

RECEIVED
ENGINEERING
FOREST ENGINEERING

(originally submitted July 17/01 - ck)

PROPOSED
MANAGEMENT PLAN NO. 4

Effective for the period
November 1, 2001 to October 31, 2006

TREE FARM LICENCE 45

LASZLO KARDOS, R.P.F., P. ENG.
ADMINISTRATIVE FORESTER
INTERFOR CAMPBELL RIVER



Acknowledgements

Management Plan No. 4 for Tree Farm Licence (TFL) 45 is the culmination of over 4 years of preparatory work dealing with new inventories and management considerations.

The MP was completed under the guidance of Laszlo Kardos. Gerry Sommers, Heidi Kalmakoff, Wayne Wall and Michelle Mico have made substantial contributions in preparing this management plan.

In addition, the following consultants have been instrumental in delivering much of the new information and inventories:

- Bob Green, B.A. Blackwell and Associates Ltd.
- Karel Klinka, University of British Columbia
- Jim Thrower, J.S. Thrower and Associates Ltd.
- Guillaume Therien, J.S. Thrower and Associates Ltd.
- Hamish Robertson, J.S. Thrower and Associates Ltd.
- Erik Wang, Timberline Forest Inventory Consultants
- Dave Coster, Timberline Forest Inventory Consultants
- Mike Mastine, Timberline Forest Inventory Consultants
- Kevin Munro, Timberline Forest Inventory Consultants
- Jouni Tanskanen, Timberline Forest Inventory Consultants
- Jeremy Webb, Recreation Resources Limited
- Debbie James, Recreation Resources Limited
- Bruce Dagg, Jacques Whitford and Associates Ltd.
- Rob Volkman, JEDROC Engineering Services Ltd.

Table of Contents

1	INTRODUCTION.....	1
1.1	LOCATION AND HISTORY OF PLANNING AREA	3
1.2	MANAGEMENT PLAN PREPARATION PROCEDURES	7
1.3	SUSTAINABLE FOREST MANAGEMENT PRINCIPLES	7
1.4	PLANNING OBJECTIVES AND FRAMEWORK	9
1.5	PARTICIPATION.....	13
2	MANAGEMENT OBJECTIVES	14
2.1	WORKER SAFETY AND ENVIRONMENTAL PROTECTION	14
2.2	FIRST NATIONS.....	16
2.3	PUBLIC INVOLVEMENT.....	16
2.4	ECONOMIC VIABILITY AND CONTRIBUTIONS TO SOCIETY	17
2.5	NON-TIMBER VALUES	18
2.6	LAND USE AND RESOURCE STEWARDSHIP.....	18
2.7	TIMBER.....	19
2.8	SILVICULTURE.....	19
2.9	LAWS AND TENURE RESPONSIBILITIES.....	20
3	MANAGEMENT STRATEGIES AND IMPLEMENTATION.....	21
3.1	LAND USE DECISIONS AND THE PROTECTED AREAS STRATEGY	21
3.2	HEALTH AND SAFETY	21
3.3	ENVIRONMENTAL PRACTICES.....	23
3.3.1	Environmental Policy.....	23
3.3.2	Environmental Management System.....	25
3.3.3	Sustainable Forestry Management Plan.....	25
3.4	SUSTAINABLE FOREST INITIATIVE SM	27
3.5	FOREST PRACTICES AND OPERATIONAL PLANS	28
3.5.1	Forest Development Plans	29
3.5.2	Engineering Standards	30
3.5.3	Timber Evaluation and Appraisal.....	32
3.5.4	Cutting Permits.....	32
3.5.5	Harvesting Methods.....	33
3.5.6	Fire Protection	37
3.6	SILVICULTURE PRACTICES.....	38
3.6.1	Silviculture Prescriptions.....	38
3.6.2	Basic Silviculture	44
3.6.3	Enhanced or Incremental Silviculture and Research	48
3.7	TIMBER MANAGEMENT.....	55
3.7.1	Timber Supply Analysis	55
3.7.2	Timber Harvesting Landbase.....	57
3.7.3	Existing Forest Cover Information.....	64
3.7.4	Allowable Annual Cut	65
3.7.5	Small Business Forest Enterprise Program (SBFEP)	67
3.7.6	Cut Control.....	68
3.7.7	Product Objectives	68
3.7.8	Maximizing Value from the Harvest.....	69
3.7.9	Harvesting the Profile	70
3.8	RESOURCE MANAGEMENT.....	71
3.8.1	Access Management / Structures.....	73
3.8.2	Forest Health	74
3.8.3	Riparian Management.....	77
3.8.4	Biodiversity and Wildlife.....	79
3.8.5	Visual Landscape Management.....	96
3.8.6	Forest Cover Inventory	101
3.8.7	Management Zones (MZs) (formerly Environmentally Sensitive Areas ESA)	104
3.8.8	Archaeological Resources.....	109
3.8.9	Community Watershed Assessment.....	111

3.8.10	Trappers and Guide Outfitters.....	111
3.8.11	Cave Management	111
3.8.12	Aquaculture Operations	111
3.8.13	Forest Renewal BC	112
4	SOCIO-ECONOMIC CONSIDERATIONS	113
4.1	ECONOMIC PROFILE.....	116
4.2	PROVINCIAL CONTRIBUTION	117
5	ANNUAL REPORT.....	119
6	CONTRACTOR CLAUSE	120
6.1	SCHEDULE B PRORATE.....	120
7	PLAN REVISION.....	121
8	REVIEW STRATEGY.....	122
8.1	MANAGEMENT PLAN 5	122
8.1.1	Draft Management Plan 5	122
8.1.2	Key Similarities and Differences; MP 3 and MP 4.....	123

Appendices

APPENDIX 1.	Certified Sustainable: Interfor's Approach to Sustainable Forest Management
APPENDIX 2.	Defined Forest Area
APPENDIX 3.	BC Chief Forester's Silviculture Strategies at a Glance
APPENDIX 4.	TFL 45 Incremental Silviculture Strategies (Interim) Version 1.0
APPENDIX 5.	Potential Site Index Estimates for the Main Commercial Species on TFL 45
APPENDIX 6.	Terrestrial Ecosystem Mapping of International Forest Product's Tree Farm Licence 45 <ul style="list-style-type: none">• Quality Control Certificate
APPENDIX 7.	Recreation Features Inventory Update; Visual Landscape Inventory Update; and Recreation Analysis and Management Strategy Report Update
APPENDIX 8.	TFL 45 Visual Resource Timber Supply Mitigation Strategy Summary Report (1998)
APPENDIX 9.	Slope Stability Review for TFL 45 Management Plan Tables and Notes to Accompany Maps
APPENDIX 10.	Recreation Analysis and Management Strategy (RAMS) Report
APPENDIX 11.	SBFEP Carry Forward
APPENDIX 12.	Timber Supply Information Package for Tree Farm Licence 45. <ul style="list-style-type: none">• Proposal for Harvest System and Access Classification Mapping• TFL 45 Inventory Audit and Statistical Adjustment
APPENDIX 13.	Timber Supply Analysis Report
APPENDIX 14.	20-Year Spatial Feasibility Report for Tree Farm Licence 45

List of Figures

Figure 1.	Klinaklini Valley in Knight Inlet.....	1
Figure 2.	Abandoned steam donkey, Frederick Arm (circa 1930's) (J. Webb).....	3
Figure 3.	Stanton's cabin, Knight Inlet (circa early 1900's).....	4
Figure 4.	Location of TFL 45.....	5
Figure 5.	TFL 45 Overview Map.....	6
Figure 6.	Sustainable Forestry Management Planning Framework.....	11
Figure 7.	Rhonda Falls, Knight Inlet.....	13
Figure 8.	Road construction – hand drilling, West Klinaklini Mainline, Knight Inlet.....	15
Figure 9.	Da'Naxda'Xw First Nation Eulachon Fishery - Klinaklini River, Knight Inlet.....	16
Figure 10.	Knight Inlet.....	17
Figure 11.	Devereaux Lake, Knight Inlet (J. Webb).....	19
Figure 12.	International Forest Products Limited Health and Safety Policy.....	22
Figure 13.	Klinaklini Estuary (CCLCRMP Candidate Protection Area), Knight Inlet (J. Webb).....	23
Figure 14.	International Forest Products Limited Environmental Policy.....	24
Figure 15.	Bridge Replacement – Mussel Creek, Knight Inlet.....	25
Figure 16.	Annual direct taxes and other payments to Government generated by the BC Forest Industry.....	27
Figure 17.	Loading, West Thurlow Island.....	29
Figure 18.	Engineering, Knight Inlet.....	30
Figure 19.	Engineered road section construction – Klinaklini Mainline, Knight Inlet.....	31
Figure 20.	Engineered road section completed – Klinaklini Mainline, Knight Inlet.....	31
Figure 21.	Dryland Sort – Quality control / Scaling, West Thurlow Island.....	32
Figure 22.	Timber, Knight Inlet.....	33
Figure 23.	Grapple yarder and juicer, Knight Inlet.....	34
Figure 24.	Helilogging, Knight Inlet.....	35
Figure 25.	Hoechucking and processing, West Thurlow Island.....	35
Figure 26.	Variable retention – Mechanically felled / feller buncher, West Thurlow Island (second growth).....	36
Figure 27.	Variable retention / Moose winter habitat retention, Knight Inlet.....	39
Figure 28.	Planting a slide, Glacier Bay.....	40
Figure 29.	Variable retention on the landscape, Knight Inlet.....	42
Figure 30.	Variable retention –Knight Inlet.....	43
Figure 31.	Variable retention – West Thurlow Island (second growth).....	44
Figure 32.	Healthy regeneration.....	45
Figure 33.	Silviculture Surveys, Knight Inlet.....	48
Figure 34.	Drilling a rock quarry, Frederick Arm.....	53
Figure 35.	Fisheries and Oceans Canada Fish Wheel – Klinaklini River, Knight Inlet.....	53
Figure 36.	Fisheries and Oceans Canada Fish Wheel – Klinaklini River, Knight Inlet.....	54
Figure 37.	Booming ground, Knight Inlet.....	54
Figure 38.	Klinaklini River and West 20km bridge, Knight Inlet (J. Webb).....	57
Figure 39.	Backspar Hoe, West Thurlow Island.....	58
Figure 40.	Distribution of the landbase in TFL 45.....	59
Figure 41.	Base Case harvest levels for MP#4.....	59
Figure 42.	Coniferous volume standing inventory for TFL 45.....	59
Figure 43.	Logging variable retention, Knight Inlet.....	61
Figure 44.	Operability Classification for TFL 45.....	62
Figure 45.	Basalt Bluffs, Knight Inlet.....	63
Figure 46.	Low productivity site, Knight Inlet.....	64
Figure 47.	Log booms, West Thurlow Island.....	69
Figure 48.	Second growth Hemlock, West Thurlow Island.....	71
Figure 49.	Scale Grade Distribution for TFL 45 during the term of MP 3.....	72
Figure 50.	Distribution of logging within TFL 45 and each Forest District.....	73
Figure 51.	Loaded logging truck – West Klinaklini Mainline, Knight Inlet.....	74
Figure 52.	Spruce weevil, Knight Inlet.....	75
Figure 53.	Windthrow, West Thurlow Island.....	77
Figure 54.	Klinaklini River Canyon, Knight Inlet (J. Webb).....	79
Figure 55.	Wildlife Tree, Frederick Arm.....	81
Figure 56.	Map of Wildlife Management Areas – Ungulates for TFL 45.....	82

Figure 57.	Map of Wildlife Management Areas – Grizzly Bears for TFL 45	83
Figure 58.	Grizzly bear habitat - Klinaklini Estuary (CCLCRMP Candidate Protection Area), Knight Inlet.....	84
Figure 59.	Biogeoclimatic Ecological Classifications (BEC) with Landscape Units for TFL 45.	86
Figure 60.	Variable retention, West Thurlow Island (second growth)	88
Figure 61.	Tumult Creek and Block W2900B (variable retention), Knight Inlet (J. Webb)	96
Figure 62.	Known Scenic Areas	98
Figure 63.	Visually Sensitive Units	99
Figure 64.	Visual Impact Assessment Model, West Thurlow Island.....	100
Figure 65.	Sim Creek (J. Webb)	101
Figure 66.	Generalized Forest Cover Overview.....	103
Figure 67.	Slope Stability Management Zones (Environmentally Sensitive Areas) in TFL 45.....	106
Figure 68.	Recreation Features Inventory.	107
Figure 69.	Float plane landing, Knight Inlet (J. Webb)	108
Figure 70.	Forest Management Trail, West Thurlow Island.....	109
Figure 71.	Klinaklini Valley at Indian Reserve (J. Webb).....	110
Figure 72.	Knight Inlet Camp.....	117

List of Tables

Table 1:	Forest Planning Framework	12
Table 2:	TFL 45 Enhanced Silviculture Summary	50
Table 3:	Timber harvesting landbase determination	60
Table 4:	TFL 45 Allowable Annual Cut Apportionment	66
Table 5:	Identified Wildlife Species present in Campbell River and Port McNeill Forest District.....	85
Table 6:	BEC Variant and total area for each Landscape Units within TFL 45.	87
Table 7:	Landscape Unit Summary for OGMA determination for TFL 45 (to be replaced by 8a).	90
Table 8:	WTP requirements for the Landscape Units for TFL 45 (to be replaced by Table 8a).....	94
Table 9:	Registered Trap Areas in TFL 45.	111
Table 10:	TFL 45 Economic Impacts, five-year average (1995-1999).	118
Table 11:	TFL Landbase Schedule AAC Prorate.....	120

1 INTRODUCTION

Management Plan No. 4 (MP 4) Tree Farm Licence No. 45 (TFL 45) has been completed according to requirements of Section 2.0 of the replacement Licence document¹.

MP 4 was prepared by International Forest Products Limited (Interfor), the licensee responsible for forest land management on the landbase as described in the TFL 45 licence document. The management plan provides objectives, goals and strategies to guide sustainable management activities for both non-timber and timber resources over the next five years. The draft management plan is reviewed by government agencies responsible for Crown land management as well as by public, community and First Nation representatives. The plan is also used, along with the associated timber supply analysis, by the Ministry of Forests (MoF) Chief Forester to determine the allowable annual cut (AAC) for the TFL.

TFL 45 is located on the central coast of mainland British Columbia. It encompasses the head of Knight Inlet and many of the watersheds that flow into its upper reaches (for example, the Kwalate, Sim, and Franklin). Also included in the TFL are Fanny Bay in Phillips Arm, Frederick Arm and the east end of West Thurlow Island. The TFL is interspersed with Strathcona and Kingcome Timber Supply Areas (TSAs) and overlaps two forest districts, Campbell River and Port McNeill.



