



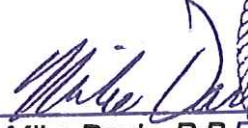
WESTERN FOREST PRODUCTS INC.

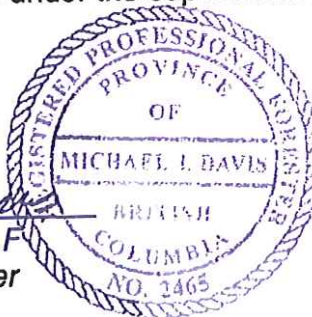
Tree Farm Licence 44

MANAGEMENT PLAN 5

June 2010

This Management Plan was prepared by and under the supervision of


Mike Davis, R.P.F.
Planning Forester



and is submitted on behalf of Western Forest Products Inc. by


Kerry McGourlick, R.P.F.
Chief Forester



TABLE OF CONTENTS

1	Introduction	1
2	Description of TFL 44.....	1
3	TFL 44 Licence Holder History	3
4	TFL 44 Consolidations and Subdivisions.....	3
5	Major TFL 44 Boundary Changes.....	3
6	TFL 44 Planning Documents	4
7	Public and First Nations Review	6
7.1	Review Process Summary	6
7.2	Summary of Comments Received	8
7.3	Summary of Revisions	10
	Appendix A: Accepted Timber Supply Analysis	11
	Appendix B: Accepted Timber Supply Analysis Information Package	67

List of Tables

Table 1 - TFL 44 Licence Holders	3
Table 2 - TFL 44 Consolidations and Subdivisions	3
Table 3 - TFL 44 Major Boundary Changes	4
Table 4 - TFL 44 Publicly Available Planning Documents	5
Table 5 - Comments Summary.....	8

List of Figures

Figure 1 - TFL 44	2
-------------------------	---



This page intentionally left blank.



1 Introduction

This is the first Management Plan (MP) prepared for Tree Farm Licence (TFL) 44 to meet the requirements of the *Tree Farm Licence Management Plan Regulation* (B.C. Reg. 280/2009). This regulation, enacted by the provincial government in November 2009 (with associated amendments to the *Forest Act*), includes content requirements, submission timing and public review requirements for TFL Management Plans. These content requirements (in regulation) replace the MP content requirements listed in the tree farm licence document and reduce the duplication of Forest Stewardship Plan matters (objectives and strategies).

Tenure restructuring and treaty negotiations with First Nations have resulted in substantial areas of present day (June 2010) TFL 44 being managed by groups other than WFP, the licence holder, or not being available to WFP for harvesting. These areas are expected to be removed from TFL 44 during the next 2 years.

Hence Management Plan #5 and the associated analysis are directed at the lands that will be retained in TFL 44 and managed by WFP. It does not include areas managed by BCTS (Sproat area), Maa-Nulth treaty related areas (including T'iitsk'in Paawats) or the second Huu-ay-aht Community Forest area (refer to Figure 1).

2 Description of TFL 44

TFL 44 is located in west-central Vancouver Island in the vicinity of the Alberni Inlet and Barkley Sound. It extends from Strathcona Park in the north to Walbran Creek in the south, including land from the Pacific Ocean to the Beaufort Range and Mount Arrowsmith (refer to Figure 1).

TFL 44 currently covers over 232,000 ha, approximately five-sixths of which is productive forest land. The major tree species include western hemlock, western red cedar, balsam (amabilis fir), Douglas-fir and yellow cedar. The forests of TFL 44 predominantly lie within the wetter and very dry maritime Coastal Western Hemlock biogeoclimatic zone. Annual precipitation levels reach 3,000 to 5,000 mm. At sea level the climate is characterized by short winters with intermittent wet snow storms; at the highest elevations a prolonged snow pack may persist. The summer period from July to September can be dry and warm.

The topography of TFL 44 is varied with mountainous, steep formations dominating the landscape on the west side of the Alberni Inlet (Great Central Lake and Henderson Lake vicinities) and more rolling gentle terrain on the east side of the Alberni Inlet.

There are five communities within or adjacent to the licence area. These are Port Alberni, Bamfield, Anacla (Huu-ay-aht First Nation), Nitinaht (Ditidaht First Nation), and Kildonan. The livelihood of these communities and their stability depends mostly or in part on the economic activities generated in the Barkley Sound region. Forest management and forest product

manufacturing are the major employment activities in this region. Other economic activities include aquaculture, commercial and recreational fishing and tourism.

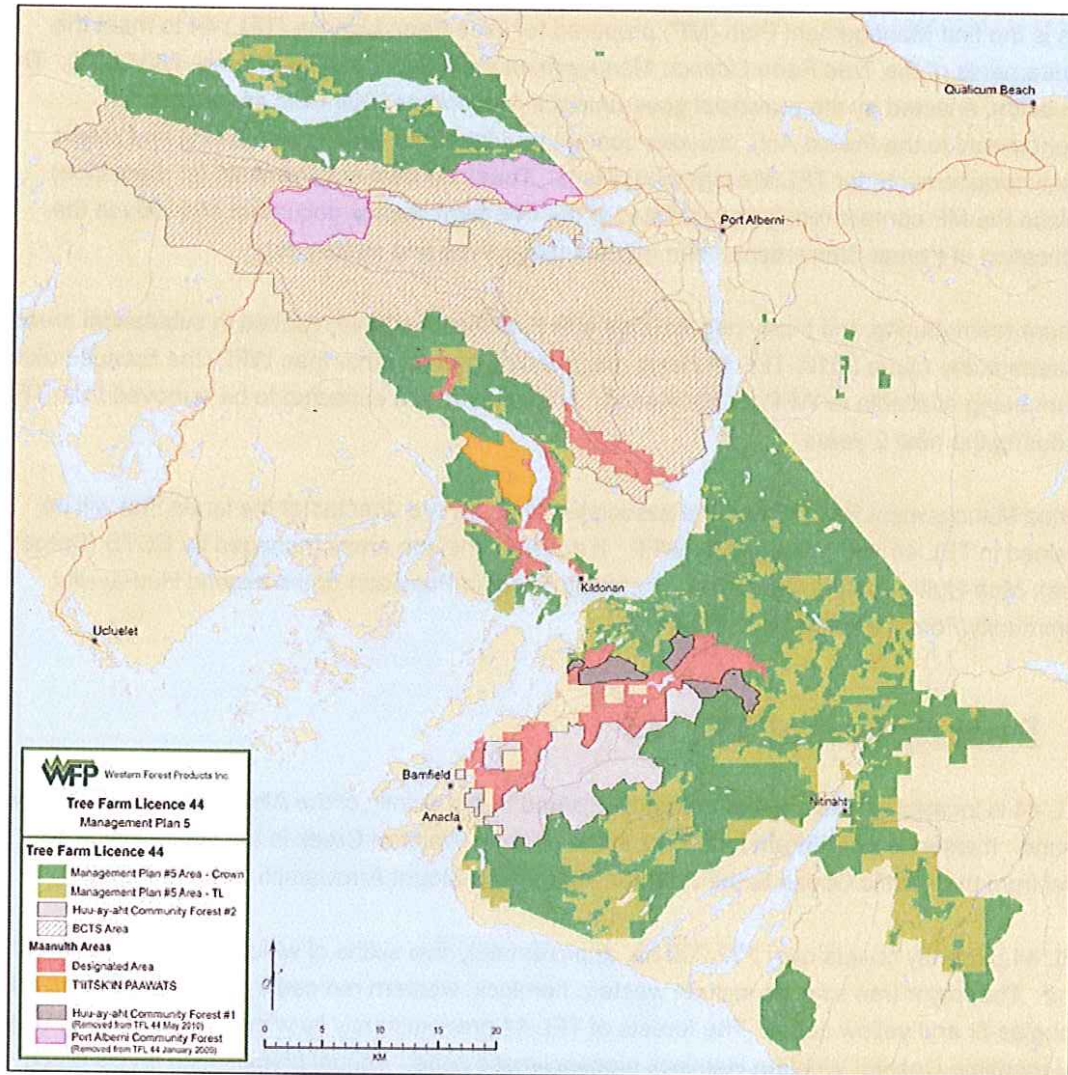


Figure 1 - TFL 44

3 TFL 44 Licence Holder History

Forest Management Licences (FMLs) No. 20 (Tofino) and No. 21 (Alberni) were originally awarded in 1955. FMLs were later renamed Tree Farm Licences (TFLs). TFL 44 was created in 1984 with the consolidation of TFL 20 and TFL 21. The licence holder has changed over time with successive corporate acquisitions and mergers (see Table 1).

Table 1 - TFL 44 Licence Holders

Licence	Date listed company became licence holder	Licence Holder	Description
FML 20 (Tofino)	January 24, 1955	MacMillan & Bloedel Limited	Original FML
FML 21 (Alberni)	March 19, 1955	MacMillan & Bloedel Limited	Original FML
TFL 44	August 1, 1984	MacMillan Bloedel Ltd.	TFLs replace FMLs plus consolidation
TFL 44	October 29, 1999	Weyerhaeuser Company Limited	Corporate Purchase
TFL 44	May 30, 2005	Cascadia Forest Products Ltd.	Corporate Purchase
TFL 44	May 1, 2006	Western Forest Products Inc.	Corporate Purchase

4 TFL 44 Consolidations and Subdivisions

In 1984, TFL 44 was created through the consolidation of TFL 20 (Tofino) and TFL 21 (Alberni). In 1999, TFL 44 was subdivided into 2 TFLs – TFL 44 and TFL 57 (the former Clayoquot Sound portion of TFL 44) which was subsequently transferred to Iisaak Forest Resources Limited. Refer to Table 2 for exact dates of these events.

Table 2 - TFL 44 Consolidations and Subdivisions

Date	Boundary Change
August 1, 1984	Consolidation of TFL 20 and TFL 21 to create TFL 44
October 27, 1999	Subdivision of TFL 44 to create TFL 57 (Clayoquot Sound)

5 Major TFL 44 Boundary Changes

Table 3 lists changes to the TFL area involving over 200 hectares and the date of those changes. This list may omit some boundary changes for which records have been lost or could not be found when preparing this document. There have been multiple minor (< 200 ha) area revisions since 1984 to accommodate other land uses such as gravel pits, hydro-electric generating stations and highway re-alignments.

Table 3 - TFL 44 Major Boundary Changes

Date	Boundary Change
March 31, 1987	Instrument 4 - Pacific Rim National Park additions land exchange
June 6, 1989	Instrument 6 – Alberni Airport land exchange
January 3, 1990	Instrument 9 – Addition of "Loop Farms" and lots immediately east of Sproat Lake Provincial Park
October 27, 1999	Instrument 28 – Deletions to create or amend several provincial parks and to create one ecological reserve
October 27, 1999	Instrument 30 – Subdivision of TFL 44 to create two TFLs (TFL 44 and TFL 57) and transfer TFL 57 (Clayoquot Sound) to Iisaak Forest Resources Limited
October 9, 2002	Instrument 35 – Deletion of a portion of the Ucluelet Working Circle lands
August 1, 2003	Instrument 41 - Deletion of remaining Ucluelet Working Circle lands
July 9, 2004	Instrument 42 – Deletion of all private lands within TFL 44
January 17, 2009	Instrument 46 – Deletion of lands for City of Port Alberni Community Forest
May 17, 2010	Deletion of area identified for Huu-ay-aht Community Forest #1
The following changes have not yet occurred but will be made during the term of Management Plan 5 (if not earlier).	
To be determined (TBD)	Deletion of BCTS Operating Area (Sproat Lake and Nahmint)
TBD	Deletion of area identified for Huu-ay-aht Community Forest #2
TBD	Deletion of Maa-Nulth Treaty Settlement Lands
TBD	Deletion of <i>T'iitsk'in Paawats</i> (Thunderbird's Nest) near Henderson Lake (to become a Provincial Protected Area)

6 TFL 44 Planning Documents

Table 4 indicates the publicly available planning documents used by WFP to guide forest management and operations within TFL 44:

Table 4 - TFL 44 Publicly Available Planning Documents

Plan Type	Plan Title	Description	Web link (as of June 21, 2010)
Regional Land Use Plan	Vancouver Island Summary Land Use Plan (February 2000)	Provides the key components of strategic land and resource management decisions made by the provincial government for Vancouver Island.	http://ilmbwww.gov.bc.ca/slrp/lrmp/nanaimo/vancouver_island/index.html
Higher Level Plan	Vancouver Island Land Use Plan Higher Level Plan Order (effective December 1, 2000)	An order that established Resource Management Zones (RMZs) and Resource Management Zone Objectives within the area covered by the Vancouver Island Land Use Plan.	http://ilmbwww.gov.bc.ca/slrp/lrmp/nanaimo/vancouver_island/index.html
Landscape Unit Plan	Renfrew Landscape Unit Plan (March 2006)	Provides background information and processes used to select Old Growth Management Areas (OGMAs) and Wildlife Tree Retention Area (WTRA) requirements in the Caycuse, Nitinat and Walbran landscape units (plus two others that are not within TFL 44). The OGMAs and WTRA requirements are incorporated into an order establishing land use objectives for these landscape units.	http://ilmbwww.gov.bc.ca/slrp/srmp/coast/south_island/renfrew.html
Forest Stewardship Plan (FSP)	Forest Stewardship Plan for the Queen Charlotte Islands, Mid Island, Stillwater, Port Alberni and portions of Mainland Coast, Nootka Sound and Zeballos Forest Operations of Western Forest Products Inc. (FSP #69)	The FSP, approved January 4, 2007, specifies results and strategies that have been deemed to be consistent with the Forest and Range Practices Act (FRPA) and the government objectives that apply to the landbase covered by the FSP. Forestry activities in turn must be consistent with the results and strategies specified in the FSP. This is the main planning document used to guide operations.	http://www.westernforest.com/company/stewardship/OnePlan_fsp.php
Sustainable Forest Management Plan (SFMP)	Port Alberni Forest Operation Sustainable Forest Management Plan (current version dated 2009-2011)	The SFMP is in support of WFP's certification under the Canadian Standards Association (CSA) Sustainable Forest Management standard (CAN/CSA-Z809). It lists values, objectives, indicators and targets that are developed locally with the assistance of a community advisory group to address the criteria and critical elements for sustainable forest management listed in the CSA standard. The SFMP also describes strategies employed by WFP to ensure operations are consistent with the SFMP.	http://www.westernforest.com/wiwag/sfm_plan.htm

7 Public and First Nations Review

7.1 Review Process Summary

The public review, including information-sharing with first nations, of MP #5 began in June 2009, prior to enactment of the *Tree Farm Licence Management Plan Regulation*. As such the draft MP #5 at this time was written to meet the content requirements of both the licence agreement and section 35 of the *Forest Act*. Appended to the draft MP #5 was the draft Information Package (IP) summarizing the data, assumptions and modeling procedures to be used in the timber supply analysis for TFL 44.

On or about June 19, 2009 copies of the draft MP #5 were provided to the following provincial government agencies:

Ministry of Forest and Range (MoFR) - Forest Analysis and Inventory Branch (FAIB)	MoFR – Coast Forest Region
MoFR – South Island Forest District (SIFD)	Ministry of Environment (MoE) – Vancouver Island Region (Ecosystems Section)

Maps associated with the MP were sent to each MoFR office. MoE was sent a CD containing the documents and the maps. WFP offered to print the maps for MoE if requested to do so (this was not requested).

