

Duncan Bay Tree Farm Licence Tree Farm Licence No. 47 Management Plan No. 3 (Part A)

January 1st, 2002 - December 31st, 2006

TFL Forest Ltd January 3rd, 2002

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Table of Contents

1.0 INTRODUCTION	6
1.1 DESCRIPTION	6 8
1.3 CHANGES TO TREE FARM LICENCE NO. 47	
2.0 MANAGEMENT OBJECTIVES	11
2.1 TIMBER RESOURCE MANAGEMENT OBJECTIVES	
3.0 TIMBER RESOURCE MANAGEMENT STRATEGIES	15
3.1 Harvesting	15
3.1.2 Harvesting Systems	16 16
3.1.4 First Entry Ages	18
3.3 UTILIZATION	19
3.3.1 Utilization Specifications	19
3.3.3 Utilization of Deciduous 3.3.4 Inoperable/Low Site	20
3.4 SILVICULTURE	21
3.4.1.1 Type I Silviculture Strategy	21
3.4.1.3 Stand Management Prescriptions	22
3.4.2.1 Stand Establishment	22
3.4.2.4 Site Preparation	23
3.4.2.5 Debris Management	23 23
3.4.2.7 Vegetation Management	23

3.4.3 Incremental Silviculture	24
3.4.3.1 Tree Improvement	24
3.4.3.2 Juvenile Spacing	24
3.4.3.3 Fertilization	25
3.4.3.4 Site Rehabilitation	25
3.4.3.4 Pruning	
3.5 PROTECTION	
3.5.1 Fire Protection	25
3.5.1.1 Prevention	
3.5.1.2 Preparedness	
3.5.1.3 Suppression	26
3.5.2 Insects and Disease	26
3.5.2.1 Balsam Woolly Aphid	26
3.5.2.2 Root Rot	27
3.5.2.3 Western Blackheaded Budworm	27 27
3.5.3 Windthrow	
3.6 ACCESS MANAGEMENT	27
3.6.1 Design, Construction, Maintenance and Deactivation	2. 28
3.6.2 Public Access	2c
3.6.3 Road Use Agreements	20
3.7 ENVIRONMENT	20 20
3.7.1 Environmental Policy	2c
3.7.2 Environmental Committee	2c
3.7.3 Environmental Management System	20
3.7.4 Certification	∠≎
3.7.5 Audits	oc
.0 NON-TIMBER RESOURCE MANAGEMENT STRATEGIES	30
4.1 STRATEGIC LAND USE PLANS	30
4.1.1 Vancouver Island Land Use Plan Higher Level Plan	30
4.1.2 Vancouver Island Summary Land Use Plan	30
4.1.3 Land and Resource Management Plans	31
4.2 CONSULTATION	
4.3 Recreation	31
4.3.1 Karst Terrain and Features	32
4.4 VISUALS	32
4.5 BIODIVERSITY	32
4.6 FISHERIES CONSERVATION	3.3
4.7 Water Conservation	33
4.7.1 Community Watersheds	3?
4.7.2 Other Watersheds	3⊿
4.8 WILDLIFE CONSERVATION	34
4.9 SOIL CONSERVATION	34

4.10 CONSERVATION OF CULTURAL AND HISTORIC VALUES	
4.10.1 Cultural and Historic Sites	
4.10.2 Aboriginal Rights	
4.11 OTHER NON-TIMBER RESOURCE VALUES	35
5.0 RESEARCH	36
5.1 SILVICULTURE RESEARCH	36
5.2 WILDLIFE RESEARCH	
5.3 Variable Retention Research	
6.0 INVENTORIES	37
6.1 Forest Cover	37
6.2 FISHERIES	
6.3 TERRESTRIAL ECOSYSTEM MAPPING	
6.4 RECREATION	
6.5 VISUALS	
6.6 ARCHAEOLOGY	38
6.7 ENVIRONMENTALLY SENSITIVE AREA MAPPING	39
7.0 SIMILARITIES, DIFFERENCES AND IMPACTS	39
7.1 MORESBY MANAGEMENT UNIT	39
7.2 PROPOSED HARVEST LEVEL	
7.3 DECIDUOUS	
7.4 EMPLOYMENT	40
7.5 Contractors	
7.6 RETENTION SYSTEMS	
7.7 FIRST NATIONS	
7.8 LANDSCAPE UNIT PLANNING	41
7.9 CERTIFICATION	41
8.0 SCHEDULE B PRORATE CALCULATION	41
9.0 REVIEW STRATEGY	42
List of Tables	
Table No. 1 – Changes to Tree Farm Licence No. 47 Table No. 2 – Proposed Harvest Level Table No. 3 – TimberWest Employees (TFL No. 47)	16
Table No. 4 – Current Timber Harvesting Land Base	41
Table No. 5 – Schedule 'A' Timber Harvesting Land Base (Current)	
Table No. 6 – Schedule 'B' Timber Harvesting Land Base (Current)	41
Table No. 7 – Proposed Harvest Level	42

List of Figures	
Figure No. 1 – Key Map of .	Johnstone Strait and Bonanza Lake MU's

Figure No. 1 – Key Map of Johnstone Strait and Bonanza Lake MU's	7
Figure No. 2 – Proposed Advertisement for Draft MP No. 4	43
Figure No. 3 – Registration Form for Draft MP No. 4	44
Figure No. 4 – Comment Form for Draft MP No. 4	45

List of Appendices

Appendix I Appendix II	- Statement of Management Objectives, Options and Procedures Timber Supply Analysis Information Package
• •	- Timber Supply Analysis
Appendix IV	- Twenty Year Plan
Appendix V	- Draft Management Plan Review Comments and Responses
	- Reports Binder
Appendix VII	- Map Folio
	- Differences between Timber Supply Information Package and Analysis

1.0 Introduction

TFL Forest Ltd (TimberWest) is a required, under Section 35(1)(d) of the *Forest Act* (FA) and the Licence Agreement (Licence) for Tree Farm Licence (TFL) No. 47, to prepare a Management Plan (MP) once every five years. MP No. 3 is for the period between January 1st, 2002 and December 31st, 2006.

1.1 Description

TFL No. 47 consists of 14 geographically dispersed supply blocks on Vancouver Island, the mainland and the Queen Charlotte Islands which are grouped into three management units (MU) to recognize the unbalanced distribution of the immature age classes and the geographic location of the old growth and mature second growth timber. This document, Part 'A' of MP No. 3, covers a total area of 139,867 hectares in the Johnstone Strait and Bonanza Lake MU's. (See Figure No. 1)

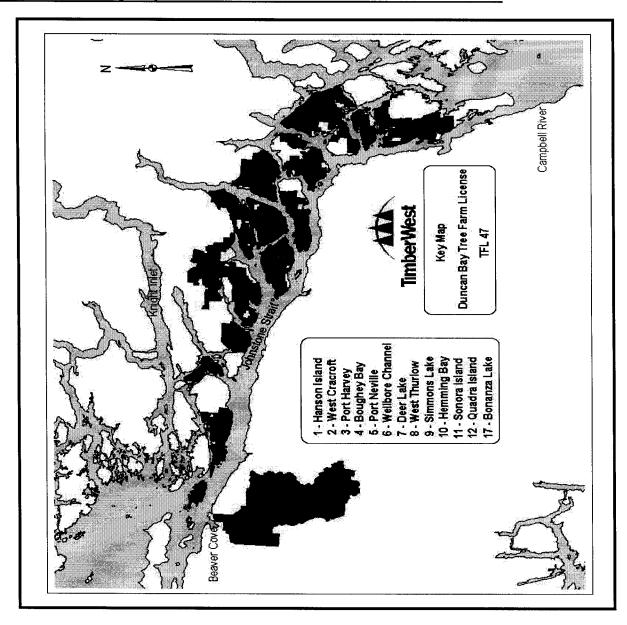
The Johnstone Strait MU extends from Quadra Island near Campbell River to Hanson Island near Port McNeill. It includes islands in the Johnstone Strait and portion of the adjacent mainland. This MU consists of Blocks No. 1-12 (Hanson Island, West Craycroft, Port Harvey, Boughey Bay, Port Neville, Wellbore Channel, Deer Lake, West Thurlow, Simmons Lake, Hemming Bay, Sonora Island and Quadra Island) which are characterised by coastline with mountainous terrain which is not especially rugged or steep. The majority of the MU lies within the Coastal Western Hemlock biogeoclimatic sub-zone with small portions in the Mountain Hemlock sub-zone.

The Bonanza Lake MU consists of Block No. 17 which is located on northern Vancouver Island south of Port McNeill. The unit is contained within a valley formed by glacial processes and is classified within the Coastal Western Hemlock biogeoclimatic sub-zone.