Figure 1. Klinaklini Valley in Knight Inlet

All land use and resource management activities within TFL 45 are subject to the *TFL Licence Agreement*, the *Forest Act*, and the regulations under that act, and the *Forest Practices Code of British Columbia Act (FPCBC Act)* and the regulations and standards made under that Act. Lower level plans for the TFL will follow the land and resource management direction described in Management Plan No. 4. This document also includes provisions

¹ Tree Farm Licence No. 45 replacement document amended January 1, 2000.

recognizing Interfor's *Environmental Management System* (EMS 2000) which was certified to the ISO 14001 international standard for environmental management systems. This document reflects Interfor's commitment to sustainable forest management by including its Sustainable Forest Management Plan (SFMP). The SFMP incorporates Sustainable Forest Management (SFM) criteria defined by the Canadian Council of Forest Ministers and key standards and principles from the American Forest & Paper Association Sustainable Forestry Initiative (SFI)^{SM2} program.

All areas within TFL 45 fall under the Central Coast Land and Coastal Resource Management Plan (CCLCRMP) area, the largest planning area in the province³. The CCLCRMP remains one of the most complex planning processes ever undertaken. In the absence of the completion of the Central Coast LCRMP higher level planning process, Management Plan No. 4 is recognized as the principle document providing direction for higher level planning objectives for Tree Farm Licence 45.

The results of the CCLCRMP Protected Areas Strategy may have a significant impact on TFL 45. In 1997, the Kwalate was identified by the Central Coast Protected Areas Team (CCPAT) as an area of interest under the Protected Areas Strategy and may come under review for designation as a protected area.

² Service Mark

³ Status Report on Land and Resource Management Plans, April 2000, Land Use Coordination Office,
<http://www.luco.gov.bc.ca/lrmp/lrmpstat.htm>

1.1 Location and History of Planning Area

TFL 45 is located on the mainland coast at Knight Inlet and along Cordero Channel (Figure 4). The largest portion of the TFL is contained within the main Klinaklini Valley located at the head of Knight Inlet and in several drainages located along the inlet (Figure 4). The southern compartment of the TFL includes portions of West Thurlow Island, Frederick Arm and Phillips Arm.

TFL 45 was transferred to International Forest Products Limited at the end of 1991. The license was obtained by an assignment from Fletcher Challenge Canada Limited that was approved by the Ministry of Forests. TFL 45 is the result of the amalgamation of TFL 17 and TFL 36 that occurred in 1982. TFL 17 (Knight Inlet Block) was awarded in 1954 and acquired by British Columbia Forest Products Ltd. (BCFP) in 1967. TFL 36 (Cordero Block) was awarded in 1958 and acquired by BCFP in 1965. At that time TFL 36 was combined with BCFP's TFL 4.



Figure 2. Abandoned steam donkey, Frederick Arm (circa 1930's)

The TFL is approximately 231,866 hectares in size, of which 72% is non-productive/non-forested steep mountainous terrain and icefields. The gross operable portion available for forest harvesting is about 15 percent (35,674 hectares) of the total area. Approximately 50 percent of the timber harvesting landbase is mature forest dominated by mature Western Hemlock. The TFL is located in the Leeward and Windward Maritime ecosections.

The operable landbase is primarily within the Central Sub-Maritime Coastal Western Hemlock biogeoclimatic zone.

Harvesting and forest management activities have occurred on TFL lands since its designation. Early logging operations along the shores of Knight Inlet and Cordero Channel consisted primarily of hand logging. A-Frame logging followed in the area of Glacier Bay, Deer Bay, Wahkash Creek, Phillips Arm, and Frederick Arm. This was followed by cat logging at the mouths of Kwalate, Sim, and Franklin Rivers, and oxen logging on West Thurlow Island. Since that time approximately 9 800 hectares of second growth forest have been established and managed.



Figure 3. Stanton's cabin, Knight Inlet (circa early 1900's)

The Knight Inlet (northern) portion of the TFL is administered by the Port McNeill Forest District, whereas the Frederick Arm, Fanny Bay and West Thurlow (southern) portions fall under the jurisdiction of the Campbell River Forest District. Interfor's operations for TFL 45 are based out of Campbell River. From here camps are accessed by boat and air travel. Logging camps are currently established and operating at the head of Knight Inlet and Butterfly Bay on West Thurlow Island. The closest major communities to the TFL are Campbell River, Port McNeill, and Alert Bay (refer to Figure 4).

British Columbia with TFL 45

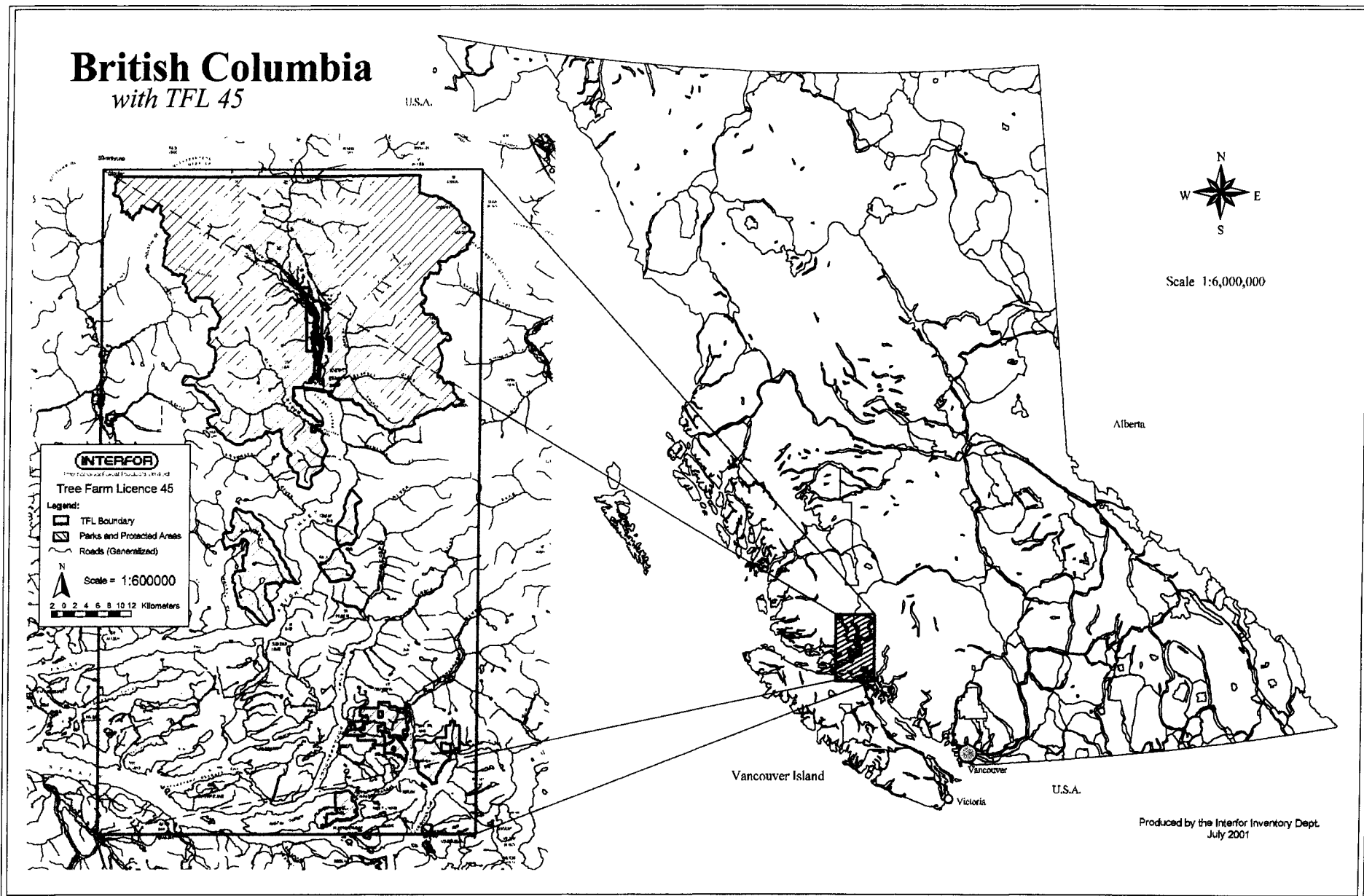


Figure 4

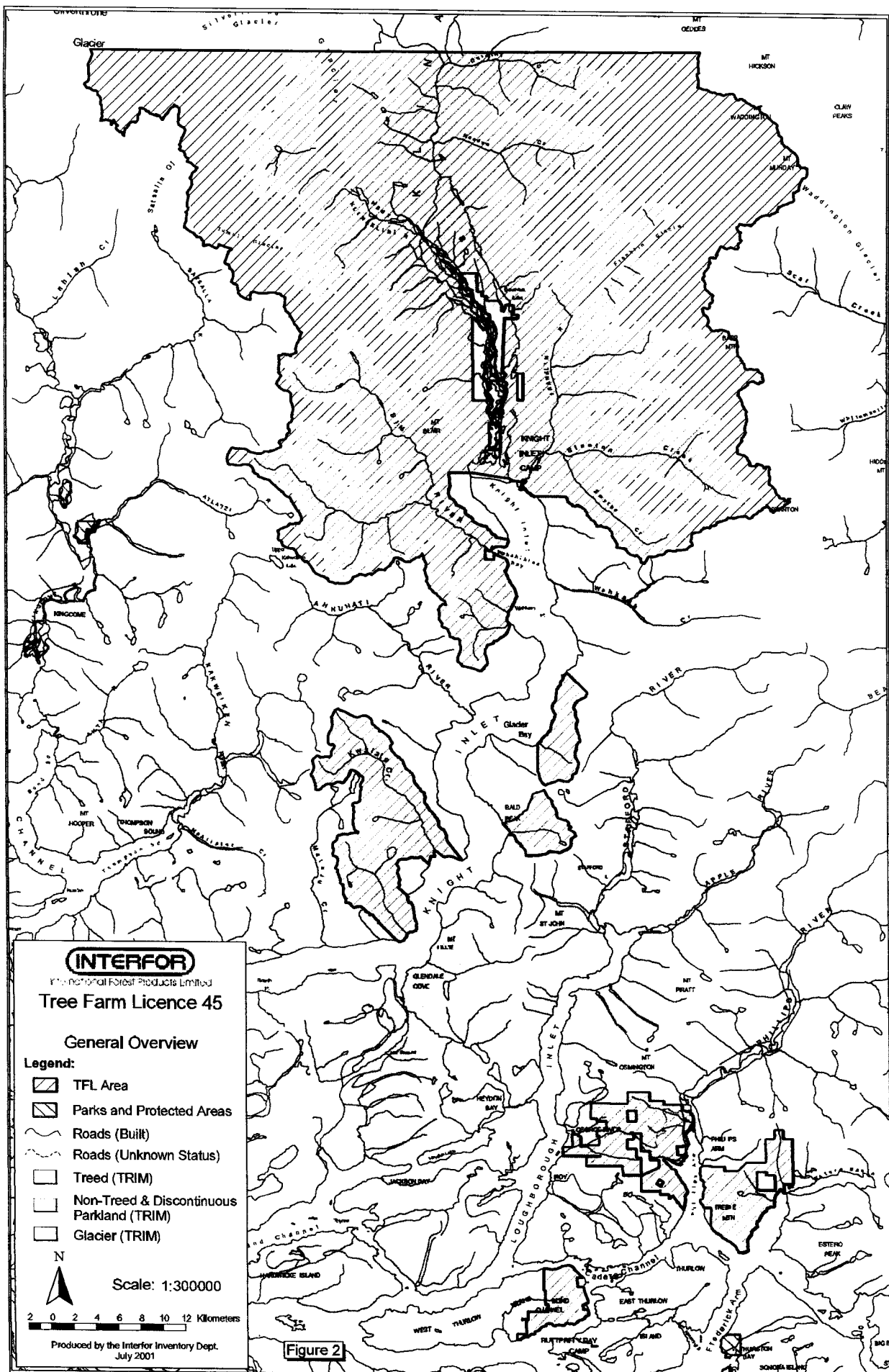


Figure 5

1.2 Management Plan Preparation Procedures

The Management Plan is part of the TFL planning process. Legislated in the *Forest Act*, a Management Plan must be renewed every five years under the TFL agreement. Tree Farm Licences are generally for 25-year terms, replaceable every five years. The licence area contains private forestland owned by the licensee plus an area of Crown Forest. All are managed for sustained forest production under a Management Plan signed off by a Registered Professional Forester and periodically approved by the Chief Forester. Stumpage (a payment based on government revenue requirements considering the final market value of the timber and average costs of getting the timber to market) is paid on timber from Crown land.

The Management Plan should include inventories, including a long-term timber supply analysis, of all forest resources and must comply with both the planning requirements and strategic zoning objectives in the *Forest Practices Code of British Columbia Act (FPCBC Act)*, regulations and standards. The plan should propose management objectives to tend, manage, protect and use the timber resources and roads, including a 20-year harvesting sequence (actual harvest is controlled by the periodic issuance of Cutting Permits and development plans). The plan must also show how non-timber resources in the Tree Farm Licence area will be protected and conserved. Requirements for Silviculture Prescriptions and Cutting Permits ensure compliance with both the *Forest Act* and the *FPCBC Act*. Identification of, and consultation with, non-timber forest resource users and First Nation groups, must be provided for.

The Licence is subject to, and the Licensee will comply with, the *Forest Act* and the regulations under that Act, and the *Forest Practices Code of British Columbia Act* and the regulations and standards made under that Act. Interfor is not authorized to carry out any operations other than in compliance with the aforementioned acts, and regulations. TFL Management Plan requirements are contained in the Tree Farm Licence agreement document, Instrument No. 3, that came into effect on January 1, 1997.

Management Plan No. 4 will be submitted to the Chief Forester for approval and will apply for a 5-year planning period. The replacement process for Management Plans occurs in two stages as shown below.

- Identify Issues: The company invites opinion regarding the current performance; and
- Review and Submit Management Plan: The company presents a draft MP to the Regional Manager for review. Resulting from Regional Manager's review, a proposed MP is submitted to the Regional Manager and Chief Forester for approval.

MP 4 is proposed for the period November 1, 2001 to October 31, 2006. Public review and government review of draft MP 4 is required prior to approval.

1.3 Sustainable Forest Management Principles

The primary purpose of forest management in British Columbia is to generate immediate and long-term economic, environmental and social benefits for the people of British Columbia. Interfor contributes to this goal by applying ecosystem-based planning and ecologically appropriate forest management activities as well as maintaining a stable log supply (refer to Appendix 1). To assert this commitment to sustainable forest management, Interfor has prepared a Sustainable Forest Management Plan (SFMP) for the Coastal Woodlands. This plan is a portion of

Interfor's Environmental Management Systems (EMS) that is certified to the International Environmental Standard ISO 14001⁴.