On or about June 19, 2009 copies of the draft MP #5 were provided to the following first nations and first nation organizations:

Chemainus	Maa-Nulth First Nations
Cowichan	Nuu-chah-nulth Tribal Council
Ditidaht	Pacheedaht
Hul'qumi'num Treaty Group	Penelakut
Hupacasath	Tla-o-qui-aht
Huu-ay-aht	Tseshah
Lake Cowichan	Uchucklesaht
Lyackson	Ucluelet

WFP provided the draft MP #5 in both paper and digital (on CD) formats. The CD contained the draft MP #5 document and the associated maps. WFP offered to print the maps for First Nations if requested to do so (this was not requested). Follow-up letters were sent to each of the above first nations and first nation organizations on July 13, 2009 reminding them of the opportunity to provide comments on the draft MP #5.

Notification letters were sent to interested stakeholders (based on a contact list that included water licence holders, trappers, guide outfitters, local governments, and WFP's CSA advisory group). Ads were run in the *Alberni Valley Times* newspaper on June 19th and June 26th, 2009. The ads stated that the draft MP #5 was available for review and comment from June 22, 2009 until August 24, 2009 at the following locations:



- WFP Campbell River office
- WFP Port Alberni office
- MoFR SIFD office
- WFP internet site

and provided phone numbers, fax numbers and an email address for providing comments.

A revised IP was submitted to FAIB on September 22, 2009 that included revisions made due to comments received and corrected typographical errors. In a letter dated October 8, 2009 this IP was accepted by FAIB for use in support of the timber supply analysis for TFL 44.

On November 27, 2009 the provincial government enacted the *Tree Farm Licence Management Plan Regulation* (with associated amendments to the *Forest Act*). This regulation specifies content requirements, submission timing and public review requirements for TFL Management Plans. Chronologically the first requirement in the new process is to obtain approval from the regional manager (Regional Executive Director) of a strategy for the public review of the management plan (section 6 (2) of the regulation). On January 20, 2010 WFP submitted a proposed review strategy to the Regional Executive Director of the Coast Forest Region. A revised strategy was submitted and approved on February 10, 2010.

A new draft MP #5 was prepared to meet the content requirements of the TFL MP regulation. This draft MP #5 included the accepted IP and the completed timber supply analysis.

On or about February 18, 2010 copies of the draft MP #5 were provided to the following provincial government agencies:

MoFR - FAIB	MoFR – Coast Forest Region
MoFR – SIFD	MoE – Vancouver Island Region (Ecosystems Section)

Maps associated with the MP were sent to each MoFR office. MoE was sent a CD containing the documents and the maps. WFP offered to print the maps for MoE if requested to do so (this was not requested).

On or about February 18, 2010 copies of the draft MP #5 were provided to the following first nations and first nation organizations:

Chemainus	Maa-Nulth First Nations
Cowichan	Nuu-chah-nulth Tribal Council
Ditidaht	Pacheedaht
Hul'qumi'num Treaty Group	Penelakut
Hupacasath	Tla-o-qui-aht
Huu-ay-aht	Tseshaht
Lake Cowichan	Uchucklesaht
Lyackson	Ucluelet



WFP provided the draft MP #5 digitally (on CD). The CD contained the draft MP #5 document and the associated maps. WFP offered to print the maps for First Nations if requested to do so (this was not requested). Follow-up letters were sent to each of the above first nations and first nation organizations on March 12, 2010 reminding them of the opportunity to provide comments on the draft MP #5.

Notification letters were sent to interested stakeholders (based on an updated version of the contact list used in June 2009). Ads were run in the *Alberni Valley Times* newspaper on February 19th and February 26th, 2009. The ads stated that the draft MP #5 was available for review and comment from February 19, 2010 until April 20, 2010 at the following locations:

- WFP Campbell River office
- WFP Port Alberni office
- MoFR SIFD office
- WFP internet site

and provided phone numbers, fax numbers and an email address for providing comments.

In a letter dated May 6, 2010 this timber supply analysis was accepted by FAIB for use in support of the allowable annual cut (AAC) determination for TFL 44.

7.2 Summary of Comments Received

Overall, few comments were received during either review opportunity. Table 5 summarizes the comments and questions received.

Table 5 - Comments Summary

Draft MP/IP review in 2009	
Comment Provider	Comment(s) / Question(s) Summary
MoFR FAIB	The timber supply forester at FAIB compiled and forwarded comments and questions on behalf of MoFR (FAIB, SIFD and Coast Region) and MoE. These focused on clarifying landbase netdown assumptions associated with riparian management, Old Growth Management Areas, Wildlife Habitat Areas and recreation. Other items included questions regarding timber volume determination, rate-of-harvest constraints and Marbled Murrelet habitat.
Huu-ay-aht First Nation	The Huu-ay-aht First Nation forwarded a letter in which questions were asked regarding Old Growth Management Areas in the Sarita landscape unit, "offsite" Douglas fir stands, stand-level retention, genetic gain values and biomass tenure.
Cowichan Tribes	The Cowichan Tribes provided comments regarding the availability of western red cedar and yellow cedar for cultural purposes within their traditional territory.
Tla-o-qui-aht First Nation	The Tla-o-qui-aht First Nation provided comments with regard to their expectations if the MP relates to any harvesting within their traditional territory.



Draft MP/IP review in 2009	
Comment Provider	Comment(s) / Question(s) Summary
Ucluelet First Nation	The Ucluelet First Nation requested a meeting to review the draft MP. A meeting was held on October 1, 2009 at which the MP/timber supply analysis process was reviewed and Ucluelet First Nation representatives provided comments regarding access to cedar for cultural purposes and treaty rights they will have within their entire territory upon implementation of the Maa-Nulth treaty (mainly access to cedar and wildlife hunting)
Hupacasath First Nation	No written comments were received from the Hupacasath First Nation; however, a meeting was held in September 2009 at which the MP/timber supply analysis process was explained and the IP reviewed. At this meeting Hupacasath representatives commented on old growth, access to cedar for cultural purposes and their land use plan for their territory.
Tseshah First Nation	No written comments were received from the Tseshah First Nation; however, a meeting was held in September 2009 at which the MP/timber supply analysis process was explained and the IP reviewed. At this meeting Tseshah representatives commented on old growth, access to cedar for cultural purposes and various watersheds within their territory.
Draft MP/TSA review in 2010	
Comment Provider	Comment(s) / Question(s) Summary
MoFR	The MoFR (FAIB) commented that Figure 11 in the timber supply analysis report seemed to have an error in it and questioned why the modeled harvest schedule in section 4.9 was selected. FAIB also requested a comparison of the THLB in MP #5 to what the THLB would have been based on the assumptions used in MP #4.
MoE	The MoE representative reiterated comments regarding the treatment of MaMu habitat in the timber supply analysis.
Alberni Environmental Coalition (AEC)	The AEC provided comments regarding biodiversity and other ecological functions provided by forests, climate change and silviculture systems.
Huu-ay-aht First Nation	The Huu-ay-aht First Nation requested further details on the timber supply contribution of various portions of TFL 44 in the Base Case and in selected sensitivity analyses.
Ucluelet First Nation	The Ucluelet First Nation requested a meeting to review the timber supply analysis. However, this meeting was deemed unnecessary since MP #5 does not include the Nahmint watershed (the largest portion of the Ucluelet territory within the boundaries of the current TFL 44) as it is within the BCTS operating area.
Hupacasath First Nation	No written comments were received from the Hupacasath First Nation; however, a meeting was held in April 2010 at which the timber supply analysis results were reviewed, with a focus on the Great Central Lake operating area. At this meeting Hupacasath representatives reiterated comments regarding old growth, access to cedar for cultural purposes and their land use plan for their territory.
Tseshah First Nation	No written comments were received from the Tseshah First Nation; however, a meeting was held in May 2010 at which the timber supply analysis results were reviewed. At this meeting Tseshah representatives commented on harvest levels within their territory and a culturally significant area within their territory that is within TFL 44.




7.3 Summary of Revisions

As a result of the comments received the following revisions have been made:

1. Additional information was provided in the final (accepted) Information Package.
2. Figure 11 in the timber supply analysis report was corrected.

Other changes made include:

1. Updating MP and TSA document dates.
2. Updating discussion in MP Introduction, Figure 1 and Table 3 re: area for Huu-ay-aht Community Forest #1.
3. Adding discussion re: area deleted for Huu-ay-aht Community Forest #1 in section 1.1 of the timber supply analysis report.

Agenda – Tree Farm Licence 44 – MP No. 5 Approval			
Objective	Approval of TFL 44 – Management Plan No. 5		
Date	March 29, 2011		
Time	From: [11 a.m] To: [11:30 a.m.]		
Conference Rm	Telephone call from Jim's office		
Dial-in-Number	Call Jim B at 250-751-7260		
Convener	Jim B.		
Attendees	Jim Snetsinger, Bud Koch, Jim Brown		
No.	Agenda Items	Background	Owner
1	Review Agenda	-	Jim B.
2	TFL 44 Management Plan No. 5 Content checklist	 TFL44MP5.pdf  TFL44MP_Checklist.pdf	Jim B.
3	First Nation Consultation Summary	 FNConsultation.pdf	
4	TFL 44 MP#5 – notification letters	In progress	Jim B.
5	TFL 44 MP #10 Approval / Instructions	-	Jim S.



Western Forest Products Inc.

File: T-44-04-05

June 19, 2009

Ministry of Forests and Range
6th Floor – 727 Fisgard Street
Victoria, B.C. V8W 1R8

ATTN.: Gordon Nienaber, Timber Supply Forester

Re: TFL 44 Draft Management Plan #5 and Timber Supply Analysis Information Package

Enclosed is a copy of draft Management Plan (MP) #5 for the portions of TFL 44 managed by Western Forest Products Inc. The draft MP provides objectives and strategies to guide management of the TFL over the next five years. The Information Package (IP) is appended to the draft MP. The IP serves as a summary of inputs and assumptions that will be made in the preparation of the Timber Supply Analysis.

The TFL 44 Draft Management Plan #5 is available for review by the public, First Nations and government agencies from **June 22, 2009** until **August 24, 2009** during normal business hours at the following locations:

- WFP Port Alberni office, 1080-A Franklin River Road, Port Alberni. Ph: (250) 720-4272
- WFP Corporate office, #118-1334 Island Highway, Campbell River. Ph: (250) 286-3767
- Ministry of Forests and Range office, 4885 Cherry Creek Road, Port Alberni. Ph: (250) 731-3000

The draft Management Plan (including the IP) and reference maps are also available at:

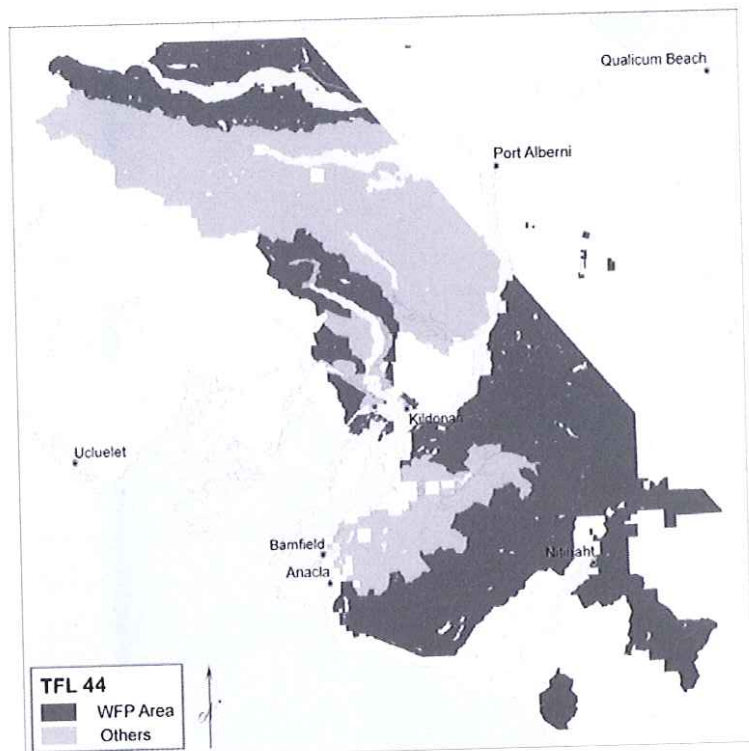
www.westernforest.com/fstew/fplanning.html.

Please contact me if you have any questions regarding the Information Package.

Yours truly,

Mike Davis, RPF
Planning Forester
Western Forest Products Inc.

pc: K. Finck, RTEB





Western Forest Products Inc.

Tree Farm Licence 44

Port Alberni – Vancouver Island

Draft Management Plan 5

2010 to 2014


Cindy Fife, RPF
Regional Forester,
Western Forest Products Inc.



Table of Contents

1.0	INTRODUCTION	1
1.1	Purpose	1
1.2	Description of TFL 44	1
1.3	Administration	2
1.4	Tenure Restructuring	2
1.5	The MP #4 Area	5
1.6	New Framework for Strategic Planning	5
2.0	RESOURCE INVENTORIES	7
2.1	Forest Cover	7
2.2	Operability	8
2.3	Recreation	10
2.4	Visual Landscape	10
2.5	Terrain Stability	10
2.6	Ownership and Other Tenures	11
2.7	Archaeological Resource Potential	11
2.8	Ecosystem Mapping	11
2.9	Streams	12
2.10	Wildlife	12
2.11	Old Growth Management Areas	12
2.12	Cave and Karst	13
3.0	PLANNING	14
3.1	Vancouver Island Land Use Plan Higher Level Plan Order (VILUP HLP)	14
3.2	Landscape Unit Plans	17
3.3	Forest Stewardship Plan	19
3.4	Forest Certification	19
4.0	WORKING WITH THE COMMUNITY	21
4.1	First Nations	21
4.2	Cultural Heritage Resources	22
4.3	Other Forest Users	22
4.4	Public Review for MP #5	23
5.0	INTEGRATED RESOURCE MANAGEMENT	24
5.1	Water Resources and Fish Habitat Protection	24
5.2	Soil Conservation	25
5.3	Biodiversity	26
5.4	Wildlife Habitat	27
5.5	Visual Quality	28
5.6	Recreation	28
5.7	Cave and Karst	28
6.0	TIMBER RESOURCE MANAGEMENT	30
6.1	Timber Harvesting	30
6.2	Establishing and Managing the New Forest	32
6.3	Forest Protection and Forest Health	36
7.0	SUMMARY OF CHANGES AND IMPACTS	40
7.1	Lands and Harvest Levels Within TFL 44	40
7.2	Protection and Conservation of Non-Timber Values	40
7.3	Planning	41
	Glossary	42
	Appendix I	

Table of Tables

Table 1: Changes in AAC Allocation During MP #4	3
Table 2: TFL 44 Land Status (March, 2009)	5
Table 3: Harvest System Classification Criteria	8
Table 4: Inventory and Logging Method Criteria for Classification of Economic Operability. Volumes are m ³ /ha ⁰	9
Table 5: Resource Inventory Status	13
Table 6: Vancouver Island Resource Management Zones – TFL 44	15
Table 7: TFL 44 Landscape Units and Biodiversity Emphases	17
Table 8: Community Watersheds in TFL44	24

Table of Figures

Figure 1: Land Status and Communities	4
Figure 2: TFL 44 Vancouver Island Resource Management Zones	16
Figure 3: TFL 44 Landscape Units	18

1.0 INTRODUCTION

1.1 Purpose

The Tree Farm Licence (TFL) agreement requires the Licensee to submit, for Ministry of Forests and Range (MoFR) approval, a Management Plan every five years. The Management Plan (MP) provides objectives and strategies to guide management over the next five year period. It provides a strategic framework for operational planning and a connection to higher level plans.