1.2 History (Tree Farm Licence No. 47)

TFL No. 47 originated as a result of an application of September 9th, 1983 to amalgamate TFL No. 2 and TFL No. 12 by Crown Forest Industries Limited. On January 1st, 1985, TFL No. 2 and TFL No. 12 were amalgamated to become TFL No. 47. Crown Forest Industries Limited continued as a wholly-owned subsidiary of Fletcher Challenge Limited and managed TFL No. 47 under an agreement until December 1992 when it was assigned to Fletcher Challenge Canada Limited. The Licence was later assigned to TimberWest Forest Limited on December 16th, 1993. Fletcher Challenge Canada Ltd. remained the majority shareholder in TimberWest Forest Limited until June, 1997, when the Minister of Forests consented to the change in control to TAL Acquisition Ltd. In September 1998, TimberWest Forest Limited changed its name to

Figure No. 1 - Key Map of Johnstone Strait and Bonanza Lake MU's



TFL Holdings Ltd and was subsequently changed in October 1998 to TFL Forest Ltd, a wholly owned subsidiary of TimberWest Forest Corp. TFL Forest Ltd currently is the holder of TFL No. 47.

1.2.1 History (Tree Farm Licence No. 2)

The TFL No. 2, registered as the 'Duncan Bay Tree Farm Licence', was granted to Canadian Western Timber Company by the Province of British Columbia on January 24th, 1949. The Licence contained four large Blocks of Crown-granted lands in the Ladysmith and Courtenay areas of Southeast Vancouver Island (Schedule 'A' lands) and twelve Blocks of vacant Crown land (Schedule 'B' lands) and revertible tenure near Johnstone Strait.

The Canadian Western Timber Company assigned all its interest in TFL No. 2 to Elk Falls Company Limited, a subsidiary of Crown Zellerbach Canada Limited on October 30th, 1950. On December 28th, 1971 the Licence was amended to include the Bonanza Lake Block near Beaver Cove on Northern Vancouver Island and the Moresby Block in the Queen Charlotte Islands. These lands were composed of Company owned timber licence and pulp licences (Schedule "A") and adjacent Crown land (Schedule "B"). Elk Falls and other companies were amalgamated as one public company in the name of Crown Zellerbach Canada Limited under an agreement dated December 29th, 1971.

On March 30th, 1983, Crown Zellerbach Corporation sold its interest in Crown Zellerbach Canada Limited to Fletcher Challenge Limited of New Zealand. As a result of the ownership change, Crown Zellerbach Canada Limited, was renamed "Crown Forest Industries Limited", effective October 1st, 1983. Additional Company owned Crown-granted lands in the Ladysmith and Courtenay areas, originating from major acquisitions from the Victoria Lumber and Manufacturing Company and later from the E & N Railway Company, were included in the Licence at this time.

The 1971 amendment to the Licence clarified the future disposition of all revertible tenure within the licence area in what would later become the Johnstone Strait MU. Clause 5 of the amended specified that TFL No. 2 included all Crown lands not permanently alienated as set forth in Schedule "B" of the agreement. Other significant changes to the Licence affected by the 1971 amendment were the twenty-one year "renewable term" and the 50% Contractor Clause obligation.

The Forest Act Amendment Act in 1972 nullified Clause 5 of the 1971 amended Licence. The Ministry of Forests ruling on the status of the old temporary tenures held by others was that lands which reverted on or subsequently to March 30th, 1972 did not at that time form a part of the TFL No. 2.

The company's first logging venture in the Johnstone Straits, although not at this point under TFL No. 2, occurred during the period 1927 - 1928 when Comox Logging and Railway Company operated a railway show on Quadra Island. The company was again active on Quadra Island in the period 1954 - 1973 with truck logging operations on timber licences.

Harvesting operations on the Schedule 'B' vacant Crown Lands of TFL No. 2, which would later become the Johnstone Strait MU, did not commence until January 24th, 1974. Prior to this date, cutting was restricted to commercial thinning and sanitation cutting of mistletoe infested hemlock stands as a result of Clause 4 of the original Licence and as restated in Clause 10 of the 1971 amended to the Licence. This clause stated that, for a period of twenty-five years from January 24th, 1949, the only harvesting approved by the Minister would be the removal of wood thinning, experimental cuttings or silvicultural stand treatments.

Logging in near Bonanza Lake, which would later become part of the Bonanza Lake MU, first occurred in the 1940's following the Company's purchase of a block of timber licences near Beaver Cove. The logging started on timber sales near the beach and later developed into a truck logging show with a permanent camp established at Kokish.

The first logging activity on the Moresby Island, which would later become the Moresby MU, occurred in the late 1930's when the company moved into the area with a float camp to supply logs for their mill at Ocean Falls. A permanent camp was later established in Sandspit.

TFL No. 2 was unique in that mature timber was not contributed by either the Crown or the Licensee in the Johnstone Strait and Southeast Vancouver Island Blocks. On their respective lands, the Crown and the Company were at liberty to dispose of timber older than 100 years at the date of the Licence for a period of 35 years from the date of the original Licence. The disposition of mature timber on Schedule 'B' lands in Johnstone Strait MU was through sale by public competition. The rate of depletion varied from year-to-year depending on market demand and log prices. Under the terms of the Licence these sales were to expire January 24th, 1984 and all the remaining old growth timber was to be included in Schedule "B" of the Licence as of that date. A subsequent agreement was signed between the Crown and Crown Forest Industries Limited to permit removal of some felled and bucked and some standing timber by certain timber sale operators until June 30th, 1984. Similarly, all remaining old growth timber in the Courtenay/Nanaimo Lakes Management Unit was included in Schedule "A" of the Licence on January 24th, 1984.

1.2.2 History (Tree Farm Licence No. 12)

The earliest logging operations, in what would later become TFL No. 12, took place on

Hardwicke Island in the mid-1890's. During this period, ox-teams were used in logging the more accessible timber. The logging consisted mainly of the removal of high quality Douglas-fir and Western Red Cedar. In 1910, the Patterson Timber Company and several other smaller operators were logging on Hardwicke Island. In 1918, Dumaresq Brothers were logging in the vicinity of Wellbore Channel and, at about the same time, two Japanese horse-logging operations were also active.

The Bendickson family moved to Hardwicke Island in 1918, established a camp at the site of the present community, and commenced logging operations immediately north of this camp site. All operations up to this time were confined to lands within about one mile of tidewater. Later, during the 1920's, the Maritime Timber Company operated a railroad show in the vicinity of Patterson Bay. The Bendickson family and several other small operators continued to log on Hardwicke Island up to 1952 when TFL No. 12 was granted to Bendickson Logging Ltd. TFL No. 12 included Hardwicke Island and the southwest corner of the mainland portion of Forward Harbour.

In 1971, Crown Zellerbach Canada Ltd. purchased all of the outstanding shares of Bendickson Logging Ltd. After ministerial approval, TFL No. 12 was transferred to Crown Zellerbach (Hardwicke Island) Ltd. on December 30th, 1971. On March 30th, 1983, Fletcher Challenge Limited became the new owner and TFL No. 12 was transferred to Crown Forest Hardwicke Island Ltd. It was later assigned on March 1st, 1984 to Crown Forest Industries Ltd. prior to it's amalgamation with TFL No. 2.

1.3 Changes to Tree Farm Licence No. 47

Since its creation in 1985, a number of changes have occurred to TFL No. 47 which are summarized in Table No. 1. During MP No. 2, the land base of TFL No. 47 was reduced from 221,151 ha to 167,021 ha primarily as a result of a land trade between the BC Government and TimberWest in 1999. In exchange for certain TimberWest lands which would be used to form parks and ecological reserves, Blocks No. 13 and No. 14 (Courtenay Management Unit) and No. 15 and No. 16 (Nanaimo Lakes Management Unit) were removed from TFL No. 47

Table No. 1 – Changes to Tree Farm Licence No. 47

Date	Instrument Number	Location	Land Use	Area (ha)
15/12/88	3	Schedule 'B' Land	Road Right-Of-Way	5.122
25/05/89	4	Lot 1 of Block 108, Nanaimo Lakes	Residential	2.060
15/03/91	6	Lot 1433, Quadra Island	Ministry of Forests	43.490
09/04/92	7	Part Lot 765, Quadra Island	Residential	10.000
15/10/92	8	Schedule 'A' Land, Comox District	BC Hydro Right-Of-Way	3.933
8/12/92	9	Schedule 'A' Block 18 Schedule 'B' Block 4 Schedule 'B' Block 12	Small Business Forest Enterprise Program	6,428.000
09/02/98	12	Portions of Lot A of DL 763 and 764, Sayward Land District and	Public Right-Of-Way	1.278
		Sections 7 and 8, TP 6, Comox Land District.		
01/01/99	14	Blocks No. 13, No. 14, No. 15 and No. 16 of TFL No. 47	Land Trade Agreement	53,630.500
Total				60,124.383

1.4 Licence Holder and Administration

TimberWest is one of Canada's largest businesses operating exclusively in the solid wood segment of the forest industry. It operates entirely in the coastal region of British Columbia, and is engaged in the harvesting and sale of logs, the processing and sale of softwood lumber, and the sale of higher use properties. TimberWest owns an extensive estate of private timberlands with an annual sustainable harvest of 2.4 million m³ of logs, annual Crown land harvest rights of 1.2 million m³ of logs, a lumbermill and approximately 6,500 hectares of properties that are constantly being made available for higher uses.

The Moresby MU is the subject of an asset purchase agreement between TimberWest and Teal Cedar Products Ltd. which is awaiting ministerial approval.

2.0 Management Objectives

TimberWest's objectives for timber and non-timber resource management on TFL No. 47 are as follows.