The ISO 14001 Certificate provides independent verification that Interfor is meeting an internationally recognized standard for environment management. The Certification covers all of Interfor's coastal forestry and logging activities stretching from Vancouver to Prince Rupert.

Certification under ISO 14001 requires development of appropriate environmental policies and programs, which are continually monitored to verify performance. Forest practices are regularly assessed by surveillance audits to include the protection and enhancement of key forest values such as water quality, wildlife habitat, soil and other ecological features that help to maintain the biological diversity of the forest.

Following ISO certification, Interfor received further recognition as the Canadian winner of a prestigious award for corporate environmental management sponsored jointly by the United Nations and the International Chamber of Commerce (ICC)⁵. The award was developed by the ICC with input from the United Nations Environmental Program. Interfor has also obtained a second certification under the Sustainable Forest InitiativeSM (SFI) of the American Forest & Paper Association Program⁶.

The Sustainable Forest InitiativeSM principles require the participants to meet market demands while using environmentally responsible practices that promote the protection of wildlife, plants, soil, air, and water quality. Under SFI, Interfor's SFMP will demonstrate its commitment to recognized standards of sustainable forest practice. Interfor is practising a stewardship ethic that integrates the art and science of forestry and meets the needs of society for economic, environmental and social values.

SFMP is applied to Interfor's Coastal Woodlands within a Defined Forest Area (DFA). DFA is a specified area of forest land that is identified for registration to a sustainable forest management system. All forest tenures, including TFL 45, are currently managed under Interfor's EMS.

The keystone principles for sustainable forest management under SFMP are:

- That society's impact is within the carrying capacity of the ecosystem;
- Forests are managed to meet present needs without compromising the needs of future generations;
- There is appropriate protection of the environment and biological diversity;
- Resources are managed through good stewardship; and
- Development fosters social well being and a viable economy.

Interfor considers that federal and provincial forestry and environmental legislation are precautionary in nature, and represent an attempt to integrate society's desire to generate commercial forest products, and to ensure the conservation of the biological diversity in managed forests. As they are instrumental in ensuring forestry planning and practice are within the carrying capacity of the ecosystem and do protect the environment and biological diversity. The role of Interfor is to conduct a sustainable forest management operation that protects the environment, ensures human health and safety, and remains economically competitive in the global market place.

⁴ Registered December 1999 by KPMG Quality Registrar Inc.

⁵ Awarded May 2000 Budapest, Hungary

⁶ January 2001 by KPMG Quality Registrar Inc.

The role of regulatory agencies is to ensure consistency with legislation and regulation (i.e. *FPCBC Act*), and government approved initiatives with respect to forest ecosystem management (i.e., land and resource management planning). The role of the community is to participate in forest resource management planning in order to reflect their social values and concerns.

Interfor subscribes to the definition of sustainable forest management developed by the Canadian Council of Forest Ministries:

“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”

Sustainable forest management requires:

<i>Environmental sustainability:</i>	<i>A healthy ecosystem;</i>
<i>Social sustainability:</i>	<i>A respect for changing social norms, values, and needs;</i>
<i>Economic sustainability:</i>	<i>Benefits that exceed costs, and the ability to generate economic value today and into the future.</i>

Forestry certification programs, including ISO 14001 and Sustainable Forestry InitiativeSM, provide frameworks of goals, objectives and indicators for sustainable forest management. When considering the various frameworks, a hierarchy of relevance arises. The hierarchy descends in scope as follows:

- Global and National;
- Provincial, Regional, and Forest District;
- Landscape Unit, Watershed; and Harvest Unit.

Many of the objectives and indicators are applicable and relevant to all levels in the hierarchy that are beyond the ability of Interfor to manage. Consistent with statute, Interfor complies with Federal and Provincial legislation, and implements forest management planning and practices at the Landscape Unit, Watershed, and Harvest Unit levels. Forest Practices Code regulations, and guidebooks are predicated on principles of sustainable forest use and provide far-reaching recommendations with respect to conducting forestry operations at those three levels.

1.4 Planning Objectives and Framework

The planning framework for Interfor's forest tenures for operating on public land consists of both strategic and operational plans developed and established by the Government of British Columbia. The forest tenures receive strategic direction through protected area strategies, local resource management plans, tree farm licence management plans, integrated watershed management plans, landscape unit plans, timber supply reviews and other regional planning initiatives (e.g. CCLCRMP). The plans establish broad, strategies that will guide Interfor's operational planning in the context of the statutory framework of the Forest Practices Code of British Columbia Act (FPCBC Act). Refer to Figure 6 to show planning framework and opportunities for public participation, government direction, and agency review.

The objectives of the planning processes are:

- To provide government agencies, the public and First Nations the opportunity for periodic review of forest management;
- To assemble, review and present a knowledge base in support of sustainable forest management. The knowledge base includes formal inventories, local knowledge, expert opinion and reflects the guiding environmental, social and economic values;
- to recommend to the Chief Forester of BC the Allowable Annual Cut (AAC) for the land-base, within the context of sustainable forestry and integrated resource management in accordance with the Forest Act and the FPCBC Act;
- In the case of FLs, support the Chief Forester of BC in the determination of AACs for the various TSAs that Interfor has operations.

The FPCBC Act specifies planning and forest practice requirements, and the Ministry of Forest's range of enforcement powers. It also establishes a system of independent audits of forest practices. Some key features of the Forest Practices Code include:

- Strategic planning tools, such as the designation of Resource Management Zones, Landscape Units and Sensitive Areas;
- Specified operational planning requirements. Requirements are to be applied consistently across the province and must be compatible with Higher Level Plans. The basic principle of integrated resource management (integrating use and protection of timber and non-timber resources, environmental values, and social values) underlies this planning process; and
- Forest Development Plans as central management documents linking broad provincial strategic plans, such as the Clayoquot Sound Land Use Decision or the Protected Areas Strategy, to operational planning including provision for public participation and review by several resource ministries. These plans identify projected harvesting and road development usually over a period of 5 years.

Provincial and regional planning focuses on defining broad strategic management objectives and land use allocations. Principles of integrated resource management guide forest management planning in British Columbia, where all resource values and social, economic, and environmental needs are identified and considered. Forest planning endeavours to reflect social values and incorporate clear commitments to conserve biological diversity, maintain the inherent productivity of aquatic and terrestrial ecosystems, and meet the needs of an economically viable and sustainable forest industry.

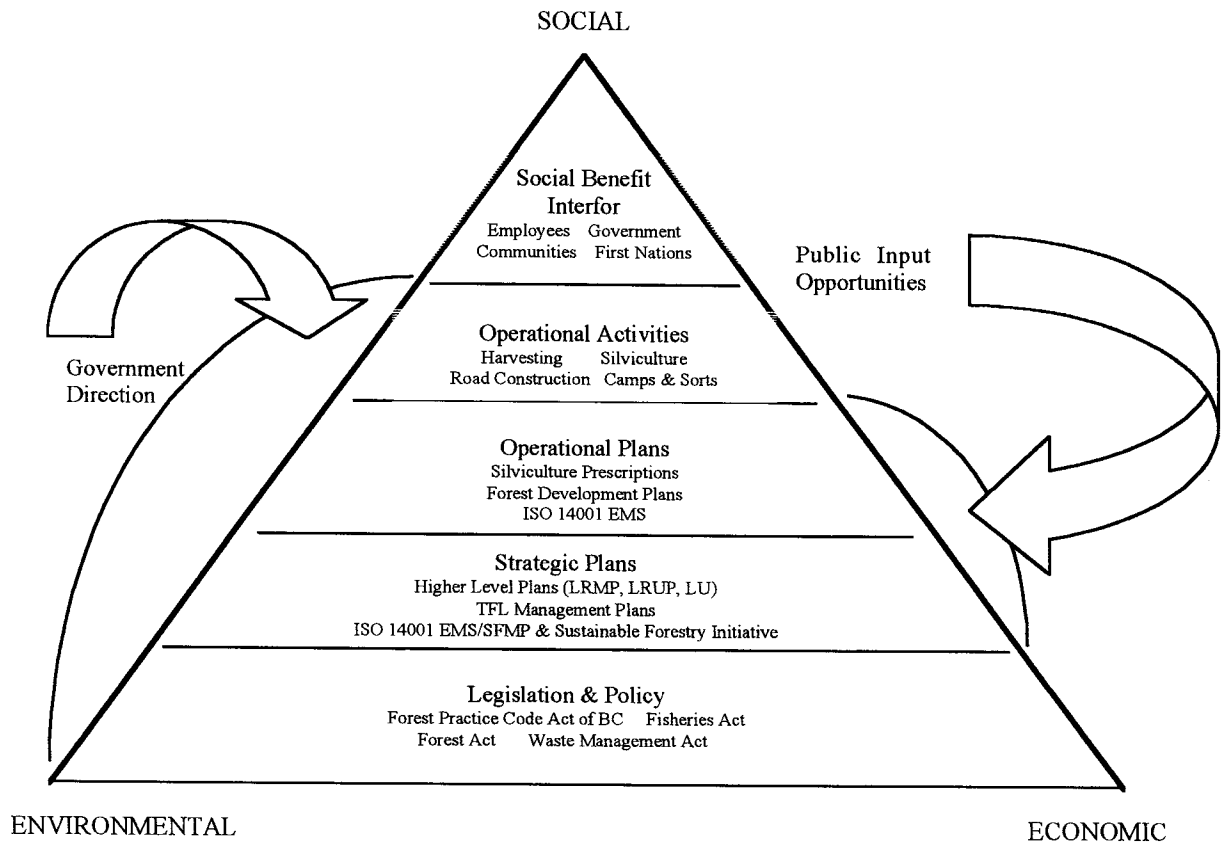


Figure 6. Sustainable Forestry Management Planning Framework.

Figure 6 shows the sequence of planning events and participation levels for forest tenures in our DFA (refer to Appendix 2 for definition of DFA). Sustainable development requires a decision making process that is community based and takes into consideration social values and community stability. Sustainable forest management requires that decisions be made as a result of informed, inclusive, and fair consultation with public and First Nations.

The current state of forest planning within British Columbia provides a process whereby government policies are translated into integrated resource management plans. The planning framework consists of five levels that provide a context for setting resource objectives and management strategies (Table 1).

Forest Development Plans (FDPs) document the first five years or more of the proposed harvesting and are typically updated annually. They consider all known resource values and map out appropriate designated areas in entire Landscape Units within which forest development is proposed. The Forest Development Plan identifies, in part, the areas to be harvested, the roads to be constructed, maintained and deactivated, drainage structures to be installed and removed, and silviculture systems.

FDPs are the recognized vehicle through which proposed forest harvesting units are reviewed and approved. Under the plan various assessments such as terrain stability and riparian and watershed assessments are considered. Formal consultation with the public, company groups, First Nations, Ministry of Environment, Lands and Parks

Table 1: Forest Planning Framework.

PLANNING LEVELS	EXAMPLES
Provincial Policies	Protected Areas / Old Growth Strategy
Strategic Plans	Commission on Resources and Environment Plans
Regional Plans	Landscape Unit Planning
Subregional Plans	Land and Resource Management Plans Tree Farm Licence Management Plans
Local Resource Use Plans	Total Resource Use Plans Coordinated Access Management Plans Total Resource Plans
Operational Plans	Forest Development Plans Silviculture Prescriptions Stand Management Prescriptions Range Use Plans

(MoELP), Fisheries and Oceans Canada and interested parties are then required before finalization of the plan and its approval by Ministry of Forests (MoF). Silviculture Prescriptions (SPs), Road Permits, and Cutting Permits (CP) are submitted intermittently, for approval and are to be consistent with approved FDPs.

Once site-specific field data is gathered, Silviculture Prescriptions (SPs) are developed to define forest management prescriptions for cutblocks before logging takes place. SPs provide for specific forest management prescriptions of cutblocks including; silviculture system, harvesting method, forest health and integrated resource management accommodations. Assessments relating to the FDP and SP are available upon request, as per the *Operational Planning Regulation* of the *FPCBC Act*, from the District Manager.

Cutting Permits provide the authority for development and harvesting of the cutting area detailing site-specific harvesting rights and obligations.

Road Permits provide the authority for development and harvesting of the right of way and construction, use and maintenance of roads.

Public participation in operational forest planning is most effective at the Management Plan and Forest Development Plan stages. It is at these planning stages that public participation in the strategic decisions of what activities will occur relative to one another and concerning other resource values is most constructive. FDPs are advertised in local papers and made available for public review. Those resource users identified by the MoF and Interfor as being involved with a specific issue are contacted during the development of the FDP. By identifying and recording issues (trappers, guide outfitters and other licensed users) and other resource values in advance, and during development planning, potential conflicts are mitigated or minimized. Specific concerns over methods and results on specific sites are best handled through comment on the FDP or the SP. The MoF is informed of any input received and any resulting changes to the plans.



Figure 7. Rhonda Falls, Knight Inlet

1.5 Participation

The key participants in the management planning process are the TFL licensee, government agencies (Ministry of Forests (MoF), Ministry of Environment, Lands and Parks (MoELP), Fisheries and Oceans Canada, First Nations, local communities, and special interest groups. The management planning process provides public participation opportunities for review through attending public viewings.

2 MANAGEMENT OBJECTIVES

The primary purpose of a Tree Farm Licence is to manage the forest resource to encourage maximum productivity for the production of timber in a manner that is consistent with the principles of sustainable development and sustainable forest management. Management Plan No. 4 (MP 4) for Tree Farm Licence No. 45 (TFL 45) is prepared in compliance with the Licence document for TFL 45 and in accordance to the requirements to the Ministry of Forests (MoF). Interfor will conduct its activities in the TFL in accordance to the regulations and standards required in the *Forest Practices Code of British Columbia Act*.

The broad objectives of this management plan are:

- To provide government agencies, the public and First Nations the opportunity for periodic review of TFL 45 forest management;
- To assemble, review and present a knowledge base in support of TFL 45 forest management; and
- To recommend to the Chief Forester of British Columbia, the allowable annual cut (AAC) for the TFL landbase.

In addition to meeting the standards set by government, management objectives for TFL 45 must also be compliant with Interfor's Sustainable Forest Management Plan (SFMP). SFMP objectives are specifically developed to conduct sustainable forest management operations that ensure human health and safety, protect the environment, and remain economically competitive in the global market place.

The specific management objectives of SFM for TFL 45 are to:

- Conduct business in a safe and environmentally responsible manner;
- Develop and plan forest resources in consultation with the public, including eliciting and respecting the concerns of First Nations;
- Conduct an economically viable business that provides multiple benefits to society;
- Incorporate environmental objectives to manage the forest resource for the conservation of water, soil, wildlife habitat and other key ecological values;
- Plan the development of forest landscapes in a manner that respects the biodiversity and function of forest ecosystems including old growth values;
- Harvest the forest at a sustainable rate in consideration of the forest's productive capacity, biological considerations and social values; and
- Respect all applicable laws and tenure responsibility.

