the following rationales for: fire 44,605m³/year, insects 4,367m³/year and windthrow 7,174m³/year, for a total of 56,146m³/year. This is less than 11% of the total allowable harvest volumes. These same assumptions have been included in the data package for the current timber supply analysis.

In 1997 approximately 1.6 hectares (470m³) of standing timber were burnt. There were no catastrophic losses in 1998 and 1999. The 10 year average (1991-2000) for losses attributable to fire is 15,887 m³/year.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Non-recoverable losses are timber volumes that are being destroyed on an annual basis by natural causes. Estimated annual losses are deducted from the gross harvested volume in the timber supply model to determine the net volume of timber which could be harvested over time. Endemic losses are accounted for in the yield tables. The increase in non-recoverable losses from past estimates to current estimates reflects the larger net area upon which Canfor is currently operating. The percentage of non-recoverable losses is anticipated to drop as a result of salvage activities and forest management.

FOREST MANAGEMENT ACTIVITIES

By definition Non-Recoverable Losses do not contribute to timber supply. However, they do contribute to other values (e.g., provision of coarse woody debris). Losses from blowdown, insects, disease and fire are minimized through salvage activities.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

The occurrence of forest health factors causing damage or that may cause damage within the TFL are recorded and evaluated annually.

3.4.8-2 Salvage of Merchantable Timber Volumes

ACCEPTABLE VARIANCE

Salvage activities must be economically and ecologically appropriate.

CURRENT STATUS

All 43 sites (30,000 m³) that blew down in 1997 were salvaged. Approximately 1.6 hectares (470 m³) of timber burnt in 1997 was not salvaged. There were no catastrophic events in 1998 and 1999.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

There are no effective tools for predicting timber damage.

FOREST MANAGEMENT ACTIVITIES

Under normal circumstances stands of damaged timber are given highest priority for harvesting.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

The occurrence of forest health factors causing damage or that may cause damage within the TFL are recorded and evaluated annually.

3.4.9 Percent of a Harvested Area Reforested

Indicator:	Objective:
9. Percent of a harvested area that is reforested	We will reforest 100% of the net area to be reforested within 2 years of harvest on average.

Regeneration delay is the amount of time between harvest starting and the date by which at least the minimum of healthy well-spaced trees of both the preferred and acceptable species and the minimum preferred species must be established and subsequently maintained until the stand is declared free growing.

ACCEPTABLE VARIANCE

None. The area weighted average regeneration delay will not exceed 2 years for the TFL in any given year.

CURRENT STATUS

A review of silviculture records was completed for all blocks harvested since January 1, 1995 and the actual biological area weighted regeneration delay is 0.6 years. For administrative reporting a silviculture strata cannot be declared to have met regeneration delay until the whole unit meets the standard. When using the administrative definition the area weighted regeneration delay is 2.0 years.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The timber supply analysis for MP 3 will use a 2-year regeneration delay for all stands harvested since 1995. See Tables 31 and 32 in the Information Package (ver 3) for TFL 48 in support of MP3 (2001).

The regeneration delay is calculated by area weighting the number of growing seasons that a site is not growing trees following harvesting starting.

FOREST MANAGEMENT ACTIVITIES

To ensure that we continue to meet this target Canfor currently plants 100% of all harvested blocks. The majority of blocks are planted the spring or summer immediately following harvest. Fill planting and stand tending treatments are completed as necessary to ensure the blocks continue to meet the regeneration and free growing criteria.

IMPLEMENTATION SCHEDULE

Silviculture records and regeneration delay periods have been tracked since 1987.

MONITORING PROCEDURE

Regeneration delay is tracked and reported on a block by block basis to ensure the block has met the target identified in the silviculture prescription. For each Management Plan and timber supply analysis an area weighted regeneration delay will be calculated.

Surveys are regularly scheduled and blocks tracked to ensure that the block maintains a satisfactory stocking level.

3.4.10 Minimum Harvest Age

Indicator:	Objective:
10. Minimum harvest age (as a surrogate for nutrient cycling)	Minimum harvest ages in years will be: Aspen 61, Cottonwood 61, Pine 81, Subalpine fir 81, Spruce 121 (based on leading species and average stand age).

ACCEPTABLE VARIANCE

Less than 5% of the periodic cut may be harvested outside these priority ages.

CURRENT STATUS

The minimum harvest age is currently set at the regional priority cutting age. This is set at Pine 101 years, Subalpine Fir 121 years, Spruce 141 and Aspen and Cottonwood 81 years. To meet other objectives (e.g. seral stage distribution) the actual minimum harvest age may be lowered over time (e.g. spruce 141 to 121).

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Timber supply analysis for MP 2 and MP 3 incorporated the regional priority harvest ages for natural stands. Managed stand minimum harvest age is set at culmination.

FOREST MANAGEMENT ACTIVITIES

See current status.

IMPLEMENTATION SCHEDULE

These minimum harvest ages are currently being exceeded.

MONITORING PROCEDURE

Stands scheduled for harvest are cruised and ages assessed prior to harvest.

3.4.11 Wildlife Tree Patches

Indicator:	Objective:
11. Wildlife tree patches	Wildlife tree patches will not be less than 8% of the harvested area, on average.

ACCEPTABLE VARIANCE

No variance less than 8% on average will be accepted for harvested blocks. Any individual block may not have 8% however blocks harvested since 1995 on average will have no less than 8% in WTP identified.

CURRENT STATUS

Blocks harvested to date since 1995 have on average 17.6% in WTPs.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The percent of the timber harvesting land base in the WTP zone was derived from an intersection of existing WTPs against the total forested land base. When the T.H.L.B. was defined, the proportion of all the WTPs within and outside the T.H.L.B. was identified. The intersection showed that 55% percent of all WTPs were inside the T.H.L.B. and 45% were outside the T.H.L.B. Within the TFL, 8 percent of the forested area within a cut block must be retained in WTPs after the block is harvested. This equates to 4.4 percent of the T.H.L.B. (8% * .55).

To simulate management of WTPs, a zone was created wherein the WTP portion of the T.H.L.B. was doubled in size and assigned a longer rotation (via a group 1 constraint where 50% of the WTP zone must be greater than a minimum age). By doubling the T.H.L.B. portion of the WTP zone, a minimum portion of each cut block would always exhibit old growth characteristics. This was done to simulate a second pass harvest of wildlife tree patches. When a plantation with a WTP reaches maturity, the T.H.L.B. portion of the WTP will be harvested and the WTP will be replaced with 4.4% of the plantation having old growth characteristics. Since plantations at maturity do not exhibit old growth characteristics, the WTP portion of each block is doubled so that replacement WTPs can age until they reach an age where old growth characteristics appear. Thus 8.8 percent of every polygon in the T.H.L.B. was assigned as a WTP. The age at which a stand is considered suitable for replacement as a WTP is 160 years for pine, 180 years for spruce and balsam and 110 years for deciduous species.

FOREST MANAGEMENT ACTIVITIES

As indicated in the current status, WTPs are currently over-represented on the TFL. Over time some WTPs may be amended or some blocks may have lower levels of WTPs to realign with the objective. Harvesting of WTPs will be allowed only if a suitable WTP is identified to replace the harvested WTP. WTP locations are placed in suitable non-timber harvesting landbase before using the timber harvesting landbase.

IMPLEMENTATION SCHEDULE

All blocks harvested since 1995 have on average greater than 8% WTPs identified. The 8% area in WTPs may be amended as landscape level planning is further implemented.

MONITORING PROCEDURE

WTPs will be reported for approved blocks with each forest development plan submission.

3.4.12 Old Growth Management Areas

Indicator:	Objective:
12. Old growth management areas	We will sustain old growth habitat values within the TFL.

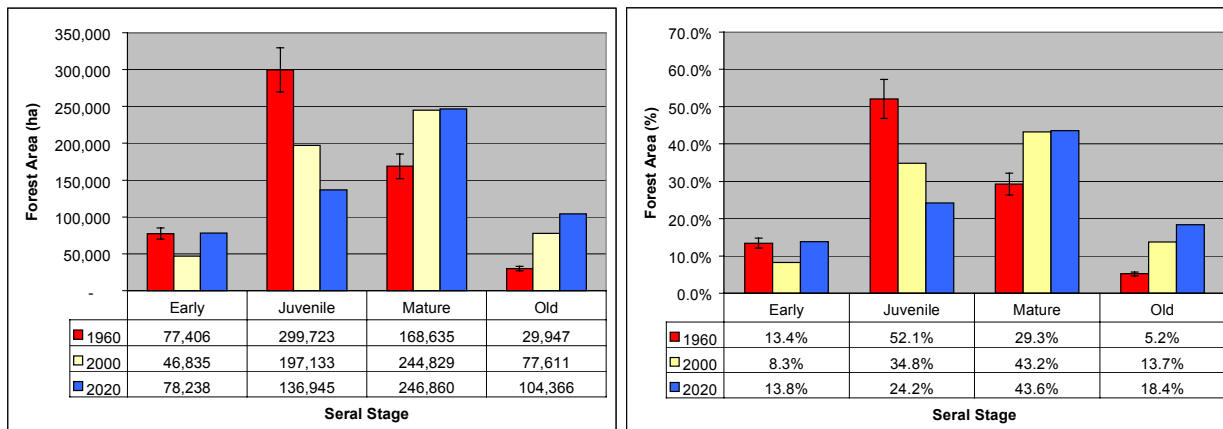
ACCEPTABLE VARIANCE

+/-10% of number of hectares identified for Old Growth management.

CURRENT STATUS

The TFL is currently represented by 13.7% (77,611 ha) Old Growth. From the 1960 baseline the amount of old growth represented on the TFL has increased from 5.2% in 1960 to 13.7% in 2000 and projected to continue to increase to 18.4% by 2020 based on the 20-year plan prepared in support of MP3.

Figure 7: 1960-2000-2020 Seral Stage Summary for TFL 48



Source: VRI 1960, 2000 and 20-year plan

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Old growth is defined as per the LUPG (March 1999). The base case timber supply analysis included old growth targets. See Section 3.4.1-2, Appendix 9.5, and 9.12 for details on how the 1960 baseline, base case assumption and 20-year plan were produced.

FOREST MANAGEMENT ACTIVITIES

Where insufficient amounts of old seral stage are available, areas will be temporarily set aside and not harvested to ensure that a certain level of old seral stage is achieved. After replacement stands develop into old seral stage (from mature), then stands that were set-aside are available for harvest. See 3.4.1-2 for seral stage strategies and Appendix 9.16 for TFL 48 2000 FDP Old Seral Management Strategies.

IMPLEMENTATION SCHEDULE

Old growth management areas will be identified by December 15, 2003. Old growth targets were modeled in the MP3 timber supply analysis. Interim strategy is to manage old seral stages as indicated in 3.4.1-2

MONITORING PROCEDURE

Old growth management areas will be monitored every Management Plan as part of the 20 year plan submission to determine their suitability as old growth habitat. Old growth seral areas will be reported in every FDP submission.

3.4.13 Coarse Woody Debris

Indicator:	Objective:
13. Coarse woody debris	We will maintain natural levels of coarse woody debris (CWD) across the TFL.

ACCEPTABLE VARIANCE

Subject to MoF variances on utilization and protection measures.

CURRENT STATUS

The current forest development plan states an objective for the management of coarse woody debris is to approximate pre-harvest levels by retaining all downed material not required to be removed according to utilization specifications. The interim strategies to meet this objective is:

- No broadcast burning.

- Non-merchantable materials will be retained on site (minimize the amount of pile and burning). Merchantable material which will meet utilization standards will be removed from the site and not contribute to levels of CWD (see Section 3.4.31).
- Wildlife trees (coniferous and deciduous) planned to be retained, in operational plans, will provide for future recruitment of CWD (see Section 3.4.11).

Utilization of optional fibre (as identified in the Cutting Permit document) on some blocks will decrease the amount of fibre available for CWD. Generally this will be dictated by the fluctuation of market prices for the optional fibre. Over time, these fluctuations will provide for differing levels of CWD to be maintained (see Section 3.4.30).

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

To determine the natural levels of CWD VRI Phase II plots will include measures of CWD. (See Appendix 9.3 Phase II Sample Plan).

FOREST MANAGEMENT ACTIVITIES

The management activities described above will be used to maintain coarse woody debris. Once natural levels have been determined the management activities may be revised.

IMPLEMENTATION SCHEDULE

Ongoing. Data from Phase II samples will be collected starting in 2001. Upon completion of field sampling initial results will be available. Implementations of revised strategies are subject to MoF approval.

MONITORING PROCEDURE

Phase II plots and waste assessments will be used to measure CWD levels over time. CWD monitoring will be reported in the annual SFM plan.

3.4.14 Habitat Connectivity

Indicator:	Objective:
14. Habitat connectivity	Maintain an adequate level of habitat connectivity at landscape and stand levels with an emphasis on species dependent on mature forest or forest types (e.g., caribou and marten) recognizing that habitat connectivity may shift across the landscape.

ACCEPTABLE VARIANCE

To be determined.

CURRENT STATUS

Currently 8.3% of the TFL is in early seral stages; modeling the effects of the 20-year plan shows that 13.8% of the TFL will be in early seral stages (see Table 5). It is unlikely that the proposed harvest levels will have an effect on connectivity in the short-term.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Patch size and distribution will be compared to caribou and marten habitat requirements to determine if connectivity for these species is compromised.

FOREST MANAGEMENT ACTIVITIES

Forest management activities would be altered if connectivity is compromised. Emphasis will be placed on using CWD piles and Wildlife Tree Patches to provide connectivity for species such as marten.

IMPLEMENTATION SCHEDULE

Canfor will begin addressing connectivity issues by September 2000 with completion by December 15, 2003.

MONITORING PROCEDURE

Connectivity will be demonstrated using a GIS exercise in each management plan.

3.4.15 Area of the TFL Occupied by Permanent Access Structures

Indicator:	Objective:
15. Area of the TFL occupied by permanent access structures associated with forest management activities	We will limit impacts on the landbase due to the presence of permanent access structures to less than 3.5% of the gross landbase of the TFL.

Permanent access structures are defined as those roads that are not planned to be returned to a forested state. Some roads may be managed to meet access strategies but are still classed as a permanent reduction in forest area.

ACCEPTABLE VARIANCE

Variance will be 3.5% +/- 0.25% of the gross landbase of the TFL.

CURRENT STATUS

Approximately 0.96% of the TFL is occupied by permanent access structures as identified in Table 12.

Table 12: Permanent Access Structures in TFL 48

Road Type (RoW width in metres)	Total Area (ha)	% of Gross TFL Area (643,511 ha)
Undistinguished Road type but delineated in VRI	4,098	0.64%
2 - Main Line Sec (20 m)	375	0.06%
3 - Operational (15 m)	949	0.15%
4 - Block Perm (8 m)	674	0.10%
Gravel Sec (30 m)	69	0.01%
Paved Hwy (50m)	23	0.00%
Grand Total	6,187	0.96%

Source VRI 1999

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

All existing roads were buffered and classified to the non-vegetated landbase. The exceptions to this are the existing roads that have been delineated by the VRI photo interpretation. Productive portions of the THLB are lost through the construction of future roads, trails and landings. A one time only reduction is applied to all stands greater than 40 years of age. The rationale for the reduction in future roads was determined in MP 2 and this rationale will be used for MP3. Details are provided in Appendix 9.5. A reduction of 4.93 percent of the timber harvesting landbase or 2.26 percent of the gross landbase will be applied to account for the construction of future roads trails and landings.

FOREST MANAGEMENT ACTIVITIES

Roads within cutblocks are deactivated to minimize impacts (Photo 3). Mainline roads may be temporarily deactivated to minimize access but are still considered to be permanent access structures. Temporary block roads are used to minimize reductions from the landbase. These roads are fully reclaimed, replanted and not permanently removed from the forested landbase.