2.1 Timber Resource Management Objectives

Harvesting

- To harvest annually a proposed volume of 702,826 m³ within the Johnstone Strait (522,826 m³) and Bonanza Lake (180,000 m³) MU's.
- To conduct harvesting operations in accordance with the FA and the Forest Practice Code of British Columbia Act (FPC).
- To implement Variable Retention (VR) or other forest management systems where structural elements are retained throughout the harvest area for at least one rotation.
- To adopt first entry rotation ages to help sustain harvest levels during the transition from old growth to second growth harvesting.
- To minimize potential impacts that harvesting operations may have on nontimber resource values identified in operation plans to the standards established by the FPC.
- To investigated opportunities for commercial thinning and implemented them when and where they area economically feasible, silviculturally appropriate and strategically justified.

Employment

- To maintain a financially viable and world-competitive forest products company that will contribute to the economic and social well-being of the province.
- To constantly innovate in ways that add value, increase production performance, improve product quality and provide an acceptable return on investment.
- To utilize the expertise of company employees.
- To balance the available fibre supply with market demands and economics.

Utilization

- To utilize the timber resources in accordance with the Utilization Specification as identified in Schedule C of the Licence.
- To utilize the operable timber-type profile including deciduous species.
- To direct logs to internal and external customers who are best able to utilize the species, quality and size harvested.
- To harvest outside the limits of the operable land-base where it is determined to be economically and environmentally feasible while being mindful of the biodiversity elements of old growth and wildlife tree retention.

Silviculture

- To fund and implement a basic silviculture program in a manner that will ensure that all areas requiring reforestation reach "free-growing" status within the acceptable standards as specified in approved Silviculture Prescriptions (SP).
- To judiciously implement an incremental silviculture program, as permitted by the availability of external government funding, that contains activities which have a high likelihood of providing an adequate return on investment.

Protection

• To manage the forest to prevent, recover or reduce losses caused by wind, fire, insects or disease.

Access Management

- To design, construct, maintain and deactivate all future roads and bridges in accordance with the FPC.
- To only restrict public access where dictated by safety, fire hazard or environmental conditions.

Environment

 To manage both lands and forest resources according to sound forest management and environmental protection principles, in ways that minimize detrimental impacts to other resource values as verified through third party certification.

Research

- To carry out operational silviculture trials as deemed necessary.
- To support those research organisations, such as the Forest Engineering Research Institute of Canada, which carry out research activities that would benefit the management of TFL No. 47.
- To support graduate level forestry related research which would benefit the management of TFL No. 47.

Forest Inventory

 To carry out annual harvesting and silviculture updates and other periodic updating of the forest inventory.

2.2 Non-Timber Resource Management Objectives

Higher Level Plans

 To minimize potential impacts that harvesting operations may have on nontimber resource values identified in higher level plans.

Consultation

- To provide stakeholders with opportunities to input into operational and strategic land use plans required to manage TFL No. 47.
- To assist government with it's responsibility to consult with those First Nations who assert title over TFL No. 47 regarding operational and strategic land use plans which may directly affect aboriginal rights.

Recreation

- To ensure recreation values are considered in timber management decisions in accordance with principles of integrated resource management.
- To manage existing known recreation sites and trails in partnership with the Ministry of Forests (MOF) and as permitted by the availability of government funding.

Visual Landscape

 To meet visual quality objectives established in known scenic areas by utilizing landscape management techniques in forest management planning and operations.

Biodiversity

 To manage for biological diversity by assisting the Ministry of Sustainable Resource Management (MSRM) in setting objectives for the priority biodiversity elements of old growth and wildlife tree retention for each Landscape Unit in TFL No. 47.

Fisheries

• To operate in a manner which will conserve the productive capacity of fish streams and marine areas.

Water

To operate in a manner which will conserve water quantity and quality.

• To carry out the hydrologic assessments of watersheds as required by the FPC.

Wildlife

To incorporate wildlife habitat requirements in operational plans.

Soils

• To operate in a manner which will conserve the productive capacity of forest soils on TFL No. 47.

Culture and Historic Values

 To abide by the Heritage Conservation Act by in part referring heritage sites and culturally modified trees discovered on TFL 47 to First Nations, MOF and Ministry of Community, Aboriginal and Women's Services.

Non-Timber Resource Inventories

 To update non-timber resource inventories periodically to reflect better information as it becomes available.

3.0 Timber Resource Management Strategies

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following strategies during MP No. 3.

3.1 Harvesting

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following harvesting strategies during MP No. 3.

3.1.1 Proposed Harvest Level

According to the Timber Supply Analysis (Appendix IV) for TFL No. 47, a proposed harvest volume of 702,826 m³/yr can be maintained by carrying out basic forest management practices and logging schedules.

The proposed levels of harvest for the Johnstone Strait and Bonanza Lake MU's are identified in Table No. 2.

Table No. 2 - Proposed Harvest Level

Management Unit	Proposed Harvest (m³/yr)
Johnstone Strait ¹	522,826
Bonanza Lake	180,000
Total (Part 'A')	702,826

The proposed harvest within the Johnstone Strait MU will consist primarily of second growth while the proposed harvest within the Bonanza Lake MU will primarily be old growth with limited second growth.

3.1.2 Harvesting Systems

Based on the characteristics of individual stands, TimberWest will select harvesting equipment and techniques best suited to avoid disturbing or damaging resource features and soils, and to ensure the efficient utilization of timber. Harvesting will generally be scheduled to achieve the longest operating season in order to achieve the maximum efficiency from equipment and work force. Priority will be given to harvesting areas of significant, economically accessible blowdown and to the recovery of accessible stands impacted by insect and/or disease infestations.

3.1.3 Retention Systems

In May 1999, TimberWest announced plans to phase out the practice of clearcutting within four years and to implement VR – a forest management system designed to leave more than half of any area harvested under forest influence and to retain structural elements of existing stands in patches (Group Retention) or as individual trees (Dispersed Retention) for at least one rotation. Through implementing VR, TimberWest believes that it will be better able to maintain biodiversity and ecological process across the landscape as-well-as manage for other values such as visual quality, recreation, wildlife, riparian and water quality.

In Group Retention, a minimum of 10% of the harvest area will be retained in groups ≥ 0.1 hectares undisturbed from harvesting activity. Additional leave areas my also be

The proposed harvest level reflects a 10% reduction to the harvest level within the Johnstone Strait MU to account for the Special Management Zone (SMZ) on Quadra Island and the loss of timber harvesting land base (THLB) resulting from the creation of four Goal II parks on Quadra Island.

required to meet spatial distribution of groups² and/or other values. Any point within Group Retention should not be more than two tree lengths from a group or the forest edge. Groups should adequately represent the unique ecological characteristic as well as samples of the existing stand.

In Disperse Retention, 10 to 20 trees per hectare - or approximately 5% of the basal area of the stand - will be retained as individual trees or in small clumps of trees dispersed more or less evenly over the entire harvesting area. As a general guideline, trees or clumps will be spaced, on average, one tree length apart but should not exceed two tree lengths. Where possible, trees selected for retention will be those with unique biological characteristics including old-growth residuals, wildlife trees and larger trees of limited merchantable value. Dispersed retention will be applied to no more that one third of the annual harvest.

In addition to Group and Dispersed Retention, other harvesting variations can be used to achieve VR. For example: snakes and blobs³, corridors⁴, group selection⁵, shelterwood⁶ and individual tree harvesting⁷.

It is important to note that VR is a relatively new forest management system. While TimberWest has some general guidelines, it is expected that the application of this system will evolve over time as it is adapted to experience which is gained during it's implementation. TimberWest will monitor the application of VR and will continue to support on-going scientific research, in association with Weyerhaeuser Company, that is expected to result in a refinement of VR or the development of other new forest management systems better able to balance environmental, social and economic objectives.

3.1.4 First Entry Ages

The proposed level harvest level reflects the use of first entry ages⁸. The Timber Supply Analysis shows that harvesting at first entry ages offers a higher sustainable

A harvest area designed as a long narrow corridor no more than four tree lengths wide.

In Group Retention, the distance between groups or forest edges should generally not be no more than four tree lengths.

A linear harvest area no more than four tree lengths wide.

A small harvest area ≤ 1 hectare where no trees are retained.

A silviculture system in which trees are remove in a harvest area in a series of passes designed to achieve a new even-aged stand under the shelter of temporarily retained trees.

The uneven-aged management of a forest stand where the selection and harvest of individual trees are based on their value, species, size and/or spatial distribution. Typically, 5 to 20 percent of the stand volume is harvested during each entry.

For the purpose of the Timber Supply Analysis, first entry age has been defined as the age at which a stand reaches a minimum quadratic average diameter at breast height of 30 centimetres and a minimum volume of 300 cubic metres per hectare.

harvest than culmination ages⁹ and provides for increased operational harvesting flexibility¹⁰ to manage the age class imbalances in the forest inventory by allowing some second growth stands to be harvested before they reach culmination of mean annual increment (MAI). In addition, a portion of the annual volume may be harvested at ages less than first entry ages to help sustain harvest levels during the transition from old growth to second growth and to meet market opportunities.