1.2 Description of TFL 44

TFL 44 is located in west-central Vancouver Island in the vicinity of the Alberni Inlet and Barkley Sound. It extends from Strathcona Park in the north to Walbran Creek in the south, including land from the Pacific Ocean to the Beaufort Range and Mount Arrowsmith (refer to Figure 1).

TFL 44 covers over 232,000 ha, approximately five-sixths of which is productive forest land. The major tree species include western hemlock, western red cedar, balsam (amabilis fir), Douglas-fir and yellow cedar. The forests of TFL 44 predominantly lie within the wetter and very dry maritime Coastal Western Hemlock biogeoclimatic zone. Annual precipitation levels reach 3,000 to 5,000 mm. At sea level the climate is characterized by short winters with intermittent wet snow storms; at the highest elevations a prolonged snow pack may persist. The summer period from July to September can be dry and warm.

The topography of TFL 44 is varied with mountainous, steep formations dominating the landscape on the west side of the Alberni Inlet (Great Central Lake and Henderson Lake vicinities) and more rolling gentle terrain on the east side of the Alberni Inlet. The licence area is drained by numerous rivers and streams. Most larger streams support significant anadromous fish populations. Large mammals, such as Roosevelt elk, Columbia black-tailed deer, cougars and black bears are found throughout the licence area. Numerous small animals, reptiles, amphibians, fish and birds can also be found.

There are five communities within or adjacent to the licence area. These are Port Alberni, Bamfield, Anacla (Huu-ay-aht First Nation), Nitinaht (Ditidaht First Nation), and Kildonan. The livelihood of these communities and their stability depends mostly or in part on the economic activities generated in the Barkley Sound region. Forest management and forest product manufacturing are the major employment activities in this region. Other economic activities include aquaculture, commercial and recreational fishing and tourism.

1.3 Administration

TFL 44 is managed by the Port Alberni Forest Operation, of Western Forest Products Inc's (WFP) West Island Region.

The TFL is within the MoFR's South Island Forest District (SIFD) with an office in Port Alberni.

1.4 Tenure Restructuring

TFL 44 MP #4 was approved in 2003 with an AAC determination of 1,700,000 m³, of which 81,608 m³ was attributed to B.C. Timber Sales (BCTS) and the balance of 1,618,392 m³ was allocated to WFP.

Private Land Removed from TFL 44

Private land was removed from TFL 44 in 2004. Effective from July 9, 2004 the TFL 44 AAC was reduced by 373,000 m³ to 1,327,000 m³ (1,245,392 m³ for WFP and 81,608 m³ for BCTS) to account for the removal of private land.

B.C. Forest Revitalization Plan

In March 2003 the MoFR announced the British Columbia Forest Revitalization Plan. This plan reallocated 20 per cent of logging rights from major licensees to First Nations, communities, and to BCTS. The re-distribution of AAC varied by Licence. For TFL 44 it occurred at the start of 2005 and was 298,648 m³, or 24% of the then WFP AAC (after removal of private land from the TFL) of 1,245,392 m³. The 298,648 m³ of AAC was distributed to BCTS (237,823 m³) and First Nations (60,825 m³).

Deletion of Area from TFL 44 for the Port Alberni Community Forest

In a TFL 44 amendment (Instrument 46) dated January 17, 2009, 6,383 ha within the Sproat Lake Landscape Unit was removed from TFL 44 as the Port Alberni Community Forest Agreement area (refer to figure 1). The TFL 44 AAC was reduced by 18,682 m³ to 1,308,318 m³.

BCTS Sproat Operating Area

The "Sproat" operating area has been defined to include the Sproat Lake, Cous, Nahmint and Upper Kennedy landscape units within TFL 44 (refer to figure 1). The 292,175 m³ of AAC currently assigned to this area includes 252,860 m³ for BCTS that is largely from the Forest Revitalization Act (Bill 28) and 26,315 m³ of First Nations AAC allocation resulting from Bill 28.

Huu-ay-aht Community Forest Areas

Two community forest areas have been defined for the Huu-ay-aht First Nation. Both are located in the Sarita Landscape Unit (refer to figure 1). Community

forest #1 is for the AAC allocation of 16,992 m³ from the Forest Revitalization Plan and will likely be formally established and removed from TFL 44 during MP #5. Community forest #2 is for an AAC allocation of 70,000 m³ (transferred from the earlier BCTS AAC of 81,608 m³) and is expected to be formally established and removed from TFL 44 when treaty implementation occurs.

Operating Areas not yet Defined

Specific operating areas have not yet been defined for 17,518 m³ of the Forest Revitalization Plan reallocated AAC. This volume is allocated to various First Nations.

Maa-Nulth Designated Area

Areas in the Sarita, Henderson and Nahmint landscape units were included in the Maa-Nulth Designated Area defined in B.C. Regulation 152/2005 dated April 15, 2005. Effective from December 5th 2005 the TFL 44 AAC was reduced by 39,500 m³ for this designated area. A new Maa-Nulth Designated Area was defined in B.C. Regulation 71/2007 on March 30, 2007 (refer to figure 1). This regulation repealed B.C. Reg. 152/2005 and also canceled the associated AAC reduction. It is expected that an AAC reduction associated with B.C. Reg. 71/2007 will be determined in 2009.

Table 1: Changes in AAC Allocation During MP #4

	AAC (m ³ /year)
TFL 44 MP #4 AAC Determination	1,700,000
Removal of Private Land (July 2004)	-373,000
Deletion of Alberni Community Forest (January 2009)	-18,682
Net TFL 44 AAC (June 2009)	1,308,318
Of Which:	
BCTS "Sproat" Operating Area	279,175 ⁽¹⁾⁽²⁾
Huu-ay-aht Community Forest Areas	86,992 ⁽¹⁾
WFP Management Area	942,268 ⁽¹⁾⁽³⁾

Figure 1 – Land Status and Communities shows a general map of the area, communities and tenures associated with TFL 44.

¹ These volumes add to 1,308,435 m³, a 117 m³ difference from the assigned AAC. The Huu-ay-aht Community Forest #2 was assigned an area contributing 70,000 m³ of AAC. This is 117 m³ more than the AAC allocation that will be transferred from BCTS on the effective date of the Maa-Nulth treaty. This small volume difference will be resolved with the TFL 44 AAC Determination.

² The BCTS area includes 26,315 m³ of AAC for First Nations and 252,860 m³ for BCTS.

³ The WFP area includes 17,518 m³ of AAC for First Nations.

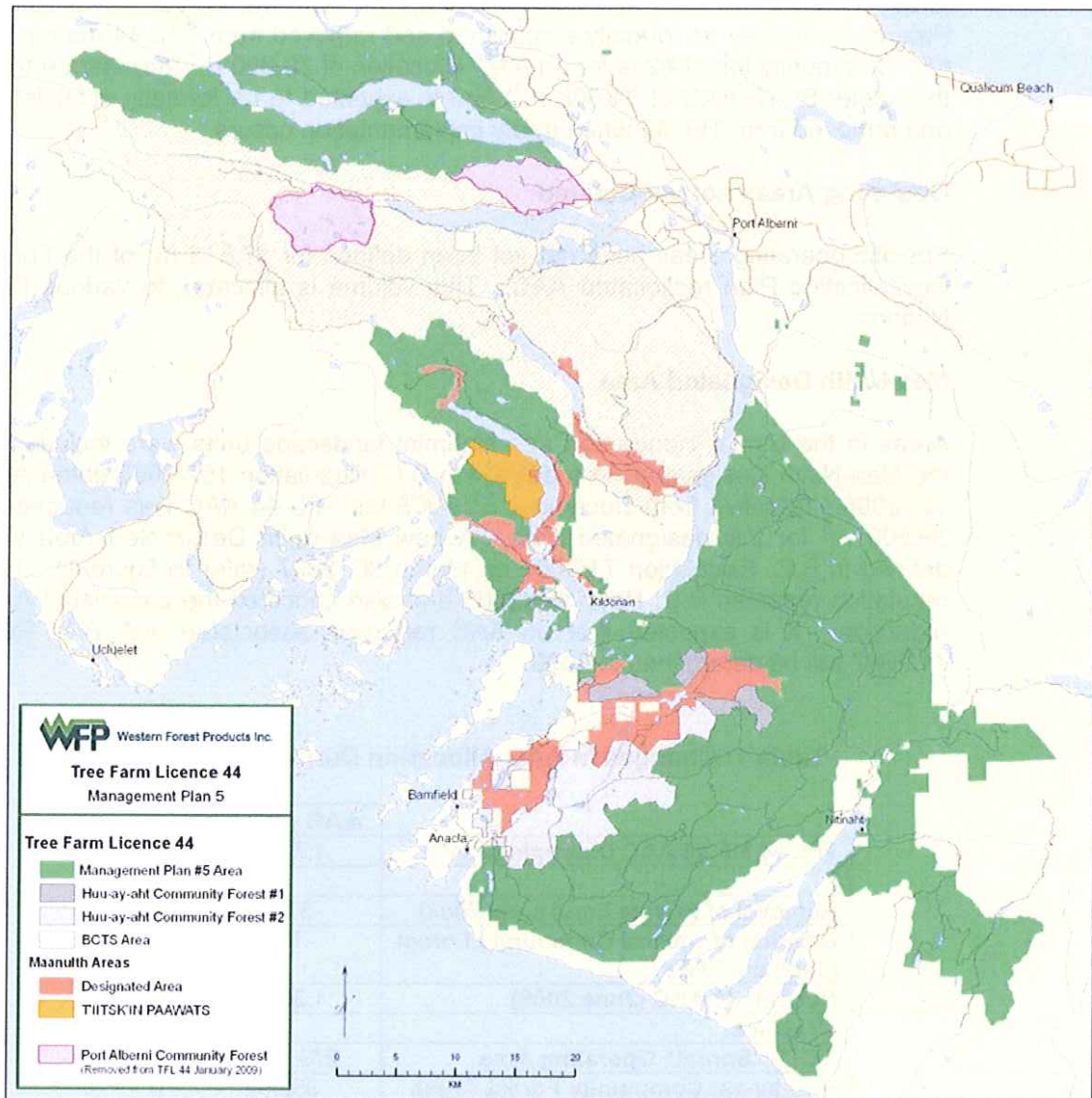


Figure 1: Land Status and Communities

Table 2 summarizes the TFL 44 land status as of March, 2009. For more detail refer to Tables 4 and 5 in the Information Package (Appendix I)

Table 2: TFL 44 Land Status (March, 2009)

	WFP⁴	BCTS⁵	Huu-ay-aht⁶	Maa-Nulth⁷	Total
Total Area (ha)	139,446	66,570	12,162	13,804	231,982

1.5 The MP #4 Area

As described in section 1.4, tenure restructuring has resulted in substantial areas of present day (June 2009) TFL 44 managed by groups other than WFP, the licence holder. These areas are expected to be removed from TFL 44 during the next 2 years.

Hence Management Plan #5 and the associated analysis are directed at the lands that will be retained in TFL 44 and are managed by WFP. It does not include areas managed by BCTS (Sproat area), the Maa-Nulth Designated Area or the two Huu-ay-aht Community Forest areas (refer to figure 1).

1.6 New Framework for Strategic Planning

When MP #4 was prepared and approved, forest practices were managed under the Forest Practices Code Act. Since then, the governing legislation has changed to the Forest and Range Practices Act, which is intended to be more results based rather than prescriptive in nature.

Government has introduced various provisions for establishing resource objectives on Crown lands including TFLs. The unifying document is the Forest Stewardship Plan (FSP). The WFP Forest Stewardship Plan (WFP FSP) for the Queen Charlotte Islands, Mid Island, Stillwater, Port Alberni and portions of Mainland Coast, Nootka Sound and Zeballos Forest Operations (FSP #69) approved in January 2007, describes resource objectives for forest areas including TFL 44 and the results and strategies that were proposed by WFP and approved by the MoFR to meet these objectives. BCTS have a FSP (TFL 44 West Forest Stewardship Plan – FSP #256) for management of their area that is currently in TFL 44.

The MoFR has compared management plan requirements with those of forest stewardship plans and has determined that much of the management plan is now redundant. There is an expectation that a regulation will be drafted to define new requirements for TFL management plans that will be centered around the information and analysis required to assist the Chief Forester in determination of the AAC.

⁴ The WFP management area includes the First Nations AAC of 17,518 m³ for which an area has not yet been defined.

⁵ The BCTS area also includes First Nations allocations of 26,315 m³ of AAC.

⁶ The Huu-ay-aht area includes two areas planned as Huu-ay-aht community forests with equivalent current AAC allocations of 16,992 m³ and 70,000 m³.

⁷ The Maa-Nulth area is a Designated Area set aside as part of the treaty negotiations with the Maa-Nulth First Nations. It is expected that a temporary AAC reduction will be made for this area in the first half of 2009. The area in Table 2 includes the "Thunderbird's Nest" (T'iitsk'in Paawats) Protected Area.



June 2009

This MP is written to meet the requirements in place as of June, 2009. It is also recognized that for many objectives and strategies that this plan is subservient to the approved FSP that is in place. If the FSP is amended without changes to the management plan, then the FSP takes precedence. Rather than simply reference FRPA and the WFP FSP, the approach taken in this management plan is to describe in general terms the objectives and strategies in place.

2.0 RESOURCE INVENTORIES

Resource Inventories are maintained for the TFL land base for forest cover, operability, recreation features, caves, visual landscape, terrain stability, ownership, archaeological resource potential, ecosystems, streams and wildlife. Table 3 summarizes the status of each inventory.

2.1 Forest Cover

Since the original cruise in 1956, inventories have been upgraded and updated on a on going basis, including:

- In 1958 a more intensive cruise was made of Douglas-fir forests.
- In 1963 more new cruising was completed and all volumes were recompiled.
- In 1966 mature (generally refers to areas established after 1870) volumes were recompiled, as required by MoFR, to close utilization standards (15 cm top diameter for trees 22.5 cm and larger).
- In 1972 mature volumes were recompiled using new MB decay factors.
- Between 1973 and 1977 the TFL was re-inventoried.
- In 1987 and 2000, operational cruising was combined with the inventory to improve the less-intensive original inventory on these areas. Thirty six percent of the productive mature inventory is now estimated from operational cruising.
- On both occasions in the remaining area (not included in the operational cruise), average lines were recalculated to reflect the samples remaining.
- The volume recompilation in 2000 used MB's 1973 loss factors and Kozak's Taper Equation Version 4.1.
- During the late 1990s most of the remaining 1970s' mature inventory was subject to inventory audits. Separate check cruises were conducted for Blocks 1, 2, 3 and 4 of the TFL. The results show no significant difference between the check volumes and the inventory volumes for any of these Blocks. Hence, no changes are made to the inventory volumes in the base option in the timber supply analysis.
- A program of cruising "pole size" second-growth stand (generally between 20 and 40 years of age) has been in place. Stands have been re-inventoried; site index measured and volume and/or basal area obtained as measures of stocking. Since 1977 cruise data has been entered into the inventory database for 18,991 ha of second-growth that has been re-inventoried.
- In addition, the inventory has been updated to reflect areas and volumes logged.