2.1 Worker Safety and Environmental Protection

In order to conduct business in a safe and environmentally responsible manner, Interfor provides training to staff, employees and contractors to ensure that an appropriate level of awareness with respect to workers safety and environmental protection exists at all levels of the organization. Interfor achieves this through a number of strategies:

- By employing professionals and other qualified forest resource management staff and contractors to develop and implement sustainable forest management plans;

- By supporting continued education in the areas of:
 - Statutes and Regulations governing the forest industry both Federally and Provincially;
 - Biodiversity and ecosystem dynamics;
 - Silviculture practices including stand regeneration; and
 - Communication with professional and forest industry associations.
- By directly employing qualified trainers to provide employee and contractor training.
- By training in the following areas
 - Workplace regulatory training;
 - Emergency response training;
 - Specific job training (such as faller training);
 - Training in the company's Environmental Management System.

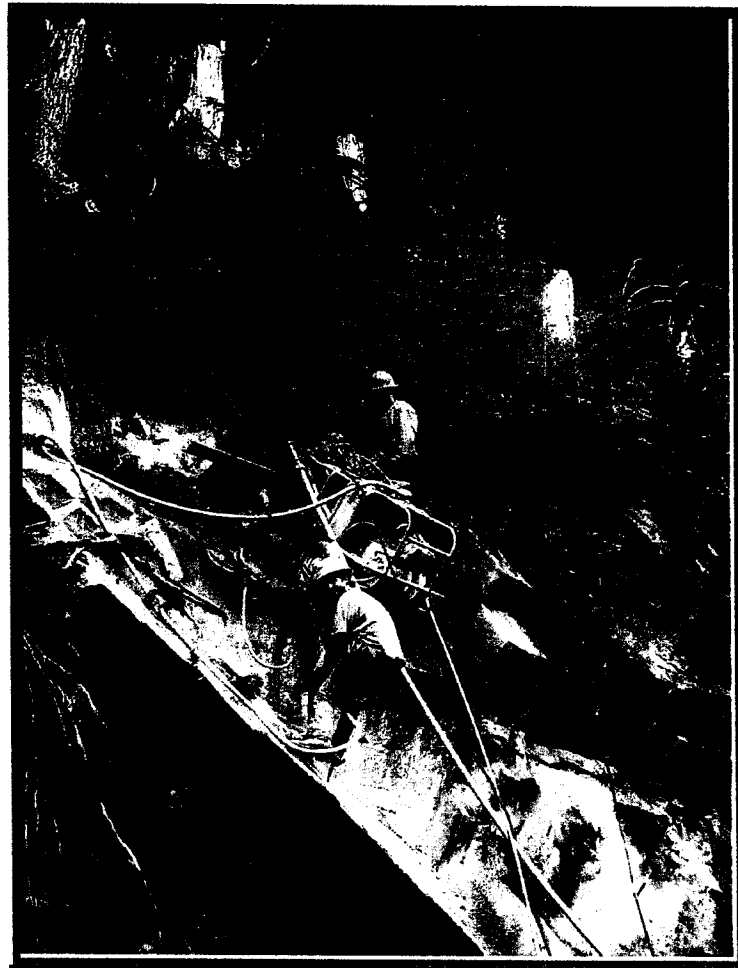


Figure 8. Road construction – hand drilling, West Klinaklini Mainline, Knight Inlet

2.2 First Nations

The management objective in TFL 45 regarding First Nations will be achieved with mutual understanding, respect, and the development and maintenance of working protocol with individual First Nations. Towards that end, Interfor will:

- Respect aboriginal interests and explore effective communications strategies in planning resource use activities with First Nations with an interest in TFL 45; and
- Manage cultural heritage resource values through the assessment and development of management prescriptions for cultural heritage resource values identified within TFL 45 consistent with the *Forest Practices Code of British Columbia Act* and *Heritage Conservation Act*.



Figure 9. Da'Naxda'Xw First Nation Eulachon Fishery - Klinaklini River, Knight Inlet

2.3 Public Involvement

Interfor builds strong relationships with local communities and other resource users, such as guide outfitters and trap line licensees. The company achieves this management objective through a number of strategies:

- Participation in land-use planning and other processes affecting Interfor's operating areas;
- Maintaining communications and developing formal agreements; and
- Providing forestry education opportunities.

2.4 Economic Viability and Contributions to Society

Interfor's business operations provide direct and indirect benefits to society through the manufacturing of commercial wood products, contributing to local and regional economies, and contributing to provincial and federal revenues. The forests managed by Interfor are a primary generator of economic well being for the people of British Columbia. Interfor's annual sales exceed \$600 million. Virtually all of this goes to wages, goods, services and government payments.

Through the maintenance of a safe and economically viable business, Interfor contributes to continued employment opportunities in forest management, harvesting, silviculture, sawmilling manufacturing, and marketing. Through these activities, Interfor contributes to the sustainability of the local economies. To achieve the objectives of the SFMP Interfor at a minimum must achieve a level of profitability over an economic cycle consistent with Interfor's cost of capital. Interfor will achieve this objective through the following strategies:

- Promoting safety as a core value and safe work practices as stated in our Health and Safety policy (refer to Section 3.2);
- Employing workers, staff and contractors;
- Meeting our financial obligations;
- Striving for continuity of forest operations;
- Creating and strengthening relationships with local communities, First Nations and other groups within the operating areas; and
- Attaining an acceptable financial return on employed capital.

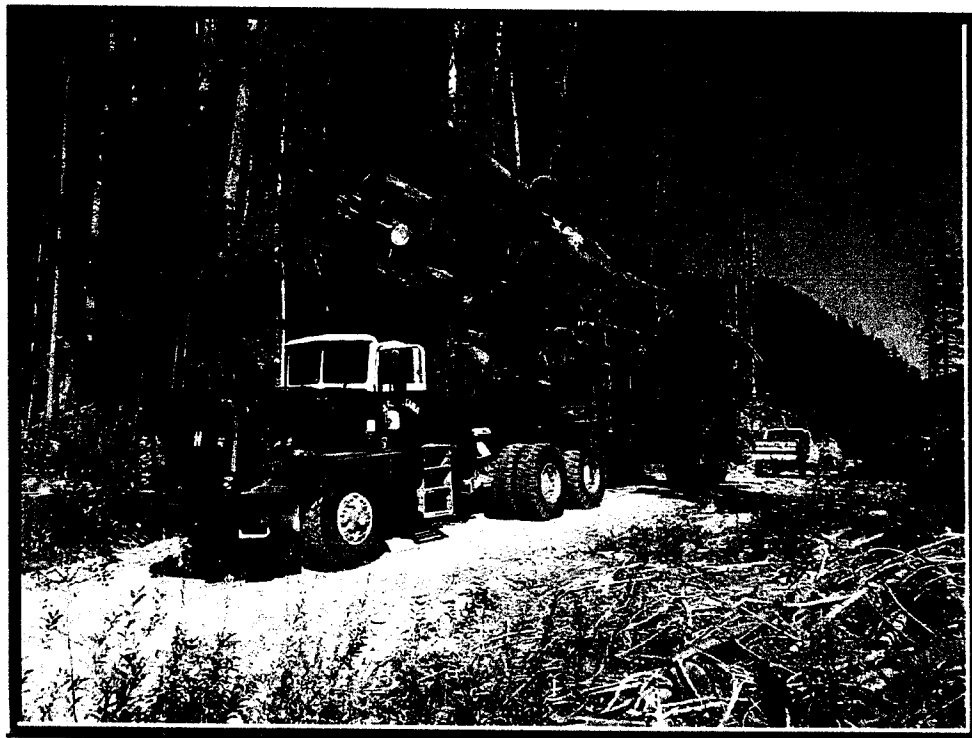


Figure 10. Knight Inlet

2.5 Non-Timber Values

In support of maintaining non-timber values, Interfor has resource inventories accepted by the Ministry of Forests as part of the previous Management Plan (MP 3) and new inventories conducted and submitted during the preparation of MP 4. New inventories include Vegetation Resource Inventory (VRI) database, Terrestrial Ecosystem Mapping, and Potential Site Index Estimates. Updated definition of Environmentally Sensitive Areas (ESAs) including slope stability review for Es2 polygons, updated Recreation Feature Inventory (RFI), Visual Landscape Inventory (VLI), Recreation Analysis and Management Strategy (RAMS), wildlife habitat inventory, and stream/riparian classification have also been determined and mapped for MP 4. Inventories that have been approved as of July 2001 include NAD shifted operability, Terrestrial Ecosystem Mapping and Potential Site Index Estimates.

Resource planning and management of non-timber resources in TFL 45 is guided by inventory requirements and planning initiatives. Specifically, Interfor manages the forest resource for the conservation of water, soil, wildlife habitat and other key ecological values. The objective of water conservation is achieved by planning the maintenance of key riparian habitats and natural water drainage. The objective of soil conservation is achieved through employing harvesting systems that minimize ground disturbance and the number of permanent access structures required to harvest timber. Key wildlife habitat is conserved at both the stand and landscape level through comprehensive planning.

Management objectives for resource planning in TFL 45 will be achieved through the application of management strategies and procedures, and commitment to legislation, rules and standards that are identified in Section 3 of this Management Plan. Specifically, Interfor will achieve these objectives through the following:

- The management of riparian habitats;
- Limiting the amount of productive landbase converted for permanent access;
- The management of key wildlife habitat and features;
- Employing a variety of harvest methods (i.e., helicopter, conventional and non-conventional systems);
- The participation in research of species of concern; and
- The maintenance of stand-level structural elements within planning areas.

2.6 Land Use and Resource Stewardship

The land use objective for TFL 45 is to manage the forest landbase for timber production as well as to ensure the maintenance of biodiversity and old growth values.

At the regional level, Interfor participates in the Protected Areas Strategy (PAS), and Land and Resource Management Plans (LRMP). Landscape Unit (LU) planning establishes forest level objectives and targets for old growth management areas and biodiversity emphasis. Interfor will implement ecosystem-based management through a number of strategies:

- Within the planning area, establishment of Old Growth Management Areas with consideration for forest interior conditions;

- Establishment of Wildlife Tree Patches and Riparian Management Areas which are the primary methods of providing stand structure attributes across the landscape;
- Operational Plans that incorporate strategies for known sensitive resource values; and
- By further developing a definition and an implementation strategy of ecosystem-based planning and management for the DFA (includes TFL 45).

These objectives will be achieved by implementing the management strategies and commitments that are identified in Section 3 of this Management Plan.

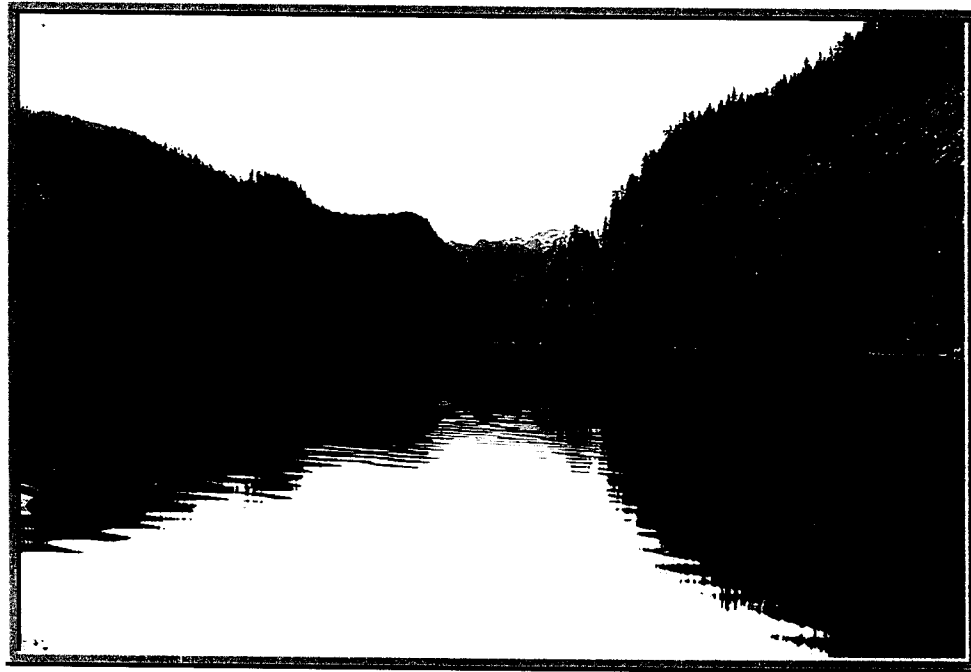


Figure 11. Devereaux Lake, Knight Inlet (J. Webb)

2.7 Timber

For Tree Farm Licence 45, Interfor proposes the allowable annual cut based on a timber supply analysis that considers the forest's productive capacity, biological constraints and social values. The Chief Forester of BC makes a determination of the AAC based on the information provided by Interfor.

Interfor will harvest the forest at a sustainable rate in consideration of the forest's productive capacity, biological considerations and social values by implementing the following strategies:

- Harvesting in accordance with the determined allowable annual cut for Tree Farm Licences; and
- Incorporating non-timber resource values.

2.8 Silviculture

Interfor employs ecologically appropriate silviculture. Harvested areas will be promptly regenerated with species appropriate to the site. Interfor is committed to silviculture practices that ensure regeneration delay and free growing obligations are met.

Interfor achieves the above by implementing the following strategies:

- Developing and following through with Silviculture Prescriptions that fully consider the biogeoclimatic classification of the proposed harvest area and duly prescribe ecologically appropriate species for reforestation;
- Promptly reforesting harvested areas;
- Assessing reforested areas for stand tending requirements and stocking status; and
- Assessing reforested areas for regeneration success and free growing status.

2.9 Laws and Tenure Responsibilities

To respect all applicable laws and tenure responsibility, Interfor tracks and reports incidents under formal investigation by a regulatory agency relevant to the FPCBC or other relevant environmental legislation, and legal obligations such as cut control. Interfor is committed to continual improvement of its compliance performance. Interfor will achieve this commitment by implementing the following strategies:

- Employing management practices to assess, monitor and improve compliance; and
- Meeting our contractual and legal obligations.

3 MANAGEMENT STRATEGIES AND IMPLEMENTATION

To achieve the management objectives set forth in Section Two, management strategies related to land use, health and safety, environmental practices, timber management, silviculture practices, First Nation involvement, community stability, and Forest Renewal BC (FRBC) will be implemented.

Interfor will continue to manage its operations to meet all legislation and regulations concerning integrated resource management so that the appropriate resource values identified are managed.