3.1.5 Commercial Thinning

Commercial thinning opportunities will be investigated and implemented when and where they area economically feasible, silviculturally appropriate and strategically justified. Economic feasibility will consider logging chance and customers desired species and piece size. Silviculture considerations will include wind firmness of residual trees, incidence of root rot and susceptibility of residual trees to damage during commercial thinning as-well-as the potential growth response of the residual stand. Strategic opportunities will occur, for example, where commercial thinning is proposed to offset the impact of harvesting in visually sensitive areas or to promote stands with old-growth characteristics.

3.2 Employment

Table No. 3 identifies the current number of full-time equivalent TimberWest employees associated with TFL No. 47.

The company also employs full (stump-to-dump) contractors and phase contractors who work at one or more phases of the harvesting operation. Contractors are also employed in forest management projects such as road deactivation, planting, brushing and weeding and juvenile spacing. Contractors have also been employed in non-timber resource inventories such as recreation and visual landscape.

During calendar year 2000, full contractors accounted for 55% of the total harvest volume and phase contractors, including the Moresby MU, accounted for 17% of the total harvest volume. Company crews and short-term contracts account for the remaining 28% of the total harvest volume.

Culmination age is defined as the age at which a stand reaches its maximum average rate of volume production for a stated utilisation standard.

Due to past harvesting patterns there are large areas of second growth reaching culmination of MAI. Current harvesting restrictions pertaining to adjacency, viewscapes and recreation constraints will delay harvesting much of this area well beyond culmination of MAI. To offset this, TimberWest will enter some second growth stands prior to culmination of MAI at first entry ages providing stands are economically viable.

Table No. 3 – TimberWest Employees (TFL No. 47)

TimberWest Employment Level (2000)			
Operation Salary & Wage Employees			
Administration - Vancouver 9			
Sawmilling - Elk Falls ¹¹	180		
Forestry and Logging 101			
Total	290		

3.3 Utilization

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following utilization strategies during MP No. 3.

3.3.1 Utilization Specifications

Utilization specification are identifies in Schedule 'C' of the Licence.

3.3.2 Utilization of Second Growth

TimberWest does not expect future markets to show significant differential pricing associated with larger diameters and/or rapidly grown clear logs. TimberWest will therefore focus on maximizing the volume of high quality saw logs and pulp logs on reduced rotations. Proposed harvest ages, by species and site, are based on a long history of second growth harvesting by TimberWest are reflective of current and predicted future market conditions.

3.3.3 Utilization of Deciduous

Deciduous leading stands comprise a relatively small proportion of the THLB of TFL No. 47. The largest concentrations occur in the Johnstone Strait MU where they represent approximately 6.5 percent of the THLB. Less than one half of one percent of the THLB of the Bonanza Lake MU is comprised of deciduous leading stands. Deciduous stands

In calendar year 2000, Elk Falls Sawmill consumed logs originating from TFL No. 47 (42%), other Crown tenures held by TimberWest (2%), Crown tenures not held by TimberWest (14%), private timberland owned by TimberWest (36%) and private timberlands not owned by TimberWest (6%).

have traditionally been included as part THLB used in determine the allowable annual cut.

Deciduous leading stands have been, and will continue to be, specifically targeted for harvesting in the Johnstone Strait MU and to a lesser extent in the Bonanza Lake MU. TimberWest is committed to harvesting deciduous stands in proportion to their contribution to timber supply. As a large component of the deciduous stands are currently at or nearing their biological prime, harvesting may occur at an excellerated rate over the next ten years prior to their decline.

The majority of the deciduous leading stands will be regenerated back to a coniferous leading stand. TimberWest, however, recognizes that some stands will develop as mixed deciduous-conifer stands and that a component will continue to remain deciduous leading following harvesting.

3.3.4 Inoperable/Low Site

The portion of the TFL No. 47 considered inoperable, for the most part, consists of large contiguous mapped areas which have been excluded from the THLB as they have been identified as uneconomic to harvest. Harvesting within areas identified as inoperable will occur as market conditions permit while being mindful of the priority biodiversity elements of old growth and wildlife tree retention. TimberWest will use it's harvesting in inoperable areas as the basis for refining the operability line for TFL No. 47.

In addition to areas identified as being inoperable, other areas with low site indices, usually isolated within the broader areas delineated as operable, have been excluded from the THLB. These low site stands¹² may be harvested but will likely only occur as part of harvesting on adjacent, more productive sites.

3.4 Silviculture

The emphasis of TimberWest's silviculture ¹³ program is to maximize the volume of stands focusing on growing stems 20 to 50 cm in diameter with good form (e.g. straight boles with minimal taper and small branches). This can be achieved by ensuring, sound silviculture planning, excellence in basic forestry practices - such as rapid reforestation using a suitable number of seedlings, of the most suitable tree species, of the best genetic stock and through careful attention to stand tending, including controlling competing vegetation – and judicious investments in incremental silviculture.

Stands which fail to reach a yield 250 m³ at culmination age.

Silviculture is defined as the art and science of controlling the establishment, growth, composition, health and quality of forests.

3.4.1 Silviculture Planning

The three planning documents used to guide the implementation of silviculture activities on TFL No. 47 are the Type 1 Silviculture Strategy, the SP and the Stand Management Prescription (SMP).

3.4.1.1 Type I Silviculture Strategy

The Type I Silviculture Strategy completed for TFL No. 47 is a strategic silviculture initiative that analyzed the effects of basic and incremental silviculture investments on the achievement of management objectives (timber volume and value, habitat supply), management unit conditions (age class distribution, site productivity, species) and operational constraints/objectives (green-up, adjacency and visuals). The Type I Silviculture Strategy identifies the following silvicultural priorities for TFL No. 47:

- High quality basic silviculture (Rapid reforestation and vegetation management);
- Tree improvement;
- Fertilization (Late rotation of fertilization of Douglas-fir and multiple-stand entry fertilization);
- Stand tending (Promotion of valuable crop species and stand density control of red alder);
- White pine management; and
- Riparian stand tending (Spacing and manual fertilization).

3.4.1.2 Silviculture Prescriptions

For those areas proposed for harvesting, SP's are used to describe their ecology and to facilitate the planning and management of all forest resources. They set objectives and specify strategies for meeting those objectives as-well-as describe the nature and extent of harvesting and silviculture activities which are planned.

3.4.1.3 Stand Management Prescriptions

A SMP describes the treatments to be carried out on a free growing stand to maintain or enhance site productivity or to produce a stand to meet stated management objectives while accommodating other resource values. A SMP will be prepared for treatments such as pruning, spacing and fertilization.

3.4.2 Basic Silviculture

Basic silviculture will insure that all harvested areas are restocked and reach freegrowing status within the time period specified in the silviculture prescription. The program will include activities necessary for the establishment and maintenance of a new forest following harvesting and/or other disturbances. Basic silviculture is part of TimberWest's legal obligation under an SP, and is undertaken at it's expense on lands, which were harvested after October 1st, 1987. The program will be carried out in accordance with the FPC.

3.4.2.1 Stand Establishment

Where planting is required, stocking densities will be achieved by planting a sufficient number of high quality seedlings and by allowing for historical rates of natural ingress. Preference will be given to planting ecologically suitable tree species.

3.4.2.2 Reforestation Methods

High quality seedlings will be grown under contract and transported quickly to the planting site to maintain physiological vigour. On-site supervision will ensure that seedlings will be planted to obtain high survival rates and rapid early growth. Reforestation will generally occur during the first planting season and no later than two years following the completion of harvesting.

Planting will be carried out as necessary to meet stocking requirements or to favour rapid early growth so that vegetation management treatments are minimized, that free-growing status and green-up requirements are achieved at the earliest opportunity, and that other objectives for visual quality, soil stability and wildlife are met.

A minimum inter-tree spacing of one meter will be used adjacent to non-productive areas, areas of excessive debris accumulations, areas of marginal plantibility and areas of poor drainage to capture the sunlight available in these voids.

3.4.2.3 Seed Collection

TimberWest will maintain an adequate supply of seed to meet sowing requirements. Collection of seed from natural stands will be undertaken when seed orchard seed or stock is insufficient to meet demands.

3.4.2.4 Site Preparation

Site Preparation will be carried out as necessary to facilitate reforestation and may include prescribed burning or other mechanical or chemical site preparation techniques.

3.4.2.5 Debris Management

Prescribed burning will only be used where necessary to reduce fire hazard or where essential for planting site preparation. No broadcast burning has been used on the TFL No. 47 since 1994, however, TimberWest still considers it as an effective site preparation technique under the appropriate circumstances.

TimberWest will not dispose of woody debris piles that have the potential to accommodate biodiversity and wildlife habitat values while not representing a significant loss of productive site (i.e. minimum stocking would not be achieved), a stability concern or a significant fire hazard.

3.4.2.6 Surveys

Stocking and free growing surveys will be carried-out as required by the FPC using survey methods accepted by the MOF.

3.4.2.7 Vegetation Management

Control of competing vegetation may be required to maintain healthy, coniferous crops. Where necessary, vegetation management will be carried-out and will be accomplished by either mechanical means or chemical applications. Chemical treatments will be under the direct supervision of a Certified Pesticide Applicator and will meet or exceed the environmental protection measures provided for in the Pesticide Use Permit, Pesticide Management Plan and Pesticide Control Act. Chemical treatments may include foliar spraying, dormant spraying, 'hack and squirt' and other injection techniques.