The base for the MP #5 analysis is an inventory updated to December 31, 2007 for changes in landbase, ownership, logging and reforestation.

2.2 Operability

In 2008, mapping of physical operability was updated for areas currently managed by WFP. This includes all the TFL 44 lands to the east of the Alberni Inlet (Franklin or Alberni East – including the Maa-Nulth Designated Area) and Great Central and Henderson operating areas.

The physical operability mapping classifies areas as conventional (accessible by ground-based harvesting systems), non-conventional (access limitations – suitable for aerial systems such as helicopter) or inoperable (areas not likely harvestable by any system).

The 2008 mapping involved two main steps, projection of roads and then classification of harvest systems.

Projection of Roads

Main and Branch access roads were projected (and recorded digitally) for currently unlogged areas considering terrain features (including slope and terrain stability mapping) and locations of existing roads relative to such terrain features.

The road projections allowed for favorable road grades (defined as loaded trucks traveling downhill) to generally not exceed 20% other than for short segments of road. Adverse road grades (defined as loaded trucks traveling uphill) were constrained to generally not exceed 10% other than for short segments of road.

Non-timber resource values (e.g. ungulate winter ranges, wildlife habitat areas, etc.) were not used to constrain road projections as there are often processes to amend these types of reserves to accommodate access timber development.

Harvest System Classification

Assignment of each area into one of the following categories was based solely on terrain features (slope and slope shape (as inferred from interpreting contour lines), occurrence of hanging valleys, gullies, etc.), rather than on forest cover, economic variables or other resource information that may change with time. I.e. if it was assumed that the entire area was covered with merchantable timber, what harvesting system would most likely be used to harvest each stand?

The Harvest System Classification model is based on the following criteria:

Table 3: Harvest System Classification Criteria

System	Criteria
Conventional	All areas accessible by roads (existing or projected) with slopes of 30% or less for ground-based harvesting (ground skidding or hoe chucking) or greater than 30% and best suited for grapple yarding or high lead systems. Typical maximum yarding distance is 200m for these systems but areas may exceed this limit. Operationally, areas with longer yarding distances are potentially addressed with spur roads that may or may not be projected in this project.

Non-conventional (aerial)	All areas with access limitations and best suited to helicopter or balloon harvesting systems. Yarding distance is unlimited for this project.
Inoperable	All areas not likely to be harvested using any harvesting system. Areas may be included in this category due to such factors as extreme steepness of slope (could not be safely felled).
None	Large areas that do not have forest cover such as water, rock, ice, etc.

The mature forest (> 137 years) has also been broadly classified using inventory attributes for considering economic operability in strategic timber supply analyses. The economic operability classification is applied to mature forest areas that are productive and physically operable under the classification above. It is a separate layer of map information from the physical operability classification.

The inventory attributes (refer to Table 2.2) include significant determinants of timber value such as species and percentage of low grades for cedar and cypress stands. They also include volume per hectare and harvest method which has a significant effect on harvesting costs.

Economic classes include economic, marginal and uneconomic. Areas classified as uneconomic are removed from the net timber harvesting land base for the base option in the MP #5 Timber Supply Analysis.

Table 4: Inventory and Logging Method Criteria for Classification of Economic Operability. Volumes are m³/ha⁽⁸⁾

Stand Type	Conventional		Non-Conventional	
	Uneconomic	Marginal	Uneconomic	Marginal
Fd (With <20% Hw)	<278	278-389	<389	389-500
Cy (<40% X,Y,Z)	<333	333-444	<444	444-556
Cy (>=40% X,Y,Z)	<444	444-556	<556	556-667
Cw (<40% X,Y,Z)	<278	278-389	<389	389-500
Cw (>=40% X,Y,Z)	<389	389-500	<556	556-667
Hw/HwBa/ FdHw(>20% Hw)/ Other	<333	333-444	<500	500-611

⁸ Breakage and Waste 2 are excluded

2.3 Recreation

The recreation inventory was completed in 1995 to 1991 MoFR standards.

On December 1, 2005, a Government Actions Regulation (GAR) Order was established to identify designated recreation sites, trails and interpretive forest sites as resource features for the South Island Forest District. This includes locations in and adjacent to TFL 44.

2.4 Visual Landscape

The TFL 44 visual landscape inventory was updated in 2000 to 1997 MoFR standards.

Visual quality objectives (VQOs) were established for the South Island Forest District by an approved GAR Order dated December 15, 2005. These VQOs apply to Scenic Areas identified as known in the District Manager's letter of November 13, 1998 and grandparented under Section 180 of FRPA. The VQOs established within TFL 44 were carried forward from the TFL 44 visual landscape inventory.

VQOs and the visual landscape inventory provide guidance when preparing operational plans. Visual impact assessments are completed for areas where VQOs indicate detailed planning is required and visual design techniques and/or alternative silviculture systems are used in the design of cutblocks in visually sensitive areas.

2.5 Terrain Stability

There are several different types of terrain stability mapping in TFL 44. The majority of the Alberni East area has had new terrain stability mapping done during MP #4 under FRBC/FIA projects completed in 2001 - 2003. There is Detailed Terrain Stability Mapping (DTSM) in the community watersheds (Malachan, Sugsaw, and Cousteau Creeks) and in the Caycuse and Walbran watersheds south of Caycuse Creek. A pilot project encompassing the Klanawa and Darling watersheds and extending partway into South Sarita, Pachena, and Nitinat watershed units was completed by Denny Maynard & Associates and Golder Associates. The pilot project used DTSM and landslide inventory data to define statistically-based terrain stability polygons for both landslides from roads and within cutblocks. The rest of Alberni East has reconnaissance terrain stability mapping (RTSM – classes of Potentially Unstable (P) and Unstable (U).

The less sensitive Great Central Lake area has older Environmentally Sensitive Area (Es1/Es2) mapping. The Henderson Lake area has early detailed terrain stability mapping (DTSM or 5-class) mapping for the Clemens Creek watershed and old Es1/Es2 mapping for the rest. There is a very small area of DTSM for the Haggard community watershed.

Avalanche run-out zones were mapped in the 1980s and early 1990s and are stored in GIS as a separate layer of spatial information. Run-out zones,

generally at the toe of avalanche runs, are managed to protect surrounding areas from avalanches.

2.6 Ownership and Other Tenures

Ownership and land status have been updated for changes to TFL 44 during MP #4. Major changes include:

- Private land was removed from the TFL on July 9, 2004.
- The BCTS Sproat Operating Area was defined in early 2005.
- The Maa-Nulth Designated Area was defined in B.C. Regulation 152/2005 in April 2005 and then revised in B.C. Regulation 71/2007 in March 2007.
- Areas for two Huu-ay-aht community forests have been defined.
- The Port Alberni Community Forest area was removed from TFL 44 in January 2009.

2.7 Archaeological Resource Potential

An Archaeological Overview Assessment (AOA) for TFL 44, funded by FIA was completed in the 2008/2009 fiscal year. The purpose of this AOA is to identify and assess archaeological resource potential or sensitivity for archaeological resources such as those protected under Section 13 (Heritage Protection) of the [Heritage Conservation Act](#) with particular attention for sites that contain Culturally Modified Trees (CMT's). Specifically, this assessment will provide a basis for predictions regarding archaeological site variability, density, and distribution and a framework within which to judge the significance of archaeological sites.

Traditional Use Studies, Archaeological Impact Assessments and Archaeological Inventory Studies are landscape level inventories that have been completed for various portions of TFL 44. Approximately 14,000 ha of proposed cutblocks in TFL 44 have been intensively surveyed for Culturally Modified Trees (CMTs). This stand level information has been entered into WFP's GIS database.

2.8 Ecosystem Mapping

Terrestrial Ecosystem Mapping (TEM) in TFL 44 was completed in 2002/2003. Funding was provided by Forest Renewal BC. Mapping is at a 1:20,000 scale on the TRIM (NAD 83) base and is according to the Provincial Resource Inventory Committee (RIC) mapping and database standards (Level 4 survey intensity).

A Sensitive Ecosystems Inventory (SEI) was developed in 2003 – 2004 with FIA funding. A rare and sensitive "theme" was created in the GIS for identifying areas with high conservation value. The layer was built by extracting data from existing GIS coverage. The primary data sources were TEM, forest cover and BC Conservation Data Centre (CDC) tables listing the "red and blue lists" of threatened, endangered or vulnerable plant communities.

2.9 Streams

Detailed riparian features mapping is ongoing for TFL 44 through cutblock development.

2.10 Wildlife

Revised Ungulate Winter Ranges (UWRs) for Columbian black-tailed deer and Roosevelt elk were approved in October 2004 (U-1-013). The total area of the UWRs is 2,126 ha.

Eight Wildlife Habitat Areas (WHAs) for marbled murrelets have been approved in TFL 44. Six of these were approved on January 15, 2003 and the seventh in the Walbran watershed was approved on December 13, 2005. An eighth (in Clemens Creek of the Henderson landscape unit) was approved on January 21, 2008. Several of these WHAs closely approximate "marbled murrelet management areas" that had been recognized (netted out of the THLB) in the MP #4 analysis and have been incorporated into operational planning for some time.

FIA funding was used in 2008/2009 to conduct low-altitude aerial surveys of marbled murrelet habitat within the majority of TFL 44. Post-survey GIS processing is complete for all areas except Great Central Lake. This inventory will be used to support various planning initiatives (e.g. Landscape Unit Planning and Wildlife Habitat Area designation).

Six WHAs were approved on May 23, 2006, in the Nitinat and Klanawa landscape units for Scouler's corydalis. The impact of these areas is nearly 15 ha. A seventh WHA (26 ha along the Caycuse River in the Nitinat landscape unit) was approved on April 1, 2009.

Two WHAs were approved on April 1, 2009 for red-legged frogs with a total area of 16 ha.

Other wildlife features such as nest trees of northern goshawks, bald eagles, and great blue herons and black bear den trees found during cutblock development are reserved, mapped and inventoried.

2.11 Old Growth Management Areas

Old Growth Management Areas (OGMAs) are a landscape-level biodiversity management initiative. OGMAs are replacing the Forest Ecosystem Networks (FENs) within TFL 44 that were established in the early 1990's. Although highly operable, the FENs are considered "non-contributing" land for the purposes of OGMA planning.

OGMAs have been established in the Caycuse, Nitinat and Walbran landscape units (these three landscape units are part of the Renfrew Sustainable Resource Management Planning Aggregate).

Draft OGMA's have been defined for the Great Central, Ash, Somass, China, Corrigan, Sarita, Klanawa and Henderson landscape units. These draft OGMA's will net down the operable area for the timber supply analysis but must complete a public and First Nations' review process before becoming legal. This process may result in revisions to the OGMA's.

2.12 Cave and Karst

With the assistance of local members of the Vancouver Island Cave Exploration Group (VICEG), WFP has created a cave inventory in the GIS which is kept confidential but which is referenced during development planning. Additionally, provincial reconnaissance karst potential mapping is also referenced during development planning.

Table 5: Resource Inventory Status

Item	Status
Forest Inventory	TFL 44 inventoried in 1970s. Augmented since with operational and second-growth cruising. Also inventory audits during the late 1990s. Inventory revisions for harvest depletion occur annually and for silvicultural assessments periodically.
Ecosystems	TEM (level 4 survey intensity) funded by FRBC was completed for TFL 44 in 2002 / 2003.
Terrain Stability	Various inventories to different standards. Most recently, during 2001 to 2003 FRBC/FIA funded projects were completed – included DTSM and landslide inventories in the Klanawa Watershed plus and reconnaissance terrain stability mapping for much of the remainder of Alberni East.
Recreation Inventory	Completed in 1995 to 1991 MoFR standards. 2005 GAR Order established to identify designated recreation sites, trails and interpretive forest sites as resource features.
Visual Landscape Inventory	The TFL 44 visual landscape inventory was updated in 2000 to 1997 MoFR standards. Basis for the TFL 44 portion of the GAR Order to establish Visual Quality Objectives for the South Island Forest District. The GAR Order was Established in December, 2005
Ungulate Winter Ranges (UWRs)	Revised UWRs for Columbian black tailed deer and Roosevelt elk (U-1-013). Approved in October of 2004.
Wildlife Habitat Areas (WHAs)	Seventeen WHAs established – eight for marbled murrelets, 7 for Scouler's Corydalis, 2 for red-legged frogs
Old Growth Management Areas (OGMA's)	OGMA's have been established in the Caycuse, Nitinat and Walbran landscape units. Refinement of draft OGMA's is proceeding for the Great Central, Ash, Somass, China, Corrigan, Henderson, Sarita and Klanawa LUs.
Stream Classification	Operational stream inventories.
Archaeological	An Archaeological Overview Assessment (AOA) funded by FIA was completed in March 2009.
Operability	Physical operability updated in a 2008 FIA funded project.
Cave and Karst	Caves are actively maintained at the operational level with assistance by VICEG; Karst is a provincial inventory.

3.0 PLANNING

The Management Plan is required to be consistent with Higher Level Plans like the Vancouver Island Land Use Plan that applies to TFL 44. Landscape Unit Plans and Forest Stewardship Plans also provide direction for management in TFL 44.

As noted in the Introduction, the TFL 44 areas referenced in this section exclude lands within the Maa-Nulth Designated Area, the Huu-ay-aht Community Forests and the BCTS management area.

3.1 Vancouver Island Land Use Plan Higher Level Plan Order (VILUP HLP)

The Vancouver Island Land Use Plan Higher Level Plan Order (effective December 1, 2000) established resource management zones (RMZs) and objectives for these RMZs.

Of the eight RMZs established by the order for the TFL 44 landbase, four are classified as Special Management Zones (SMZs) and four are classified as Enhanced Management Zones (EMZs). The remaining area in TFL 44 is classified as General Management Zones (GMZs) by the Vancouver Island Summary Land Use Plan (February 2000). The zones are summarized in Table 4 and shown in Figure 2.

Special Management Zones (SMZs)

The SMZs in TFL 44 include the Strathcona-Taylor, Barkley Sound, Alberni Canal and Walbran Periphery SMZs, all partially within TFL 44. SMZs are areas for which conservation of one or more resource values, such as biodiversity, wildlife, cultural, recreation or scenery have been defined as a priority. Objectives specific to SMZs include:

- Sustaining forest ecosystem structure and function. The emphasis is on creating or maintaining stand structure and forest attributes associated with old forests.
- The target is to maintain at least 25% of the productive area in each SMZ in mature and old forests.
- A variety of silvicultural systems are applied, subject to maximum cutblock size of 5 ha for clearcut, clearcut with reserves or seed tree silvicultural system and 40 ha for shelterwood, selection or retention silvicultural systems.
- Priority is on the management of visual landscapes in the Barkley Sound and Alberni Canal SMZs

Enhanced Management Zones (EMZs)

The Corrigan and Klanawa EMZs are largely within TFL 44. The Sarita and Effingham EMZs are partially within the TFL. Objectives specific to EMZs allow for more flexibility on cutblock size and adjacency requirements. This includes:

- A cutblock is greened-up if it is adequately stocked and the average height of the trees is at least 1.3 meters.
- A cutblock may be larger than 40 ha where hydrology, wildlife, biodiversity, scenic or recreation values are not impacted significantly.