3.1 Land Use Decisions and the Protected Areas Strategy

As the Central Coast Land and Coastal Resource Management Plan (CCLCRMP) process has not yet been completed, no proposed protected areas have yet been designated within TFL 45 or the central coast planning area. In order to protect the key values within this proposed area, Interfor has maintained the Protected Areas Strategy (PAS) Interim Management Guidelines that no roads or harvesting and no fire or pest management will occur in the area until the completion of the CCLCRMP process⁷.

On April 4th 2001 the Government of British Columbia announced its decision on land use for the Central Coast region of the Province, following more than three years of public consultation. Feedback from the public and stakeholders will be used by the Government to revise the plan if necessary. With public input to the draft plan completed, the plan will be forwarded to the government for approval by mid-2001.

Interfor will continue to be involved in land use issues and processes in order to determine their effect on the TFL and affected communities. Interfor will also continue to be proactive by maintaining support for a co-operative process that is creative in seeking solutions.

3.2 Health and Safety

To implement all management strategies, employees and contractors are expected to demonstrate an uncompromising commitment to Interfor's Health and Safety policy. Interfor's Health and Safety policy appears in Figure 12.

⁷ Central Coast Protected Areas Strategy (PAS) Report, May 1997, Land Use Coordination Office.
<http://www.luco.gov.bc.ca/slupinbc/cencoast/reports/ccpasrpt/ccpasrpt.htm>



Health and Safety Policy

“Health and Safety is the uncompromised right and responsibility of all employees”

- We will integrate Health and Safety into our business with the knowledge that all accidents are preventable.
- We will hold all levels of management accountable for providing a safe work environment and enforcing safe work practices, including timely follow-up to safety incidents.
- We will train all employees to identify hazards and protect themselves and fellow workers.
- We will hold all employees and contractors working for Interfor accountable for following safe work practices and reporting unsafe acts and conditions.
- We will use audits to measure and improve our Health and Safety performance.
- We will actively involve our employees in effective Safety programs.
- We will operate in compliance with Health and Safety Regulations.
- We will monitor and report regularly on our Health and Safety Performance.

International Forest Products Limited is committed to the health, safety and well being of all employees.



International Forest Products Limited

Approved and Endorsed
By the Board of Directors on
July 21, 1999

3.3 Environmental Practices

Interfor has been proactive in its commitment to responsible stewardship of the environment by becoming involved with several environmental initiatives. Interfor's Environmental Management System (EMS) was designed to govern, as well as continually improve, the environmental performance of the Coastal Woodlands operations. Through the implementation of EMS, Interfor was successful in attaining third party verification to the ISO 14001 international standards for its environmental management systems. Although not a requirement of the ISO 14001 standard, Interfor has developed a Sustainable Forest Management Plan (SFMP) within the EMS. To enact its commitment to sustainable forest practices, Interfor pursued and obtained certification under the Sustainable Forest Initiative (SFI)SM standards of sustainable forest practices.

3.3.1 Environmental Policy

Interfor's Environmental Policy provides the basis by which all environmental issues will be addressed. The policy establishes Interfor's commitment to environmental protection and enables the development and implementation of an environmental management system. The company's Environmental Policy appears in Figure 14.

This policy was developed to regard and maintain the awareness and management of environmental impacts resulting from company operations. The environmental policy commitment governs all activities performed within the Coastal Woodlands Operations of the Company.

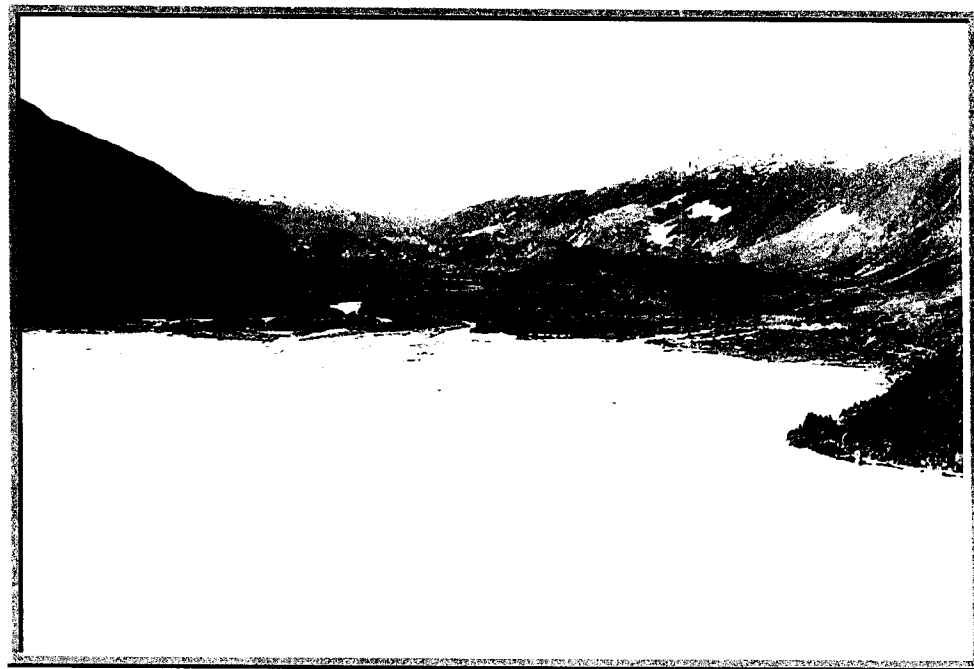


Figure 13. Klinaklini Estuary (newly Protected Area under the CCLCRMP), Knight Inlet (J. Webb)



Environment Policy.

**International Forest Products Limited
is committed to responsible stewardship of the
environment.**

- We will minimize environmental impact, prevent pollution and strive for continuous improvement of our environmental performance.
- We will operate in compliance with all applicable laws pertaining to the environment.
- We will regularly review our practices and procedures to monitor and report on environmental performance.
- We will provide training for employees and contractors in environmentally responsible work practices.
- We will manage our forest resources in a sustainable manner that is environmentally appropriate, socially beneficial and economically viable.
- We will promote the use of our wood products as a good choice for the environment.



International Forest Products Limited

Approved and Endorsed
By the Board of Directors on
July 21, 1999

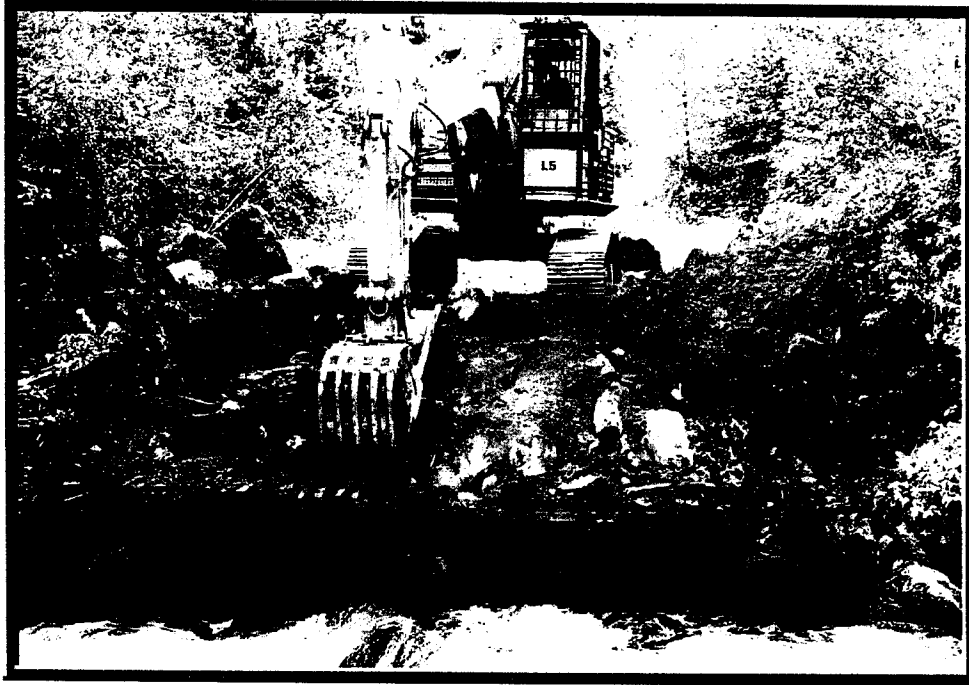


Figure 15. Bridge Replacement – Mussel Creek, Knight Inlet

3.3.2 Environmental Management System

The Environmental Management System (EMS) is an assertive plan that demonstrates Interfor's commitment to excellence in forest stewardship and environmental performance. It was originally developed and implemented under the direction and focus of Interfor's Environmental Policy. The EMS identifies all activities within the scope of this program and recognizes their potential aspects and impacts, especially ones that Interfor may control or influence. Each activity has its own environmental management program to develop and implement its numerous specific aspects and impacts.

3.3.3 Sustainable Forestry Management Plan

A Sustainable Forestry Management Plan (SFMP) demonstrates Interfor's commitment to recognized standards of sustainable forestry practice. The objectives and strategies of the SFMP are integrated with Interfor's planning process as well as with Interfor's operational controls as employed in other Programs (both EMS and non-EMS).

This Sustainable Forest Management Plan (SFMP) for Interfor's Coastal Woodlands has been prepared to demonstrate Interfor's commitment to recognized standards of sustainable forestry practice. Interfor is practicing a new stewardship ethic that integrates the art and science of forestry that meets the needs of society for economic, environmental and social values.

Interfor operates in British Columbia where the forest land-base is 95% publicly owned. This forest land is jointly managed by Interfor and the Government on behalf of the public interest. The public interest is reflected through Government regulations and public processes.

Interfor employs Professional Foresters as forest land managers to carry out integrated resource management in consideration of timber, biodiversity, wildlife, fish, recreation, protected areas, and social values. The people of British Columbia, through the Foresters Act, have given Professional Foresters the mandate to plan and manage the provinces forest resources for the benefit of the public. As such, Professional Foresters are legally responsible to the public and their employer “to advocate and practice good stewardship of forest land based on sound ecological principles to sustain it’s ability to provide for those values that have been assigned by society”.⁸

The practice of Professional Forestry is also unique in that it must consider long-term planning horizons spanning decades to several hundred years. Striving to provide sustainability of society’s ever changing demands on the forest resource over such a long-term is a formidable task.

In British Columbia, the practice of forestry is heavily regulated through statutes such as the Forest Act and the Forest Practices Code Act. The legislation, both federal and provincial is an attempt to integrate society’s desire both to generate commercial forest products, and to ensure the conservation of the biological diversity in managed forests. In the British Columbia context the government administers the management of the land-base for the integration of forest and non-forest resource values ensuring forestry planning and practice are within the carrying capacity of the ecosystem and protect the environment and biological diversity. Government promotes the utilization of the resource to generate multiple benefits to society, including employment, quality of life, and revenue. Figure 17 shows the annual direct taxes and other payments to Government generated by the BC Forest Industry.

The SFMP pertains to all lands for which Interfor’s Coast Forest Operation has management responsibilities. The Defined Forest Area (DFA) of International Forest Products Limited – Coastal Woodlands, includes the Tree Farm Licenses (TFL), Forest Licences (FL) and Timber Sale Licences (TSL) spread across all the Timber Supply Areas (TSA) of coastal British Columbia.

The distinct boundaries of the DFA correspond to the areas where Interfor is the primary harvesting operator. The DFA includes Crown land and private land (that is part of a TFL), and specifically excludes all Crown Lease land, Indian Reserves, Small Business Forest Enterprise Program (SBFEP) operations, FL A19214 and any areas otherwise excluded from Interfor’s Chart Area or TFL land-base (refer to Appendix 2).

⁸ Association of British Columbia Professional Foresters, Bylaw 14

Total payments to government = \$4,216,000,000 or \$63 per cubic metre

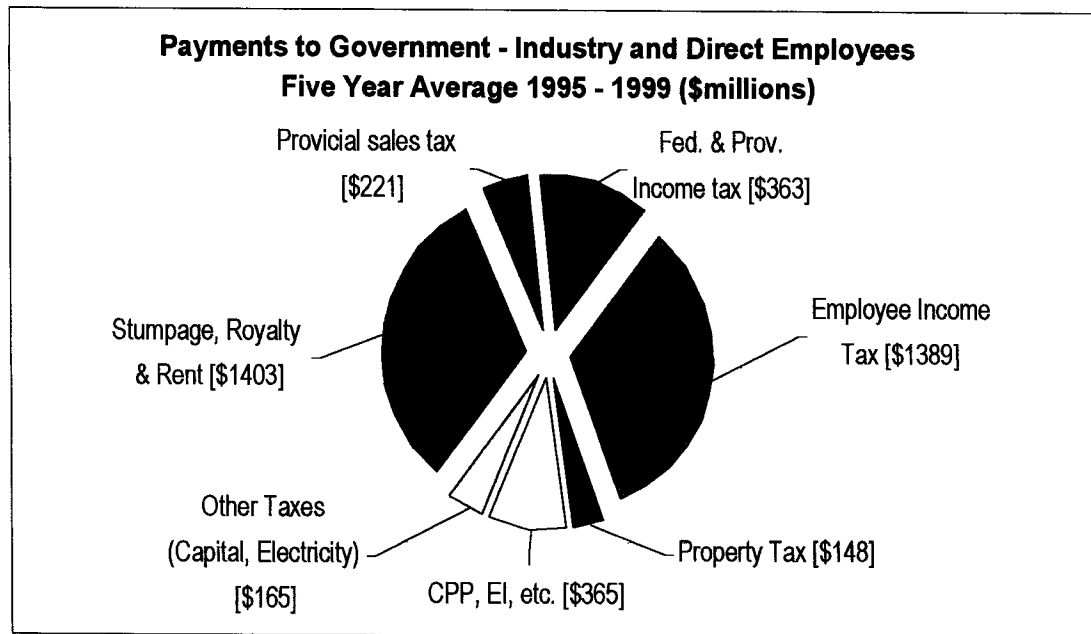


Figure 16. Annual direct taxes and other payments to Government generated by the BC Forest Industry

(Source: The Forest Industry in British Columbia - 1999, PricewaterhouseCoopers).

3.4 Sustainable Forest InitiativeSM

Although Interfor already has attained ISO 14001 certification, it also achieved third-party certification of its Sustainable Forest Management Plan in 2001. This initiative was undertaken in response to Interfor's customers' specific needs, and the growing marketplace demand for quality wood products that are independently certified as being derived from sustainably managed forests. Certification also reflects Interfor's longstanding commitment to sustainable forest management and environmental leadership.