3.4.2.8 Conifer Release

In situations where crop-tree growth and survival is significantly threatened by competition, action will be taken to release the crop-trees by manual, mechanical, and/or chemical methods. Treatment needs will be determined after having considered environmental protection, worker safety, probability of treatment success, and expected benefits.

3.4.3 Incremental Silviculture

Incremental silviculture includes those activities applied to free growing stands to increase yields of merchantable volume and/or wood quality, to reduce the time to future harvest, to increase wildlife capability or, in the case of spacing, to increase employment in areas of high unemployment. On TFL No. 47, incremental silviculture will continue as-long-as external government funding is available. A number of incremental silviculture activities, including tree improvement, juvenile spacing, fertilization, site rehabilitation and pruning will be considered based on their likelihood of providing an adequate return on investment. Market research however suggests that differentiating forest products and not the forest resource returns the greatest value. This implies that incremental silviculture must be applied judiciously.

3.4.3.1 Tree Improvement

Improved seed, from controlled pollination of selected superior seed orchard trees, will result in gains in timber volume and quality. Where available, improved seed will be sown to grow trees for the reforestation of areas harvested on TFL No. 47.

The company has participated in the Coastal Tree Improvement Council and has established 10 maritime seed orchards at its Mount Newton site in Saanich. The Mount Newton Seed Orchard currently provides improved seed for company reforestation of low elevation Douglas-fir, low to mid elevation Western Hemlock and low elevation Western Red Cedar sites within the coastal Maritime seed planning zone. Limited quantities of coastal maritime Amabilis Fir and Yellow Cedar seed have also been produced. Yellow Cedar vegetative cuttings will supplement seed production for coastal maritime sites.

3.4.3.2 Juvenile Spacing

TimberWest will determine the need for juvenile spacing¹⁴ to maintain or improve growth based on target forest conditions required to fulfil market-driven product objectives. Research trials have shown that investments made on juvenile spacing provide a poor return and that densely stocked stands, on most coastal sites, differentiate in height and diameter adequately without treatment. However, if external government funding is provided for employment and community stability purposes, TimberWest will consider undertaking spacing projects provided that such treatments do not adversely affect the future value of treated stands.

Juvenile spacing is the removal of trees within a stand to control stocking, to maintain or improve growth, or to achieve other resource management objectives, such as wildlife forage.

3.4.3.3 Fertilization

Application of suitable fertilizers will be considered on Douglas-fir predominated stands having a site index 25 meters or better at age 50 years. Application will be planned to occur 8 to 12 years before harvest. TimberWest encourages provincial funding of fertilization within TFL No. 47.

3.4.3.4 Site Rehabilitation

Site rehabilitation will be considered in second-growth coniferous areas which are estimated to be growing at rates (MAI) less than 50% of their fully stocked potential. Rehabilitation will include the planting of large stock and any necessary control of competing vegetation to ensure that areas attain an appropriate stocking level.

3.4.3.4 **Pruning**

Pruning projects will be undertaken where necessary to manage white pine blister rust or to support wildlife habitat objectives.

3.5 Protection

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following protection strategies during MP No. 3.

3.5.1 Fire Protection

Fire protection programs will be undertaken to minimize the risk of fire during operations, to minimize the impact of fires if and when they occur, and to minimize the difficulties inherent in controlling fires. The programs will be structured to comply with the requirements of the FPC.

3.5.1.1 Prevention

Fuel loading will be reduced through strict adherence to the utilization specifications. Hazard reduction by burning or alternate means may be carried out where fuel loading presents a high risk.

3.5.1.2 Preparedness

A Fire Preparedness Plan outlining TimberWest's commitment to fire prevention, detection and suppression will be submitted annually. A duty roster identifying company personnel who can be contacted in an emergency will also be prepared and submitted annually to the MOF.

Weather stations will be established in locations which are representative of hazard conditions within the various operational areas and will be use to collect information used in determining fire weather indices.

3.5.1.3 Suppression

TimberWest will take immediate, initial action on all forest fires detected on or adjacent to TFL No. 47 in an attempt to control fires as quickly as possible and preferably before 10:00 am of the day following the discovery. All major fires will be reported to the MOF immediately upon detection. Prior to extensive suppression efforts, TimberWest and the MOF will determine responsibilities and roles associated with extinguishing a fire.

3.5.2 Insects and Disease

Historically, insect and disease infestations have had a relatively minor impact on TFL No. 47. TimberWest monitors TFL No. 47 for visible symptoms caused from insect and disease infestation. The isolated location of the Licence area and access to remote sites requires frequent aircraft flights which provides the opportunity to review any developing pest problems as they become detectable. If epidemic pest activity is identified and is causing significant reductions in growth or mortality within stands, provided that they are economically accessible, TimberWest will prioritize them for harvesting in order to eradicate the pests and recover the maximum volume and quality of timber prior to it's deterioration. TimberWest will rely on passive management strategies for the treatment of endemic infestations on TFL No. 47.

3.5.2.1 Balsam Woolly Aphid

The Balsam Woolly aphid (<u>Adelges piceae</u>) is a serious pest in the Johnstone Strait MU and has forced TimberWest to limit the establishment of amabilis and grand fir in stands. The most serious outbreaks have occurred on West Thurlow Island, Wellbore Channel and Deer Lake Blocks. Where identified, infected stands have been prioritized for harvesting. In areas of high incidence, the use of Abies has been limited in future stands by ensuring that it is not a preferred species during stand establishment and juvenile spacing.

3.5.2.2 Root Rot

Small root rot infection centres of <u>Phellinus weirii</u>, <u>Armillaria ostoyae</u> and/or <u>Leptographium wageneri</u> have been identified in stands in the Johnstone Strait MU. Management will include surveying to determine the incidence and extent of root rot and testing of alternative management techniques where field reconnaissance indicates a significant level of infection. TimberWest will continue to seek assistance of those individuals specializing in the identification of root rot and the assessment of impacts.

Where identified, Phellinus and Armillaria root rot infection centres will be prioritized for harvesting and where appropriate, will be manage with stumping treatments. Phellinus may also be managed through the regeneration of tolerant or resistant species such as western red cedar, western white pine and other deciduous species.

3.5.2.3 Western Blackheaded Budworm

Defoliation cause by western blackheaded budworn (<u>Acleris gloverana</u>) has occurred within the Bonanza Lake MU. Defoliation has typically been light and has only had minor impacts on tree growth. Stand tending treatments, such as spacing and fertilization, will help maintain healthy stands that will likely be more resilient to budworm defoliation. Well spaced, even-aged mature stands should be less susceptible and suffer fewer impacts.

3.5.3 Windthrow

TimberWest monitors TFL No. 47 for the occurrence of windthrow. The isolated location of the Licence area and access to remote sites requires frequent aircraft flights which provides the opportunity to review any developing windthrow problems as they become detectable. If epidemic windthrow is identified and has caused significant damage to stands, provided that they are economically accessible, TimberWest will prioritize them for harvesting in order to recover the maximum volume and quality of timber prior to it's deterioration. TimberWest will not typically recover endemic windthrow and will rely on management strategies, such as topping, pruning, edge feathering and cutblock design, to lessen the likelihood of its occurrence in stands adjacent to or leave areas within harvested areas.

3.6 Access Management

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following access management strategies during MP No. 3.

3.6.1 Design, Construction, Maintenance and Deactivation

All future roads and bridges will be designed, constructed, maintained and deactivated in accordance with the FPC and will incorporate measures both to ensure the maintenance of natural drainage patterns of all continuous and seasonal streams and to control surface "run-off" during periods of high rainfall. Permanent access structures will be designed to minimize the alienation of forest land while providing for efficient harvesting operations and ensuring user safety. TimberWest will design, construct and maintain all bridges and culverts in accordance with the FPC with respect to structural components, load capacity and peak flow capability.

Road construction, maintenance and deactivation activities during wet periods will be carried out with care to minimize the impact on water quality and risk to human safety. Rainfall will be monitored with rain gages to ensure that work is stopped when heavy rainfall conditions¹⁵ are experienced.

TimberWest will carry out road deactivation projects on historic roads which are no longer permitted to company subject to the availability of government funding and on current roads as required by the FPC. As part of the Forest Development Plan (FDP), a schedule of road deactivation, which will identify the level of access to be maintained on non-active roads, will be submitted to the appropriate MOF District.

TimberWest will rely on qualified individuals to provide hydrologic and terrain stability expertise if road construction activities have the potential to adversely affect other resources or human safety and will consult with the appropriate government resource agencies where the activities are expected to have the potential to impact other resources.

3.6.2 Public Access

TimberWest recognizes the public's desire for continued access to areas within TFL No. 47 that are suitable for outdoor recreation. TimberWest will seek approval from the appropriate MOF District in advance of any road closures except where it is dictated by safety, fire hazard or environmental conditions. Public access on active roads may be discouraged during operating hours in an effort to maintain public safety and on non-active roads may be restricted or eliminated through road deactivation. Where deactivation has occurred, signs will be erected informing users of the hazards that may be expected or that the road has been closed to traffic. When using either active or non-active roads within TFL No. 47, the public is expected to abide by traffic rules, to respect TimberWest's property, to assume the risk of using such roads and the inherent dangers of fire season, and to have regard for natural resources.