IMPLEMENTATION SCHEDULE

Currently on the TFL there is 1.4 km of temporary block road which has been replanted and 26.8 km of proposed temporary block roads.

There are also other roads and landings that have been rehabilitated but these areas are only recorded on hard copy maps and records. These records exist but have not been updated into our Forest Road Management System (FRMS). The update will be completed by June 30, 2001.



Photo 3: Temporary roads are rehabilitated to minimize reductions from the landbase.

Further analysis will be conducted in conjunction with the 20-year plan submitted with MP 3 in an effort to further reduce the long-term permanent removals due to permanent access structures. This will be completed by March 2001.

MONITORING PROCEDURE

The amount of landbase occupied by permanent access structures are reported each management plan. Tracking of planned and completed activities and status is done through Canfor's FRMS.

3.4.16 Number of Reportable Spills

Soil and water resources and physical environments are conserved if the quantity and quality of soil and water within forest ecosystems are maintained.

Indicator:	Objective:
16. Number of reportable spills entered into Incident Tracking System	We will minimize the number of reportable spills.

ACCEPTABLE VARIANCE

All reportable spills will be investigated to minimize future occurrences.

CURRENT STATUS

A reportable spill is any spill that enters a waterbody or is greater than the levels indicated in Table 13 below. There were no reportable spills in 1999.

Table 13: Spill Reporting Levels

Material	Reportable Levels
Antifreeze	5 kg
Diesel Fuel	100 l
Gasoline (auto & chainsaw)	100 l
Greases	100 l
Hydraulic Oil	100 l
Lubricating Oils	100 l
Methyl Hydrate	5 kg
Paints & Paint Thinners	100 l
Solvents	100 l
Pesticides	1 kg
Explosives	Any

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Operational controls within Canfor's Environmental Management System include: Work Instructions, Emergency Preparedness and Response Plan and spill response training.

IMPLEMENTATION SCHEDULE

Set performance targets by March 1 annually.

MONITORING PROCEDURE

Regular audits and inspections of our activities will be conducted. All reportable spills will be entered into the Incident Tracking System.

3.4.17 Use of Environmentally Friendly Lubricants

Indicator:	Objective:
17. Use of environmentally friendly lubricants	We will research and identify environmentally friendly lubricants by March 1, 2001.

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Our workforce currently uses conventional and synthetic lubricants.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

FERIC has conducted several studies on environmentally compatible fluids. We will be assessing these and other studies for application to our operations by March 1, 2001.

MONITORING PROCEDURE

Not applicable.

3.4.18 Soil Productivity Measures

Indicator:	Objective:
18. Soil productivity measures	We will use site index measures based on BEC zone to confirm the predicted long-term soil productivity.

ACCEPTABLE VARIANCE

-10% of predicted site index

CURRENT STATUS

The status to March 2000 for site index measures is shown in Table 14.

Table 14: Average Site Index by Leading Species

Average Site Index (BHA 50)		Leading Species							
BEC	SITE SERIES	Subalpine Fir		Hybrid Spruce		Lodgepole Pine - Interior		White Spruce	
		Actual	Predicted	Actual	Predicted	Actual	Predicted	Actual	Predicted
BWBSmw1	01					20.0	18.0		
BWBSwk1	01					15.3	15.0	12.0	12.0
	05							15.0	15.0
ESSFmv2	01	21.5	12.0						
	04	15.0	15.0	15.0	15.0				
ESSFwk2	01	15.0	15.0	15.0	15.0			15.0	15.0
	03							19.0	12.0
SBSwk2	01	16.8	15.0	18.0	18.0	19.9	21.0	17.5	18.0
	05					21.0	21.0		

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

All strata which have met free growing status were reported on from Canfor's FMIS. The average site index for each site series is then compared against the predicted site index based on Site Index Estimates by Site Series for Coniferous Tree Species in British Columbia 1997. For deciduous stands the original stand site index will be used as a comparison to the actual site index at free growing.

The assumption is that if at free growing the actual site index is close to the predicted site index for that site series then soil productivity has not been adversely impacted.

The above table shows that in most cases the actual site index is higher than the predicted. In one case, the SBSwk2 01 PI site, the actual of 19.9 is less than the predicted of 21.0. Several factors may influence this including adverse brush and competition on the site. This will be monitored at the end of the 2000 free growing surveys and assessed again to determine the ongoing trends.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Free growing surveys with site index estimates have been collected since 1998 and will continue as more blocks approach free growing status.

MONITORING PROCEDURE

This will be reported annually in the SFM annual report to include results of new free growing surveys.

3.4.19 Soil Degradation

Indicator:	Objective:
19. Soil degradation	We will not exceed site degradation guidelines.

ACCEPTABLE VARIANCE

Variances may include small cutblocks containing main haul roads, cutblocks with a switchbacking haul road, or other cases where topography and engineering constraints limit the options for road location and development.

CURRENT STATUS

The silviculture prescription sets out the maximum proportion of the total area under the prescription that may be occupied by roads, landings, gravel pits and other permanent access structures. Generally permanent access structures do not occupy more than seven per cent of the total area within a cutblock. All 1998 and 1999 harvested areas were within allowable limits.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The forest development plan, the twenty year plan and the timber supply analysis for the TFL consider and evaluate future requirements for permanent roads. Areas occupied by permanent access structures do not contribute to the THLB.

FOREST MANAGEMENT ACTIVITIES

Permanent access structures are and will continue to be constructed using a variety of road building techniques such as endhauling, minimizing sidecast and using excavators. Areas in excess of the prescribed limits will be rehabilitated.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Road and harvest inspections and post harvest assessments are conducted to ensure operations are within the prescribed limits.

3.4.20 Seedling Growth or Establishment

Indicator:	Objective:
20. Seedling growth or establishment	We will meet Free Growing requirements within Silviculture Prescriptions.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

Records relating to year of harvest and stocking status are tracked by Canfor for all areas harvested within the TFL (Table 15). Since 1987 licensees have assumed responsibility for reforestation and silviculture prescriptions have set free to grow (FTG) target dates. Backlog areas are currently being managed by Canfor and funded through Forest Renewal BC. When treatments have been completed and these stands meet current free to grow standards then this will be reported.

To date no stands have passed the FTG date. Over the next few years many of the stands harvested in 1987 will be approaching their FTG dates.

Table 15: Free to Grow Status as of April 2000

	Licence			Grand Total
	TFL48 (1987- 2000)	SBFEP (1985 -1998)	PA13 (1990-1999)	
Avg. Logged (ha/yr)	924	159	44	-
Total Area Logged to Date	13,854	2,073	394	26,639
Area NSR (ha)	1,872	159	186	3,219
Area Not FTG	13,854	2,064	394	25,049
Area FTG	0	9	0	9
Area Past FTG Date	0	0	0	0

Source: Canfor Genus Report (April 2000) – Silviculture Current Status and VRI data for SBFEP and PA 13

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Interim surveys are conducted to determine stand progression.

FOREST MANAGEMENT ACTIVITIES

All basic silviculture activities are described in Section 3.7. There have been 12,785 ha's harvested prior to 1987. This area is managed through Canfor's backlog program. Of this area 1,590 ha's have been declared free to grow.

IMPLEMENTATION SCHEDULE

Free growing targets and liabilities have been tracked and reported since 1987.

MONITORING PROCEDURE

Canfor will continue to track and conduct activities to ensure that stands reach free growing status. Canfor will monitor and report progress of declaring free growing stands on an annual basis in the annual SFM report. The Ministry of Forests and Louisiana-Pacific have the responsibility to ensure that areas which are harvested under the SBFEP and PA 13 respectively, meet free growing status. Closer accounting methods will be developed for the SBFEP and PA 13 over the term of MP 3 to allow for more accurate and timely reporting.

3.4.21 Soil Disturbance Surveys

Indicator:	Objective:
21. Soil disturbance surveys	We will not exceed soil disturbance limits within cutblocks.

ACCEPTABLE VARIANCE

Maximum soil disturbance limits may be temporarily exceeded to construct temporary access structures.

CURRENT STATUS

All 1998 and 1999 harvested areas were within allowable soil disturbance limits. Sensitive sites are either harvested with low ground pressure equipment, cable yarders or helicopters. Table 16 outlines soil disturbance guidelines.

Table 16: Recommended Allowable Soil Disturbance Within the Net Area to be Reforested (NAR)

Leading soil disturbance hazard	Soil sensitivity rating ^a	Allowable dispersed soil disturbance (% NAR)
Mass wasting ^b	VH, H	5
Surface soil erosion	VH	5
Soil displacement	VH	5
Soil compaction	VH	5
Mass wasting	M, L	10
Surface soil erosion	H, M, L	10
Soil displacement	H, M, L	10
Soil compaction	H, M, L	10
Forest floor displacement	VH, H, M, L	10

^a VH = Very High; H = High; M = Moderate; L = Low

^b Mass wasting hazard refers to the potential for cut and fill failures, and should not be confused with terrain stability, which refers to the likelihood of landslides.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Winter conditions for harvesting may be prescribed to minimize impact on soil.

FOREST MANAGEMENT ACTIVITIES

Temporary roads, bladed trails and backspar trails are rehabilitated and planted.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Harvest inspections and post harvest assessments are conducted on each cut block to ensure operations are within the prescribed limits.

3.4.22 Area in Cutblock Managed as RRZ or RMZ

Indicator:	Objective:
22. Area in cutblock managed as Riparian Reserve Zone or Riparian Management Zone by appropriate stream, lake or wetland classification	We will meet or exceed appropriate riparian measures as recommended by the Forest Practices Code Riparian Guidebook.

ACCEPTABLE VARIANCE

Acceptable variance is zero unless authorized by the District Manager.

CURRENT STATUS

The BC Forest Practices Code defines a Riparian Management Area (RMA), Riparian Reserve Zone (RRZ) and Riparian Management Zone (RMZ). The RMA is a combination of the RRZ and the RMZ. The purpose of the RMA is to provide protective cover, shade, stability, diversity, small organic debris, and large organic debris depending on the requirements of the individual RMA for the stream, river, lake or wetland. The RRZ is a reserve where no timber harvesting is permitted without authorization from the District Manager. The width of the RRZ and RMZ is determined by the stream classification. The RMZ is an area outside the RRZ that may restrict timber-harvesting practices. Timber harvesting practices are prescribed within the RMA to preserve the functionality of the stream through windfall protection, stream bank integrity, and water quality, and secondly to provide additional wildlife trees.

Currently there is approximately 31,000 ha of the TFL assigned to RMAs. These reserve areas will be excluded from the THLB as part of the net down process for the calculation of the AAC, as described below. Note: Area is dependent on the order in which variables are netted down.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Since 1995 Canfor has conducted fish and fish habitat inventories in the TFL. By 1998, over 250 sites were sampled in Block 4 of the TFL. These sites, as well as literature on fish and fish habitat, were used to predict fish presence/absence and stream width measures using a stream network in a GIS environment. Using these models and the stream network Stream Class (S1-S6) was predicted for over 13,000 reaches in Block 4.

For the purposes of analysis we had to establish the amount of merchantable volume left in the total Riparian Management Area (RMA). To do this we had to develop a total Riparian Management Area width applied to streams. Riparian Reserve Zone (RRZ) widths were taken from the Guidebook (e.g., S3 = 20 m). In practice in the Riparian Management Zones on S3s, Canfor has left approximately 47% of the merchantable timber. For the purposes of analysis we assumed that S3s had a 9.5 meter buffer “reserve” in addition to the 20 meter RRZ. In this example, a total Riparian Management Area is modeled as 29.5 meters.

The total buffers were applied across Block 4 of the TFL to establish a netdown of operable area.

FOREST MANAGEMENT ACTIVITIES

During cutblock and road layout, identified rivers, streams, lakes and wetlands will have riparian assessments conducted to determine the classification of the riparian area (Photo 4). RMAs are established and harvesting prescriptions are developed using criteria set forth in the FPC Riparian Management Area guidebook.



Photo 4: Harvesting prescriptions are developed for Riparian Areas.

IMPLEMENTATION SCHEDULE

Riparian Reserve Zones and Riparian Management Areas are prescribed on an ongoing basis.

MONITORING PROCEDURE

Pre-harvest inspections are conducted based on risk ranking described in Canfor's EMS. Logging foreman conduct preworks with the logging contractors to ensure that Riparian Management Areas are known and flagged. Post harvest inspections are conducted on all cutblocks.

The areas managed as Riparian Reserve Zone or Riparian Management Zone by appropriate stream, lake or wetland classification will be summarized in the annual report.

3.4.23 Area of a Stream Affected by Harvesting and Road Construction

Indicator:	Objective:
23. Area of a stream affected by timber harvesting and road construction	<p>23-1 We will identify hazard indices through watershed assessment procedures as necessary.</p> <p>23-2 We will identify watercourses and hazards to watercourses as they arise.</p>

3.4.23-1 Hazard Indices

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Watershed Assessment Procedures (WAPs) have been conducted in the Carbon, Gething, Maurice Creek as well as smaller drainages adjacent to these streams. Low WAP hazard scores were recorded in most drainages. Gething, Burnt Trail Creek, Maurice east sub-basins had moderate hazard scores but no specific works were recommended (Table 17).

Table 17: Peak Flows Hazard Index as determined by IWAPs

Watershed/Sub-basin	Peak Flows Index
Carbon Creek	0.07
Gething Creek	0.18
East and West Williston Tribs.	0.31
Burnt Trail Creek*	0.51
Maurice West*	0.19
Maurice East*	0.49
Residual*	0.35

*Not entirely within TFL.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Canfor will consult with MoF and MELP to determine if WAPs are required. We will follow current RIC standards for assessments.

FOREST MANAGEMENT ACTIVITIES

If remedial works are recommend through WAPs they will be conducted within 5 years, or sooner as determined by risk (i.e. up to 2 years to develop prescriptions and up to 3 years to implement prescriptions).

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Canfor will consult with MoF and MELP to determine if WAPs are required.

3.4.23-2 Watercourses and Hazards to Watercourses

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

One site has been rehabilitated in 11 Mile Creek, and one site has been rehabilitated on a tributary to 7 Mile Creek.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Rehabilitation prescriptions have been completed for 6 roads and a further 4 have prescriptions pending (See Table 18). These watercourses will be rehabilitated by the end of 2001 field season.

Table 18: Planned Watershed Restoration Works For 2000

Road Name (km)	Creek	Restoration
Table Creek Road (0.5)	Gaylard Creek	Road cut slump
Tentfire Creek Road (9)*	Tentfire Creek	Road cut/fill slump
Johnson Creek FSR (35)*	Track Creek	Road cut/fill slump
Upper Burnt River Road (28)	Upper Burnt River	Road fill slump
Burns Road (17)	Seven-Mile Creek	Road fill slump
Johnson Creek FSR (spur) (36)	Track Creek	Road fill slump
Table Creek Road (1.5)*	Gaylard Creek	Road cut/fill slump
Table Creek Road (12)*	Table Creek	Road cut/fill slump
Table Creek Road (24.5)	Tributary to Williston Lake	Road cut slump
Club Creek Road (6.5)	Club Creek	Road fill slump

FOREST MANAGEMENT ACTIVITIES

If remedial works are recommended they will be conducted within 5 years, or sooner as determined by risk (I.e., up to 2 years to develop prescriptions and up to 3 years to implement prescriptions).

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Routine road maintenance inspections, government inspections, watershed assessment procedures, and public input will be used to determine if rehabilitation measures are required.

3.4.24 Sediment Levels

Indicator:	Objective:
24. Sediment levels	We will ensure that sedimentation due to harvesting and road building activities falls within acceptable limits.