The VILUP HLP also allows for variation in old seral constraints in the Corrigan and Sarita EMZs.

- In the Corrigan (with an intermediate biodiversity emphasis option) CWHvm1 variant, up to one third of the old seral target may be recruited from second-growth, provided specific conditions are met. The draft Corrigan Land Use Plan (LUP) includes a proposal for such recruitment areas.
- In the Sarita (with a low biodiversity emphasis option) there may be additional retention requirements for marbled murrelet habitat.

Table 6: Vancouver Island Resource Management Zones – TFL 44

RMZ Type and #	RMZ Name	Productive Forest Area (ha)
SMZ 14	Barkley Sound	1,225
SMZ 17	Strathcona-Taylor	4,851
SMZ 18	Alberni Canal	2,486
SMZ 21	Walbran Periphery	444
EMZ 42	Corrigan	14,635
EMZ 44	Klanawa	23,442
EMZ 43	Sarita	11,416
EMZ 38	Effingham	1,521
GMZ 34	E&N South	30
GMZ 35	Ash / Great Central	14,868
GMZ 37	Henderson	9,319
GMZ 45	Nitinat	22,919
GMZ 41	Cameron-China	377
GMZ 46	Gordon-Caycuse-San Juan	10,627
Total		118,162

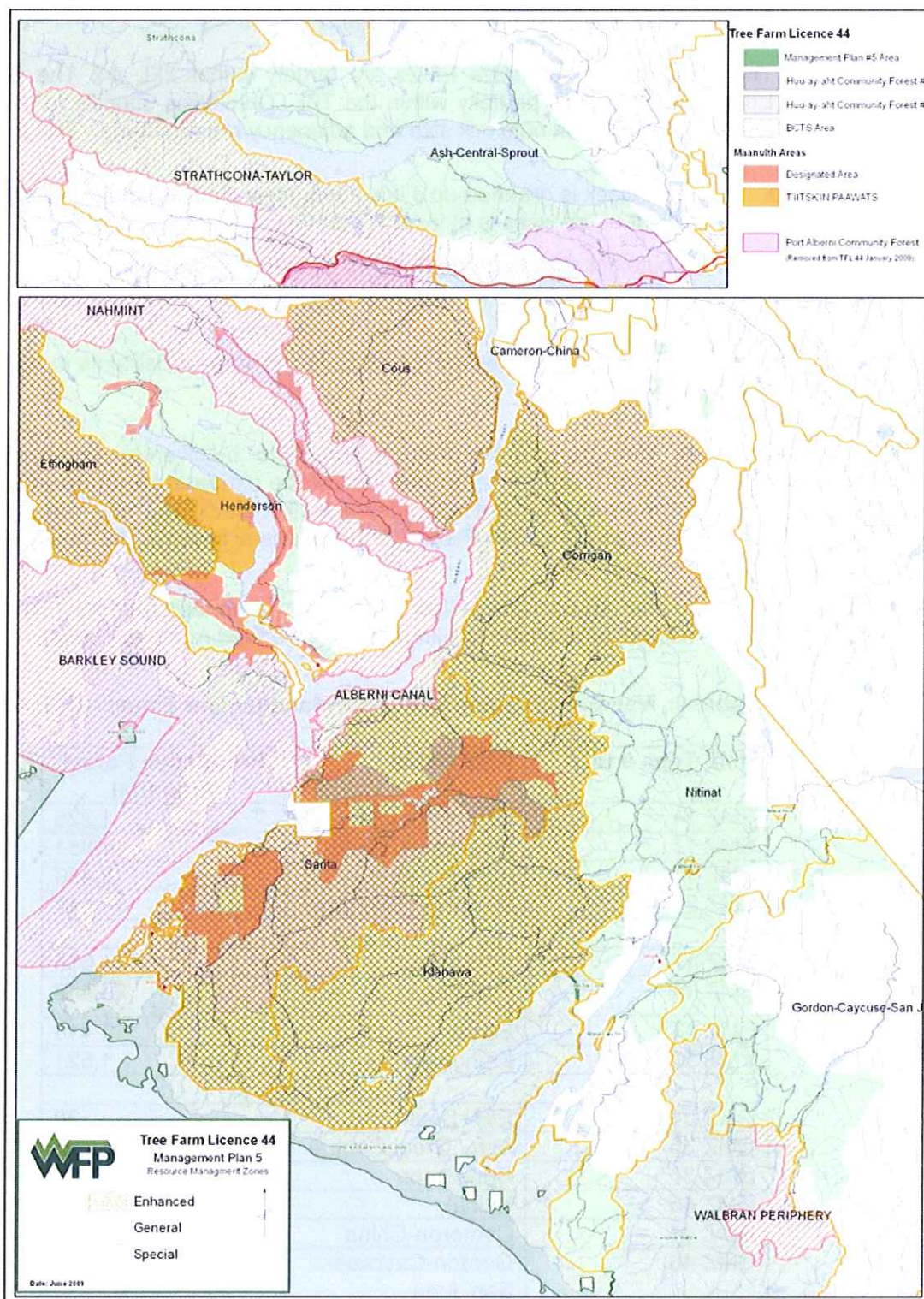


Figure 2: TFL 44 Vancouver Island Resource Management Zones

3.2 Landscape Unit Plans

Government has developed a Landscape Unit Planning Strategy for the Coast Forest Region. This initiative defines landscape units and assigns biodiversity emphasis to each unit. Within TFL 44 there are nine landscape units (LUs); these and associated biodiversity emphasis (BEO) are listed in Table 5 and shown in Figure 3.

The focus is on establishing old-growth management areas (OGMAs) and objectives for Wildlife Tree Retention Areas (WTRAs) for each landscape unit. OGMAs are intended to provide a foundation for representation of different habitat types and a distribution across the forest landscape of a range of structural (habitat) elements. WTRAs ensure that habitat and structural elements are present on the landbase. WTRA targets are defined in the respective FSP relative to the appropriate legislation.

Objectives have been established for the Caycuse, Nitinat and Walbran landscape units as part of the Ministerial Order for Land Use Objectives for the Renfrew Sustainable Resource Management Plan dated January 2007.

Work is proceeding with refinement of draft OGMAs for the other landscape units in TFL 44. It is expected that several will be ready for public and First Nations review in 2009. In the meantime the Order establishing Non-Spatial Old Growth Objectives (June 30, 2004) specifies targets for maintenance of old forest by biogeoclimatic variant within each landscape unit. The targets vary according to biodiversity emphasis and variant. They are shown in Table 40 of the Information Package (Appendix i)

Table 7: TFL 44 Landscape Units and Biodiversity Emphases

Landscape Unit	Biodiversity Emphasis	Landscape Unit Plan Status (March 2009)	Areas (ha) Within TFL 44	
			Total	Productive Forest
Caycuse	Intermediate	Established	6,643	6,341
Corrigan	Intermediate	Draft	17,555	15,591
Effingham	Intermediate	Not started	1,729	1,521
Great Central	Intermediate	Early Draft	27,645	17,367
Henderson	Low	Draft	14,391	10,557
Klanawa	Intermediate	Draft	24,786	23,412
Nitinat	Intermediate	Established	24,529	22,950
Sarita	Low	Draft	14,189	12,933
Walbran	Intermediate	Established	4,930	4,729
Ash	Intermediate	Combining with Great Central	2,609	2,353
China	Intermediate	Combining with Corrigan	409	377
Somass	Low	Combining with Corrigan	31	30
Total			139,446	118,162

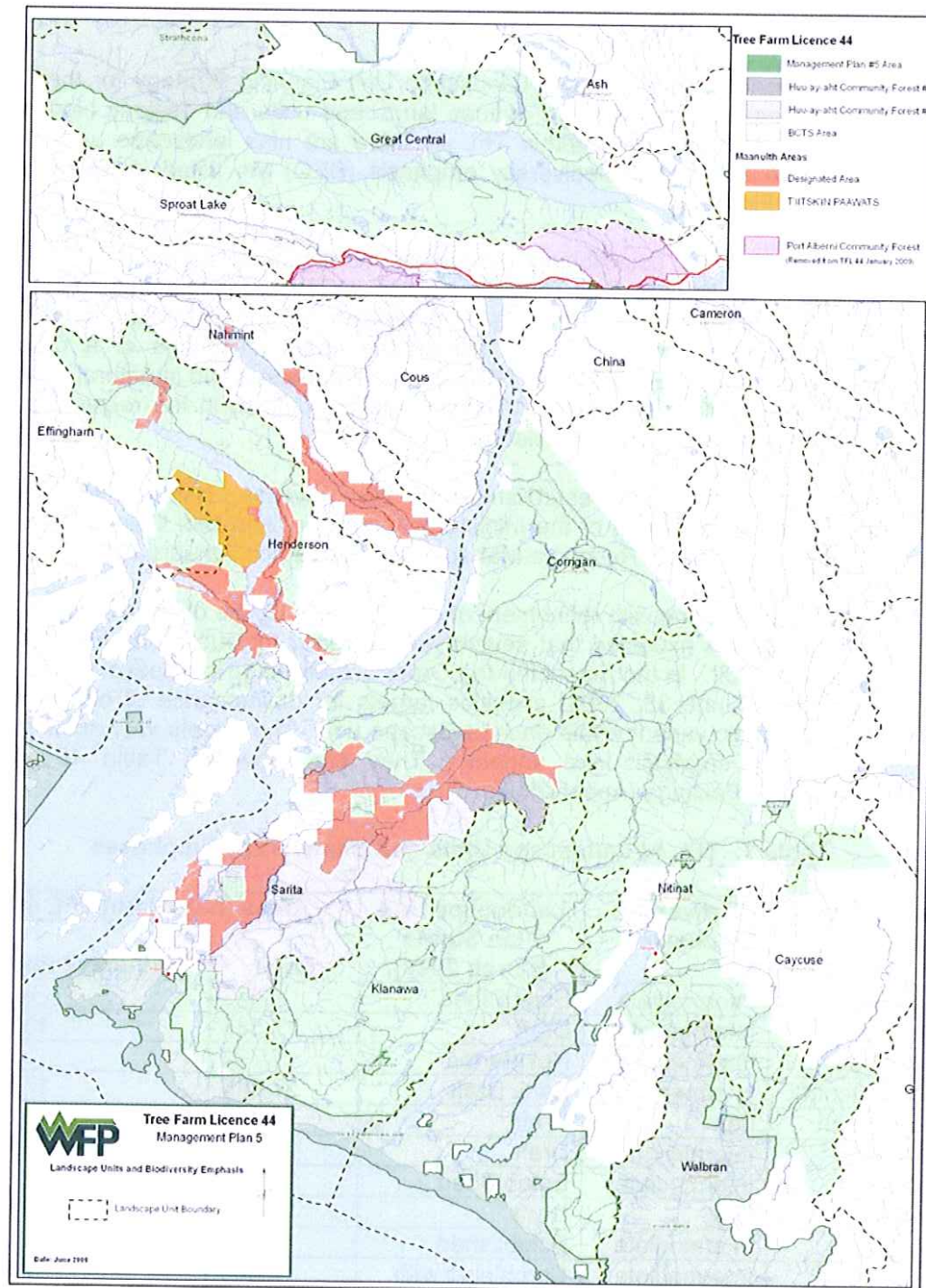


Figure 3: TFL 44 Landscape Units

3.3 Forest Stewardship Plan

The WFP Forest Stewardship Plan (FSP) for the Queen Charlotte Islands, Mid Island, Stillwater, Port Alberni and portions of Mainland Coast, Nootka Sound and Zeballos Forest Operations (FSP #69) approved in January 2007, addresses objectives and corresponding results and strategies for forest areas including TFL 44. As set out by FRPA, the FSP addresses objectives for biodiversity, soils, riparian areas, community watersheds, forest hydrology, timber, wildlife, cultural heritage resources, visual quality.

This management plan takes the lead from the FSP for the objectives covered by the FSP. If there is any inconsistency between the MP and the FSP, then the FSP takes precedence.

3.4 Forest Certification

Forest certification provides structure and discipline to achieve responsible forest stewardship including an emphasis for on-going improvement. It provides customers and the public with third party verification that WFP's forest management systems meet or exceed specified standards.

WFP is currently involved in three main forest certification standards:

- ISO 14001 standard for Environmental Management Systems (EMS)—ISO stands for the International Organization for Standardization;
- Canadian Standards Association (CSA) Z809 standard for a Sustainable Forest Management System (SFM); and
- Programme for the Endorsement of Forest Certification (Chain of Custody) which assures the customers that the products originated in a Certified Forest.

Port Alberni Forest Operation (which manages TFL 44) was certified to the ISO 14001 and CSA Z809 standards in November 2000, and Chain of Custody since 2001.

Major components of the ISO and CSA certification include:

- The ISO 14001 EMS provides a framework for actively managing environmental risks. Policies, procedures, responsibilities, monitoring and training are all clearly defined.
- The CSA Z809 Sustainable Forest Management Plan (SFM) provides a framework of forest management goals, criteria, indicators and objectives. The criteria are based on those developed by the Canadian Council of Forest Ministers and are aligned with the internationally recognized Montreal Process criteria and indicators for Sustainable Forest Management. The specific SFM indicators and objectives for each operation are developed through input from the local community.



June 2009

- The achievement and maintenance of both ISO and CSA standards are verified by annual third party audits.
- Both ISO and CSA procedures are based on processes that deliver continual improvement.

4.0 WORKING WITH THE COMMUNITY

Relationships between WFP and local communities are important. Forests contribute significantly to the social, economic and recreational opportunities of these communities.

4.1 First Nations

Overview

WFP is committed to continuing the development of mutually beneficial relationships with all First Nations whose traditional territories include portions of TFL 44 operating area. First Nation communities are an integral part of the overall community, a source of employees, suppliers, customers and contractors, and represent a growing business sector.

There are fourteen First Nations or First Nation's Treaty Groups/Tribal Councils that have traditional territory within TFL 44. These are the:

- Pacheedaht First Nation
- Ditidaht First Nation
- Cowichan Tribes
- Lake Cowichan First Nation
- Huu-ay-aht First Nation
- Uchucklesaht Tribe
- Hupacasath First Nation
- Tseshah First Nation
- Ucluelet First Nation
- Chemainus First Nation
- Penelakut First Nation
- Treaty Groups / Tribal Councils
 - Nuu-chah-nulth Tribal Council
 - Maa-Nulth First Nations
 - Hul'qumi'num Treaty Group

WFP respects First Nation rights and culture and understands that cultural heritage resources are very important to all First Nations people. WFP continues to refine understanding of forest management issues that are of importance to First Nations and special areas considered to be of high cultural sensitivity.

Economics

WFP will continue the development of long-term business relationships with First Nation partners that are to the benefit both parties.

WFP has supported a number of economic initiatives. These include:

- The development of independent First Nation contract logging businesses by providing contract logging opportunities.
- Business alliances with several First Nations in salvage and minor forest product recovery programs.
- Employment in archaeological assessment work.
- Stream rehabilitation, watershed restoration and fishery projects.