As a guideline, in areas of known slope instability, heavy rainfall conditions will be assumed to exist when, during a 24 hour period, in excess of 100 mm of rainfall occurs.

3.6.3 Road Use Agreements

Inter-company co-operation with regard to the use of roads and bridges has been actively encouraged and TimberWest will continue to enter into formal road use agreements with forestry, mining, and other industrial users. These agreements will contain general terms and conditions, rights, privileges and a fee schedule for maintenance activities.

3.7 Environment

To achieve it's objectives for managing timber resources on TFL No. 47, TimberWest will implement the following environmental strategies during MP No. 3.

3.7.1 Environmental Policy

TimberWest's environmental policy is a statement of intentions and principles in relation to overall environmental performance and provides a framework for action and setting environmental objectives and targets. The policy, updated in July 2001, commits TimberWest to sustainable forest management and conducting its activities in an manner that maintains fully functioning ecosystems and economic operations.

3.7.2 Environmental Committee

The Environmental Committee of the Board of Directors was established in late 1993 and is a key organization within TimberWest. It is chaired by a designated member of the Board and is responsible both for implementing and maintaining an Environmental Management System (EMS) and for reviewing and communicating issues within and outside TimberWest that are related to the environment. The Committee commissions independent environmental audits of operations and monitors TimberWest's environmental performance, EMS and internal audits.

3.7.3 Environmental Management System

In 1994, an EMS was formalized for TimberWest. The system, substantially implemented by the end of 1995, is designed to ensure that TimberWest will be in compliance with all regulatory requirements and includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy. In 1999, in preparation for International Standards Organization (ISO) 14001

certification, each TimberWest operation developed individual EMS's in support of the company's EMS.

3.7.4 Certification

All of TimberWest's operations were awarded ISO certification by November 26th, 1999 which identified that operations were being managed in accordance with the EMS.

3.7.5 Audits

Environmental audits, associated with ISO certification, are conducted to review action plans on a periodic basis and to ensure that TimberWest's commitment to continuous improvement is being met. Follow-up audits confirm that action plans have been completed.

4.0 Non-Timber Resource Management Strategies

TimberWest believes that the identification and integration of non-timber resources to be fundamental in the management of TFL No. 47. To achieve it's objectives for managing non-timber resources on TFL No. 47, TimberWest will implement the following strategies during MP No. 3.

4.1 Strategic Land Use Plans

The management of TFL No. 47 is guided by strategic land use plans.

4.1.1 Vancouver Island Land Use Plan Higher Level Plan

The Vancouver Island Land Use Plan Higher Level Plan (VILUP HLP) became effective December 1st, 2000 and makes binding some components of the Vancouver Island Summary Land Use Plan (VISLUP) at variance with the general provisions of the FPC. The VILUP HLP established resource management zones and objectives for Special Management Zone (SMZ) No. 19 (Quadra Island – Block No. 12) and Enhanced Forestry Zone (EFZ) No. 11 (Bonanza – Block No. 17). Operational Plans prepared for TFL No. 47 will be consistent with the VILUP HLP.

4.1.2 Vancouver Island Summary Land Use Plan

The VISLUP was prepared to integrate the 1994 Vancouver Island Land Use Plan, subsequent decisions, and work related to completing the 1994 plan. The VISLUP

includes key non-forest uses; incorporates changes to the FPC and other relevant policy and legislation; and provides the results of recent work on resource management objectives and strategies for special management, general and enhanced forestry zones and relates these objectives and strategies to provisions of the FPC. Although not a 'higher level plan', the objectives, regimes and strategies for resource values identified in the VISLUP for SMZ No. 19 (Quadra Island – Block No. 12), General Management Zone No. 32 (Quadra/Cortes – Block No. 12) and EFZ No. 11 (Bonanza – Block No. 17) will be considered in the preparation of operational plans for TFL No. 47.

4.1.3 Land and Resource Management Plans

The Central Coast Land and Coastal Resource Management Plan (CCLCRMP) is currently under development. Upon completion, the CCLCRMP will provide objectives and strategies that will guide the management of natural resources in the land use zones it defines. Upon it's completion, the CCLCRMP will be considered in preparing operational plans within Blocks No. 1–11.

4.2 Consultation

Resource users and stakeholders are afforded an opportunity to participate in the planning process for TFL No. 47 through public reviews of the FDP and MP. Letters and adds placed in local newspapers will notify the known resource users, stakeholders and general public of upcoming public reviews. A list of known resource users and stakeholders is maintained and revised periodically. It includes government agency contacts, First Nations, environmental organizations, mining and mineral licence holders, trappers and guide outfitters, and local and regional governments. Where activities are to be conducted directly adjacent to private property holdings, efforts will be made to make contact to advise owners with regard to those activities planned on TFL No. 47. Input obtained will be considered in the development of FDP's and MP's prior to their approval by the MOF.

4.3 Recreation

The management of recreation resources on TFL No. 47 will consider both the diversity and abundance of recreational features and their proximity to large population centres on Vancouver Island and will be guided by recreation inventories. Subject to the availability of external government funding, TimberWest will manage existing known recreation sites and trails in co-operation and partnership with the MOF and will develop new recreational opportunities according to public demand.

4.3.1 Karst Terrain and Features

The Bonanza Lake MU, and to a lesser degree the Quadra Island block within the Johnstone Strait MU, have karst terrain and features, such as caves and caverns, which are popular with local spelunkers. TimberWest will minimize the potential impact to karst features through the identification of limestone bedrock areas which have known or potential karst terrain or features, through communication with the MOF, and through training employees on the recognition of karst features. Any significant karst features identified will be documented (measure, describe, illustrate, map, photograph) and will be evaluated and classified jointly with the MOF. Site specific measures for the protection of karst features, such as the establishment of reserves, restrictions on road building and/or harvesting, timing restrictions, access management, increased supervision, and measures to minimize the potential for windthrow, will be jointly developed with the MOF.

4.4 Visuals

TimberWest will utilize the visual landscape inventory and the MOF's guidance regarding know scenic areas or visual quality objectives, as the basis for planning and management decisions on TFL No. 47. By applying landscape management techniques and working with established tourism operators, TimberWest will minimize the impact of proposed forest management and harvesting operations on visual resources within know scenic areas. TimberWest has the capability of producing digital terrain models and preparing three dimensional perspective images to assist in designing cutblocks to reduce the visual impact of harvesting activities.

4.5 Biodiversity

Biological diversity or biodiversity refers to the diversity of life in all its forms and levels of organisation including genes, species and ecosystems. While the concept of biodiversity within forest management is relatively new, maintenance of biodiversity within TFL No. 47 will assist in ensuring that the present flora and fauna are not lost through the alteration of habitat.

The primary initiative for the maintenance of landscape level biodiversity is Landscape Unit Planning. TimberWest will participate in Landscape Unit Planning following the principles and practices described in the Landscape Unit Planning Guidebook. The Johnstone Strait MU is situate within six landscape units that have been assigned either

intermediate or high biodiversity emphasis options (BEO)¹⁶. The Bonanza Lake MU is situated within a single landscape unit which as been assigned a low BEO. The current priority within each landscape unit is the development of objectives for old growth and wildlife tree retention.

Although VR is primarily a stand level tool which assist in the maintenance of biodiversity, it also provides a mechanism for reducing the impact of landscape level fragmentation. VR compliments wildlife tree and old growth retention objectives under landscape unit planning by providing opportunities for linkages not currently identified as priority biodiversity elements.

4.6 Fisheries Conservation

TimberWest will operate in a manner, which will conserve the productive capacity of fish streams and marine environments by following the FPC and the *Fisheries Act* and by utilizing the expertise of company personnel. Riparian areas will be determined in accordance the FPC and where necessary, debris catches and stream cleaning will be prescribed to maintain water quality and fish habitat. Other fisheries resources, such as fish farms in the Johnstone Strait MU, will be accommodated in harvesting proposals. Where opportunities exist to enhance or restore fish habitat with external government funding, TimberWest will co-operate with government agencies.

4.7 Water Conservation

TimberWest will conduct watershed assessments on community watersheds, on those watersheds with significant downstream fisheries values or licenced domestic water users and significant watershed sensitivity as determined under the FPC, and on those watersheds where it has been determined necessary by the MOF. Watershed assessments are designed as an objective method for evaluating the overall condition of watersheds and the cumulative impacts associated with harvesting and road construction activities.

4.7.1 Community Watersheds

Although there are currently no designated community watersheds, there are a number of watersheds with licensed water users within the Johnstone Straits and Bonanza Lake MU's. To date, the MOF has not directed that a watershed assessment by conducted for those watersheds with licenced users, however, TimberWest will continue to plan

Biodiversity emphasis options are a key part of biodiversity management in British Columbia and reflect the relative priority attached to biodiversity conservation and timber production in each landscape unit.

and conduct it's harvesting, road construction and silviculture activities in a manner that will minimize potential impacts to their water quality and quantity.

4.7.2 Other Watersheds

At the direction of the MOF, watershed assessments have been completed for the Kokish and Bonanza Watersheds in the Bonanza Lake MU. The recommendations and conclusions from these assessments have been incorporated into operational plans for harvesting, road construction and silviculture activities within these watersheds. The FPC requires that watershed assessments be updated every three years. In 2001, TimberWest was relieved of this requirement for the Kokish and Bonanza Watersheds.