ACCEPTABLE VARIANCE

To be determined.

CURRENT STATUS

Canfor has met with BC Environment officials and independent consultants to discuss appropriate methodologies for measuring this objective. Canfor has identified 3 methodologies for monitoring which it

wishes to discuss with the PAC, these methodologies and the strengths and weaknesses of each are outlined in Table 19.

Table 19. Potential Sediment Monitoring Methodologies

Monitoring Methodology	Pros	Cons
Continuous monitoring of 1 watershed in each of TFL 48 and Ft. St. John timber supply area	<ul style="list-style-type: none"> Excellent in stream data over 4-5 years. 	<ul style="list-style-type: none"> Limited to very few watersheds. Hard to apply to other watersheds. Expensive.
Stream Crossing Quality Index and Gravel Buckets	<ul style="list-style-type: none"> Covers many watersheds and different crossing structures through index. Provides limited in-stream data on sediment. Cost effective. 	<ul style="list-style-type: none"> Provides only limited in-stream data on sediment.
Stream Crossing Quality Index for TFL Block 2	<ul style="list-style-type: none"> Covers many watersheds and different crossing structures. Very cost-effective 	<ul style="list-style-type: none"> No in-stream data.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

To be determined.

FOREST MANAGEMENT ACTIVITIES

Forest management activities will be designed to stay within acceptable levels, and will include road maintenance, straw bales, ocular estimates, in-stream work windows and shut-downs in wet weather.

IMPLEMENTATION SCHEDULE

Data analysis and collection will begin by September 2001. Acceptable limits will be defined by September 30, 2002.

MONITORING PROCEDURE

Road and harvest inspections and post harvest assessments are conducted to ensure operations are within acceptable limits. Specific water quality monitoring procedures will be developed as part of the stream crossing quality index discussed above.

3.4.25 Stream Flows

Indicator:	Objective:
25. Stream flows	We will design forest management activities to minimize impact on stream flow.

ACCEPTABLE VARIANCE

To be determined.

CURRENT STATUS

The closest Canadian Hydrological Service monitoring station is located on the Moberly River near the town of Taylor, data were available from 1980 and 1995. Mean flows usually peak in mid-June, after which it declines until winter base flow conditions are reached in November. Base flow is approximately 3-5% of the peak flow. Base flow conditions persist until around mid-April, when the spring runoff usually begins (Aquatic Resources Limited 1997).

Peak flow hazard indices are shown above in Table 17 (Section 3.4.23-1).

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

To be determined.

FOREST MANAGEMENT ACTIVITIES

Riparian reserve and management zones will be established in harvesting areas. Bridges and culverts will be designed to accommodate flows.

IMPLEMENTATION SCHEDULE

Canfor will investigate the availability of existing information and data collection on stream flows within the TFL. Existing information will be determined by September 30, 2001.

MONITORING PROCEDURE

To be determined.

3.4.26 Forest Health

Forest conditions and management activities contribute to the health of global ecological cycles. This contribution is maintained if:

Indicator:	Objective:
26. Forest health	We will minimize Non-Recoverable Losses to less than 10% of AAC based on a 10 year rolling average.

This objective is the same as objective 8-1. See Section 3.4.8 for full information around this indicator and objective.

3.4.27 Allowable Annual Cut

Indicator:	Objective:
27. Allowable Annual Cut	We will ensure that the allowable annual cut will not adversely impact Long Term Harvest Level.

ACCEPTABLE VARIANCE

No acceptable variance.

CURRENT STATUS

As shown in Table 20 the current AAC is set below the calculated non-declining Long Term Harvest Level (LTHL) as determined in the Timber Supply Analysis Report in support of Management Plan 2. The harvest level proposed for MP 3 is at the base case non-declining LTHL.

Table 20: Annual Allowable Cut and Long-Term Harvest Level

	MP 1	MP 2	MP 3
Partition	AAC	AAC	Estimated Harvest Level
Coniferous	410,000	460,000	528,300
Deciduous	0	54,000	54,000
Total	410,000	514,000	582,300

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Timber supply analyses are based upon current practices and the best available information. The information and criteria used to determine the LTHL are documented in the Timber Supply Analysis Report in support of Management Plan 2 and attached as Appendix 9.11 in support of MP 3. The Chief Forester of the Province of British Columbia sets the AAC level.

FOREST MANAGEMENT ACTIVITIES

Activities are conducted consistent with the Management Plan and Timber Supply Analysis assumptions.

IMPLEMENTATION SCHEDULE

An AAC has been set and followed since the granting of the TFL to Canfor in 1987.

MONITORING PROCEDURE

Current practices and assumptions are reassessed and a new LTHL is calculated with every Management Plan.

3.4.28 Sawmill LRF, CRF and Shipment of Mini-Chips

Indicator:	Objective:
28. Sawmill Lumber Recovery Factor, Chip Recovery Factor and shipment of mini-chips	We will target an annual range of 246 - 252 fbm/m ³ , 0.15 BDU/m ³ and 60,000 tonnes/year respectively.

ACCEPTABLE VARIANCE

247-252 fbm/m³, 0.145-0.155 BDU/m³ and 50-70,000 tonnes/year, respectively.

CURRENT STATUS

250 fbm/m³, 0.150 BDU/m³ and 60,000 tonnes/year, respectively.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Actual results from the previous year plus planned improvements and forecasted log sizes are factored to develop a business case annually.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Lumber recovery and chip recovery are monitored monthly, mini-chips are monitored annually. Numbers will be reported annually in the SFM.



Photo 5: Utilization of timber at our Chetwynd facility is important.

3.4.29 Harvest Levels / Volumes

Indicator:	Objective:
29. Harvest levels/volumes	We will achieve periodic cut control within 10% of target, over 5 years.

ACCEPTABLE VARIANCE

The volume of timber harvested during a 5 year cut control period will not be less than 90%, nor more than 110%, of the total of the allowable annual cut available.

CURRENT STATUS

Table 21 summarizes harvested volumes by year.

Table 21: Actual Recorded and Allowable Annual Cut Summary

Year	Allowable Annual Cut (m ³)	Adjustment (m ³)	Actual Recorded Cut (m ³)	Cut Control (%)
1987	348,500.0		319,871.0	91.8
1988	348,500.0		277,930.0	79.8
1989	348,500.0		183,330.0	52.6
1990	348,500.0		456,600.0	131.0
1991	348,500.0		555,001.0	159.3
Subtotal	1,742,500.0		1,787,732.0	102.6
1992	348,500.0	-8,315.0	280,820.0	82.5
1993	348,500.0	-8,315.0	389,447.9	114.5
1994	348,500.0	-8,314.0	284,526.6	83.6
1995	348,500.0	-8,314.0	313,409.0	92.1
1996	348,500.0	-8,314.0	391,717.0	115.1
Subtotal	1,742,500.0	-41,572.0	1,659,920.5	97.6
1997	401,370.0	16,516.0	343,587.6	82.2
1998	401,370.0	16,516.0	435,088.2	104.1
1999	401,370.0	16,516.0	532,574.3	127.4
2000	401,370.0	16,516.0	302,668.0	72.4

Source: MoF Annual Cut Control Letters (1987-2000)

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

We will review harvested volumes and budgets annually.

3.4.30 Waste

Indicator:	Objective:
30. Waste	We will assess all waste volumes for harvested blocks and report annually.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

Waste assessments are completed for each block harvested. In 1998 0.46% of the Actual Recorded Cut was waste volumes.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Waste volumes are tracked and compared to District averages.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Harvest inspections and post harvest assessments are conducted to ensure operations are within acceptable limits. Waste volumes will be reported in the SFM report by April 30 of each year.

3.4.31 Timber Harvesting Utilization Standards

Indicator:	Objective:
31. Timber harvesting utilization standards	We will meet or exceed timber utilization standards of 1999 (i.e., 4 inch tops).

ACCEPTABLE VARIANCE

Only as required for coarse woody debris or under extreme socioeconomic conditions, the approval of the District Manager is required to alter utilization standards.

CURRENT STATUS

We meet close utilization standards (Table 22) for obligatory utilization and often utilize optional grades of timber (i.e. log grades 3 and 6). From May 1, 1999 to April 30, 2000 approximately 8% of total log volumes were optional grades of timber.

Table 22: Close Utilization Standards

Species	Min. Diameter At Stump Height	Max. Stump Height	Min. Top Diameter For Butt Logs And Top Logs	Min. Log Length For Butt Logs And Top Logs	Min. Slab Thickness	Min. Slab Length
Lodgepole Pine and Deciduous	15 cm	30 cm	10 cm	3.0 m	12.5 cm	3.0 m
All other species	20 cm	30 cm	10 cm	3.0 m	12.5 cm	3.0 m

Source: TFL Document

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The timber supply analysis is based upon close utilization specifications.

FOREST MANAGEMENT ACTIVITIES

Assessments will be conducted to measure merchantable volumes left on site. If the measured volumes exceed acceptable limits then an evaluation of the harvesting practices will be done and corrective action implemented.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Harvest inspections and post harvest assessments are conducted to ensure operations are within acceptable limits.

3.4.32 Area of Forested Land

Indicator:	Objective:
32. Area of Forested land	<p>32-1 We will track, monitor and project losses to other uses and incorporate these losses in to AAC calculations every 5 years.</p> <p>32-2 We will notify MEM and OGC of objective for oil and gas, mining tenure holders to reforest, within operable forest areas, to MoF standards inactive mines, well sites, pipelines and reclaimed roads within 2 years of becoming inactive.</p>

3.4.32-1 Track and Project Losses

ACCEPTABLE VARIANCE

Omissions would have less than a 1% impact on AAC calculations.

CURRENT STATUS

The following table (Table 23) shows reductions to the land base due to other uses. Oil and Gas well sites are not reported in this table as they were classified in the VRI as non-vegetated and already excluded from the productive forest. There is no attribute in the provincial VRI standard that would allow us to report well sites discreetly.

Table 23: Reductions to Land Base Due to Other Uses (Excluding Roads)

Feature	Total Area (ha)
Cutline or Seismic Line (7m)	1,776
Pipeline (15m)	253
Trail (7m)	508
Transmission Line (15m)	195
Grand Total	2,732

Source: VRI1999 coverage used for MP 3 analysis

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

TRIM II features identified above were buffered in a GIS routine at the specified widths and the area was permanently removed from the forested landbase. Major pipelines or transmission lines are classified within the VRI. The buffer widths chosen for these features was chosen in an attempt to capture those feature that were not classified in the VRI.

FOREST MANAGEMENT ACTIVITIES

Where applicable existing cutlines or trails are upgraded for forestry access in an attempt to minimize the amount of landbase permanently removed from the forested landbase.

IMPLEMENTATION SCHEDULE

Reductions to the landbase were incorporated into the timber supply analysis for MP 2 and will continue to be accounted for in future timber supply analysis.

MONITORING PROCEDURE

These features will be identified and accounted for in each timber supply analysis in support of the Management Plans. The identification methods will be through a combination of sources including but not limited to remote sensing, GPS, or data exchange with other industries or agencies.

3.4.32-2 Notify MEM and OGC

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Currently inactive sites are generally reclaimed, but not reforested, to meet safety and erosion standards (e.g., left in stable condition and reseeded).

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

These areas currently represent a net loss of timber harvesting landbase for AAC calculations (see Table 23).

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Notify MEM and OGC of objective by December 15, 2000.

MONITORING PROCEDURE

Not applicable.

3.4.33 Investment in New Technology, Capital Maintenance and Construction

Indicator:	Objective:
33. Average investment in new technology, capital maintenance and construction at Canfor operations in Chetwynd	We will invest \$2.5 million annually based on a 10 year rolling average, in new technology, capital maintenance and construction.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

The 1990 – 1999 10 year rolling average is \$4.0 MM.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Capital spending is based on investments in Manufacturing (building and equipment, mobile, other), Logging (roads, bridges, mobile, other) and Land and Timber

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

The 10 year rolling average will be reported in the annual report.

3.4.34 Economic Contribution to Local Communities and Contractors

Indicator:	Objective:
34. The economic contribution that Canfor Chetwynd makes to local communities and contractors	<p>34-1 We will report annually on the economic indices that reflect Canfor's contribution to local communities and contractors, and jobs per cubic metre.</p> <p>34-2 We will provide contracting opportunities that support local employment where the skills exist.</p>

3.4.34-1 Local Economic Indices

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

The indices are summarized in Table 24.

Table 24: Canfor's Contribution to Local Communities

Index	Amount (\$MM) in 1999
Property taxes	0.3
Salary Wages and Benefits	13.3
Contract Services (Local)	23.1
Contract Services (Nonlocal)	13.5
Supplies	2.4
Community Donations	0.088
Jobs/m ³	1.39/1000 m ³

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The number of jobs/m³ is calculated as follows:

(Total Wages/Average Provincial Wage)/Actual Recorded Cut

Where:

Total wages = Salaries, Wages and Benefits + Local Contractors + Non-local Contractors

Average Provincial Wage = This is based on Pricewaterhouse Coopers Annual Report on the Forest Industry in British Columbia. In 1999 the provincial average forest industry employee earned \$67,042.

Actual Recorded Cut = Indicator 29

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Implemented this Management Plan.

MONITORING PROCEDURE

The data above will be calculated annually.

3.4.34-2 Local Contractors

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Seventy-one percent (71%) of contractors in Canfor's Peace Region approved contractor database are located in Canfor's Peace Region.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Evaluation criteria will consider local content.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

The percentage of local contractors in Canfor's Peace Region approved contractor database will be reported in the SFM Annual Report.

3.4.35 Animal Unit Months

Indicator:	Objective:
35. Animal unit months	We will maintain a minimum of 1000 Animal Unit Months per year (excludes brush control by sheep).

ACCEPTABLE VARIANCE

We will maintain not less than 1000 AUMs.

CURRENT STATUS

There are currently range tenures issued by the Ministry of Forests within the TFL totaling approximately 2,503 AUM's (See Table 25). The main areas of range use are in the Boucher Lake rehabilitation and Rice property areas.

Table 25: Animal Unit Months on TFL 48

Grazing Tenure	Total AUM's	% Area TFL	AUM's TFL
Grazing Lease	10	100.0%	10.0
RAN071469	161	98.9%	159.2
RAN071476	254	11.3%	28.7
RAN071818	148	99.6%	147.4
RAN072880	20	92.2%	18.4
RAN073021	944	58.2%	549.2
RAN073876	1080	34.9%	376.9
RAN074239	50	50.0%	25.0
RAN074307	240	40.2%	96.5
RAN074323	16	50.0%	8.0
RAN074778	480	100.0%	480.0
RAN074779	120	100.0%	120.0
RAN074781	280	100.0%	280.0
RAN074782	204	100.0%	204.0
Total			2,503.3

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

These range tenures in most cases overlap and are not fully contained within the TFL. The methodology to determine the amount applicable to just the TFL was to simply prorate by area the number of AUM's attributable to the TFL.

FOREST MANAGEMENT ACTIVITIES

Trails, roads and landings within range use areas are seeded to the appropriate approved range seed mix following deactivation.

The addition of the Rice Property to TFL 48 has provided new public grazing opportunities. Approximately 713 ha's of pasture currently exist on the Rice Property. No treatment will be proposed on this pasture so that range use can continue.

Grazing opportunities may also arise once the new coniferous seedlings are well established and are tall enough to withstand cattle grazing in the remainder of the area. Range Use Plans may be developed for these areas in co-ordination between Canfor, the Ministry of Forests and the Range Licensee. These Range Use Plans may include cross fencing, cattle guards, AUM constraints and water development to ensure that seedling damage is kept to less than 5 percent.