Communication and Information Sharing

WFP and First Nations participate in a number of information-sharing forums. In summary they include:

- Several committees with government agencies and specific First Nations to share information, discuss forest management issues and encourage planning input and participation in local forest management.
- Business meetings – WFP and First Nations business partners meet regularly to discuss the status of current projects and to identify potential initiatives.
- Operational meetings – WFP operational planners meet with CMT survey crews to discuss cutblock survey priorities and cultural heritage resource management strategies.
- Forest Stewardship Plan (FSP) Reviews – Each First Nation is given a copy of the portion of the FSP that covers their traditional territory to review for potential impacts on their traditional uses of the forest and on cultural heritage resources.
- First Nations participation continues throughout operational planning to ensure that identified cultural heritage resources are managed appropriately.

4.2 Cultural Heritage Resources

The objective is to identify and manage known sites of historic and cultural significance.

Strategies include:

- To ensure protection of important First Nations cultural heritage sites, a procedure has been developed for management of archaeologically important areas and culturally modified trees (CMTs).
- An archaeological overview assessment of the TFL identifies potentially significant areas.
- Operational plans are reviewed with First Nations and local interest groups / individuals to identify areas where cultural or historic resources may be affected by forest development.
- Archaeological Impact Assessments (AIAs) of cultural heritage resources are conducted in accordance with the Heritage Conservation Act and the FSP and is sent to the First Nations involved for review and comment.
- Management of identified cultural heritage resources includes First Nations having the opportunity to provide input
- Strategies to provide First Nations with opportunities for cultural use of cedar are described in the FSP.

4.3 Other Forest Users

Other resource users include recreationists, trappers, hunting/fishing guides, other recreation businesses and producers of non-timber forest products.

WFP interacts and responds to the various forest users in a number of ways:

- Input is sought from recreation groups and the public when revising recreation inventories.

- Opportunities to review Forest Stewardship Plans (FSPs) and Management Plans are advertised in local papers. Mailing lists are also maintained and used to notify interested people and groups of opportunities to review plans. These include those identified by the MoFR as being involved in a specific area or issue; for example guiding or recreation use.
- Informal discussions are held with groups and individuals who may have concerns regarding our nearby activities.
- Approaches for communicating with the public also include open houses for FSPs, public invitations to be involved in cutblock layout in contentious areas, and tours to review specific areas with special interest groups. The MoFR is informed of any input received and any resulting changes to FSPs or the MP.
- Harvesting of salal, mushrooms and tree boughs occurs on an informal basis. Operations respond to requests, providing information and locations of timber harvesting activity.
- Registered trapper and guide outfitter licences are shown in the map atlases attached to the MP, but licence holder names are withheld to maintain confidentiality. Participation in FSP and MP preparation and review is elicited through advertisements of such opportunities.
- Mineral claims occur throughout TFL 44. Participation in FSP and MP preparation and review is elicited through advertisements of such opportunities.

4.4 Public Review for MP #5

A written report on the results of the public review of the draft Management Plan will be submitted to the Regional Executive Director of the Coast Forest Region. A summary of the public review report will also be included as an appendix in the proposed Management Plan.

5.0 INTEGRATED RESOURCE MANAGEMENT

5.1 Water Resources and Fish Habitat Protection

Objectives are to minimize impacts on water resources and to respect riparian values associated with streams, lakes and wetlands.

Background:

The watersheds in TFL 44 drain a large catchment area on the west coast of Vancouver Island. Many support populations of anadromous fish and some supply domestic drinking water. Hatton Creek and Klanawa River are designated fisheries sensitive watersheds in TFL 44. Eighteen registered water licensees have water licenses within the boundaries, or within 200m of the boundary, of TFL 44. The 5 community watersheds in TFL44 are listed in Table 6.

Table 8: Community Watersheds in TFL44

Community Watershed Name	MoE Ref. #
China Creek	930.004
Cousteau Creek	930.006
Malachan	930.013
Sugsaw	930.023
Haggard	930.009

Strategies include:

WFP has standard operating procedures (SOP) designed to protect water quality and the environment in general. These standards include formal procedures for activities and maintenance of machinery in riparian management zones, work shutdowns for environmental and safety reasons, application of herbicides for brush control and cutblock design and layout.

Road construction is carefully monitored to reduce sediment where stream crossings are required. Timing windows are observed for road construction around fish streams. Where required appropriate riparian management practices are established to maintain the integrity of riparian reserves. The focus of road deactivation and maintenance is to maintain natural surface and ground water flow patterns and to minimize risks posed by road related landslides or other mass wastage events. Road deactivation plans reduce erosion through dry seeding, or hydroseeding and planting deactivated road surfaces.

Helicopter yarding has increasingly been used in sensitive areas to minimize road density.

Forest Investment Account (FIA) or other government funding for watershed restoration work is used where available. For example, the general health of watersheds and associated management strategies is updated every 3 – 5 years. In-stream activities funded by the FIA watershed restoration program also contribute to the maintenance and restoration of local fish populations.

5.2 Soil Conservation

The overall objective is to sustain the productivity of the landbase.

Background:

The total area of TFL 44 MP #5 (excluding BCTS and Community Forests) is 139,446 ha. Of this total, 118,162 ha are considered productive. Existing roads, trails and landings occupy roughly 4,120 ha or 3.4% of the productive land. Allowances for environmentally sensitive areas of soils are a significant component in preparation of data for the timber supply analysis. Approximately 8,900 ha of productive area (excluding that reserved in wildlife, riparian and inoperable areas) was identified and removed from the timber harvesting land base due to soil concerns.

Strategies include:

Conservation of the productivity and the hydrologic function of soils occur mainly through mitigation of impacts on the net productive landbase.

Permanent and temporary access structures are planned to minimize the total amount of road required to safely and economically harvest the timber.

Practice requirements in FPPR limit soil disturbance based on soil sensitivity ratings, and limit the amount of permanent access structures in a cutblock to 7%, with exceptions.

Modern harvesting equipment, and road building practices, mitigate soil productivity and hydrological impacts.

Additionally, the following practices may be undertaken to minimize the loss of productive area.

- Excess material generated by road building on slopes greater than 60% is generally end-hauled or keyed into the road prism to minimize side-casting;
- During deactivation, fill slopes are rehabilitated through side cast pullback and planted with trees and grass seeded where required to stabilize the road.
- Standard Operating Procedures (SOPs) outlining preferred forest practices are used for road construction, maintenance and deactivation. A rainfall shutdown SOP ensures the safety of personnel and reduces the risk of erosion and landslides.
- Terrain stability field assessments (TSFAs) are conducted on steep and sensitive sites. TSFAs are completed where harvesting is proposed in areas of higher hazard for landslide initiation following timber harvesting or road construction. If harvesting or road building proceeds in these areas the recommendations made by terrain specialists are considered in plan development by the forest professional.

- Internal and external audits examining road building and harvesting practices.
- In areas with steep terrain, helicopter harvesting reduces road density.

5.3 Biodiversity

The broad objective is to sustain healthy biologically diverse forests and ecosystems.

Biological diversity (or biodiversity) is the diversity of plants, animals and other living organisms in all their forms and levels of organization, and includes the diversity of genes, species and ecosystems, as well as the evolutionary and functional processes that link them (FPC, Biodiversity Guidebook, September 1995).

Strategies include:

Substantial areas throughout TFL 44 are unavailable for harvest. Approximately 32% of the productive forest is classified as inoperable, as sensitive sites (unstable soils and riparian areas) and for non-timber values such as wildlife. An additional 5,500 ha is forested but not productive from a timber management perspective.

Landscape Unit planning is underway in TFL 44. Old-Growth Management Areas (OGMAs) are being drafted and are scheduled to be ready for legal establishment in mid 2009. OGMAs spatially define where minimum levels of old-growth habitat are reserved by landscape unit and BEC variant. In the meantime, the Non-Spatial Old Growth Order ensures that the OGMA targets can be realized.

Minimum targets for stand level retention in reserve areas, called Wildlife Tree Retention Areas (WTRAs), are also defined. Currently WTRA targets are defined in the FSP.

WFP is voluntarily implementing an innovative forest management strategy to sustain biological diversity within the company's tenures. In brief the strategy has three broad goals, to:

1. Represent the full range of ecosystems within the non-harvestable land-base to maintain lesser known species and ecological functions.
2. Maintain structural attributes of older forests distributed across the landscape and in harvested areas to support biological richness.
3. Sustain productive populations of forest-dwelling species over time.

Part 2 (above) is further developed. Landscape zoning stand level retention and adaptive management are used to achieve these goals while balancing other ecological, social and economic objectives. Because the effectiveness of stand level retention and broad landscape zoning in maintaining biodiversity is largely untested, "adaptive management" is a key component of the strategy. Adaptive management (AM) is a structured approach to learning from operational

practices, with monitoring and experiments providing feedback to management and a basis for continual improvement.

Reforestation and tree improvement programs contribute to the maintenance of genetic diversity for commercial conifer species. Seed orchards are designed to include a wide genetic base. Wild seed collections gather seed from a large number of trees to ensure that significant genetic diversity will occur in each seedlot. Under section 169 of the FRPA the Chief Forester may establish, vary or revoke standards respecting tree gene resources. The Chief Forester's standard for seed use has been in effect since April 2005. Licensees are required to follow this standard which includes measure to protect tree seed genetic diversity.

5.4 Wildlife Habitat

Objectives are to minimize the impact of forest management activities on wildlife habitat.

The strategies described under "biodiversity" ensure that substantial areas of wildlife habitat are distributed across the forest. These reserve areas range in size from several hundred hectares to small patches (less than 0.2 ha). It is recognized that this general or "coarse filter" approach will not address every wildlife need.

"Fine filter" approaches target more specific habitat structure and other features. In TFL 44 these include:

- Ungulate winter ranges (UWRs), reserved habitat for black-tailed deer and Roosevelt elk have been established by Order of the Minister (in October 2004). The Order contains General Wildlife Measures (GWMs) to guide management. WFP is legally obligated to follow these GWMs. Development of an elk management strategy for the Klanawa River will occur during MP #5.
- Wildlife habitat areas (WHAs) have been established for the marbled murrelet, Scouler's Corydalis and the red-legged frog..
- Bald eagle, peregrine falcon and osprey nests are protected under the Wildlife Act.
- Great blue heron nest colonies are also protected under the Wildlife Act. They are assessed and if determined appropriate a WHA may be designated.
- Active Queen Charlotte Goshawk nests are protected under the Wildlife Act. These are usually managed in variable width WTRA/retention patch connected to larger patches of forested non-harvested land base.
- Where operationally feasible, high quality black bear dens are used as "anchors" for WTRA or long-term, windfirm retention patches.
- Training field personnel to identify at-risk species, identified wildlife and regionally important species as well as their habitat.

5.5 Visual Quality

The objective is to reconcile where possible harvest activities with visual landscape values.

Strategies include:

Within the plan area, a cutblock or road affecting visual quality will be designed by the Licensee to incorporate visual landscape objectives for scenic areas. Visual landscape planning is based on a visual landscape inventory maintained by WFP.

Viewpoints for planning and evaluation may include rest stops, vistas, view stops, or other focal points along travel routes, marinas, lodges, campsites, picnic sites, parking areas, and grouped dwellings and gathering places in settled areas.

5.6 Recreation

The objective is to integrate forest management activities with recreation values.

Strategies include:

- Continue to work with the MoFR and local residents to develop appropriate prescriptions for public access to specific areas. Issues include road deactivation (environmental risk), road maintenance and safety.
- Provide road signs to assist the public in accessing the forest and using forest roads safely.
- Co-operate with commercial tour operators where access is required.
- Develop and maintain recreation sites and trails in concert with the MoFR and subject to funding.
- With the MoFR, develop strategies for recreation sites and trails and define objectives for management of these features.

5.7 Cave and Karst

The objective is to minimize the impact of forest management activities on cave and karst resource features.

Strategies include:

Identification of karst and cave resource features usually happens during primary layout for logging. Once a potentially-affected feature is identified, an assessment may be conducted, and/or a qualified person consulted. This information is used to design primary forest activities so as to not damage or render features ineffective.

WFP will continue to work with local caving groups and interested agencies in managing and protecting sensitive caves and karst resources features. Locations



June 2009

are not shown on generally distributed maps to assist in protecting these sensitive features.

6.0 TIMBER RESOURCE MANAGEMENT

6.1 Timber Harvesting

The objective is to manage the forest land in TFL 44 for the sustainable production of logs suitable for conversion into wood products.

Strategies to meet this objective are described in the following subsections. They include analysis of timber supply options to assist the Provincial Chief Forester's determination of the Allowable Annual Cut (AAC) for TFL 44. They also include harvesting systems and procedures; utilization specifications and strategies; infrastructure and road development to access the timber resource.

6.1.1 Analysis and Allowable Annual Cut

Information is provided to assist the Chief Forester of BC in the determination of the AAC for TFL 44 for the coming five years. This involves three main components:

1. The Information Package (refer to the copy in Appendix I)

The Information Package documents the assumptions and describes the modeling procedures that are to be used in the Timber Supply Analysis. This includes details on:

- Options / scenarios that will be examined in the analysis
- Allowances (commonly called net-downs) that will be applied to derive the Timber Harvesting Land Base (THLB) for modeling purposes.
- Current timber volumes, silviculture and yield projections (forest growth)
- Harvesting
- Integrated resource management

2. The Timber Supply Analysis (TSA) (to be completed and included in the proposed Management Plan)

The TSA examines alternative timber supply strategies by incorporating assumptions on land base, productivity, forest management and integrated resource management in projecting forest growth and timber harvest over 250 years.

Options are examined to test the impacts of various timber supply issues and to provide information on the sensitivity of timber supply to uncertainties regarding the available land base, forest growth and integrated forest management.

3. The Spatial Analysis (to be completed and included in the proposed Management Plan)

The intent is to show the spatial feasibility of initial (the first 20 years) harvest levels in the timber supply analysis.

6.1.2 Harvesting Systems and Procedures

There are essentially three approaches to harvesting: ground-based systems, cable systems and aerial systems. The choice of system is based on slope, terrain conditions, yarding/skidding distance and piece size. The importance of non-timber resources, accessibility and road costs, future management considerations, and the necessity to keep production costs within economic limits are other essential factors in determining harvesting systems. The actual methods to be used for each cutblock are detailed in operational plans.

The forest has been broadly classified for harvest systems according to projected road access. Conventional areas are those that may be accessed by road and harvested by ground-based or cable systems. Areas inaccessible by road are classified for aerial systems. In addition the mature (greater than age 137 years of age) forest inventory has been classified according to broad economic operability class (uneconomic, marginally economic or economic) as well as conventional or helicopter systems. Harvest area by type is summarized annually (refer to section 6.12 of the Information Package in Appendix I for a summary of recent results).

Substantial areas are largely unavailable for harvesting because of difficult logging chance, protection issues and non-timber values. However, individual tree and small patch logging by helicopter can enable removal of some trees without interfering with primary protection (soils and riparian) or non-timber (wildlife, recreation etc.) values.

6.1.3 Utilization Standards

General utilization standards are described under "Utilization Specifications" in Schedule C of the Licence.

Details on species and grades that contribute to cut control are defined in cutting permits.

6.1.4 Utilization of Second-Growth

During the next five years, most of the harvest is anticipated from older stands (greater than 137 years of age).

The transition to harvesting the new forest (less than 137 years of age) will largely occur over the next 30 years. Harvesting some volume from these younger stands during MP #5, although dependent on market conditions, will allow harvest to be more fully distributed across the TFL. This will facilitate meeting spatial restrictions such as adjacency restrictions and the management of visual landscapes.