Interfor has selected the Sustainable Forestry Initiative (SFI)SM program as the platform for registration of its Sustainable Forest Management Plan. SFMP applies Interfor's commitment to recognize national and international standards of sustainable forestry practices by incorporating SFM criteria defined by the Canadian Council of Forest

Ministers and key standards/principles from Canadian Standards Association (CSA) and the American Forest & Paper Association Sustainable Forestry InitiativeSM. Not only will forest practices improve under the system but the system is designed to incorporate indicators that assess Interfor's standard of forestry practice against its management practices. Regular monitoring of actual achievement of targets will provide guidance for continual improvement and a measured effectiveness of the forestry practices in accomplishing the objectives, and improve the measures for enhancing a sustainable forest.

In 2001, Interfor has achieved SFI registration of its Coastal Woodlands Operations. The accredited SFI certifier was KPMG Quality Registrar.

3.5 Forest Practices and Operational Plans

Forest practices are guided by a planning framework that directs both strategic and operational activities. Key components of this framework for TFL 45 include:

- Forest Practices Code of BC Act, Regulations, Standards and Guidebooks;
- TFL Management Plan; and
- Operational Plans.

Interfor will administer forest practices within TFL 45 in a manner that is consistent with government approved procedures associated with the planning framework. In the absence of the completion of the Central Coast LCRMP higher level planning process, Management Plan No. 4 is recognized as the principle document providing guidance for the higher level planning objectives for Tree Farm Licence 45.

The *Forest Practices Code of British Columbia Act (FPCBC Act)* is the legislative umbrella establishing mandatory requirements for planning documents and forest practices, setting enforcement and penalty provisions, and specifying administrative arrangements.

- The regulations lay out the forest practices that apply province-wide;
- Standards may be established by the Chief Forester, where required, to expand on a regulation. Compliance with regulations and established standards are mandatory requirements under the Code; and
- Forest Practices Code guidebooks support the regulations, but are not generally part of the legislation. Guidebook recommendations are not mandatory requirements, however once a recommended practice is included in a plan, prescription, or contract, it becomes legally enforceable. The guidebooks describe procedures, practices and results that are intended to be consistent with the legislated requirements of the Code. However, as they are not part of the legislation, some guidebook recommendations have become outdated and obsolete.

The information provided in each guidebook is used to aid professional judgement in developing site-specific management strategies and prescriptions designed to accommodate resource management objectives. Flexibility in the application of guidebook recommendations is required to adequately achieve the specified land use and resource management objectives. Based on site specifics, a recommended practice may be modified when an alternative could provide better results for forest resource stewardship. Guidebooks are not intended to be definitive and will not be interpreted as being the only acceptable option.

It is recognized that specific forest practices that are appropriate for TFL 45 will be developed and be adjusted over time. This will reflect the application of new knowledge and techniques that are considered part of adaptive management. The company will apply those forest practices that are environmentally sound, operationally achievable, economically prudent and safe to employ.

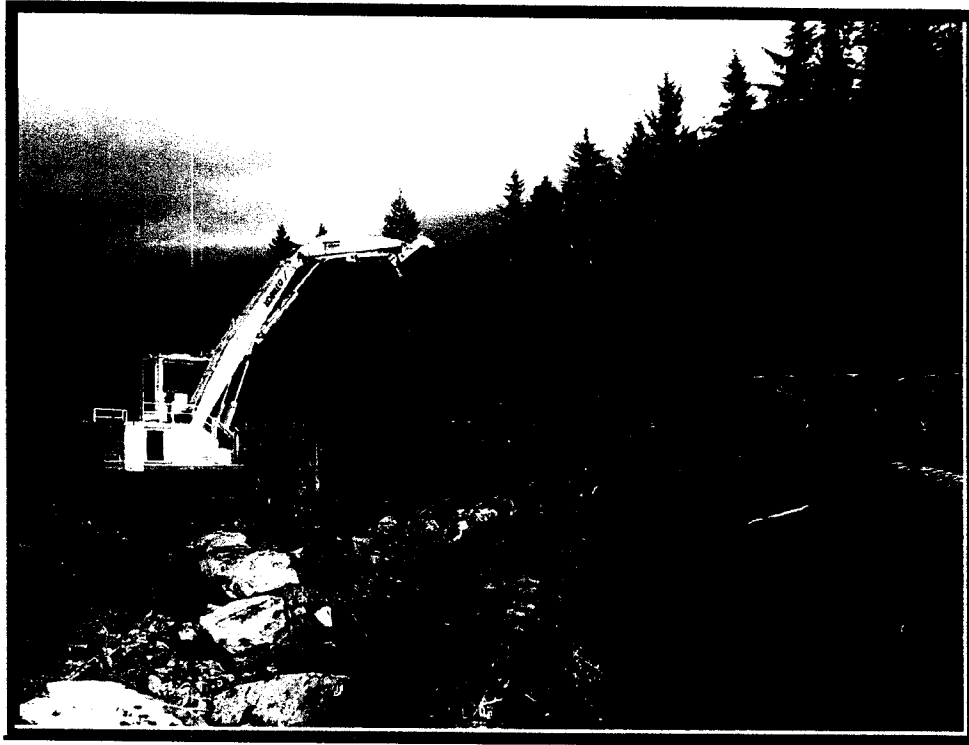


Figure 17. Loading, West Thurlow Island

3.5.1 Forest Development Plans

The scope, content and term of Forest Development Plans are described in the *Operational Planning Regulation* of the *FPCBC Act*. The regulations specify requirements pertaining to: terrain mapping in community watersheds; forest health and watershed assessments prior to review; riparian assessments for areas of joint approval; terrain stability assessments for areas of joint approval; map information; Category I and Category A blocks; and notice, review and comment.

In addition to the regulations, all Forest Development Plans for the TFL may make consideration of the *Forest Development Plan Guidebook*.

These plans will involve the public, community groups, First Nations, and interested parties through formal consultation and when plans are presented for public viewing. Comments received from public and government agencies and First Nations will be considered before finalization of the plan and submission to the respective ministries.

Some other guidebooks that may be referenced in forest development planning include: the *Riparian Management Area Guidebook*; the *Fish-stream Identification Guidebook*; the *Mapping and Assessing Terrain Stability Guidebook*; the *Gully Assessment Procedure Guidebook*; the *Visual Impact Assessment Guidebook*; the *Coastal Watershed Assessment Procedure Guidebook*; the *Channel Assessment Procedure Guidebook*; the *Boundary Marking Guidebook*, and the *Public Consultation Guidebook* as amended from time to time.

3.5.2 Engineering Standards

Standards for engineering apply to roads, bridges, facilities and other structures that will be designed, constructed or maintained within TFL 45.



Figure 18. Engineering, Knight Inlet

All engineering plans and structures will be developed in consideration of the current Forest Road Engineering Guidebook. The Forest Road Regulation of the FPCBC Act pertains to road layout and design, construction and modification, maintenance and deactivation. Recommended engineering practices are contained in the Forest Road Engineering Guidebook.

Proposed road building, maintenance and deactivation are included in the FDP for review and approval by the MoF District Manager. As part of this process, older roads (where Interfor has Road Permits), and structures are continually assessed for rehabilitation requirements. Interfor has initiated rehabilitation projects since acquisition of the TFL in 1991. Plans for specific projects will be reviewed by the appropriate government agencies as required.



Figure 19. Engineered road section construction – Klinaklini Mainline, Knight Inlet

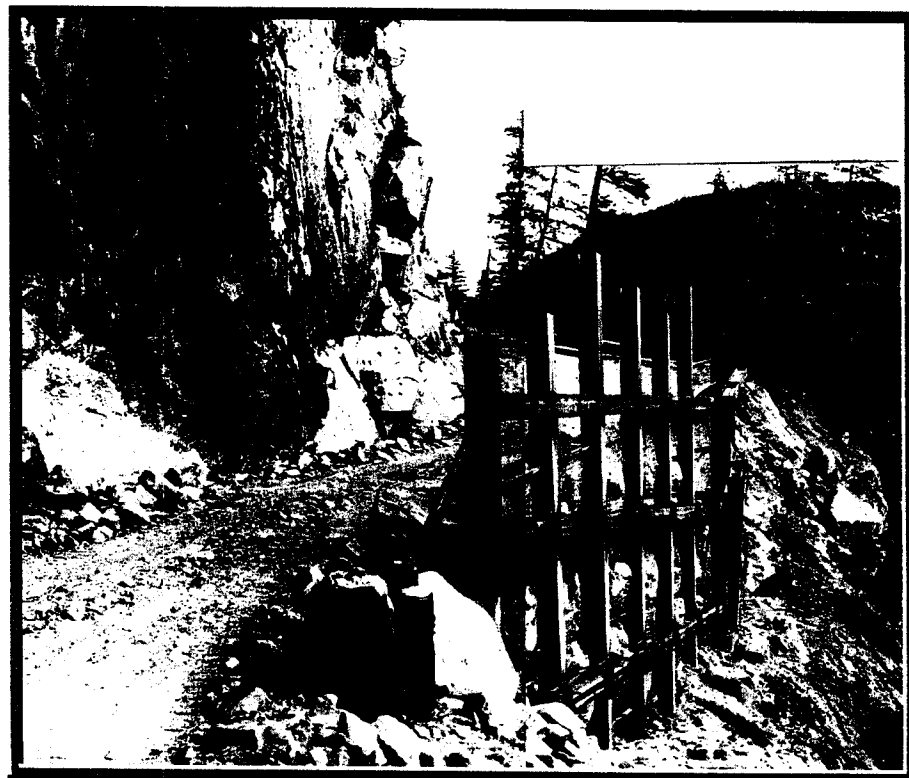


Figure 20. Engineered road section completed – Klinaklini Mainline, Knight Inlet

3.5.3 Timber Evaluation and Appraisal

All engineered harvest blocks included in Cutting Permit applications are cruised to evaluate timber quality, quantity and assess profitability. The current TFL licence document (as amended January 1, 2000) specifies that cruises must be carried out in accordance with the current MoF *Cruising Manual*. Cruise data submitted must be compiled in accordance with the current *Cruising Compilation Design Manual*.

Stumpage is determined as per the current *Appraisal Manual* and the TFL licence document by using the appraisal data required, submitted, and compiled in accordance with the current relevant legislation, specifically the *Forest Act*.



Figure 21. Dryland Sort – Quality control / Scaling, West Thurlow Island

3.5.4 Cutting Permits

Cutting Permits (CPs) provide the authority to implement development and harvesting as proposed in Forest Development Plans and Silviculture Prescriptions.

The *Forest Act* provides for Cutting Permits to be issued within TFLs by the District Manager, within the limits specified in the Tree Farm Licence document, to authorize harvest of portions of the allowable annual cut from specified areas within the Tree Farm Licence area (i.e. Schedule A and Schedule B).

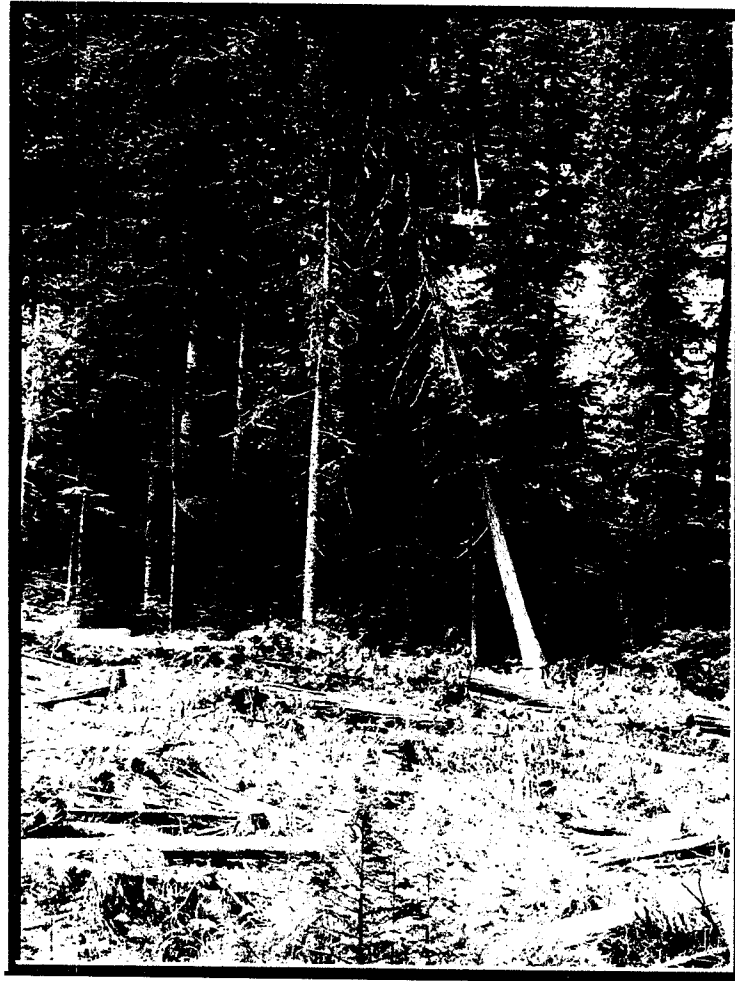


Figure 22. Timber, Knight Inlet

Cutting Permit application format, contents, and conditions are specified in the TFL 45 Licence document with specific direction provided by the Forest Districts. CPs detail site-specific harvesting rights, including: term; timber mark; stumpage; felling, bucking and utilization specifications; and obligations.

3.5.5 Harvesting Methods

Interfor will conduct its operations in TFL 45 in compliance with all applicable legislation, including the *Timber Harvesting Practices Regulation* of the *FPCBC Act*. The regulation pertains to both general and specific harvesting practices associated with carrying out a timber harvesting operation.

The selection of a harvesting method is a function of topography, soil type and landslide potential, silvicultural system, timber characteristics, road access and roading constraints, yarding distance and direction, and resource values and management considerations. Specific harvesting and silvicultural systems are described in the Silvicultural Prescription.

The majority of the TFL is dominated by rugged terrain and soil conditions that will limit the use of ground-based equipment versus cable systems. Traditionally, cable systems are used on the majority of the TFL, but during the past several years Interfor has utilized a number of different harvesting systems to suit the site specific conditions of certain areas.