IMPLEMENTATION SCHEDULE

The commitment to have not less than 1000 AUM's available on the TFL was made in Management Plans 1 and 2.

MONITORING PROCEDURE

The number of AUM's issued in range tenures for the TFL will be requested from the Ministry of Forests to be included in the annual SFM report.

3.4.36 Visual Landscape Inventory

Indicator:	Objective:
36. Visual Landscape inventory	We will maintain and update an approved visual landscape inventory.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

Canfor has maintained a Visual Landscape Inventory for the TFL since 1995. This inventory was conducted in 1994 and approved by the Ministry of Forests on January 20, 1995.

In 1999/2000, Canfor completed an update of the Visual Landscape Inventory (VLI) for TFL 48. The VLI was done at a scale of 1:50,000 using the provincial Visual Landscape Inventory Procedures and Standards Manual (RIC May 1997).

Work completed included the following:

1. An update of the VLI for the **Peace Williston Lake Area** for all areas visible from Williston Lake, navigable inlets, Dunlevy road, Dunlevy campground, and Bennett Dam Lookouts,
2. An update of inventory line work to include all areas visible from the highway corridors along **Highways 29 and 97** within TFL 48,
3. An update of the VLI for the **Murray River Forest Service Road** from Tumbler Ridge to Monkman Lake Park,
4. An update of the VLI for **Sukunka Falls Park**,
5. A completion of the VLI for the **Twin Sisters Resource Management Zone**.

The report on the Visual Landscape Inventory for TFL 48 – February 2000 can be found in Appendix 9.7.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The timber supply analysis for MP 2 used the 1995 Visual Landscape Inventory. The timber supply analysis base case for MP 3 incorporated the 1995 inventory, as this is the information that has been made known under the Forest Practices Code of British Columbia Act. The new inventory completed in January 2000 was also modeled to quantify the impact of the new inventory.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Canfor has maintained a Visual Landscape Inventory on TFL 48 since 1995.

MONITORING PROCEDURE

Monitoring of visual areas will continue to ensure that all visibly sensitive areas are maintained in an inventory with each Management Plan.

3.4.37 Level of Public Acceptance

Indicator:	Objective:
37. Level of public acceptance of Visual Landscape inventory	<p>37-1 We will include public input in reviewing and updating the visual landscape inventory.</p> <p>37-2 We will propose and manage harvesting cutblocks consistent with Visual Sensitivity Classes.</p>

3.4.37-1 Visual Landscape Inventory Public Input

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

A notice of intention to update the visual landscape inventory was advertised in local newspapers as well as direct mail out solicitation of comments to communities and individuals. Feedback was received from 3 communities and from the Northern Rockies Alaska Highway Tourism Association. Information was provided on scenic areas of interest and number of visitors or viewers. This information was used in the classification of the attributes for visual areas. One community requested and received a presentation on the VLI from Canfor.

Canfor will propose visual quality objectives to the Ministry of Forests based on the new inventory. Once accepted by the Ministry these will be advertised as per the FPC of BC Act to make known scenic areas. Public input will be solicited concurrently.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

The purpose of the Visual Landscape Inventory is to provide information about the visual condition, characteristics and sensitivity to alteration of areas and travel corridors throughout TFL 48. This information is intended to assist land use planners and resource managers in deciding appropriate land uses, resource development objectives and management prescriptions.

IMPLEMENTATION SCHEDULE

Canfor has solicited and included public input into the visual landscape inventory update since September 1999.

MONITORING PROCEDURE

Public input is recorded and documented as part of the visual inventory report for TFL 48 dated January 2000. Additional comments concerning the visual landscape inventory will be tracked through Canfor's EMS public enquiry forms.

3.4.37-2 Visual Impact Assessments

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

All proposed blocks within visual areas as identified in the 1995 inventory are subject to the principles of visual landscape design and perspective modeling to ensure plans will achieve the desired results.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Visual sensitivity classes and/or visual quality objectives are considered in timber supply analysis.

FOREST MANAGEMENT ACTIVITIES

Block layout is consistent with visual landscape design and biodiversity requirements which soften block appearance.

The initial minimum target stocking density on the TFL is 1600 sph. This density exceeds that of the Regional well-stocked stand target of 1200 sph.

Road and trail deactivation/rehabilitation, grass seeding/reforestation and an acute awareness of dispersed site disturbance have reduced site disturbance.

Our site preparation methods now emphasize minimal disturbance of the duff in order to maintain a more natural look to the blocks. Broadcast burning is not used and raw planting is preferred. This minimizes exposed rock and soil.

Planting a variety of species improves visual characteristics.

The increased utilization of winter harvesting results in less site disturbance, fewer permanent roads and more natural regeneration.

Increased cable harvest reduces skid trails.

Selective logging techniques have also been used in visually sensitive areas to minimize the impact on visual resources.



Photo 6: Selective logging minimizes impact on visual resources.

IMPLEMENTATION SCHEDULE

Blocks have been designed and laid out consistent with visual inventory since 1995.

MONITORING PROCEDURE

Requirements for landscape design and perspective modeling is identified at each forest development plan.

3.4.38 Back Country Condition

Indicator:	Objective:
38. Back country condition	We will maintain or increase backcountry condition in Klin Se Za, Bocoock, Butler Ridge, Pine LeMoray, Peace Boudreau, and Elephant Ridge/Gwillim Protected Areas and manage special management zones (Klin Se Za, North Burnt, Dunlevy) as per LRMP.

For the purposes of this document backcountry condition is defined as Semi-Primitive Motorized or Non-Motorized or Primitive classifications as per the Recreation Opportunity Spectrum (ROS) inventory RIC standard 1998.



Photo 7: Backcountry conditions exist throughout the TFL.

ACCEPTABLE VARIANCE

There will be no additional loss of Semi-Primitive ROS due to management activities by Canfor

New road construction will be open for the duration of the season in which the forest management activity occurs (eg. road construction, harvesting, primary silviculture). Seasonal deactivation and access restrictions will be completed by the end of the active season. Upon completion of primary silviculture activities (planting) the road will be deactivated and motorized access restricted.

Access management and deactivation can be used as tools to achieve the desired ROS classification (see Appendix 2 of Appendix 9.17 SFM Annual Report for definition of ROS classes).

Canfor may use roads developed and maintained by other non-forest industry industrial users (eg. oil/gas, mining). If Canfor assumes responsibility for the road due to no other industrial user having long term interests in the road then it will be assessed as a change in ROS attributable to forest management activities.

Currently, work is underway to create a plan for managing the Dunlevy SMZ. When the LRMP working group has completed this plan and government endorses it then this indicator may need to be amended to ensure that it is consistent with the Dunlevy SMZ Plan.

CURRENT STATUS

The ROS class for each Protected area and SMZ is shown in Table 26.

Table 26: Area of ROS Class by PAS and SMZ's

PAS / SMZ	Recreation Opportunity Spectrum			
	Roaded (ha)	Semi-Primitive Motorized (ha)	Semi-Primitive Non Motorized (ha)	Grand Total (ha)
Bocock			988	988
Butler Ridge	1,479		5,035	6,513
Dunlevy SMZ	3,619	8,672	18,871	31,162
Elephant Ridge/Gwillim	25		2,890	2,915
Klin Se Za			2,668	2,668
North Burnt SMZ	6,305		10,574	16,879
Peace River/Boudreau	2,089			2,089
Pine/LeMoray	1,017	1	2,262	3,280
Klin Se Za Mtn SMZ	1,709		7,364	9,073
Klin Se Za Headwaters SMZ	7,146	140	10,419	17,704
Total	23,388	8,813	61,071	93,272

Source: 1995 Recreation Inventory

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Protected areas are removed from the THLB.

FOREST MANAGEMENT ACTIVITIES

Forest management activities will not occur in the Protected Areas unless otherwise requested. Forest management will be consistent with the objectives of the SMZ. Access will be managed under the Sensitive Access Management direction given in the LRMP in the SMZ's. This may involve access control, road deactivation, accelerated harvesting or alternative silvicultural techniques. Access control and or deactivation may be completed for existing roads adjacent to or within backcountry areas to remove areas from the roaded classification and move to the semi-primitive. These works and strategies are subject to agency approvals and do not include oil/gas or mining activities.

IMPLEMENTATION SCHEDULE

Ongoing. The ROS for the Dunlevy SMZ requires updating to incorporate the existing recreational motorized access. This will form the baseline for monitoring and will be completed by September 30, 2001.

MONITORING PROCEDURE

Each Management Plan will report on forest management activities in these backcountry areas and current ROS status.

3.4.39 Habitat Supply for Botanical Forest Products

Indicator:	Objective:
39. Habitat supply for botanical forest products	We will investigate local uses of botanical forest products to determine habitat requirements.

ACCEPTABLE VARIANCE

To be determined.

CURRENT STATUS

There is no large-scale commercial use of botanical forest products in the TFL. Current uses include gathering of berries, medicinal plants and possibly such features as mushrooms and tree burls by both the public and Aboriginal people.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Canfor will solicit input on botanical forest product use through consultation with local Aboriginal groups and advertising through newspapers. When the current status of botanical forest products are better understood, habitat modeling, seral stage distribution or other forestry forecasting methods may be used to forecast botanical forest product use.

FOREST MANAGEMENT ACTIVITIES

Forest management activities may be altered to avoid (e.g., buffer by berry patch) or enhance (e.g., through road access) botanical forest product use.

IMPLEMENTATION SCHEDULE

Determine habitat requirements by June 2001.

MONITORING PROCEDURE

To be determined.

3.4.40 Public Advisory Committee

Indicator:	Objective:
40. Public Advisory Committee	<p>40-1 We will establish and maintain a Public Advisory Committee and hold at least two meetings annually.</p> <p>40-2 We will hold an annual open house to review SFM plan performance.</p>

3.4.40-1 Public Advisory Committee

ACCEPTABLE VARIANCE

None, unless otherwise agreed to by the Committee.

CURRENT STATUS

The PAC was established in early February 2000 and 6 meetings have been held prior to July 2000.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Forest management activities will change as input from the PAC is considered and implemented. Changes may not be immediate, as they are dependent on analysis of multiple variables.

IMPLEMENTATION SCHEDULE

Implemented February 4, 2000.

MONITORING PROCEDURE

Number of meetings will be reported annually. Meeting summaries will be distributed to PAC members and interested members of the public.

3.4.40-2 Annual Open House

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

The first annual open house was held on September 22, 2000.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Comments received during the open house will be considered for changes to forest management. If possible individuals will be provided with feedback to their comments.

IMPLEMENTATION SCHEDULE

The first annual open house was hosted in September 2000.

MONITORING PROCEDURE

Comments received will be summarized in the annual report.

3.4.41 Participation in LRMP

Indicator:	Objective:
41. Participation in LRMP	We will attend meetings, and provide information as required, for LRMP functions.

ACCEPTABLE VARIANCE

A minimum of 90% of meetings will be attended.

CURRENT STATUS

100% of meetings have been attended in 1999 (2) and 2000 (2).

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Not applicable (see 3.4.42 "Manage operations to the spirit and intent of the Dawson Creek LRMP").

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Number of meetings held and attended will be reported annually.

3.4.42 LRMP and Land Use Plans

Indicator:	Objective:
42. LRMP and land use plans	We will manage operations to the spirit and intent of the Dawson Creek LRMP.

ACCEPTABLE VARIANCE

Zero.

CURRENT STATUS

Management Plan 3 will be managed to the spirit and intent of the LRMP. All Forest Development Plans under this Management Plan will be managed to the spirit and intent of the LRMP.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Constraints under the LRMP (e.g., Protected Areas, Biodiversity emphasis options, etc) are included in Allowable Annual Cut calculations.

FOREST MANAGEMENT ACTIVITIES

Forest management activities under this Management Plan will be managed to the spirit and intent of the LRMP.

IMPLEMENTATION SCHEDULE

Ongoing. Participating ministries were directed by cabinet to implement the plan March 30, 1999. Canfor participated in the development of the LRMP since the spring of 1992.

MONITORING PROCEDURE

The SFM Annual Report will include status of appropriate Objectives which incorporate LRMP intent (e.g., Protected Areas, Special Management Zones, wildlife indicator species).

3.4.43 Proactive Consultation Process

Indicator:	Objective:
43. Proactive consultation process for significant activities such as proposed timber harvesting	Forest Development Plan will be referred to Saulteau and West Moberly First Nations.

ACCEPTABLE VARIANCE

None.

CURRENT STATUS

The 2000 to 2005 Forest Development Plan was referred to both Aboriginal groups.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Aboriginal groups will be informed as to how their input on the FDP has been addressed.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Canfor will respond to all comments received by Aboriginal groups and detail how their comments have been included.

3.4.44 Archaeological Impact Assessments

Indicator:	Objective:
44. Archaeological impact assessments on proposed harvest blocks	We will conduct archaeological impact assessments as indicated through archaeological overviews or inventory.



Photo 8: Elder Max Desjarlais Coring a Blazed Tree

ACCEPTABLE VARIANCE

No roads or cutblocks which require an archaeological impact assessment will be built or harvested until an assessment has been completed.

CURRENT STATUS

Over 50 Archaeological Impact Assessments (AIAs) have been completed for roads and cutblocks since 1995. To date we have not found any Heritage sites within the TFL during the course of these assessments. Currently there are 20 known heritage sites within the TFL, 6 of these sites occur within new Protected Areas and an additional 4 are expected to occur in Riparian Management Areas.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The Ministry of Forests, Dawson Creek uses the Archaeological Overview Assessment (AOA) to select planned roads and cutblocks for archaeological impact assessments (AIAs). For the timber supply analysis we modeled a 1 ha buffer around known archaeological sites as a net down.

FOREST MANAGEMENT ACTIVITIES

No roads or cutblocks which require an archaeological impact assessment will be built or harvested until an assessment has been completed.

IMPLEMENTATION SCHEDULE

Ongoing since 1995.

MONITORING PROCEDURE

The MoF notifies Canfor annually which roads and cutblocks require assessment.

3.4.45 Aboriginal Liaison

Indicator:	Objective:
45. Aboriginal liaison	We will increase the level of aboriginal input to forest management by meeting with band councils, representatives, contractors and/or individuals as issues and opportunities arise.

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

In 1999 Canfor met with West Moberly First Nation twice and Sauleau once. Although not participants in the PAC Canfor provided all meeting summaries and information from the PAC to both West Moberly and Sauleau.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Aboriginal groups will be informed as to how their input on the FDP and other plans has been addressed. Canfor will continue to investigate methods to include Aboriginal groups in forest planning.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Meetings proposed and attended will be tracked and reported annually.

3.4.46 *Incorporate Objectives of Klin Se Za into FDP and MP*

Indicator:	Objective:
46. Incorporate objectives of Klin Se Za into FDP and MP	We will maintain or increase backcountry condition in Klin Se Za, Bockock, Butler Ridge, Pine LeMoray, Peace Boudreau, and Elephant Ridge/Gwillim Protected Areas and manage special management zones (Klin Se Za, North Burnt, Dunlevy) as per LRMP.

See Section 3.4.38 for complete information on this indicator and objective.

3.4.47 *Aboriginal Employment*

Indicator:	Objective:
47. Aboriginal employment	We will budget \$100,000 annually for aboriginal contractors.

ACCEPTABLE VARIANCE

Annual variations may be substantial depending on the availability of qualified contractors.

CURRENT STATUS

In 1999 aboriginal contractors conducted approximately \$465,000 worth of forestry work.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

A minimum of \$100,000 will be budgeted annually.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

An accounting summary will be conducted annually for aboriginal contractors.

3.4.48 *FDP, PMP and MP*

Indicator:	Objective:
48. FDP, PMP and MP	We will advertise and refer plans to all parties in a proactive manner (public, agencies and other licence holders).