Harvest ages may vary from less than 50 years to 120 years depending on management history, species and site productivity.

6.1.5 Infrastructure and Access Development

6.1.5.1 *Dryland Sorts and Log Dumps*

Installations will be maintained to ensure conformance with environmental protection regulations. No new dryland sorts or log dumps will be built unless an environmental and heritage site assessment has been made and the appropriate approvals, including those for proposed ameliorative actions, received.

6.1.5.2 *Road Building and Maintenance*

All permitted roads and bridges will meet the legislated requirements. Where existing non-permitted roads are required for harvesting, they will be permitted and brought up to standard.

6.1.5.3 *Site Restoration*

Roads and landings will be maintained or deactivated according to the road permits. The decision will be based on road status, evaluation of environmental risk, and further use. All decisions will be based on the prescription and/or plans approved for the specific sites.

6.1.5.4 *Commercial and Public Use of Roads and Facilities*

The public has free right of access and use of WFP roads on the TFL, subject to safety, security and environmental considerations.

WFP will enter into agreements, including clearly stated charges and responsibilities, with industrial operators wanting to use WFP roads and infrastructure.

6.2 Establishing and Managing the New Forest

The management objective is to maintain or enhance the productivity of forests.

6.2.1 Basic Silviculture

Basic silviculture includes activities associated with reaching free growing status. For cutblocks harvested after October 31, 1987, costs are the responsibility of the licensee.

Goals of the basic silviculture program are to:

- Regenerate all harvested land with appropriate species considering silviculture characteristics, economic values and non-timber values.
- Establish a free growing stand of ecologically appropriate, well spaced trees within the prescribed period.
- Manage regenerated cutblocks to target stocking standards (described in the FSP).

Basic silviculture initiates the future diversity and productivity of the forest.

To achieve these goals the following activities will be undertaken:

6.2.1.1 Nurseries, Seed Selections, and Stock Allocations

WFP uses its own nursery in Saanich as well as other private nurseries to grow container seedlings for reforestation. All stock is audited for growth performance and health. The specifications of stock quality standards assure WFP of maximum survival and growth of its forest plantations.

Wherever available, "A" class improved seed of the highest breeding value will be used. Much of the Hw, Cw and Fd seed used is "A" class and produced at WFPs seed orchards in Saanich.

Genetically improved planting stock will be used preferentially.

6.2.1.2 Species and Stock Selections

WFP bases species selection on the ecosystem to be managed and the silvics of the individual species which includes forest health considerations.

Species selection will be consistent with the FSP Stocking Standards. Preferred and acceptable species may be coniferous and/or deciduous depending on the site.

Planting stock selections balance ecological suitability and performance with future value and establishment cost. Larger stock sizes are generally allocated to brush/browse sites, rehabilitation sites and fill plants.

6.2.1.3 Site Preparation

Site preparation is not required for initial reforestation in most areas with the exception of spot accumulations of yarding slash along roads and some root rot sites. Accumulations that would prevent the achievement of desired stocking densities are piled and then burned or left as coarse woody debris and/or habitat. Roadside accumulations account for less than 1% of the reforestation area.

Site preparation methods that may be prescribed include mechanical piling or dispersal of slash, accumulation burns, and mechanical control of brush or unwanted vegetation. Each potential method is considered in terms of economics, environmental impact and government regulation—e.g., for smoke control, use of herbicides, or protection of fish habitat—before making a prescription.

6.2.1.4 Regeneration Methods

WFP analysis shows that prompt establishment and full stocking gives one of the higher returns amongst silvicultural investments.

Planting is a common method of reforestation. The number of trees planted will depend on the amount of advanced regeneration retained after harvesting, expected natural fill-in, and the potential for brush and browse. Some sites may be left for natural reseeding or stocking from advanced natural regeneration.

Selected sites may be fertilized at time of planting. Benefits include giving young trees a boost on poor and brush-prone sites and increasing medium-term harvest opportunities by shortening the time needed to reach free growing.

The retention silviculture system provides additional flexibility for managing sites that are difficult to regenerate. The amount and distribution of retention can be varied to encourage natural regeneration and to provide additional shelter for young seedlings.

6.2.1.5 Surveys and Monitoring

Formal surveys are used to determine regeneration and free growing status. Monitoring (usually walk-through inspections) to check progress towards regeneration or free growing, will vary according to stand conditions (e.g. brush, mortality, etc.).

Information collected includes species, total number of stems and number of stems that are well spaced, brush species and distribution, and qualitative remarks. The results are used to prescribe follow-up silviculture treatments if necessary. Survey results are reported to the MoFR via the RESULTS silviculture reporting system.

6.2.1.6 Regeneration Maintenance

Whenever a new stand is in danger of not meeting its free growing requirements due to brush competition, regeneration maintenance will be carried out. The method of maintenance prescribed will be dependent on competing brush species, treatment efficacy, treatment cost and environmental considerations.

An integrated pest management approach will be used when determining treatment thresholds, and treatments for brush control. TFL 44 is covered under a five year Pest Management Plan. The Plan specifies when and how brush control treatments will be undertaken, consultation protocols, environmental protection measures and monitoring. Brush control by non-herbicide methods will be favoured where results and costs are comparable.

When unacceptable animal damage occurs, protection measures and/or larger stock types and varied planting densities will be utilized.

6.2.2 Incremental Silviculture

Incremental silviculture involves activities beyond achievement of free growing.

Forest Investment Account (FIA) funding is available for treatments such as fertilization, spacing and pruning.

The report "TFL 44 Incremental Silviculture Strategy (Interim)", B.C. Ministry of Forests (February 2001) provided suggestions on strategies for increasing the quantity and quality of the future timber resource. Fertilization (particularly late rotation treatments in stands with Douglas-fir) and tree improvement have been identified as most cost effective for increasing mid-term (fertilization) and long-term (tree improvement) timber supply.

Since the 2002/2003 financial year most of the FIA funding allocated for incremental silviculture in TFL 44, has been directed to aerial fertilization of stands with a significant Douglas-fir component. Smaller amounts have been spent on pruning and in earlier years on spacing.

Select seed is produced internally at the Saanich Forestry Centre, with shortfalls purchased externally from other suppliers as necessary. The intent of the WFP tree improvement program is to become self-sufficient in the development and supply of improved tree seed.

Further detail by activity is provided in the following sub-sections.

6.2.2.1 Tree Improvement

WFP has been active in the tree improvement field for many years. The Tree Improvement strategy focuses on:

- ensuring a secure supply of improved Fdc, Hw, Cw, Yc, Pw, and Ss seed to meet WFP needs;
- securing reforestation materials with high volume, value and / or pest resistance;
- maintaining and enhancing genetic diversity across the landscape; and
- continuing to participate in the Provincial Forest Genetics Council and other affiliated organizations.

WFP views tree improvement as one of the strongest pillars of high-yield forestry.

6.2.2.2 Spacing

Analysis of WFP's data suggests that conventional spacing strategies reduce merchantable stand volumes and that minimal stand value gains are expected from density control alone. It is recognized that additional value may be achieved by spacing for other objectives in specific circumstances. Such situations may include selection of the preferred crop tree species (e.g. Douglas-fir), and development of habitat. .

Little spacing activity has happened in the last five years.

WFP will cooperate with provincial initiatives to publicly fund spacing investments, particularly those directed towards enhancement of timber value (e.g. species selection), non-timber resources and social objectives.

6.2.2.3 Pruning

Pruning increases the proportion of clear wood, can reduce the amount of juvenile wood and hence may increase future log value. The economic return on pruning is uncertain considering the high costs of the activity, the long investment period and the assumption of a high premium for clear wood in the future.

Priority for public funded pruning activities is increased if there are clearly identified social, visibility or habitat enhancement benefits.

6.2.2.4 Fertilization

WFP recognizes fertilization as a major contributor to high-yield forestry. Opportunities for gains occur throughout stand development from at-time-of-planting to late rotation fertilization.

Selected sites will be fertilized at time of planting. Refer to section 6.2.1.4.

Fertilization of Douglas-fir sites has shown a positive response. Yield gains and financial benefits are proven with up to three fertilizer applications spaced 7-10 years apart and before harvest for Douglas-fir sites. Recommendations are to fertilize medium and good site (Site Index 24 to 35) candidate stands.

Fertilization of Cw salal and Hw sites also show a response. WFP will evaluate the potential for treatments of these sites in TFL44 and follow the guidelines from SCHIRP for these sites should projects be undertaken.

FIA funds may be utilized to undertake eligible fertilization projects.

6.2.3 Hardwood Management

Deciduous stands contribute to timber production objectives while deciduous and mixed stands contribute to stand and landscape biodiversity.

Some deciduous areas are retained, adding to biodiversity (e.g. habitat and riparian) values. Retention silviculture systems provide additional flexibility for leaving deciduous trees (individual and patches) across the forest landscape.

Other deciduous areas will be managed for timber production. The TFL 44 timber harvesting land base (THLB) includes 662 ha of stands with a deciduous (primarily red alder) leading species.

The FSP includes stocking standards for deciduous species.

6.3 Forest Protection and Forest Health

6.3.1 Fire Prevention and Suppression

The management objective is to minimize the number of hectares burned to accidental fires.

Strategies include:

Fire prevention and control are governed by operating plans and procedures including the following:

- A fire preparedness plan is prepared under the WFP Environmental Management System (EMS). The plan outlines proposed activities, key contacts, shut down criteria, suppression equipment and company regulations with respect to fire prevention and suppression.
- Initial fire suppression training is conducted annually.
- Each operation maintains its own ground based fire suppression capability including trained workers and fire fighting equipment. The Ministry of Forests and Range as well as private companies provide air tankers and helicopters as provided.
- Each operation is connected to the MoFR Fire Weather Information Network. In addition WFP sets up strategically located fire weather stations to monitor weather in the various operating areas. Data from these stations are used to modify or shut down operations according to hazard rating risk and fire danger rating.

When necessary to meet the fuel management or regeneration goals, slash is dispersed or burnt in accordance with the prevailing regulations and the terms of the burning permit.

Debris from dryland sorts is burned according to applicable permits.

6.3.2 Forest Insect and Disease Control

The objective is to cost effectively minimize losses due to insects and disease.

Background:

The forests of TFL 44 have been relatively free of major insect or disease infestations. There have been no major catastrophic outbreaks causing significant unsalvaged mortality or volume losses. The main active agents have been defoliators and bark beetles.

Spruce weevil (*Pissodes strobi*) has severely infested Sitka spruce plantations to the point where the species is nearly non-existent in reforestation programs. White pine blister rust (*Cronartium ribicola*) has resulted in a similar outcome for white pine as a reforestation species. WFP tree improvement program is focused on producing weevil resistant spruce and will be adding blister resistant white pine. Operations will utilize disease resistant species as resistant seed or vegetative material becomes available.

Hemlock dwarf mistletoe is widespread throughout merchantable size stands. Sanitation treatments of advanced regeneration are sometimes required to prevent the spread in newly regenerated western hemlock stands. Usually

vigorously growing, fully stocked stands are not impacted significantly by hemlock dwarf mistletoe.

Root diseases sometimes result in small pockets of mortality. Reforestation with less susceptible species can be used in root rot pockets.

Ambrosia beetle attack degrades value of logs in inventory or storage. Keeping felled and bucked inventories low and processing logs quickly is the best method of control. Pheromone baited traps are sometimes used around dryland sort and booming grounds to trap adult beetles.

The insect and disease pest management strategy includes:

6.3.2.1 Detection

Detection of insect and disease activity normally occurs with the collection of site plan field data or silviculture surveys. Silviculture instructions will include proposed actions for dealing with insects or diseases noted. Any increased incidence of insect or disease activity observed during the course of regular operations will be dealt with by a specific action plan.

Informal overview surveys of forestlands occur whenever helicopter or fixed wing flights occur within the tenure. Any significant pest or disease issues noted informally will be followed with more formal surveys.

Where outbreaks are identified, WFP will seek assistance from specialists at the Canadian Forestry Service, MoFR, universities, and consultants, if required.

6.3.2.2 Application of Pesticides

In cases where control using a pesticide is recommended, WFP will:

- Develop an action plan consistent with approved Pest Management Plan (PMP).
- Inform the public and First Nations of planned activities.
- Implement the plan according to specifications of the pesticide use permit issued by the Ministry of Environment.

6.3.2.3 Minimize Loss

Losses due to insect or disease epidemics will be minimized by:

- Carrying out harvesting and sanitation activities in areas identified as disease centers subject to environmental and economic considerations.
- Maintaining tight inventory control to keep the volume of logs susceptible to ambrosia beetle attack as low as practical.
- Managing within provincial guidelines for Balsam Woolly Adelgid and Sitka Spruce weevil.

- Trapping insects such as ambrosia beetles, where appropriate.

6.3.2.4 Training

Forest health training programs offered through the provincial and federal governments will be reviewed periodically. Company personnel will be sent to appropriate sessions.

6.3.3 Abiotic Damage

The objective is to minimize losses from abiotic factors such as windthrow, snow press, drought and sun scald in a cost effective manner.

The strategy includes:

Assessments are made for windthrow hazard and risk during the cutblock layout phase. If it is determined that the level of expected windthrow is unacceptable then prescriptions may include:

- Locating reserves and edges to reduce the risk of windthrow.
- Leaving larger buffers and allowing natural feathering (with a plan to salvage windthrown trees).
- Increase retention patch sizes while reducing the number of patches.
- Utilization of active windfirming techniques such as feathering, pruning and topping of trees.
- Using partial cutting systems to retain windfirm trees.

Where significant amounts of windthrow occur, salvage of merchantable timber will be implemented where practicable. Timely completion of salvage harvesting ensures that further degradation of the timber does not occur.

Species and seedlot selection, stocking control and tree placement when planting, may be utilized to reduce abiotic damage.

6.3.4 Browse Damage to Seedlings

Deer and/or elk browse of seedlings has a significant impact on reforestation in some areas. Measures to protect seedlings from browse damage are costly. The impact is greatest on red and yellow cedar, as these species are most palatable to deer.

Less palatable species will be planted where appropriate and feasible in areas that are highly susceptible to browse. Measures to protect seedlings in areas of high browse hazard continue to evolve. Current practices include shielding devices such as sinocast tubes and the use of approved liquid repellents. Larger planting stock can make a difference in some areas.

7.0 SUMMARY OF CHANGES AND IMPACTS

7.1 Lands and Harvest Levels Within TFL 44

Changes that have occurred during MP #4 are summarized in section 1.4 on Tenure Restructuring

When MP #4 was approved, the TFL 44 total area was 310,795 ha and the AAC was determined as 1,700,000 m³.

The TFL 44 MP #5 landbase is 139,446 ha, a decrease of 55% from MP #4. This reduction reflects removal of private lands and the Alberni Community Forest Agreement area from the TFL and establishment of the BCTS, Maa-Nulth Designated Area and Huu-ay-aht Community Forest areas, all of which are expected to be removed from TFL 44 during the next two years.

This decrease in TFL 44 area and related AAC does not correspond to a similar reduction in overall harvest activity as management is proceeding in these other lands (excluded from MP #5) for timber production.

At this time (June 2009), the timber supply analysis has not been completed for TFL 44. The Proposed Management Plan that will be submitted (after completion of the analysis) will include a recommended AAC and a discussion of impacts of any resulting change in harvest.