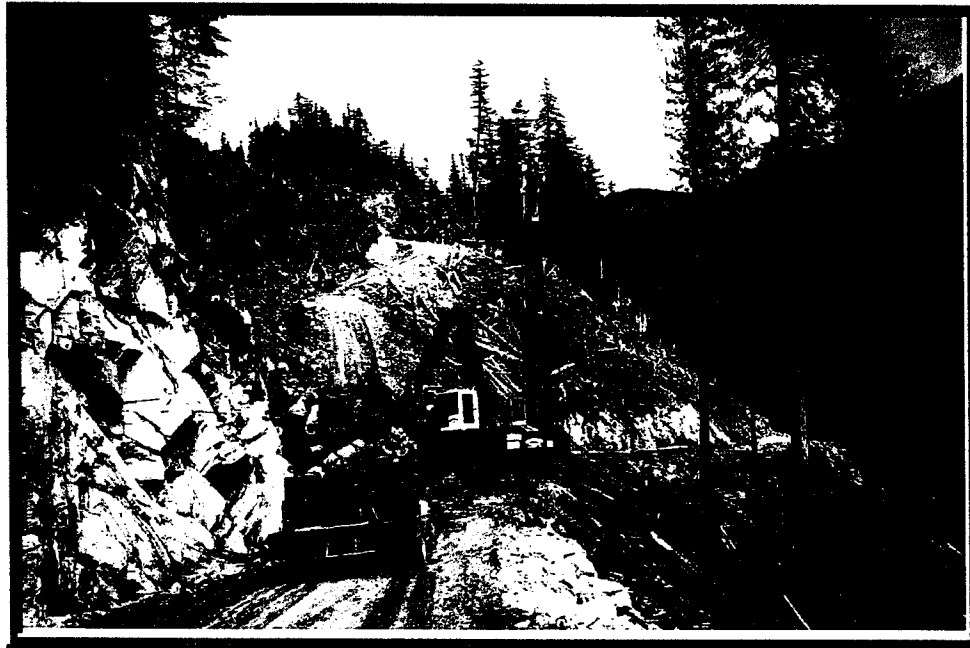


Figure 23. Grapple yarder and juicer, Knight Inlet

Interfor is an industry leader in the use of helicopter logging. This harvesting system is used in the TFL when the ground is too steep or sensitive to be accessed by roads. Helicopter harvesting allows an area to be logged while keeping the level of disturbance (road site degradation) to a minimum.

Since 1993, Interfor has utilized two ground based harvesting systems; hoe-forwarding and feller bunching. Both of these systems are used on sites with gentle slopes and soils that can handle heavy machine traffic. Cable systems and ground skidding methods are used on specific sites where they are economically and environmentally feasible. Backspar trails or skid trails used in conjunction with these methods will be constructed, and rehabilitated, consistent with the operational plans, to maintain the maximum feasible productive growing site.

Prior to the Forest Practices Code, the predominant silviculture system in TFL 45 was clearcutting. More recently, a wider range of ecologically based alternative systems have been designed, considered and applied. This results in cutblock sizes that are dramatically reduced and that retain greater stand structures.



Figure 24. Helilogging, Knight Inlet



Figure 25. Hoechucking and processing, West Thurlow Island

Variable retention harvesting is considered when there are visual, biological and terrain issues. A variable-retention system requires harvesting methods that are:

- Efficient and safe; and
- Flexible to accommodate different levels and distributions of retention.

The procedures for harvesting in the TFL consider harvesting pattern, stand conditions and utilization standards. The harvesting pattern is dictated by the operability, resource sensitivity, green-up requirements and logistics outlined in Forest Development Plan. The pattern of dispersed road and forest development throughout all drainages is anticipated to continue. Timber harvesting may be dispersed throughout the TFL in order to:

- Balance seasonal harvesting;
- Balance hauling distance;
- Allow for “green-up” periods in adjacent areas as per regulations;
- Rationalize block sizes to produce a mosaic of variable sizes and shapes of openings;
- Distribute the rate of cut across the TFL landbase; and
- Maintain access throughout the TFL for recreation and fire protection.



Figure 26. Variable retention – Mechanically felled / feller buncher, West Thurlow Island (second growth)

Stand condition is also a factor in harvest block selection. The largest portion of the total growing stock in TFL 45 is made up of over-mature timber. Harvesting will target these stands as the primary objective. Operationally, the minimum harvest age considered is that associated with log sizes that meet the minimum merchantability standards.

Felling, bucking and utilization specifications and requirements that apply to the TFL are specified in the TFL 45 Licence document and in Cutting Permit documents. Harvest residue and waste assessment requirements are also specified in the licence document. Assessments will be carried out in accordance with the current *Provincial Logging Residue and Waste Measurement Procedures Manual*.

3.5.6 Fire Protection

A fire protection program is part of the timber strategy to reduce the risk of fire and to prevent timber loss. The company's objective is to have all fires contained by 10:00 a.m. the day following initial attack.

Interfor will submit a Fire Preparedness Plan before April 1 of every year, as required by the *Forest Fire Prevention and Suppression Regulation* of the *FPCBC Act*. The plan will outline the Company's response procedures including details of operating conditions and safeguards, responsible personnel, equipment, fire tool locations and initial attack actions.

The *Forest Fire Prevention And Suppression Regulation* of the *FPCBC Act* specifies requirements for: 1) personnel and equipment: including fire watch, fire fighting tools, water delivery systems, and central equipment cache; 2) fire prevention precautions relating to large and small engines, hot work, cable logging, sawmills, fireworks, combustible material, explosives, and restrictions on industrial activities; 3) open fires: including fires for cooking, warmth and ceremony, fires for disposal of waste, fires not permitted; 4) planning for protection operations: including requirement for a fire preparedness plan, content of fire preparedness plan, and training requirements; 5) fire hazard assessment and abatement: including requirement for carrying out a hazard assessment, content of a fire hazard assessment, what constitutes a fire hazard, and abatement or removal of a fire hazard; 6) initial fire suppression and site rehabilitation; 7) forest fire fighting compensation, and offenses.

Fire history and historic weather information from both Ministry of Forests and Licensee records will be used in the preparation of fuel management plans. This plan will also address control of logging slash hazard, location of fuel management corridors, and arduous operating locations and seasons.

Operational weather stations are established near active logging operations during fire season. Logging operations are curtailed during high and extreme fire hazard conditions and public access to the TFL will be restricted during these periods.

3.6 Silviculture Practices

Interfor is committed to carrying out basic silviculture to support the TFL resource management objectives. Silviculture activities are conducted in accordance with the *Forest Practices Code of BC Act (FPCBC Act)* and associated regulations. The objectives of the silviculture activities on the TFL are to:

- Ensure all harvested areas are reforested and managed to meet government and corporate requirements;
- Utilize silviculture systems appropriate for the achievement of forest management objectives;
- Protect the forest and minimize losses from fire, insects, disease, windthrow and other biotic and mechanical factors.

The aim of the silviculture program on the TFL is to produce logs of a suitable size, quality and species mix that will meet the demands of Interfor's sawmills.

Silviculture activities that occur on the TFL can be divided into three areas according to when they occur:

- 1) Prior to harvesting, a *silviculture prescription* is prepared. This document describes the ecology of the site, measures to be taken to protect other resources and the timelines allowed to obtain a free growing stand.
- 2) The *basic silviculture* activities (planting, brushing, surveys) that are undertaken after harvesting to ensure that a free growing stand is obtained.
- 3) Other silviculture activities and research. These can be performed at any time during the rotation of a stand and includes incremental silviculture. Incremental silviculture activities are typically done on stands that have obtained free growing.

Each of the above will be described in greater detail.

3.6.1 Silviculture Prescriptions

Prior to harvesting, a silviculture prescription (SP) is prepared and submitted to the District Manager for approval in accordance with the *Operational Planning Regulation* of the *FPCBC Act*. A silviculture prescription is an operational plan that "describes management objectives and strategies, and conditions that must be met to accommodate known forest resources, and to ensure that the inherent productivity of the site is maintained and a free growing stand is produced." The SPs may be amended at any time to reflect the state of current management. SPs are prepared using a variety of reference material, including, but not limited to, *The Field Guide for Site Identification and Interpretation for the Vancouver Forest Region – Handbook #28*, the *Establishment to Free Growing Guidebook - Vancouver Forest Region*, and the *Silviculture Prescription Guidebook*. Interfor's objective is to have approved SPs for the first two years of the Forest Development Plan (FDP).



Figure 27. Variable retention / Moose winter habitat retention, Knight Inlet

The *Operational Planning Regulation* specifies the contents of prescriptions. They must include a determination of the amount of productive ground lost to permanent access structures, measures to address terrain stability, silviculture systems and stocking standards.

➤ **Permanent access structures**

The proportion of land that will occupy permanent access structures will be limited to that compatible with safety and long-term resource management objectives. The amount of permanent access structures will be limited to the maximum stated and approved in the SP.

➤ **Terrain stability**

The *Operational Planning Regulation* of the *FPCBC Act*, requires that where certain site conditions exist, the licensee must collect and analyze data, and submit in conjunction with the FDP, assessments in consideration of site and soil conditions; terrain stability and hazards associated with instability. The silviculture prescription must be consistent with the results of this assessment. The risk of landslides will be assessed for impact on resource management objectives, and for significant risk of damage to resource values.

If new slides are noted, they will be reported to the appropriate Forest District as well as MoELP depending on the location of the slide. Reporting of slides will be in accordance with the Port McNeill or Campbell River Forest District landslide reporting procedures. As part of the individual event report an action plan for remediation work will be prepared.

Slides that have a detrimental impact upon the resource management objectives will be evaluated and where appropriate stabilized to:

- Control surface erosion and improve stability through revegetation and/or other techniques; and
- Re-establish conifers and/or deciduous species as required to meet objectives.

The *Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Processes Guidebook* may be considered in the assessment of the inherent sensitivity of a site to the following soil-degrading processes: soil compaction and puddling; soil displacement (including exposure of unfavourable subsoil and slope hydrology changes); and surface soil erosion (exposed mineral soil). In addition to the regulations, Interfor may make consideration of the *Soil Conservation Guidebook*, and the *Soil Rehabilitation Guidebook*.



Figure 28. Planting a slide, Glacier Bay

➤ **Silviculture systems**

Interfor will examine alternative silviculture systems and different harvesting methods. Key aspects to consider in the application of any alternative silviculture system includes:

- Safety of operational crews and the public following harvest. This factor is not an option, it is a requirement;
- Silvics of commercial tree species (as well as non-commercial brush and shrubs species, as they may effect conifers);
- Ecological suitability and forest health concerns;
- Terrain limitations;
- Exposure to high wind conditions that increase blowdown concerns;

- Economics including engineering/administration costs, potential approval delays, harvesting costs, road amortization costs and isolation of timber;
- Equipment limitations;
- Other resource values (visual, wildlife, etc.);
- Sustainable timber production;
- Value of timber;
- Logical operational considerations (for example yarding); and
- Local First Nation's or community values.

Interfor will apply a variety of silviculture systems that address the above concerns to meet the objectives for forest management on the TFL. Silviculture system selection will make consideration for the *Silvicultural Systems Guidebook*.

Alternative silviculture systems may be used to meet management objectives for visual quality, wildlife habitat or terrain stability. Alternative silviculture systems may also be employed to increase operability in environmentally sensitive areas, riparian buffers, wildlife management zones, and visually sensitive areas. Commercial thinning opportunities will be examined so that timber flow profile is optimized. Alternative systems that may be employed include 'variable retention', 'group selection', 'seed tree', and 'shelterwood'. It is anticipated that the main alternate system that will be utilized throughout the TFL is variable retention (VR). As this is a relatively new concept it is explained in greater detail below.

Variable Retention Silviculture System

The key concept in the variable retention (VR) silviculture system is the retention of a portion of existing stand characteristics (i.e., second growth, mature and over-mature) for at least one rotation, or cutting cycle, in order to achieve specific management objectives. The *Operational Planning Regulation* (OPR) defines a "retention system" as a silvicultural system that is 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.*

Interfor, has adopted two types of retention systems that may be utilized throughout its operations 1) aggregate variable retention and 2) dispersed variable retention. Both of these silviculture systems have the following requirements:

- more than 50% of the total logged area must be within one tree height from the base of a retained tree, group of trees or timber edge;
- a minimum of 10% of the total area under prescription (TAUP) will be retained for at least one rotation. TAUP, refers to the total area within the cutblock boundary for the silviculture prescription and includes wildlife tree patches adjacent to the block.

In addition for aggregate variable retention:

- about 200 metres between groups, patches or stand edges
- aggregate retention patches should be ≥ 0.10 hectares

In addition for dispersed variable retention:

- about 100 metres between groups, patches, stand edges or single trees
- dispersed retention includes individual trees retained or small groups < 0.90 hectares.

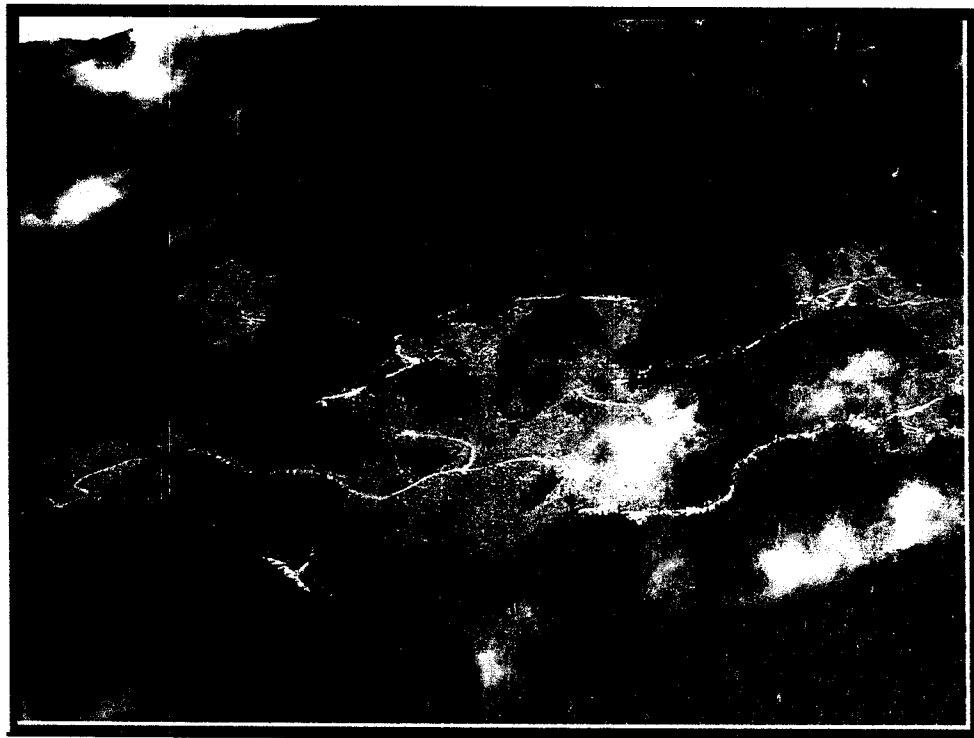


Figure 29. Variable retention on the landscape, Knight Inlet

One of Interfor's goal in applying the VR silviculture system is to retain some natural functions in the managed forest and to retain some of the natural elements of stand and forest structure, as ecological and aesthetic benefits. Many factors will be weighed for a specific block in determining the retention levels and spatial distribution.