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Canfor’s Environment Policy states that we will create opportunities for interested parties to have input to our forest planning activities. Therefore the PAC will provide input on:

- Values, goals, and indicators and objectives as related to CSA,
- Design of Sustainable Forest Management (SFM) system, monitoring system, and evaluation process,
- Review performance evaluations and make recommendations for improvement,
- Provide input to the communication strategy to provide feedback to interested parties about the defined forest area, particularly the results of performance evaluations related to the critical elements of the Canadian Council Forest Ministers (CCFM) Criteria,
- Refine and implement the public involvement program,
- Key forest management activities and issues in the DFA.

Forest Development Plans, Pest Management Plans and TFL Management Plans are advertised for public comment.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

An interested party list is maintained for the TFL.

IMPLEMENTATION SCHEDULE

The PAC will meet at least twice annually to provide continued input and to conduct an annual review of the SFMP. Forest Development Plans, Pest Management Plans and TFL Management Plans are advertised for comment as they are produced.

MONITORING PROCEDURE

Minutes of PAC meetings will be documented and reviewed by committee members. Public comments for the Plans will be considered and documented.

3.4.49 Public Enquiry Forms

Indicator:	Objective:
49. Public enquiry forms	We will respond to public inquiries on our practices (in addition to normal planning processes) within 1 month of receipt and maintain and track forms as per Environmental Management System

ACCEPTABLE VARIANCE

Feedback will be provided to all individuals if contact information is provided.

CURRENT STATUS

Three Public Enquiries or Complaints were received in 1999 in regards to the TFL.

1. An unidentified member of the public reported to Canfor staff on site the occurrence of a hotspot after pile burning had occurred on the Rice Property. The hotspot was extinguished immediately.
2. A member of the public was concerned with timber harvesting in the Pine Valley. A written response was sent to the concerned individual.
3. On a separate occasion this same individual asked if Canfor was going stop clearcutting because of certification goals. Canfor's response was that certification looked closely at habitat issues but did not specify harvesting methods.

Note: A member of the public commented favourably on irregular shelterwood harvesting methods in Canfor's forest licence area. The same strategy is employed in the TFL.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

None.

FOREST MANAGEMENT ACTIVITIES

We will consider comments from the public in our forest management activities.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Public enquiries and complaints are reviewed by the Peace Region EMS committee and will be summarized in annual reports.

3.4.50 Level of Public Comments

Indicator:	Objective:
50. Level of public comments	We will provide feedback to concerned individuals and the PAC on how concerns were addressed.

ACCEPTABLE VARIANCE

Feedback will be provided to all individuals if contact information is provided.

CURRENT STATUS

Feedback is provided to individuals in the form of meetings, correspondence or telephone conversations.

Management Plan

Canfor advertised Management Plan 2 as being available for comment, 4 responses were received in 1999.

1. Archaeology Branch responded to notification stating that they are no longer involved in Management Plan review.
2. A community requested copies of maps from MP2 and the plan itself. No maps were in the plan and an offer by Canfor to review the Management Plan with them was not responded to.
3. One individual attended a meeting in the office but reserved comment until MP3 became available.
4. One individual scheduled a meeting but never attended.

Forest Development Plan

No comments were received in 1999 on the Forest Development Planning Process.

Pest Management Plan

Three trappers provided comments on the Pest Management Plan in 1999. The following summarizes the extent of comments:

1. Through meetings Canfor and the trapper agreed to conduct site visits to address specific concerns,
2. During a meeting the trapper agreed that there would be no impact on his trapline but that he still wished for annual notification, and
3. It was identified through correspondence and telephone conversations that no treatment would occur on an individual's trapline in the current PMP plan.

Several letters and phone calls were exchanged between West Moberly First Nation (WMFN) and Canfor, and West Moberly and BC Environment. West Moberly requested maps and additional information, which was provided. West Moberly indicated to BC Environment that Pesticide Free Zones (30m) are to remain in place on Carbon Creek and its tributaries. Canfor has indicated to BC Environment that these zones are restrictive but that we are willing to look at alternative methods to achieve these goals.

A meeting was held with Saulteau First Nations (SFN). Saulteau is generally opposed to the use of herbicides. Canfor indicated that herbicides are an important silvicultural tool and cannot be eliminated from practice. However, we are willing to discuss alternative practices on a site-specific basis.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Not applicable.

FOREST MANAGEMENT ACTIVITIES

Forest management activities are altered following input or a rationale is provided to the individual or group stating why the activities were not altered.

IMPLEMENTATION SCHEDULE

Ongoing.

MONITORING PROCEDURE

Comments are summarized in each plan (e.g., FDP, PMP) and will also be summarized in the annual SFM plan.

3.4.51 Spatial and Temporal Models

Indicator:	Objective:
51. Spatial and temporal models	<p>51-1 We will use leading edge modeling systems to develop rotation length plans.</p> <p>51-2 We will use up-to-date vegetation inventory.</p> <p>51-3 We will use the best available science to develop an understanding of ecological response.</p>

3.4.51-1 Modelling Systems

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

Canfor is using the FSSIM Version 3 model for the timber supply analysis in support of MP 3. The Ministry of Forests Timber Supply Branch developed the model.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

The ability to make credible projections of future forest conditions is a necessary step towards Canfor's goal of product certification and sustainable forest management. Resource management decisions must be based on sufficient data and that data must be structured to support its use at a hierarchy of temporal and spatial scales.

An analysis of alternate ecosystem management strategies will be conducted and synthesized through the use of an ecosystem-based modeling framework developed by the University of British Columbia and in consultation with the Canadian Forest Service (CFS) Pacific Forestry Centre.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

A three year initiative entitled "Exploring, Forecasting and Visualizing the Sustainability of Alternative Ecosystem Management Scenarios" will provide the tools to manage spatial and temporal data at a scale required for landscape unit planning. In particular, the project will focus on the projection of future forest conditions as defined by economic, ecological and social indicators of sustainability. The research project will help Canfor develop and apply forest ecosystem principles within TFL 48. Completion of this project will be by April 2003.

A twenty-year plan showing potential blocks consistent with the management plan assumptions has been completed.

MONITORING PROCEDURE

Progress on the research initiative will be reported in the SFM annual report.

3.4.51-2 Vegetation Inventory

ACCEPTABLE VARIANCE

The vegetation inventory will be updated for disturbance and projected for growth on an annual basis.

CURRENT STATUS

The current forest cover inventory is based on two re-inventory programs implemented by Canfor during the term of MP 2. The inventory conforms to Resource Inventory Committee (RIC) standards and exists in the form of a Vegetation Resource Inventory (VRI). The photography for this inventory was taken in 1993/94 for Blocks 4 and 5 and 1997 for Blocks 1, 2, and 3 of the TFL. The inventory was completed in the spring of 2000.

The VRI has been updated to account for all harvesting activities and silviculture surveys completed up to March 2000. All constructed roads were buffered and removed from the forest landbase. Trails, seismic lines, pipelines, and transmission lines based on the TRIM II (1996) update were buffered and netted out from the forest landbase. Canfor's spatial block tracking, silviculture and road management system was used as the source for the update and done through automated GIS routines.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

Growth projections are completed using Ministry of Forests VDYP projection model.

FOREST MANAGEMENT ACTIVITIES

Annual updating for growth, depletion, and silviculture activities.

IMPLEMENTATION SCHEDULE

The current inventory management system has been implemented since 1997 when the new vegetation inventory process was first initiated.

We will continue to refine our re-inventory program by adjusting the classification through the use of VRI Phase II sample data. In 1998, we completed 65 VRI Phase II timber emphasis plots on the TFL. The data obtained from these samples will form the basis for additional Phase II sampling on the TFL. Results of the initial 65 samples in the TFL compared to the new VRI Phase I are included in Appendix 9.3.

In 2000-2001 we will continue with our sampling plan as shown in Appendix 9.3. The main objectives of the VRI Phase II sampling are to:

1. Adjust the Phase I estimates to provide statistically valid timber volumes in the TFL to support timber supply analysis.
2. Provide baseline ecology and coarse-woody debris data to support other projects in the TFL including predictive ecosystem mapping, site index ecological correlations, monitoring, and certification.

It is anticipated that this new inventory will last at least 20 years.

MONITORING PROCEDURE

Monitoring plots established as part of the Phase II ground sampling program will be used to test the accuracy of the growth projections and provide indications of successional changes.

3.4.51-3 Best Available Science

ACCEPTABLE VARIANCE

Not applicable.

CURRENT STATUS

A pilot research project with UBC was initiated to calibrate stand level models and to generate sample scenarios. This will be expanded to a three year initiative entitled "Exploring, Forecasting and Visualizing the Sustainability of Alternative Ecosystem Management Scenarios" to provide the tools to manage spatial and temporal data at a scale required for landscape unit planning. In particular, the project will focus on the

projection of future forest conditions as defined by economic, ecological and social indicators of sustainability. The research project will help Canfor develop and apply forest ecosystem principles within TFL 48.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

An analysis of alternate ecosystem management strategies will be conducted and synthesized through the use of an ecosystem-based modeling framework developed by the University of British Columbia and in consultation with the Canadian Forest Service (CFS) Pacific Forestry Centre.

FOREST MANAGEMENT ACTIVITIES

Not applicable.

IMPLEMENTATION SCHEDULE

This project started in September 1999 and will be complete by April 2003.

MONITORING PROCEDURE

Progress on the research initiative will be reported in the SFM annual report.

3.4.52 Number of Recreational Trails and Campsites

Indicator:	Objective:
52. Number of recreational trails and campsites	We will provide and/or maintain a minimum of one trail and three recreation sites on the TFL.

ACCEPTABLE VARIANCE

No less than the stated objective.

CURRENT STATUS

There are 3 recreation campsites and 1 developed trail within the TFL at this time. Previously the Ministry of Forests had the management responsibility for the campsites. Canfor has assumed the maintenance responsibility of these recreation resource features. These opportunities will be available to the public free of charge.

FORECASTING ASSUMPTIONS AND ANALYTICAL METHODS

In the timber supply analysis for Management Plan 3 the four recreation sites listed below are identified and removed from the timber harvesting landbase.

FOREST MANAGEMENT ACTIVITIES

Objectives of the following sites and trails are as follows:

Current levels of infrastructure including tables, fire rings and pit toilets will be maintained.

Carbon Lake Recreation Site

The objective is to manage the Carbon Lake site for a roaded recreation opportunity. Vehicle access will be maintained. Routine campsite maintenance will be completed. Lakeshore and natural vegetation will be conserved. Opportunities for camping, picnicking and boating will be available at this site.

Gething Creek Recreation Site

The objective is to manage the Gething Creek site for a roaded recreation opportunity. Vehicle access will be maintained. Routine campsite maintenance will be completed. The creek shoreline and natural vegetation will be available at this site.

Wright Lake Recreation Site

The objective is to manage the Wright Lake site as a semi-primitive recreation opportunity. The trail and campsite will be maintained. The lake shoreline and natural vegetation will be conserved. Opportunities for hiking, camping and picnicking will be available at this site.

11 Mile Recreation Trail

The objective is to manage the 11 Mile trail as a backcountry recreation opportunity. The trail will be maintained. Opportunities for hiking, camping and backcountry experience will be available on this trail.

IMPLEMENTATION SCHEDULE

Canfor initially proposed and developed the Carbon Lake and Gething Creek recreation sites using Section 88 funds. The Ministry of Forests assumed the management and maintenance responsibility. The 11 Mile Lake trail was developed by Canfor in 1994. Starting in the summer of 2000 Canfor has committed to the Ministry of Forests to assume management and maintenance responsibilities of all the recreation sites and trails listed above.

MONITORING PROCEDURE

Routine maintenance will be conducted to ensure sites, trails and associated infrastructure are safe and sanitary.

3.5 MANAGEMENT AND UTILIZATION OF THE TIMBER RESOURCE

3.5.1 Management Goals

We will achieve a 90% self sufficient fibre supply for the sawmill in Chetwynd through the management of company held tenures. Additional volumes will be acquired through the purchase of softwood from the Woodlot Licence Program, value-added alliances, Small Business Forest Enterprise Program and private sources.

We will balance non-timber values with the maximum short- and long-term economic return for the timber resource through careful planning and ecologically-based harvesting practices.

We will harvest in accordance with the Forest Practices Code, defined landscape and stand level objectives, cut control constraints, market demand and various timber profiles as designated by species composition, season, harvesting system and priority use zones.

We will continue to explore alternate harvesting systems and implement, where appropriate, alternate silviculture systems.

3.5.2 Physical Operability

During the term of MP 2, Canfor conducted terrain mapping over the entire TFL. The resultant data developed in conjunction with TRIM-derived data and a Landslide inventory was used to predict physical operability into the classes presented in Tables 27 and 28.

Table 27: Physical Operability by Slope Class and Harvest System

Physical Operability Class	Slope					
	0-10%	10-45%	45-70%	70-80%	80-100%	100% +

Stability Index	Stable	Conventional	Conventional	Cable	--	--	--
	Moderately Stable	--	Conventional	Cable	--	--	--
	Quasi-Stable	--	Mixed	Cable	None	None	--
	Lower Threshold	--	Cable	Cable	None	None	None
	Upper Threshold	--	None	None	None	None	None
	Defended	--	None	None	None	None	None

Table 28: Physical Operability by Slope Class and Gross Area (ha)

Physical Operability Class		Slope					
		0-10%	10-45%	45-70%	70-80%	80-100%	100% +
Stability Index	Stable	124,162	249,776	218	-	-	-
	Moderately Stable	-	70,302	3,862	-	-	-
	Quasi-Stable	-	50,883	34,087	131	8	-
	Lower Threshold	-	21,220	43,300	8,902	3,685	15
	Upper Threshold	-	4,647	8,033	2,968	2,791	1,539
	Defended	-	2,271	4,411	1,964	2,925	1,412
Totals		124,162	399,099	93,911	13,965	9,409	2,965
Gross Area of TFL 48							643,511

The majority of harvesting on the TFL takes place using conventional ground-based equipment. This reflects the generally favourable physical operating conditions in the area. Non-conventional methods such as overhead cable systems and helicopter logging are used as required to harvest steeper ground or to meet terrain stability requirements.



Photo 9: Grapple yarding is used to address steep or sensitive sites.

Over the past few years the use of non-conventional methods represented about 40% of the systems deployed due to the backlog of cable ground accessible from existing roads. The extent of cable logging will decrease over time.

Horse logging or small tractor is employed on a small scale to provide social opportunities and to demonstrate the ability to utilize alternate silviculture systems to meet non-timber management objectives.

The implementation of any and all of these systems where applicable has resulted in there being very few physically inoperable areas within the TFL.

3.5.3 *Harvesting Methods*

All openings will be harvested according to the appropriate silviculture system designated in the Silviculture Prescription.

Appropriate planning and scheduling will minimize impact on other resources. The harvesting pattern will be designed to minimize windfall in standing timber when possible.

Harvesting operations will be conducted in accordance with the approved Management Plan, Forest Development Plan, Silvicultural Prescriptions, Cutting Permit documents, and the Forest Practices Code. The Forest Development Plan shows our planned harvesting requirements for the next five years.

We employ a range of financially feasible timber harvest methods and practices to mitigate any negative impacts to other forest resources. A brief description of each method is as follows:

Conventional (Ground-based)

This method is generally utilized on stable to quasi-stable soils with slopes ranging from 0 to 45%.

Conventional harvesting is the primary harvest method employed on the TFL. Generally, feller bunchers, grapple skidders, and stroke delimiters are used. Roadside log loading capability limits the need for landing construction. In some cases handfelling, lineskidding and wheel loaders are used in both winter and summer operations, however application of this system is greatly diminishing. Low ground pressure skidding equipment is used in all but the winter season.