7.2 Protection and Conservation of Non-Timber Values

Initiatives during MP #4 include the establishment of wildlife habitat areas, revision and confirmation of ungulate winter ranges and old growth management area planning.

WHAs have been established for marbled murrelet, Scouler's corydalis and red-legged frogs. Several, but not all, of the marbled Murrelet WHAs closely approximate "marbled murrelet management areas" that were recognized (netted out of the THLB) in the MP #4 analysis and have been included in operational planning for some time.

Revised Ungulate Winter Ranges (UWRs) for Columbian black-tailed deer and Roosevelt elk were approved in October 2004 (U-1-013). These UWRs replace the UWRs used in the last timber supply analysis.

Old-growth management areas (OGMAs) have been established in the Caycuse, Walbran and Nitinat landscape units. Draft OGMAs have been defined for the Great Central, Ash, Somass, China, Corrigan, Sarita, Klanawa and Henderson landscape units. These draft OGMAs will be used in the timber supply analysis but must complete a public and First Nations' review process before coming legal. This process may result in revisions to the OGMAs. These OGMAs address the Non-spatial Old Growth Order objectives.



WHAs, UWRs and OGMA's formalize reserve areas across the forest landscape for biodiversity and wildlife habitat. Their establishment will provide additional clarity as to the timber available for harvest which will assist operational planning.

WFP's strategy for zoning and stand level retention will come into effect during MP #5. This is a refinement of the Forest Strategy in place during much of MP #4 and will continue to provide additional retention in cutblocks and a diversity of forest structure and habitats within cutblocks.

7.3 Planning

During MP #4, government revised the planning framework for management of public forestlands including those in TFLs. The new results based structure is centered on the Forest and Range Practices Act. Many of the resource objectives and corresponding results and strategies for TFL 44 are now in the approved WFP Forest Stewardship Plan (WFP FSP) for the Queen Charlotte Islands, Mid Island, Stillwater, Port Alberni and portions of Mainland Coast, Nootka Sound and Zeballos Forest Operations (FSP #69).

There is an expectation that the role of the management plan will change during the next year to focus primarily on the information and analysis required to assist the Chief Forester in determination of the AAC.

Glossary

Acronyms used in this document

AAC	Allowable Annual Cut
AIA	Archaeological Impact Assessment
AM	Adaptive Management
AOA	Archaeological Overview Assessment
BCTS	B.C. Timber Sales
BEC	Biogeoclimatic Ecosystem Classification
BEO	Biodiversity Emphasis Option
CMT	Culturally Modified tree
EMZ	Enhanced Management Zone
FIA	Forest Investment Account
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
FPPA	Forest Planning and Practices Regulation
FRPA	Forest and Range Practices Act
FSP	Forest Stewardship Plan
GAR	Government Actions Regulation
GMZ	General Management Zone
GWM	General Wildlife Measure
ISO	International Organization for Standardization
LU	Landscape Unit
MB	MacMillan Bloedel
MoFR	BC Ministry of Forests and Range
MoSRM	BC Ministry of Sustainable Resource Management (obsolete)
MP	Management Plan
NVAF	Net Volume Adjustment Factor
OGMA	Old Growth Management Area
RIC	Resource Inventory Committee
RESULTS	Reporting Silviculture Updates and Land status Tracking System (MoFR)
RMZ	Resource Management Zone
SBFEP	Small Business Forest Enterprise Program



SCHIRP	Salal Cedar Hemlock Integrated Research Program
SMZ	Special Management Zone
SOP	Standard Operating Procedure
TEM	Terrestrial Ecosystem Mapping
TFL	Tree Farm License
THLB	Timber Harvesting Land Base
TSA	Timber Supply Analysis
TSFA	Terrain Stability Field Assessment
UWR	Ungulate Winter Range
VQO	Visual Quality Objective
VRI	Vegetation Resource Inventory
WFP	Western Forest Products Inc.
WHA	Wildlife Habitat Area
WTRA	Wildlife Tree Retention Area

Adaptive Management: A formal process for continually improving management practices by learning from the outcomes of operational programs.

Adjacency: The desired spatial relationship among cutblocks. Most adjacency restrictions require that recently harvested areas must achieve a desired condition (green-up) before nearby or adjacent areas can be harvested.

Allowable Annual Cut (AAC): The allowable rate of timber harvest from a specified area of land. The Chief Forester of British Columbia sets the AAC for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the Forest Act.

Basic silviculture: Silviculture treatments used to establish a free-growing crop of commercial trees on a logged area.

BC Timber Sales (BCTS): BCTS was founded in 2003 with a mandate to provide the cost and price benchmarks for timber harvesting from public land in British Columbia. This is achieved by supplying timber to the market through open and competitive auctions.

Biodiversity Emphasis Option (BEO): The provincial government assigns low, intermediate or high BEOs to landscape units depending on a range of management priorities (i.e. timber production, wildlife habitat and biodiversity conservation). The main result is a designation of the area of old growth forest that should be maintained in the landscape unit.

Biogeoclimatic Ecosystem Classification (BEC): Developed in BC in 1965, the BEC System classifies areas of similar regional climate, expected climax plant communities and site factors such as soil moisture and soil nutrients. The subzone is the basic unit of

this classification system. Within subzones, variants further identify more local climatic factors.

Biogeoclimatic zone: a geographic area having similar patterns of energy flow, vegetation and soils as a result of a broadly homogenous macroclimate.

Biogeoclimatic Variant: See Biogeoclimatic Ecosystem Classification.

Biological diversity (Biodiversity): The diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.

Brush Control (Brushing): A silviculture activity done by chemical, manual, grazing or mechanical means to control competing forest vegetation and reduce competition for space, light, moisture and nutrients with crop trees or seedlings.

Clearcutting: A harvesting method whereby all trees that meet utilization standards are harvested. The harvested site is then regenerated to acceptable standards by appropriate means including planting and natural seeding.

Coarse woody debris: Logs and stumps that provide habitat for plants, animals and insects, and a source of nutrients for soil development.

Commercial thinning: A silviculture treatment that 'thins' out a stand by removing trees that are large enough to be sold as products such as poles or fence posts (see also, Juvenile spacing).

Conifer: Cone bearing trees having needles or scale like leaves, usually evergreen, and producing wood known commercially as "softwoods".

Conventional harvesting areas: Includes timber productive, physically operable land that is loggable by conventional ground based methods; i.e. grapple, high-lead, hoe-chuck, skidder etc.

Cutblock: Defined in the Forest Practices Code of British Columbia Act as a specific area of land identified on a forest development plan, or in a license to cut, road permit, or Christmas tree permit, within which timber is to be or has been harvested. (Also see opening.)

Cultural heritage resource (CHR): An object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features and traditional use sites.

Deactivation: Measures taken to stabilise roads and logging trails during periods of inactivity, including the control of drainage, the removal of side-cast where necessary, and the re-establishment of vegetation for permanent deactivation.

Deciduous: Perennial plants which are normally leafless for some time during the year.

Ecosystem: A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest, or the earth's biosphere – but it always functions as a whole unit.

Environmental management system (EMS): A structured system for identifying and ranking the environmental risk associated with management activities; creating and implementing control methods to manage that risk; monitoring and assessing performance; and taking corrective action to address deficiencies under a continual improvement program.

Forest Practices Code (FPC): The Forest Practices Code of British Columbia Act, the regulations made by Cabinet under the act, and the standards established by the BC Chief Forester. The term is sometimes used to include guidebooks associated with the Code. FPC has been superseded by the Forest and Range Practices Act.

Forest and Range Practices Act (FRPA): FRPA and its regulations govern the activities of forest and range licensees in B.C. This statute sets the requirements for planning, road building, logging, reforestation and grazing. FRPA and its regulations took effect on January 31, 2004.

Forest Planning and Practices Regulation (FRPPA): A major regulation under FRPA.

Free to grow: A stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. Silviculture regulations further define the exact parameters (e.g., species, density and size) that a stand of trees must meet to be considered free growing.

Green-up: A reforested cutblock with a stand of trees that has attained the height specified in a higher level plan for the area or that, in the absence of a higher level plan, has attained a height of at least three meters is said to have achieved green-up.

Helicopter harvesting areas: Includes timber on productive, physically operable land that is loggable only by "non-conventional" aerial methods. Currently, helicopter systems are primarily used for logging in these areas.

Incremental silviculture: silviculture treatments applied after a stand has reached free-growing.

Information Package: A TFL licensee submits a timber supply analysis information package which details the technical information and assumptions to be included in the timber supply analysis. Includes inventories, net-downs (area and volume), expected timber growth rates and other resource management assumptions. The package is reviewed by the MoFR.

Inoperable lands: Based on the terms of reference for the TFL 19 operability mapping. Inoperable includes areas not available for timber harvesting due to being physically

inaccessible, of low productivity and/or unmerchantable. Physical inoperability relates to the presence of a physical barrier or terrain constraint leaving access virtually impossible. Low productivity and/or unmerchantable relates to stands that do not produce wood volumes or quality that is economic to harvest and manage under an even-aged silviculture system regardless of market conditions.

ISO standard: Refers to ISO 14001, a generic international standard approved by the International Organization for Standardization to provide any organization with the elements of an effective Environmental Management System to support environmental protection and prevention of pollution.

Integrated resource management: The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and decision-making.

Karst: Karst features include fluted rock surfaces, vertical shafts, sinkholes, sinking streams, springs, complex sub-surface drainage systems and caves. Karst is a distinctive topography that develops as a result of the dissolving action of water on carbonate bedrock (usually limestone, dolomite or marble).

Landing: An area modified as a place to accumulate logs before they are transported.

Landscape level: A watershed, or series of interacting watersheds or other natural ecological units. This term is used for conservation planning and is not associated with visual landscape management.

Landscape unit: For the purpose of the forest practices code, landscape units are planning areas delineated on the basis of topographic or geographic features. Typically they cover a watershed or series of watersheds, and range in size from 5000 to 100 000 ha.

Long term harvest level (LTHL): A harvest level that may be maintained in the long term given a defined timber harvesting land base, estimates of forest growth and description of management for timber and non-timber resources.

Mature forest: Term used for forest inventory and timber supply purposes. In the TFL 19 analysis, mature is defined as forest areas that are currently (2008) more than 120 years of age.

Non spatial oldgrowth order: This Order which became effective on June 30, 2004 establishes non-spatial old growth objectives (to address biodiversity values) for areas where a landscape unit plan has not yet being established.

Not satisfactorily restocked (NSR): Productive forest land that has been denuded and has not regenerated either naturally or by planting or seeding to the specified or desired free growing standards for the site.

Old growth: Old growth is a forest that contains live and dead trees of various sizes, species, composition and age class structure. Old-growth forests, as part of a slowly changing but dynamic ecosystem, include climax forests but not sub-climax or mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another. As a rough measure, forests on the BC Coast that are aged 250 years or older and exhibit few or no signs of human intervention are generally termed old growth. (See also second growth and mature.)

Opening: Usually used synonymously with cutblock (see above) to include all of an area that has been harvested or is designated for harvesting, including the trees retained singly or in groups within the area. Less often, used to describe the actual cleared area(s) within a cutblock.

Partial harvesting (cutting): A general term referring to silviculture systems other than clearcutting, in which only selected trees are harvested. Includes seed tree, shelterwood, selection and retention systems.

Permanent access structure: A built structure, including a road, bridge, landing, gravel pit, etc. that remains operational after timber harvesting activities on the area are complete.

Productive forest: Forest land that is capable of producing a merchantable stand of timber within a defined period of time.

Pruning: The manual removal of the lower branches of crop trees to a predetermined height to produce clear, knot-free wood.

Reforestation (regeneration): Establishment of a new stand of trees after harvesting or natural disturbance by either planting or natural regeneration.

Reserve zones: Zones where harvesting is not permitted.

Retention system: Defined in the BC Operational Planning Regulation as a silvicultural system designed to retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation and leave more than half the total area of the cutblock within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock.

Riparian: An area of land adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas.

Rotation: The planned number of years between establishment of a tree crop and its final harvest. Can be based on physical, biological, pathological or economic criteria.

Second growth: Typically younger (i.e., less than 120 years on the BC Coast) forests that have been established by planting and/or natural regeneration after removal of a

previous stand by fire, harvesting, insect attack or other cause. (See mature and old growth.)

Selection: A silviculture system that removes mature timber either as single scattered trees or in small groups at relatively short intervals, repeated indefinitely, where the continual establishment of regeneration is encouraged and an uneven-aged stand is maintained.

Sensitive soils: Forest land areas that have a moderate to very high hazard for soil compaction, erosion, displacement, landslides or forest floor displacement.

Shelterwood: A silviculture system in which trees are removed in a series of cuts designed to achieve a new even-aged stand under the shelter of the remaining trees.

Silviculture: The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

Silvicultural system: A planned program of treatments throughout the life of the stand to achieve defined objectives. A silvicultural system includes harvesting, regeneration and stand-tending. It covers all activities for the entire length of a rotation or cutting cycle. In BC this includes seven major categories: clearcut, patch-cut, coppice, seed tree, shelterwood, retention and selection.

Site Index (SI): A measure of site productivity. Site indices in British Columbia are based on heights of free-growing dominant trees of a given species at a reference age of 50 years above breast height. Site index curves have been developed for British Columbia's major commercial tree species.

Spacing: A silvicultural treatment to reduce the number of trees in young stands, often carried out before the stems removed are large enough to be used or sold as a forest product. (see Commercial thinning).

Stand level: Level of forest management at which a relatively homogenous (usually small) land unit can be managed under a single prescription, or a set of treatments, to meet well-defined objectives.

Stocking: The proportion of an area occupied by trees, measured by the degree to which the crowns of adjacent trees touch, and the number of trees per hectare.

Sustainable forest management (SFM): Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations.

Timber harvesting land base (THLB): The portion of the total area of a management unit considered to contribute to timber supply. The THLB is defined by reducing the total land base according to specified management assumptions.

Timber supply analysis (TSA): An assessment of future timber supplies over long planning horizons (more than 200 years) by using timber supply models for different scenarios identified in the planning process.

Tree farm licence (TFL): Provides rights to harvest timber, and outlines responsibilities for forest management, in a particular area.

Vegetation resource inventory (VRI): A data standard, developed in 1998 that supports the inventory of both timber and non-timber vegetation and associated ecological attributes at a strategic, management-unit level in British Columbia. The VRI attempts to answer three questions: (1) how much do we have? (2) where is it located? (3) how does it change through time?

Visual Landscape Management: The identification, assessment, design and manipulation of the visual features or values of a landscape, and the consideration of these values in the integrated management of forest areas.

Visual Quality Objective (VQO): An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.

Wildlife tree retention area (WTRA): An area occupied by wildlife trees that is located in a cutblock or in an area that is contiguous with a cutblock, or in an area that is close enough to the cutblock so that the trees could directly affect, or be directly affected by, a forest practice carried out in the cutblock.

Wildlife tree: A tree or group of trees that provide wildlife habitat, and assist in the conservation of stand-level biodiversity.

Windthrow: Trees uprooted as a result of wind events.

Yarding: In logging, the hauling of felled timber to the landing or temporary storage site from where trucks (usually) transport it to the mill site. Yarding methods include cable yarding, ground skidding, and aerial methods such as helicopter yarding.



June 2009

Appendix I