4.8 Wildlife Conservation

TimberWest will manage wildlife habitat on TFL No. 47 according to the FPC both at a landscape level and stand level.

At the landscape level, the management of wildlife habitat includes voluntary MAMU deferrals and grandparented Ungulate Winter Ranges (UWR's). It is expected that Old Growth Management Areas (OGMA's) and Wildlife Habitat Areas (WHA's) will replace or augment these areas during the term of MP No. 3.

At the stand level, wildlife trees, including those used by bald eagles, goshawks and bears, will be identified and appropriate management strategies will be developed to provide for their protection. Where possible, these wildlife features will form the biological anchors around which Wildlife Tree Patches (WTP's) will be established.

4.9 Soil Conservation

TimberWest will plan and conduct it's harvesting and road construction activities in a manner, which will conserve the productive capacity of forest soils on TFL No. 47 by following the FPC and by utilizing the expertise of it's personnel.

4.10 Conservation of Cultural and Historic Values

To achieve it's objectives for managing non-timber resources on TFL No. 47, TimberWest will implement the following strategies during MP No. 3 related to the conservation of cultural and historic values.

4.10.1 Cultural and Historic Sites

Cultural or heritage sites, including culturally modified trees, that are discovered during planning or during harvesting, road construction or silviculture activities will be managed in accordance with the *Heritage Conservation Act* and will be referred, where required, to the relevant First Nation (if First Nations related), the MOF and the Archaeology Branch of the Ministry of Community, Aboriginal and Women's Services.

When completed, the Archaeological Overview Assessment for the Johnstone Strait MU will guide operational planning and will determine where more detailed archaeological impact assessments will be required.

4.10.2 Aboriginal Rights

On December 11th, 1997, the Supreme Court of Canada in *Delgamuukw v. British Columbia* ruled that aboriginal rights on Crown land had not been extinguished. As a result, resource management decisions must now be examined to determine if they will infringe on aboriginal rights. TimberWest will co-operate with the MOF in meeting government's obligation to consult with First Nations with regard to potential infringements of aboriginal rights on TFL No. 47.

4.11 Other Non-Timber Resource Values

TimberWest recognises the local public's interest in forest management activities on Quadra Island including old growth management, recreation opportunities, alternatives to clearcutting and operations adjacent to parks.

TimberWest acknowledges the importance of the old growth timber located on Mount Seymour and supports the public view that the area's recreation value is higher than it's timber value. Therefore, the company has deferred the area from harvesting plans until the area can be considered in Landscape Unit Planning or other Higher Level Planning initiatives. During this deferral period, harvesting would take place only if necessitated by a catastrophic occurrence such as windthrow, fire or insect infestation. In addition, during the term of MP No. 2, TimberWest participated in the completion of the access trail on Mount Seymour which starts at Bold Point Road and ends at Negduzie Lake.

TimberWest will continue to explore alternatives to clearcutting on Quadra Island including shelterwood, single tree harvest, inverse J-curve selection, green tree retention, group selection and/or small clearcuts (less than 1.5 ha). Other additional harvesting alternatives will be pursued on a trial basis during MP No. 3.

Parks have recently been declared by Order-in-Council at the Main Lakes chain, Surge

Narrows, Waiatt Bay - Small Inlet and Octopus Islands. TFL No. 47 lands on Quadra Island adjacent to the designated parks have been identified as a SMZ in the VILUP HLP and will be managed in accordance with the objectives which have been set out. Harvesting will continue to recognise the sensitive recreation values of Quadra Island.

5.0 Research

TimberWest works closely with a broad spectrum of research agencies and organizations. Research activities are identified and prioritized according to need and available funding. Contract and/or cost sharing of research work with other agencies is undertaken when warranted. TimberWest personnel participate on many advisory boards which direct research activities, such as Forest Engineering Research Institute of Canada. TimberWest also participates in the Coastal Tree Improvement Council, Science Council of B.C., Coastal Forest Productivity Council and various other forest resource research initiatives.

5.1 Silviculture Research

During the term of MP No. 3, it is anticipated that operational trials and studies will be planned and undertaken with respect to regeneration, vegetation management, stocking control, forest nutrition, initial stand growth and silvicultural systems.

5.2 Wildlife Research

TimberWest is participating in a joint study of Marbled Murrelet (MAMU) which has been initiated by the forest industry in conjunction with the Canadian Wildlife Services and MOF and is a member in the Marbled Murrelet Recovery Team co-ordinated by the Federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Information gathered on MAMU as part of these two initiatives, such as habitat characteristics, nesting requirements, nest locations, abundance and distribution, will lead to the development of plans to integrate conservation actions within TFL No. 47.

5.3 Variable Retention Research

TimberWest is currently working co-operatively with Weyerhaeuser Company to evaluate VR and to develop new strategies or alternative forest management systems which are adapted to new information as it becomes available.

6.0 Inventories

TimberWest believes that the collection of information on timber and non-timber resources is fundamental to the management of TFL No. 47. Timber and non-timber resource inventory information for TFL No. 47 has been prepared and is presented in Appendix No. VI and Appendix No. VII.

6.1 Forest Cover

The last forest cover inventory was completed for the Bonanza Lake MU in 1988 and for the Johnstone Straits MU in 1969. Between 1989 and 1990, the forest cover inventory was reprojected from North America Datum Projection (NAD) 1927 to NAD 1983 using Terrain Resource Inventory Management (TRIM) based orthophotos for control. Since then, the inventory has been updated annually for logging and forest management activities

The MOF completed an audit of the forest inventory for the Johnstone Strait and Bonanza Lake MU's on October 9th, 2001. The audit results for the mature component of the inventories in the forested land base of TFL No. 47 suggest that the inventories are statistically acceptable for both the Johnstone Straits and Bonanza Lake MU's. In the Bonanza Lake MU, where operability information was provided, trends similar to those observed in the total forested land base were found in the operable portion of the forested land base. Audit results for the immature component of the inventory in the Johnstone Straits MU suggest that site index assignment in young stands is acceptable.

6.2 Fisheries

Prior to the establishment of the FPC, TimberWest classified the majority of streams in the Bonanza Lake and Johnstone Strait MU's at an overview scale according to the 1988 BC Coastal Fish Forestry Guidelines (CFFG). In 1998, this information was converted to the FPC stream classification system. While it is acknowledge that the conversion process that was used was imprecise, it is sufficient for the purpose of forest level planning and identifying where further stand level assessments are required. Wetlands and lakes within the Bonanza Lake and Johnstone Strait MU's were assigned a FPC classification based on their area and which biogeoclimatic sub-zone variant they fell within. TimberWest is currently working towards completing a government funded project to have stand level riparian assessments of streams, wetlands and lakes incorporated into the inventory.

6.3 Terrestrial Ecosystem Mapping

Terrestrial Ecosystem Mapping (TEM) has been completed for both the Johnstone Strait and Bonanza Lake MU's. As part of this government funded initiative, site units of the Biogeoclimatic Ecosystem Classification (BEC) system of British Columbia where inventoried for TFL No. 47.

6.4 Recreation

The existing (1994) recreation features and recreation opportunity spectrum inventories for TFL No. 47 were recently updated to the October 1998 Resource Inventory Committee (RIC) Standard¹⁷. The recreation features inventory identifies, classifies and records the types and locations of biophysical recreation and cultural features, existing and potential recreation activities, recreation feature significance and feature sensitivity on TFL No. 47 The recreation opportunity spectrum describes the types of recreational experiences, physical settings, structures and services, access, management settings and social settings that, in combination, describe the recreational opportunities on TFL No. 47.

In 1999, a recreation analysis and management strategy was prepared for Blocks No. 4-12 of TFL No. 47 using the Ministry of Forests' guidelines¹⁸. This strategy compares the supply of recreation opportunities (features, activities, settings) with existing and future use and determines the demand for public/commercial recreation. Based on this comparison of opportunities with use patterns, the analysis presents strategies, options and objectives for the management of the recreation resource.

6.5 Visuals

The existing (1990) inventory of visual landscapes for TFL No. 47 has recently been updated to the May 1997 RIC Standard¹⁹. The visual landscape inventory identifies, classifies and records the location and quality of visual resources and values within TFL No. 47.

6.6 Archaeology

During the term of MP No. 3, an archaeological overview assessment will be completed for Blocks No. 4-12 of TFL No. 47. An archeological overview is a resource

Recreation Features Inventory Procedures & Standards Manual – October 1998
Recreation Opportunity Spectrum Inventory Procedures & Standards Manual – October 1998

Circular #VCR-98 – November 1998

Visual Landscape Inventory and Procedures & Standards Manual - May 1997

management aid that estimates an area's potential for archaeological resources. The results predict archaeological site variability, density and distribution. Archaeological overviews assist in identifying and minimizing adverse impacts to archaeological resources and are used to determine the need for subsequent impact assessments and management studies.

6.7 Environmentally Sensitive Area Mapping

The Environmentally Sensitive Area (ESA) mapping is a composite of several resource inventories, which have been prepared for TFL No. 47. It identifies areas of significant non-timber resource values and/or environmental sensitivity requiring special consideration with respect to forest harvest activities including terrain stability and wildlife habitat.