Cable Yarding

This method is generally utilized on quasi-stable to lower-threshold soils with slopes ranging from 10 to 70%.

This harvest method consists primarily of a mobile swing yarder utilizing grapple and skylining techniques. It is used for harvesting timber on steep and sensitive terrain for distances up to 300 meters. Operations are mechanized as much as possible. Handfelling and choker setting are used 20 - 30% of the time. Sortyards are commonly used to eliminate landings and to facilitate operations. Mini-skyline yarders are used to address areas with poor deflection and areas designated for selective harvesting.



Photo 10: Sortyards are used to eliminate landings.

Aerial

This method is generally utilized on lower-threshold soils with slopes ranging from 70 to 100%.

Helicopter logging is planned where cable yarders are not feasible and road access is economically or environmentally prohibitive. Helicopters generally require large landings for safe operations. Helicopter logging has only been employed on a very limited basis, as we can successfully harvest most of our operable timber using ground-based and cable systems. We will continue to evaluate the feasibility of helicopter logging.

3.5.4 Felling, Bucking and Utilization Specifications

We comply with government standards regarding timber utilization as we balance customer needs with objectives for maintaining biological diversity.

Utilization specifications define the species, dimensions and quality of trees that must be harvested and removed from an area during harvesting operations. These specifications are expressed in the TFL document. The specifications are described in Table 29 and apply to all sawlog grade timber for endemic stands and all sawlog grade and dead and dry sawlog grade timber for catastrophic stands.

Table 29: Utilization Specifications

Utilization Specification	Lodgepole Pine and Deciduous Species	All Other Species
Maximum stump height ¹	30 cm	30 cm
Minimum diameter at stump height	15 cm	20.0 cm
Minimum log length	3.0 m	3.0 m
Minimum top diameter ²	10 cm	10.0 cm

¹ Maximum stump height is measured on the side of the stump adjacent to the highest ground level.

² Minimum top diameter is measured as the inside bark diameter at the narrowest end of the log.

Residue and waste surveys are completed following harvest.

3.5.5 Economic Operability

Economic operability has been estimated using a combination of an indication of site quality (Table 30) and of the age/height/stocking attributes of a forest stand.

3.5.5-1 Low Site Exclusion

Table 30 documents the immature area that is not suitable for harvest due to its poor timber growing potential. A measure of the site index of the stand at breast height age 50 is one of two methods used in this analysis to identify unmerchantable stands of forests.

Table 30: Low Site Exclusion Limits

Timber Types	Site Index Upper Limit of Exclusion by Operability Type		
	Conventional	Mixed	Cable
Balsam	9.6	10.9	13.0
Spruce	7.5	8.5	12.0
Pine	10.4	11.7	14.1
Aspen	16.1	Exclude from the THLB	
Cottonwood	12.4		
NSR with no Species	7.5		
Other Species	Excluded		

3.5.5-2 Problem Forest Types

Problem forest types are stands which are physically operable and exceed low site criteria. These stands are excluded from the timber harvesting land base at the present time due to the stands being too old, too short, and/or having too small a diameter. Although many of these stands may be harvested in part, they are not specifically targeted for harvesting at the present time. Changes in timber value, timber availability and sawmill requirements may change Canfor's management strategies for these stands.

Table 31 documents the areas that are currently considered to be problem forest types. The land base deductions are described according to inventory file attributes.

Table 31: Problem Forest Types

Leading Species	Characteristics				
	Age/Height/Stocking	Minimum Volume by Operability Class			Reduction Percent
		Conv.	Mixed	Cable	
B, BH	age class ≥ 6 and height class 2, or age class ≥ 6 and stocking class = 2	120	150	200	100
BS	age class ≥ 6 and height class 2	120	150	200	100
S	age class ≥ 8 and height class 2	120	150	200	100
	all black spruce stands	all	all	all	100
PI	age class ≥ 5 and height class = 1 all stocking class 4 all stands ≤ 17.5 metres	120	150	200	100
AtCon, CotCon AtDec, CotDec	all types outside the PA 13 portion of the TFL, ¹ area within the ESSF, area within cable or mixed operability	all	all	all	100
AtCon, CotCon AtDec, CotDec	age class ≥ 7 or age class ≥ 4 and height class = 1	120	all	all	100
Other Species (W, L, Ep)	all	all	all	all	100

3.5.6 Proposed AAC

3.5.6-1 Coniferous Fibre Strategy

Canfor's coniferous fibre supply strategy is to maximize the sustainable coniferous timber production from the TFL conifer and non-commercial brush sites. An AAC of 528,300 m³/year can be maintained.

The economic operability criteria developed for the different harvesting systems in use on the TFL will determine the operable landbase that supports the proposed AAC.

Minor components of commercial deciduous species that occur in conifer leading stands will be managed over the total landbase to achieve a variety of landscape level objectives. Management regimes will range from maintaining mature deciduous stems on site to contribute to non-timber resource values (visual, biodiversity, riparian, etc.) to removing all deciduous volumes where resource values will not be compromised and economic conditions permit. Deciduous that is harvested incidentally from conifer leading stands will contribute to the conifer AAC and be billed for accordingly.

3.5.6-2 Deciduous Fibre Strategy

Canfor's deciduous fibre supply strategy is to maintain the existing commercial deciduous production from the TFL operable deciduous landbase. A maximum harvest of 54,000 m³/year can be maintained.

Deciduous leading stands that occur on non-conventional (mixed, cable and aerial harvesting systems) ground, or in the ESSF Biogeoclimatic Zone or outside the PA 13 area will not contribute to the proposed deciduous harvest level.

Canfor does not possess manufacturing facilities that process deciduous species on a regular basis. Our deciduous utilization policy will be to plan, permit and make available for sale, all commercial deciduous species from deciduous leading stands (as determined by the individual block cruise), up to the level of the deciduous harvest as determined by the Chief Forester. This strategy may take up to 3 years (by 2004) to fully implement, due to the Forest Development Planning process.

Commercial deciduous volumes will be made available for purchase to the holders of Pulpwood Agreements 10 and 13 under a negotiated fibre supply agreement. In the absence of a fibre supply agreement, this fibre will be made available to any company or individual that wishes to purchase the timber. If no purchaser can be found, the deciduous component will be left standing and made available when economic conditions permit.

In 2001 Louisiana-Pacific Canada Ltd. and Canadian Forest Products Ltd. have signed a memorandum of understanding pertaining the management of deciduous leading stands within the common boundaries of TFL 48 and PA's 10 and 13 (Appendix 9.14).

All deciduous and conifer species cut from deciduous leading stands will be tracked separately (from the conifer AAC) and contribute to the deciduous harvest level. Any coniferous volumes that are harvested from deciduous leading stands will be utilized in Canfor's manufacturing facilities.

The Ministry of Forests is responsible for providing TSL information such as regeneration success, post harvest assessments and volumes harvested to Canfor for incorporation into Forest Development Plans and Management Plans.

Deciduous Partition Harvest Levels

In the AAC Rationale for TFL 48 effective December 31, 1996 the Chief Forester set a partition of a maximum of 54,000 m³ year attributable to deciduous and coniferous trees harvested within deciduous leading stands.

To date harvesting of the deciduous leading stands has been carried out under the Small Business Forest Enterprise Program and through MoF direct awards to Louisiana-Pacific under Pulpwood Agreement 13.

Table 32 shows total area harvested to March 200 from deciduous leading stands.

Table 32: Total Area Harvested to March 2000 from Deciduous Leading Stands

LICENCE ID	CUT BLOCK	Total Area (ha)
PA13 - TFL48	A36114-001	56.1
	A36114-002	68.7
	A36129-001	50.3
	A36130-001	14.8
	A36130-002	60.1
	A36134-001	38.5
	A40312-001	57.4
	A40715-001	14.2
	A42153-001	21.4
	A42153-002	15.8
	A42153-003	15.3
	A52867-001	12.5
	A52867-002	18.9
	A52867-003	10.1
	A52869-002	14.4
	A57306-001	22.5
	A57306-006	25.7
	A57306-007	57.9
A57306-008	25.2	
PA13 - TFL48 Total		599.8
SBFEP-TFL	A36234-001	28.4
	A36270-001	24.2
	A36270-002	8.1
	A36270-003	15.3
	A40310-001	20.0
	A42831-001	12.1
	A42832-001	19.6
	A42840-001	30.0
	A42845-001	18.1
	A42845-002	12.5
	A45272-001	29.8
SBFEP-TFL Total		218.1
Grand Total		817.9

3.5.7 Mixed Wood Fibre Strategy

The forested land base of TFL 48, although dominated by coniferous stands, is comprised of a variety of forest types, each of which contributes to the TFL's coniferous and/or deciduous fibre supply (Table 33).

Table 33: Forest Type Distribution Within TFL 48

Forest Type	Species Mix	% Landbase		Management Regime
		Forested	THLB	
Coniferous	Coniferous > 50 % Deciduous < 20 %	80 %	82 %	Manage for conifer sawlogs at 81-121 years minimum
Mixed Wood Coniferous leading	Coniferous > 50 % Deciduous > 20 %	5 %	6 %	Manage for conifer sawlogs at 81-121 years minimum
Mixed Wood	Coniferous > 20%	3 %	2 %	Manage for conifer sawlogs

Deciduous leading	Deciduous > 50 %			at 81 years minimum ¹
Deciduous	Coniferous < 20 % Deciduous > 50 %	12 %	10 %	Manage for deciduous sawlogs at 61 years minimum

Harvest planning will continue to focus on meeting the challenges presented by an abundance of overmature coniferous stands on a range of site conditions. Short-term plans will continue to address the need to utilize non-conventional harvesting methods to balance the harvest profile from steeper terrain.

Harvest planning will strive to blend mixed wood stands into the harvest profile. Operability constraints may have to be adjusted to reflect the equipment complement required to capture the value contribution of these stands.

Biological constraints must also be considered within a mixed wood management strategy. Mixed stands, although composed of different species, tend to be even aged as a result of forest succession following disturbance. In coniferous leading stands, the conifers may not have reached harvesting age while the deciduous is in decline.

During the term of Management Plan 3, we will develop a monitoring and tracking procedure to ensure that the contribution of conifer/deciduous/mixed wood areas to the harvest profile and to the elements of biodiversity will be maintained.

3.5.8 Integration with SBFEP

Since the inception of TFL 48, the SBFEP program has not been fully integrated into the TFL planning and development process.

Starting in 2000, all planning functions related to the Forest Development Plan (FDP) will become the responsibility of Canfor. Once prescriptions and cut blocks are approved for harvest in the FDP, the required SBFEP volume (55,350m³ AAC) will be transferred to the District Manager for layout and harvest.

Discussions are underway between Canfor and the MoF to consolidate SBFEP operations within the chart area of Canfor's FL A18151-, in order to jointly increase efficiencies and to have Canfor responsible for all forest activities within TFL 48 (Defined Forest Area), for certification purposes.

3.6 FOREST FIRE

We will maintain an effective fire control organization to mitigate damage and losses caused by wildfires.

3.6.1 Prevention and Suppression

We will protect the forest from fire by:

- Preparing and submitting an annual Fire Pre-organization Plan to the MoF. This Plan outlines our commitment to fire prevention, detection and suppression. Our objective is to control all wildfires by 10:00 A.M. on the day after discovery.
- Obtaining accurate weather data and monitoring fire weather indices.
- Maintaining an adequate inventory of fire fighting equipment.
- Ensuring that company and contract personnel are properly trained to report fires and safely and efficiently use fire tools and equipment.
- Co-operating with other agencies on fire research.

¹ The intention is to not manage for a mid rotation deciduous entry but to wait until the conifer will form a saw log. The management intent is to regenerate these sites back to a similar species composition to be tracked at the landscape level. See Section 3.4.1-1.

3.6.2 Prescribed Fire

Burning of residue from harvesting will be carried out in accordance with District and Regional smoke management guidelines. Prior to any prescribed burning we will evaluate the risk factors. Broadcast burning is not prescribed due to unpredictable winds across the TFL. Operational controls include our Environmental Management System Procedures.

3.6.3 Fuel Management

We conduct post harvest fire hazard assessments for each cutblock.

Fuel management will be addressed by burning landing and roadside debris piles. Additional slash accumulations that are assessed as hazardous may be prescribed for piling and burning. Disposal will normally occur within twelve months of harvest.

Exceptions may include:

- horse logging where limbing and topping in the bush are prescribed to help meet social objectives, and
- coarse woody debris piles that provide habitat for small mammals and furbearers,
- helicopter logging.

3.7 FOREST HEALTH

Canfor is committed to maintaining and enhancing forest health on TFL 48. Protection includes prevention, detection and control. Forest health issues may affect harvest scheduling, patterns and treatments.

We will protect the forests from disease and pests by:

- Conducting ground and aerial surveys with trained field crews,
- Utilizing data from pest surveys conducted by the MoF and Forestry Canada,
- Continuing to operate a spruce beetle detection program,
- Following MoF standards and guidelines for the prevention and control of Warren's root collar weevil (*Hylobius warreni*), planting of alternate species and other control measures when required,
- Following accepted cultural practices in the control or eradication of root diseases (e.g., Tomentosus root rot) as part of our silviculture program,
- Monitoring any increase in spruce weevil infestations,
- Developing models to identify high risk areas.

3.7.1 Disease Management

Tomentosus root rot (*Inonotus tomentosus* (Fr.) Gilbn.) is monitored and/or managed to reduce the risk of spread and impact on the timber resource.

At the stand level, disease control prescriptions are included in SPs that are kept in our central filing system. Specific activities or actions required are scheduled and tracked in our FMIS. Records of surveys, plans and treatments are kept in Canfor's central filing. Applicable activities are reported through MLSIS.

3.7.2 Pest Management

A number of pest species exist on TFL 48 and populations are monitored and/or managed to reduce the risk of spread and impact on the timber resource.

Known pest species of concern include the following:

- Warren's root collar weevil (*Hylobius warreni* Wood)
- Western balsam bark beetle (*Dryocoetes confusus*)
- Spruce beetle (*Dendroctonus rufipennis* (Kirby))
- Spruce budworm (*Choristoneura* spp.)
- White pine weevil (*Pissodes strobi* (Pk))

Monitoring operations may include specific insect detection flights by Canfor, MoF and CFS personnel. At least once per year a comprehensive aerial survey is conducted to collect information on windthrow and to check for evidence of insect attacks.

Our pest control strategy is largely proactive and is designed to minimize risk. Generally speaking, history has shown that insect outbreaks usually target one tree species and populations are ultimately controlled by biological factors. To control potential damage and minimize losses, Canfor manages for a mix of ecologically suitable species both at the stand and landscape level. In the event of a potentially catastrophic insect outbreak, our intent would be to cooperate with government agencies and neighbouring licensees in designing and implementing a coordinated control program.

3.8 SILVICULTURE

Silviculture is defined as managing forest vegetation by controlling stand establishment, growth, composition, quality and structure, for the full range of forest resource objectives. On TFL 48, we practice a wide range of silviculture activities designed to improve the productivity and value of our future forests.

We carefully site prepare cutover lands where required, reforest utilizing nursery stock grown from native seed, and control brush and weed species. Superior planting stock will be used when available.

Through proper silviculture practices, we achieve a number of forest management objectives. We improve a young forest's value as a provider of timber yields, wildlife habitat and recreation opportunities. We decrease the chance of the forest becoming destroyed by fire, disease and insects.

3.8.1 *Silviculture Systems*

A silvicultural system is a planned program of treatments throughout the life of the stand to achieve stand structural objectives based on integrated resource management goals. A silvicultural system includes harvesting, regeneration and stand-tending methods or phases. It covers all activities for the entire length of a rotation or cutting cycle.

Throughout the TFL many silvicultural systems are utilized including variations and combinations of clearcut, patch-cut, coppice, shelterwood and selection systems.



Photo 11: Irregular shelterwood is one of the many silvicultural systems used on the TFL.

We prescribe silviculture systems that are ecologically appropriate for the harvest areas and consistent with the objectives established in higher level plans. The silviculture system chosen for any site must reflect the biology of the native tree species, existing stand structures, the ecology of the site, worker safety, and the economic feasibility of the harvesting operation. The system selected must also fulfil all requirements of the *Forest Practices Code of British Columbia Act* and its regulations.

When properly implemented, clearcutting with reserves represents the most ecologically sound silviculture system for lodgepole pine and white spruce stands within TFL 48. Silviculture systems other than clearcutting are appropriate when managing higher elevation unevenaged Engelmann spruce/sub-alpine fir stands. Understory preservation and green tree retention promote biodiversity and provide a nurse crop for the new plantation on these harsh sites.

We will use the best available science to develop an understanding of ecological responses to natural and human-caused disturbances. We will incorporate this knowledge into higher level and operational plans by applying ecosystem management principles to achieve desired future forest conditions.

3.8.2 Basic Silviculture

We carry out basic silviculture activities to:

- Establish and tend new stands that suit the ecological characteristics and productivity estimates of each site,
- Optimize the timing of management activities that positively influence the stand's development, and
- Produce a diverse and sustainable flow of species and products.

Our basic silviculture strategy incorporates the following standards:

- Preferred species are those tree species that are ecologically suited to the site and management activities are primarily aimed at their establishment and growth. The characteristics of these species are consistent with the desired timber and non-timber objectives for the site.
- Stocking standards set out target numbers of trees per hectare to ensure full site occupancy. Minimum standards are set in accordance with legislation. Stocking method outlines recommended treatments to achieve target stocking.
- Minimum intertree distance sets out the prescribed intertree spacing which in combination with average spacing will result in target stocking with a good distribution. During planting operations, plantable spot decisions will be based on microsite quality rather than measured distances to ensure maximum seedling survival and production. On difficult sites, intertree spacing may be reduced to take advantage of limited plantable spots.
- Regeneration delay sets the allowable delay or “fallow period” for a given area measured from commencement of primary harvesting operations. The regeneration delay specified in the tables sets the administrative period which allows for completion of harvest, restocking, surveys and reporting. Our target is to restock areas within 1 year of harvest completion (i.e. cutblocks are fallow for no more than one growing season).
- Free-growing age defines the period measured from commencement of primary harvesting where a stand must meet free-growing requirements and is usually defined as a range (earliest to latest).
- Free-growing height defines for each species on a site, the minimum height that must be attained for a given tree to be considered free-growing.

3.8.2-1 Silviculture Prescriptions

Silviculture prescriptions are site specific applications of the strategies designed to achieve a free-growing stage of development according to accepted standards.

Our prescriptions are consistent with management strategies and landscape level objective. SPs are prepared and approved for all blocks prior to harvest. We will ensure, for the area under an SP, that the prescription:

- Is consistent with the silviculture system selected for the area,
- Demonstrates that the free-growing stand specified in the prescription will be established to meet the target requirements specified in the prescription within the free-growing assessment period specified in the prescription,
- Demonstrates that growth of ecologically suitable species will occur at the site,
- Demonstrates that protection of fish, wildlife, recreation, scenic, soil, water, cultural heritage and other resource use values will be facilitated,
- Describes any action required to achieve known landscape level objectives for stand structure and species composition.

3.8.2-2 Reforestation Methods

We apply reforestation methods that promote prompt and complete reforestation of all cutblocks with ecologically and economically appropriate trees.

All areas harvested are reforested through a combination of planting and natural regeneration. Reforestation plans are prepared each year that set out locations and specifications for each cutblock to be treated.

On TFL 48, all harvested areas will continue to be satisfactorily restocked within an average of two years following harvest commencement.



Photo 12: We reforest all our harvested areas within on average two years.

Our planting program insures that our future forests are as productive as possible. Primary planting is carried out on those areas where the natural regeneration of a preferred species cannot be relied on (i.e. white spruce). Consistent with our objectives, planting densities average 1,600 trees per hectare and range from 1,200 to 1,800 trees per hectare.

Planting is carried out by qualified reforestation contractors in both the spring and summer. Generally, lower elevation sites are planted in the spring and high elevation sites in the summer. A fall planting program is considered on special sites.

To guarantee seedling survival and rapid initial growth, we must be certain that all trees are planted correctly. Planting contractors follow stringent quality standards. The work is closely supervised by our forestry staff who continue to implement current MoF planting quality inspection procedures.

3.8.2-3 Seed Procurement

We secure an appropriate supply of ecologically suitable and genetically superior seed to satisfy projected seedling requirements. To realize the reforestation objectives determined by our Silviculture Prescriptions, we are committed to maintaining an appropriate inventory of seed (i.e. 10 year supply). Collecting the correct amount of high quality seed is a critical silviculture activity.

Seed supplies for reforestation are maintained through:

- Collections from the forest for natural stand, (B class), seed,
- Production from orchards for genetically superior, (A class), seed.

Where genetically superior seed is available from the provincial tree improvement program, we will favour the use of this seed in our reforestation activities. A small amount of A class spruce seed is available for TFL 48. In 2000, we planted approximately 300,000 of these seedlings.

Each year, we will complete an analysis of seed requirements for reforestation. This analysis will be based on site types and elevations projected in forest development plans. This will allow us to adjust seed purchase and/or collection strategies accordingly.

Every seedlot collected for our reforestation program is given a provincial registration number, processed, tested and stored by individual seedlots at the Ministry of Forests' Seed Centre in Surrey, BC. Seed inventories are updated annually.

3.8.2-4 Site Preparation

Site preparation treatments are completed to facilitate planting. In general, sufficient plantable spots exist following harvest. However, there are occasions when treatment is necessary to increase seedling survival and growth, achieve target stocking levels, control brush species, reduce fire hazard and improve wildlife habitat.

Low impact excavators are used to mechanically spot scarify or mound cutover areas and areas with soil compaction concerns. Most of the fine and coarse woody debris remains on site.

In areas where unmerchantable material has accumulated along the roadsides during harvesting, debris is piled and burned. Some accumulations may be left to weather naturally and provide important habitat for small mammals.

The debris may be moved onto the roadbed as part of our program to rehabilitate secondary resource roads following harvest. The large woody debris provides both shade and a long-term nutrient supply to seedlings planted along the deactivated road surface. Extremely heavy roadside accumulations are bunched or windrowed in preparation for burning.

3.8.2-5 Brushing and Weeding

Brushing and weeding helps to control brush competition and ensure crop tree survival. Excessive competition for light, water and nutrients can have a serious impact on seedling growth and site productivity. A seedling may survive under such conditions but will not grow effectively until released from the competing vegetation.

Any prescribed brush control treatment is designed to minimize the effect on native wildlife species. We use three different control treatments: herbicide, manual and biological. The

immediate planting of all brush-prone sites with tailored nursery stock assists in minimizing the application of brush control.



Photo 13: Sheep grazing is one of several brush control treatments.

On TFL 48, we do not attempt to eradicate all competing species. Instead, the amount and type of herbicide applied only holds the targeted vegetation in check until seedlings are tall enough to no longer be affected by the competition for light and nutrients.

3.8.2-6 Silviculture Assessments

A series of periodic surveys are used to monitor the health and vigour of our young forests from initial establishment to second harvest.

Regeneration surveys are carried out within two years of planting. These surveys assess the level of success that our reforestation efforts have achieved relative to the objectives set out in the Silviculture Prescription.

Regeneration performance assessments are done to review the effect of different treatments on seedling survival and growth. The results of the assessment allow us to develop new and innovative techniques designed to improve the performance of our young forests. A free-growing survey is the final field check performed to certify that our basic forestry objectives have been met.

Sometimes the survey results determine that remedial action is required to increase stocking levels, control brush species, or protect seedlings from animal damage. When this occurs, the necessary action is prescribed and the area is scheduled for treatment.

3.8.2-7 Silviculture Funding

Funding for silviculture activities is based on the history of legislation defining agency responsibilities. For a given cutblock, funding responsibility for silviculture depends on what activities are proposed and when the block was logged.

- Blocks logged between 1982 and 1987: All costs for activities associated with achieving a free-growing stand are the responsibility of the Crown.
- Blocks logged after 1987: All costs for activities associated with achieving a free-growing stand are the responsibility of the licensee.

We will continue to work with the Ministry of Forests to plan, implement and report on silviculture treatments designed to achieve free growing on all 1982 - 1987 harvest areas. Ongoing works under this program are subject to the availability of ministry or other funding. Currently, funding is delivered through Forest Renewal BC.

3.8.3 Elimination of Pre-1982 Backlog Areas

We will eliminate all pre-1982 backlog areas that exist in the regions and compartments listed in the Schedule C of the TFL 48 agreement, effective as of December 1, 1988, by November 30, 2008.

On October 2, 2000, we submitted to the District Manager the proposed management objectives and strategies, including a schedule of operations, for the pre-1982 backlog areas.

The reforestation plan was:

- prepared in accordance with the requirements of the District Manager, and is consistent with Management Plan 3; and
- for the period beginning October 1, 2000.

The Crown will supply the seedlings to be used in restocking pre-1982 backlog areas.

In the past 5 years backlog NSR (pre-1987) has been reduced from a net area of 13,063 ha to 2,654 ha. This has occurred as a result of Canfor's reforestation activities, natural reforestation and a re-inventory of the forest cover within the TFL. The pre-1982 component of the remaining 2,654 ha of backlog NSR is 2,403 ha.

3.8.4 Site Rehabilitation

We will rehabilitate brush sites to provide harvest opportunities and to maximize the landbase available for coniferous timber production. The stand conversion work will be carried out in consultation with the MELP and the MoF District staff. As noted in Section 3.4.1 we will sustain forest types over time across the TFL.

Accordingly, we will:

- Ground check candidate stands,
- Prepare SMPs for areas eligible for treatment.

Once assessed and treated, these areas will be managed according to the silviculture strategy and appropriate site series.

3.9 ROADS

3.9.1 Construction

Roads constructed and maintained on Crown lands by Canfor will comply with the Forest Road Regulations of the *Forest Practices Code of BC Act* and Road Permit documents. Road standards will reflect the expected volume and season of harvest. All right-of-way logging and road construction activities will be conducted under appropriate field conditions to minimize the impact on other resources.

3.9.2 Maintenance

Road maintenance will be conducted on a regular schedule on all roads where we have maintenance responsibilities. All maintenance activities will be carried out in a timely manner to minimize risk to the road, its users and the environment. Required maintenance activities will be determined from information documented during regular inspections as well as from information reported by users of the road.

3.9.3 Deactivation

Deactivation of all inactive roads and logging trails will be conducted as approved in the Forest Development Plan. Measures will be taken to stabilize roads during periods of inactivity, including the control of runoff, the removal of sidecast where necessary, and the re-establishment of vegetation for semi-permanent and permanently deactivated roads.

3.9.4 Road Rehabilitation

We rehabilitate temporary roads to maximize the landbase available for timber production. Rehabilitated roads are reforested and are tracked in our Forest Management Information System.

3.10 RESEARCH AND DEVELOPMENT

We will develop innovative systems, techniques and products that maximize the potential value derived from the timber resource.

We will explore innovations designed to ensure that landscape and stand level management objectives will be met while maximizing the potential value derived from the timber resource.

3.10.1 Wildlife Research

3.10.1-1 Harlequin Ducks

Through FRBC funding, administered through the Science Council of BC (SCBC), Canfor conducted two seasons of research on Harlequin Ducks in the Carbon, Eleven Mile and

Brazion Creeks and the Burnt River as well as other similar watersheds. Harlequin Ducks were selected as a research species because they are considered to be sensitive to human disturbance and were a candidate for Identified Wildlife status. The program had four objectives:

- conduct a helicopter survey of Carbon Creek during mid-May, to compare present pre-breeding pair densities with those obtained during a 1976 pair survey,
- to evaluate the effectiveness of aerial vs. ground based census techniques,
- to quantify habitat relationships for the ducks, and
- to evaluate the effectiveness of the FPC riparian management criteria for managing Harlequin Ducks.

The second year of data complemented the first demonstrating that:

- pre-breeding pair densities of harlequin ducks compare well with the survey conducted in 1976 suggesting that the level of habitat disturbance to date has little or no effect on Harlequin Ducks,
- aerial based techniques are slightly more effective for conducting surveys than ground surveys,
- Harlequin Ducks were shown to key in on several stream habitat characteristics but riparian habitat was more variable,
- the FPC, for S1 and S2 streams, adequately manages Harlequin Duck habitat (McElligott 1998).

No further surveys or research on harlequin ducks is planned at this time.

3.10.1-2 Marten

Initial snow tracking surveys on the Rice Property during the winter of 1997/98 revealed unusually high numbers of marten in young (< 20 years) aspen stands. To determine the possible reasons for such high use, Canfor and a University of Alberta Masters student have undertaken radiotelemetry, small mammal, and habitat studies. Preliminary results showed that measures of capture success, density, mortality, home range size and foraging success indicated that the habitat in and around the Rice Property are not suboptimal. This habitat use pattern is contrary to most reports on marten habitat preferences (Grindal et al. In review). Ongoing work (A. Porter, University of Alberta) will more closely look at fine scale habitat use to determine if coarse woody debris or small mammal availability are influencing marten habitat use on the Rice.

Results from the marten research will be included in habitat models.

3.10.1-3 Grizzly Bear

The Ministry of Forests, BC Environment, Canfor, The Pas Lumber and the University of Northern British Columbia are partners in a multiyear study of grizzly bears in the Parsnip River drainage in the Prince George Forest District. Radio-collared bears (GPS and VHF collars) occasionally cross the continental divide and use habitat in the Wolverine and adjacent drainages. Applicable data from this study will be incorporated in wildlife habitat models.

3.10.2 CFS / NSERC / SSHRC Forest Research Partnership

The ability to make credible projections of future forest conditions is a necessary step towards Canfor's goal of product certification and sustainable forest management. Resource management decisions must be based on sufficient data and that data must be structured to support its use at a hierarchy of temporal and spatial scales.

A three-year initiative entitled “Exploring, Forecasting and Visualizing the Sustainability of Alternative Ecosystem Management Scenarios” will provide the tools to manage spatial and temporal data at a scale required for landscape unit planning. In particular, the project will focus on the projection of future forest conditions as defined by economic, ecological and social indicators of sustainability. The research project will help Canfor develop and apply forest ecosystem principles within TFL 48.

An analysis of alternate ecosystem management strategies will be conducted and synthesized through the use of an ecosystem-based modeling framework developed by the University of British Columbia and in consultation with the Canadian Forest Service (CFS) Pacific Forestry Centre.

4 OTHER RESOURCE USERS

4.1 CONSULTATION

Canfor is taking a number of measures to identify and consult with persons using the TFL for purposes other than timber production, including:

- Public Acceptance of Visual Landscape Inventory (see Section 3.4.37)
- Public Advisory Committee (see Section 3.4.40)
- MP, FDP and PMP processes (see Section 3.4.48)
- Public Enquiry Forms (see Section 3.4.49)
- Level of Public Comments (see Section 3.4.50)

Canfor recognizes the importance of Treaty 8 as it relates to Treaty signatories such as Sauteau First Nations and West Moberly First Nations. The adhesion of the McLeod Lake Indian Band to Treaty 8 in April 2000 is also recognized. In addition, Canfor acknowledges that the Lheidl T'enneh of Prince George have interests in the southern portion of the Dawson Creek Forest District through the BC Treaty Commission process. Canfor is waiting for clarification from the Ministry of Forests Dawson Creek District Office in regards to the level of information sharing that is expected to take place with the McLeod Lake Indian Band and the Lheidl T'enneh First Nation. In the interim Canfor will provide information on an as requested basis.