The ESA mapping serves as a coarse filter for identifying potential non-timber resource concerns or conflicts in the harvest planning. ESA mapping is based, in larger part, on interpretation of map and aerial-photo information. As a consequence, ESA mapping will be used primarily to indicate where more intensive assessments may be necessary.

More detailed inventories will replace the ESA mapping as they are prepared. During the term of MP No. 3, it is expected that detailed terrain stability mapping will replace the ESA layer for soils (Es) for the Bonanza Lake MU and ungulate winter ranges confirmed under the FPC and Wildlife Habitat Areas established for MAMU's and/or Goshawks will replace the ESA layer for wildlife (Ew) for TFL No. 47. TimberWest does not intend to replace the ESA mapping for regeneration (Ep) or avalanche areas (Ea).

7.0 Similarities, Differences and Impacts

The following summarizes the key similarities and differences between MP No. 2 and MP No. 3 and the impacts that were caused by implementing MP No. 2 or are anticipated to result from implementing MP No. 3.

7.1 Moresby Management Unit

The Moresby MU is under the direct management of Teal Cedar Products Ltd. A separate MP for the Moresby MU has been prepared as part of MP No. 3 for TFL No. 47.

7.2 Proposed Harvest Level

The Allowable Annual Cut on TFL No. 47 is currently 696,758 m³/yr including Block No. 18. MP No. 3 proposes increasing the harvest level by 118,068 m³/yr to 814,826 m³/yr.

7.3 Deciduous

Deciduous leading stands have been, and will continue to be, specifically targeted for harvesting in the Johnstone Strait MU and to a lesser extent in the Bonanza Lake MU. TimberWest is committed to harvesting deciduous stands in proportion to their contribution to timber supply. As a large component of the deciduous stands are currently at or nearing their biological prime, harvesting will occur at an excellerated rate over the next ten years prior to their decline.

7.4 Employment

During MP No. 2, efforts to improve productivity exerted a downward pressure on employment. It is anticipated that, with the increase in the proposed harvest level, employment levels should stabilize during MP No. 3.

7.5 Contractors

Harvesting within the Johnstone Strait MU will continue to be dominated by contractors while harvesting within the Bonanza Lake MU will primarily be done by company employees.

7.6 Retention Systems

During MP No. 3, TimberWest will implement VR or other forest management systems where structural elements are retained throughout the harvest area for at least one rotation.

7.7 First Nations

TimberWest has built strong relationships with First Nations over the course of MP No. 2 and will continue to develop them during MP No. 3. TimberWest hopes that through these alliances it will be better prepared to accommodate First Nations concerns into the management of TFL No. 47.

7.8 Landscape Unit Planning

During the term of MP No. 3, it is anticipated that objectives for the priority biodiversity elements of old growth and wildlife tree retention will be established for those landscape units within TFL No. 47.

7.9 Certification

During the term of MP No. 2, TimberWest obtained ISO 14001 certification. TimberWest is committed to maintaining this certification and the standards established through this process.

8.0 Schedule B Prorate Calculation

Table No. 4 - Current Timber Harvesting Land Base

Management Unit	Area
Johnstone Strait's Management Unit	73,216 ha
Bonanza Lake Management Unit	22,086 ha
Moresby Management Unit	17,535 ha *
Total	112,837 ha

Table No. 5 - Schedule 'A' Timber Harvesting Land Base (Current)

Management Unit	Area
Johnstone Strait's Management Unit	854 ha
Bonanza Lake Management Unit	4,585 ha
Moresby Management Unit	12,845 ha
Total	18,284 ha

Table No. 6 - Schedule 'B' Timber Harvesting Land Base (Current)

Management Unit	Area
Johnstone Strait's Management Unit	72,362 ha
Bonanza Lake Management Unit	17,501 ha
Moresby Management Unit	4,690 ha 4
Total	94,553 ha

Table No. 7 - Proposed Harvest Level

Management Unit	Volume
Johnstone Strait's Management Unit	522,826 m ³
Bonanza Lake Management Unit	180,000 m ³
Moresby Management Unit	112,000 m ³
Total	814,826 m ³

Schedule 'B' Prorate Calculation

94,553 ha ÷ 112,837 ha = 0.838 ¹

Schedule 'B' Portion of Proposed Harvest Level

 $0.838 \times 814,826 \text{ m}^3 = 682,824 \text{ m}^3$

Compliance with the FA requires a harvest by full and phase contractors as per the following calculation:

50% x Volume Harvested x Schedule B Portion of AAC available to the licensee

9.0 Review Strategy

TimberWest is committed to involving stakeholders in the preparation of MP No. 4 for TFL No. 47. This review strategy will ensure opportunities for interested parties such as local communities, First Nations, government agencies, unions and contractors to provide input into MP No. 4. Interested parties are invited and encouraged to identify issues and concerns with Draft MP No. 4 which will be considered in the preparation of Proposed MP No. 4.

The review strategy complies with the requirements and timelines of the Licence and more specifically will be guided by the following:

- Not less than 16 months prior to the expiry of MP No. 3, the Regional Manager will be provided with Draft MP No. 4.
- Commencing at the substantially same time as when Draft MP No. 4 has been provided to the Regional Manger, advertisements, similar to the one identified in Figure No. 1, will be published twice within a period of two consecutive weeks in each of the following newspapers and will identifying that Draft MP No. 4 is available for review and comment:

North Island Gazette Campbell River Courier Courtenay – Record Courtenay – Echo

Figure No. 2 - Proposed Advertisement for Draft MP No. 4



TFL Forest Ltd Public Viewing for Tree Farm License No. 47 Draft Management Plan No. 4

The public is invited to comment on draft Management Plan No. 4. The plan states the objectives and strategies which will guide the management of the TFL over the next five years.

TimberWest will hold open houses in the following locations on the dates and times shown: (dates, times and locations TBA)

Port McNeill

place

date

time

Campbell River

place

date

time

A TimberWest representative will be on hand to answer questions.

The draft management plan is also available for viewing commencing (date of the first publication) for 60 days during normal business hours from 8:30 am to 4:30 pm in the following locations:

TimberWest offices at

5705 North Island Hwy, Campbell River

250-287-9181

Beaver Cove Office in Kokish

250-928-3023

A copy of the plan is also available for viewing at the Ministry of Forests' offices in Port McNeill, Campbell River, Nanaimo and Victoria.

Please forward written comments by (60 days after date of the first advertisement) to:

TFL Forest Ltd

#3 - 4890 Rutherford Road,

Nanaimo, B.C.

V9T 4Z4

Attention:

Kenneth E. Kaps, R.P.F.

- The 60 day viewing period for Draft MP No. 4 will commence from the date of the first advertisement.
- Comments on Draft MP No. 4 will be received up to 60 days after the date of the first advertisement.
- Draft MP will be available for viewing during normal business hours (8:30 a.m. to 4:30 p.m.) at the TimberWest's and Ministry of Forests' offices identified in the newspapers advertisements.
- One day open houses will be held in the communities of Port McNeill and Campbell River
- A registration form, similar to the one identified in Figure No. 3, will be kept to record those who took the opportunity to review Draft MP No. 4.

Figure No. 3 - Registration Form for Draft MP No. 4

	TimberWest				
	Location Date:				
	Tree Farm License No. 47				
	Management Plan No. 4				
	Public Viewing Registration				
	Name Address				
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

- Comment sheets, similar to the one identified in Figure No. 4, will be available for those that wish to provide comments on Draft MP No. 4.
- All written comments received on Draft MP No. 4 will be responded to by TimberWest in writing.
- All written comments received on Draft MP No. 4, complete with TimberWest's written response, will be summarized and submitted to the Ministry of Forests within 4 months after the deadline for comments.

Figure No. 4 - Comment Form for Draft MP No. 4

Co	TimberWest
Tree F	Farm License No. 47
Public Viewi	ing of Management Plan No. 4
Do you have any issues or comments you wis reviewed?	sh to raise in respect of the draft Management Plan you have
	4
Completed by (print legibly, please) Name: Address:	Please forward comments byto: TFL Forest Ltd #3 – 4890 Rutherford Road,
	Nanaimo, B. C. V9T 4Z4
	Attention: Kenneth E. Kaps, RPF

- Letters will be sent to individual stakeholders notifying them of their opportunity to review and comment on Draft MP No. 4.
- First Nations, which exert an interest over lands within TFL No. 47, will be advised, by means of the individual notification letters, of their opportunity to review and comment on Draft MP No. 4.
- TimberWest will offer to hold additional one day open houses for Draft MP No. 4 with First Nations that exert an interest over lands within TFL No. 47.

- Dates, times and locations for the open houses for Draft MP No. 4 will be agreed upon with the Regional Manager.
- A two page summary will be provided for those reviewing and commenting on Draft MP No. 4.
- Draft MP No. 4 will be referred to the Ministry of Forests (Vancouver Forest Region, Port McNeill Forest District, Campbell River Forest District) and Ministry of Water, Air and Land Protection (Vancouver Island Region) at substantially the same time as when it has been provided to the Regional Manger.
- The Department of Fisheries and Oceans and the Ministry of Competition, Science and Enterprise will be notified when Draft MP No. 4 will be made available for review and comment.