Canfor recognizes that it cannot consult with the First Nations and that this is the role of the Crown (e.g., Ministry of Forests for Forest Development Plans, and Ministry of Environment, Lands and Parks for Pest Management Plans) but that we can provide important information to the First Nations. In addition to the public involvement noted above Canfor has also identified the following Indicators in relation to First Nations:

- Proactive Consultation Process (see Section 3.4.43)
- Aboriginal Liaison (see Section 3.4.45)
- Incorporation of Objectives of Klin Se Za (see Section 3.4.46)
- Aboriginal Employment (see Section 3.4.47)

4.2 ROLES AND RESPONSIBILITIES OF OIL, GAS AND MINING

All oil, gas and mining activities (e.g., seismic, roads, pipelines, well sites, mine sites) proposed for the TFL are referred to the Canfor office. Canfor provides comments to minimize impacts on the timber harvesting land base (e.g., reforest disturbed sites), proposed road locations and known resource features.

For oil and gas these comments are provided to the company proposing development. The company is then obligated to report these comments and how they will incorporate these comments to the Oil and Gas Commission.

For mining activities (e.g., mine review) the comments are provided to the company proposing development and to the Ministry of Energy and Mines.

Canfor offers to purchase merchantable coniferous timber from these developments at market value.

Industrial developments (e.g., well sites, pipelines, mines) are mapped by Canfor and included in timber supply analysis (see Section 3.4.15 Area of TFL Occupied by Permanent Access Structures and 3.4.32 Area of Forested Land) and Forest Development Plans.

5 COMPARISON SUMMARY BETWEEN MP 2 AND MP 3

The key similarities and differences between the MP 2 and MP 3 Management Plans are summarized below.

5.1 INVENTORIES

In his Rationale for Annual Allowable Cut determination (1996) the Provincial Chief Forester directed Canfor to complete a comprehensive inventory of the TFL lands. Several inventories have been completed including Vegetation Resources Inventory, Operability, and Fish and Fish Habitat Inventory (see Section 2.2 TFL 48 Resource Inventories). These inventories provide a more accurate account of the timber harvesting landbase.

5.2 RICE PROPERTY

Canfor purchased the Rice Property for inclusion into TFL 48. In August 1998, the Ministry of Forests approved the transfer of land into TFL 48 and the conversion to coniferous forests. The addition of the Rice Property (5,773 ha gross) will increase the operable landbase through the conversion of marginal agricultural land, immature deciduous stands and logged-over coniferous sites to sustainable coniferous forest management. The inclusion of the Rice Property into the operable Schedule B lands of TFL 48 will potentially increase the coniferous rate of harvest by 15,000m³ to 20,000m³ per year.



Photo 14: The Rice Property will be returned to predominantly coniferous forests in the TFL.

5.3 LANDBASE

Table 34: Landbase Comparison between MP 2 and MP 3

	MP 2	MP 3*	Difference
Total Area	638,811 ha	643, 511 ha	+ 4,700 ha
Productive Forest Area	518,738 ha	570,744 ha	+ 52,006 ha
Current Net Operable Area (Conifer)	257,915 ha	280,804 ha	+ 22,889 ha
Long-term Net Operable Area (Conifer)	245,200 ha	268,797 ha	+ 23,597 ha
Current Net Operable Area (Deciduous)	29,370 ha	40,774 ha	+ 11,404 ha
Long-term Net Operable Area (Deciduous)	27,922 ha	39,031 ha	+ 11,109 ha

**Data used in MP3 Timber Supply base case*

The total area changes are a result of the following:

- Incorporated the licence boundary as provided by the MoF.
- Removed new woodlots
- Added Rice property
- Incorporated protected areas

5.4 CSA CERTIFICATION

In July of 1999 Canfor formally announced its commitment to seek sustainable forest management certification of the company's forestry operations under the Canadian Standards Association Sustainable Forest Management System standard CAN/CSA-Z809-96. The Sustainable Forest Management Plan presented within the proposed MP 3 and its implementation is intended to fulfil that commitment for TFL 48. TFL 48 was registered to the CSA Standard in July 2000.

5.5 MANAGEMENT OF DECIDUOUS LEADING STANDS

Louisiana-Pacific Canada Ltd. and Canadian Forest Products Ltd. have signed a memorandum of understanding pertaining the management of deciduous leading stands within the common boundaries of TFL 48 and PA's 10 and 13.

5.6 INTEGRATION WITH SBFEP

Since the inception of TFL 48, the SBFEP program has not been fully integrated into the TFL planning and development process.

Starting in 2000, all planning functions related to the Forest Development Plan (FDP) will become the responsibility of Canfor. Once prescriptions and cut blocks are approved for harvest in the FDP, the required SBFEP volume (55,350m³ AAC) will be transferred to the District Manager for layout and harvest. Approximately 40,000m³ of the volume has been awarded as a 10-year Section 21 (Value Added) sale.

Discussions are underway between Canfor and the MoF to consolidate SBFEP operations within the chart area of Canfor's FL A18151, in order to jointly increase efficiencies and to have Canfor responsible for all forest activities within TFL 48 (Defined Forest Area), for certification purposes.

5.7 HARVEST LEVELS (CURRENT AND PROJECTED)

Implementing Management Plan 2 increased the harvest level from 410,000m³ (Management Plan 1) to 460,000m³ (coniferous leading) and 54,000m³ (deciduous leading).

The estimated harvest level from the proposed management plan indicates that there may be an additional increase attributable to the coniferous leading stands up to 528,300m³.

5.8 ECONOMIC OPPORTUNITIES

The increase in harvest levels during the implementation of Management Plan 2 resulted in an increase in employment and contract opportunities. Approximately 20 direct jobs were created in road building, timber harvesting and silviculture.

5.9 THE PROTECTION AND CONSERVATION OF NON-TIMBER VALUES

During the course of Management Plan 2 there were significant changes for the protection and conservation of non-timber values under the *Forest Practices Code of BC Act*. These include the application of streamside buffers for fish-bearing streams, and changes in harvesting practices to better represent Natural Disturbance Types (NDTs).

We will continue to harvest in accordance with the Forest Practices Code. In addition, in July 1999, Canfor made a commitment to seek sustainable forest management certification of the company's forestry operations (See Sections 1.5 and 3.3 Sustainable Forest Management). These commitments have been used to guide the development of MP 3 and our Sustainable Forest Management Plan (SFMP). In particular Canfor has established a Public Advisory Committee to provide input to the SFMP.

6 IMPACT SUMMARY OF IMPLEMENTING MP 3

Forest law, all relevant legislation, standards and procedures, and the objectives proposed in the Dawson Creek LRMP are fundamental to management practices and standards on TFL 48. Constraints imposed by these references are considered within our proposed Management Plan. Consequently, changes to these constraints may, in turn affect the expected impacts on these factors.

6.1 HARVEST LEVELS

The harvest rate proposed for the period of MP 3 (Section 3.5.6) is approximately 68,300m³ higher than the current harvest level.

6.2 ECONOMIC OPPORTUNITIES

Economic opportunities provided from TFL 48 are partly related to the allowable annual cut determined by the provincial Chief Forester. Certainly, economic opportunities are more a function of the costs associated with manufacturing, marketing and delivering products to our customers and the sales price these customers are willing or able to pay.

By preparing MP 3 and fulfilling the requirements of our TFL 48 agreement, we expect the stability of this tenure will support shareholder confidence, assist in securing long-term contracts with customers and provide a basis from which to explore new markets.

In developing MP 3, we improved several inventories which has allowed us to refine our estimates of, monitor and incorporate the economic operability of timber resources within our timber supply analysis. This has helped us to identify and explore new opportunities.

Canfor will continue to support initiatives that significantly reduce costs, enhance revenues and improve productivity. We will also continue to work with the MoF towards its fourth mandate to encourage a vigorous, efficient and world competitive timber processing industry in the province of British Columbia (Ministry of Forests Act - The purposes and functions of the ministry).

6.3 EMPLOYEES AND CONTRACTORS

The number of persons directly and indirectly employed from TFL 48 operations is partly related to the allowable annual cut determined by the provincial Chief Forester. The proposed harvest rate for MP 3 should support an increase of employment.

6.4 NON-TIMBER VALUES

The proposed AAC incorporates spatial constraints for timber harvesting and protecting non-timber resources. We expect that recent improvements in forest resource inventories will help us to plan and ensure that non-timber values are protected.

7 PUBLIC REVIEW STRATEGY FOR MP 3

7.1 PUBLIC AND AGENCY INVOLVEMENT

In the course of producing MP 3, we solicited public involvement. The following sections summarize the approaches taken for public and agency involvement and the responses received from the public and agencies regarding key components of this plan. See Appendix 9.13 for complete documentation of public and agency involvement.

7.1.1 Summary of comments received from the assessment of MP 2

Our objective was to solicit public input regarding the implementation of MP 2 and incorporate the feedback into the draft MP 3.

We invited the public to comment on our MP 2 by advertising in local newspapers. In addition, individual notification letters were sent to stakeholders and special interest groups. There were no public comments specific to the performance of MP 2.

On October 19, 1999, we received a letter from the MoF Regional Manager that provided a list of issues to be addressed in the preparation of MP 3. Where appropriate, these issues were incorporated into the draft MP 3.

7.1.2 Public Advisory Committee

In February 2000 Canfor formed a Public Advisory Committee (PAC) to develop sustainable forest management indicators and objectives for Tree Farm Licence (TFL) 48.

The PAC ensures that sustainable forest “decisions are made as a result of informed, inclusive, and fair consultation with local people who are directly affected by or have an interest in sustainable forest management decisions”. The PAC represents the diverse range of interests in the TFL and:

1. Provides input on
 - Values, goals, indicators and objectives as related to CSA
 - Design of Sustainable Forest Management (SFM) system, monitoring system, and evaluation process
2. Reviews performance evaluations and make recommendations for improvement
3. Provides input to the communication strategy to provide feedback to interested parties about the defined forest area, particularly the results of performance evaluations related to the critical elements of the Canadian Council of Forest Ministers (CCFM) Criteria
4. Refines and implements the public involvement program

The PAC was comprised of the following interests during 2000:

Communities, Environment, Forest Workers, Independent Forest Operators, Oil and Gas, Recreation, Saulteau First Nation, Trapping, West Moberly First Nation

In addition, the following acted as advisors to the Committee:

BC Environment, Canfor, Louisiana Pacific, Ministry of Forests, Ministry of Energy and Mines

Members of the public were allowed to attend each PAC meeting and provisions were made for public comment at the meetings. Notices of each PAC meeting were sent to the Chetwynd Echo, Tumbler Ridge Observer, Peace River Block News and members of the public who expressed interest.

Canfor held 6 meetings with the PAC prior to the submission of the Draft Management Plan 3 in 2000. With the exception of Aboriginal groups, all PAC interests attended at least 2 meetings, with most interests being present at 4 of the 6 meetings. Canfor attended all PAC meetings, while other advisors attended 1-3 meetings. It is our understanding that Aboriginal groups did not attend any PAC meetings because of concerns about potential affects on their Treaty rights, and due to lack of capacity within the groups to attend the PAC. All interests, including Aboriginal groups, and advisors were provided with meeting summaries immediately prior to each subsequent meeting.

Input by the PAC on the values, goals, indicators and objectives as related to CSA have been directly incorporated into the Management Plan. The PAC will remain active by meeting at least twice annually to be kept apprised of progress on Values, Goals, Indicators and Objectives, and to provide input on key forest management activities within the TFL. Canfor will continue to develop news releases so that the general public is aware of the progress in relation to Sustainable Forest Management.

7.1.3 *Summary of comments received from the assessment of draft MP 3*

Our objective was to solicit public input regarding the draft MP 3 and incorporate results into MP 3 submitted to the provincial Chief Forester.

We invited the public to comment on our draft MP 3 by advertising in local newspapers. In addition, individual notification letters were sent to stakeholders and special interest groups. The draft Management Plan was available for public viewing at Canfor's Chetwynd and Vancouver offices, and at the Chetwynd Public Library.

The Chetwynd Public Advisory Committee reviewed the Draft Management Plan / Sustainable Forest Management Plan on September 21, 2000. An open house was held in Chetwynd on September 22, 2000 to present the Draft Management Plan / Sustainable Forest Management Plan.

There were no public comments specific to the content of draft MP 3 that required any revisions to the Management Plan.

A thorough review of draft MP 3 by MoF district, regional and branch staff identified several wording problems and pointed out several items that required clarification in the text. Correspondence from the Regional Manager identified some issues to be addressed. Where appropriate, these issues were incorporated into the proposed MP.

8 REFERENCES

8.1 LITERATURE

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8.2 PERSONAL COMMUNICATIONS

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9 APPENDICES

- 9.1 SUSTAINABLE FOREST MANAGEMENT MATRIX**
- 9.2 TERMS OF REFERENCE FOR CHETWYND PUBLIC ADVISORY COMMITTEE**
- 9.3 VEGETATION RESOURCE INVENTORY GROUND SAMPLING PLAN**
- 9.4 PHYSICAL OPERABILITY MAPPING AND STABILITY INDEX**
- 9.5 (ACCEPTED) TIMBER SUPPLY ANALYSIS INFORMATION PACKAGE**
- 9.6 STREAM CLASSIFICATION TOOL - TFL 48**
- 9.7 REPORT ON THE VISUAL LANDSCAPE INVENTORY FOR TFL 48**
- 9.8 RECREATION LANDSCAPE ANALYSIS REPORT FOR TFL 48**
- 9.9 CROSS REFERENCE OF MOF AND CSA REQUIREMENTS**
- 9.10 WILDLIFE SPECIES KNOWN OR EXPECTED IN TFL 48**
- 9.11 TIMBER SUPPLY ANALYSIS**
- 9.12 TWENTY YEAR PLAN**
- 9.13 AGENCY AND PUBLIC REVIEW**
- 9.14 MANAGEMENT OF DECIDUOUS LEADING STANDS – MOU WITH LP**
- 9.15 PRE – 1982 BACKLOG SILVICULTURE STRATEGY**
- 9.16 TFL 48 2000 FDP OLD SERAL MANAGEMENT STRATEGY**
- 9.17 SFM ANNUAL REPORT**

9.18 MAP FOLIO

- 9.18.1** *TFL 48 Overview*
 - TFL and Block Boundaries
 - Physical and Administrative Features
 - Land Tenure Status
- 9.18.2** *Biogeoclimatic Information (e.g. Zone, Subzone and Variant)*
- 9.18.3** *LRMP Resource Management Zones*
- 9.18.4** *Protected Area Strategy Information for TFL 48*
- 9.18.5** *Draft Landscape Unit and Biodiversity Emphasis Options*
- 9.18.6** *ALR and Range Tenures*
- 9.18.7** *Trapper and Guide Areas*
- 9.18.8** *Recreation / Landscape Inventory (1994)*
- 9.18.9** *Recreation Inventory*
- 9.18.10** *Visual Landscape Inventory (2000)*
- 9.18.11** *Terrain Classification*
- 9.18.12** *Physical Operability*
- 9.18.13** *Terrain Stability (SINDEX)*
 - Map 1 of 4 Blocks 1 & 2
 - Map 2 of 4 Block 3
 - Map 3 of 4 Block 4
 - Map 4 of 4 Block 5
- 9.18.14** *Seral Stages 1960 – 2000 – 2020*