The primary purpose of variable retention harvesting is to maintain the stands structural diversity by maintaining some mature/old-growth conditions. The variable retention system is a result of scientific study of the importance of structural complexity to forest ecosystem functioning and the maintenance of biodiversity⁹.

⁹ Franklin, J. F., D.R. Berg, D.A. Thornburgh and J.C. Tappeiner. 1997. Alternative silvicultural approaches to timber harvesting: variable retention harvest systems. Pp. 111-139. In Kohm K.A. and J.F. Franklin. 1997. Creating a forestry for the 21st century: the science of ecosystem management. Island Press, Washington DC.

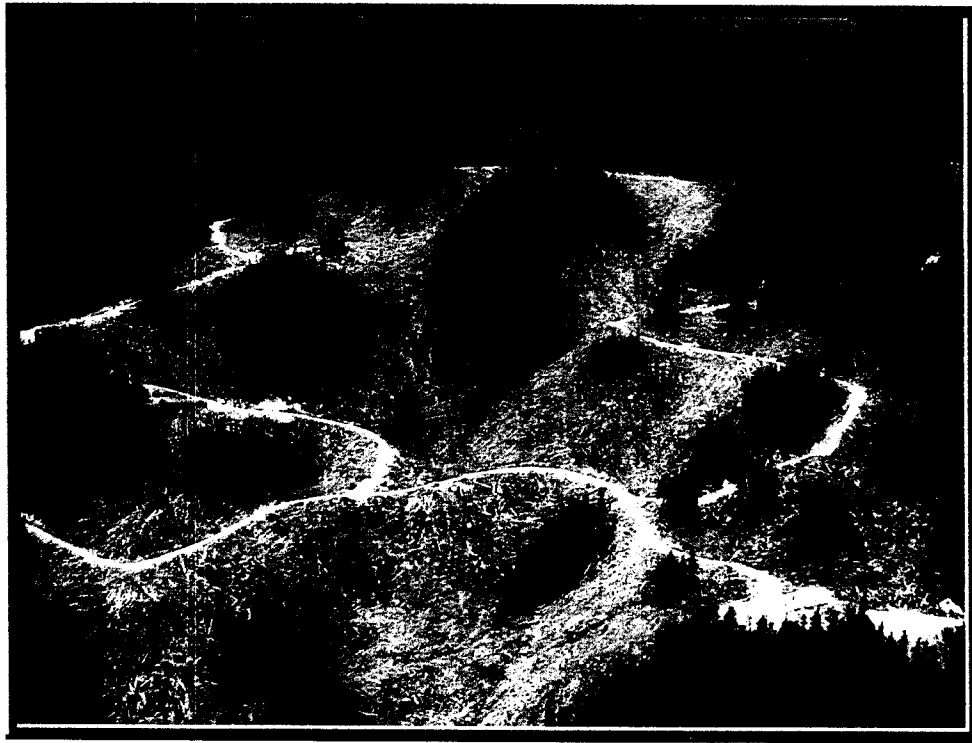


Figure 30. Variable retention –Knight Inlet

Variable retention follows a short-interval natural disturbance model by always retaining part of the stand structure after harvesting. It focuses on the role of structural complexity to forest ecosystem function and biological diversity. Important structural features include snags, woody debris on the forest floor, multiple canopy layers, varied sizes and conditions of live trees of varying ages, and the presence of canopy gaps. The resultant structure provides habitat components for many species.

Variable retention harvesting systems can be implemented using a variety of harvesting techniques, and will result in stands that have structures which are similar in appearance to silvicultural systems such as shelterwood, selection, or patchcut, to meet forest regeneration objectives.

The type, amount and spatial pattern of retention will be dispersed throughout a cutblock (individual trees or small groups) or aggregated (clumps or patches) depending upon management objectives. Two common models for retention are termed “dispersed retention” and “aggregated retention”. For safety and ecological reasons, aggregate retention is preferred.



Figure 31. Variable retention – West Thurlow Island (second growth)

➤ **Stocking standards**

The current *Establishment to Free Growing Guidebook - Vancouver Forest Region*, is used to determine the appropriate stocking standards for a specific site. Exceptions to this guidebook may be proposed after assessing the use of alternative silviculture systems, and to overcome or reduce the effect of the following:

- Colluvial sites (precluding achievement of minimum stocking standards);
- Sites with high water table (within 30cm of mean soil surface and restricting productive sites to mounds);
- Shallow organic soils over rock or other impermeable layers (Folisols); and
- Sites where lower stocking standards are deemed in accordance with wildlife management objectives.

Colluvial sites, sites with high water tables, and sites with folisols will be harvested only if they are capable of sustainable forest management, or if required for safety. Where regional stocking standards cannot be achieved, minimum stocking densities will be proposed similar to those present before harvesting. In some cases, longer than normal regeneration delays may be recommended and defined in the silviculture prescription.

3.6.2 Basic Silviculture

Basic silviculture includes the silviculture activities conducted from the time of harvest until the stand is declared free growing. Free growing is defined as “a stand of healthy trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees” (*Silviculture Surveys Guidebook*, December 1995). Silviculture activities that may be required to attain free growing may include site preparation

(mechanical or chemical), reforestation (planting or natural), brushing (manual or chemical), silviculture surveys and spacing.



Figure 32. Healthy regeneration

➤ Site Preparation

The necessity for, and method of site preparation, is prescribed in the SP through assessment of potential slash loading, planting spot availability, species preference, regeneration method, biodiversity requirements, and fire and pest risk. As well as achievement of target stocking objectives, site preparation treatments may be carried out as part of integrated vegetation management strategies, or to improve soil or other site conditions for tree growth. These treatments may be considered where compatible with resource management objectives and scheduled in an approved SP. Site preparation may occur on individual areas greater than 0.2 ha in area, dispersed throughout the harvest block, and on roadside patches greater than 50 m² (0.005 ha). Site preparation prescriptions may reference the *Site Preparation Guidebook*. Site preparation may include the manual preparation of spots through the moving and placement of logging slash. Most site preparation will be done with machines (excavators), however other techniques (i.e., spot burning, mounding, trenching, piling and chemical methods) may be employed where appropriate.

Chemical site preparation is considered where it is necessary to reduce existing vegetation competition when planting into established vegetation communities. Herbicides that may be considered are Vision (Glyphosate) and Release (Triclopyr). The proposed use of herbicides will be specified in the silviculture prescription. The use of herbicides is regulated under the *Pesticide Control Act and Regulations*. The Act and Regulations are administered under the Pesticide Management Program of the Ministry of Environment Lands and Parks (MoELP). The MoELP regulate Pesticide Use Permits, their issuance and Pest Management Plans.

It should be noted that site preparation treatments might not be of benefit to achieve regeneration on many harvested areas. Therefore, other than roadside piling and burning, the majority of the areas will likely receive no treatment.

➤ **Reforestation**

Reforestation is accomplished as soon as practical following harvest completion and any necessary site preparation treatments. In accordance with the approved SP the majority of harvested areas will be:

- Planted within one year of completion of harvest to minimize regeneration delay.
- Natural regeneration is prescribed on a site-specific basis. Fill planting of sites prescribed for natural regeneration may be required to achieve stocking standards within the specified regeneration delay period;
- Planted to ensure the presence of ecologically suitable and preferred species;
- Planted at densities that, along with natural regeneration, will ensure prompt achievement of target stockings standards;
- Planted with appropriate sized stock types (in general larger stock types are planted where vegetation competition, and climatic conditions require it)
- Planted with a component of genetically improved stock where available;
- Fill-planted within one year of plantation failure, if that occurs; and
- Planted/natural seedlings may be fertilized to enhance growth on poor sites or to achieve crown closure on brushy sites.

Interfor attempts to have available a five-year or greater supply of seed necessary to meet planting stock requirements for the TFL. Genetically improved seed-orchard seed will be obtained whenever it is available. Interfor is neither an owner nor partner in any seed orchards, and therefore purchases suitable seed from other producers. Interfor will collect, trade, and purchase seed to ensure adequate supply.

➤ **Brushing**

Stands are monitored from completion of harvesting to determine the need for brushing treatment(s). Deciduous and brush competition in regenerating stands will be controlled to allow stands to reach a free-growing condition as prescribed in the approved silviculture prescription.

In most cases, the objective will be to avoid the need to brush by promptly planting suitable stock types and/or fertilizing at the time of planting. If brushing is required then the methods employed will be manual, mechanical and/or herbicide application.

The method of brush control, whether manual, mechanical or herbicide application, is chosen on a site specific basis to provide the most efficient means of achieving the brush control objectives. The following variables are considered in selecting a treatment method for each site:

- The brush species competing, the present and potential degree of competition, terrain and site conditions;
- The effectiveness of different control methods available;
- Potential for re-treatments;
- Risk to workers, employees, and others;
- Risk to wildlife and fish;
- Risk to soil and water; and
- The cost of effective control by various methods.

➤ **Silviculture surveys**

An appropriate regime of surveys and inspections will be maintained to support the basic silviculture program. Sites will be:

- Inspected at harvest completion to identify and prescribe any site preparation or planting treatments and to refine prescriptions for planting or natural regeneration;
- Inspected after site preparation to determine the quality/efficacy of the treatments and to further prescribe the planting/regeneration strategy;
- Inspected during planting to determine the quality of the planting stock, plantation and survival chance;
- Inspected between the first and second growing seasons after planting to determine the seedling survival rate and the need for additional planting or treatments;
- Surveyed before or at regeneration delay to determine stocking levels, stand height, species composition and stand health;
- Inspected at or before the anticipated onset of undesirable levels of vegetation competition;
- Surveyed for free growing condition; and
- Considered for other surveys and inspections as required to manage site conditions and to achieve resource management objectives.

Silviculture surveys are planned in consideration of the current *Silviculture Surveys Guidebook*.

➤ **Spacing**

Stands will be spaced as a part of our basic silviculture obligation as defined by regulation and committed to in the silviculture prescription. Spacing is required when a survey of countable stems indicates greater than the maximum number of countable stems per hectare exist on an area. The stand must then be spaced down to between a minimum and maximum post-spacing density of well-spaced trees. The current maximum density, as defined in the *Silviculture Practices Regulation*, is 10,000 stems/hectare. Maximum density or basic spacing is seldom required on the TFL as free growing stands typically have less than 10,000 stems/hectare.

The current *Spacing Guidebook* may be considered in developing site-specific management strategies and prescriptions to accommodate resource management objectives identified in this Management Plan. The guidebook

is not definitive and is deemed to allow reasonable flexibility to vary and adapt juvenile spacing practices to site and stand-specific conditions and to achieve a wide range of forest management objectives.



Figure 33. Silviculture Surveys, Knight Inlet

3.6.3 Enhanced or Incremental Silviculture and Research

Interfor continues to pursue an incremental silviculture program, with the intent to enhance the forest's timber-producing capability by increasing volume and improving quality and value. Interfor will evaluate and implement programs that are of incremental value to the basic silviculture responsibilities. This program is ongoing through the implementation of Forest Renewal B.C. proposals planned for the term of MP 4. Components of this program currently being considered include the following:

- Prompt reforestation with larger-sized genetically improved stock, where available - to reduce time to achieve visually effective green-up, and to allow for increased opportunities on visually sensitive areas;
- Stand conversion from deciduous to coniferous stand types - to expand the contributing operable landbase, where economically and ecologically justifiable. If hardwoods are the most ecologically suitable species for a given site then hardwood management will be employed. Hardwood species will be managed for where needed to maintain stability, provide wildlife or riparian values and/or site rehabilitation.
- Growth and yield measurements, particularly those related to site index (SI) - to validate timber supply analysis SI adjustments;
- Pre-commercial thinning activities - to effect piece size and quality;
- Fertilization opportunities - to improve yields from managed stands; and
- Pruning opportunities - to meet second growth product objectives.

The objective of enhanced silviculture is, in general, to accelerate tree growth and to improve the value of the final crop (refer to Appendix 3 and 4). The most common intensive silviculture treatments used for live-crown management are spacing, fertilization, and pruning. The rehabilitation of backlog satisfactorily restocked (SR) and not satisfactorily restocked areas (NSR) areas is also a component of enhanced silviculture.

Intensive silviculture must consider site quality and the limitations imposed by low productivity sites. All silvicultural interventions must be based on economic efficiency, as the potential benefits may not always be realized.

There is an optimal combination of stocking and harvest age, for each species and site, which will produce the highest value combination of volume and quality. Product objectives will be the basis for specific prescriptions. No single prescription can serve as a general treatment. On each site the objective is to balance the costs of silviculture against increased future value, and to choose the economically optimum rotation age.

➤ Stand Management Prescriptions

The scope and content of stand management prescriptions (SMP) are described in the *Operational Planning Regulation* of the *FPCBC Act*. The regulations specify requirements pertaining to treatments and objectives and the content of stand management prescriptions.

An approved SMP is required under the authority of the *FPCBC Act*, prior to the commencement of any silvicultural treatment on free growing stands. Stand management prescriptions for TFL 45 may make consideration of the *Stand Management Prescription Guidebook*. SMPs describe actions to be carried out on a free growing site to:

- Ensure that stand management activities are planned and implemented to maintain or enhance the inherent productivity of the site;
- Ensure resource values including biological diversity are identified and accommodated; and
- Set out a series of stand management activities to produce a stand capable of meeting the stated management objectives.

Stand management objectives may vary from the production of high value sawlogs to the creation of improved riparian habitat. The SMP provides a stand-level action plan for achieving the target stand conditions to meet these varied management objectives.

Collectively, the SP and SMP provide a stand strategy that schedules all silviculture activities required to meet specific stand management objectives. The life span of an SMP is from free growing to the time when the next SP or SMP is approved. Though an SMP is in force for this period, it is not a static document. The SMP may be amended at any time to authorize alternative objectives and treatment(s) for that stand.

The SMP does not have the same legal requirements as the SP. It is expected to be an adaptive document. The SMP carries no obligations to fund or implement the prescription. However, if an activity is undertaken, the management objectives and the minimum treatment standards specified in the SMP must be adhered to. If there is more than one activity scheduled in an SMP and one or more of the prescribed activities have already been carried out, there is no legal obligation to carry out the remaining activities in the SMP¹⁰.

➤ Spacing

Stand density plays an important role in the growth function of regenerating stands, and the production of merchantable sawlogs. Presently, the TFL's spacing program is approximately 50 ha per year (Table 2). This treatment is predominantly done to achieve target sawlog dimensions and species composition at commercial thinning and final harvest.

Stands will be considered for juvenile spacing where stocking control can be reasonably expected to result in a positive financial return from an earlier harvest of sawlog-sized conifers, or where stocking control is appropriate to achieve other resource management objectives. In addition, social objectives and stands that qualify for incremental funding will be considered for spacing as funding (FRBC) becomes available.

Table 2: TFL 45 Enhanced Silviculture Summary

Year	Activity		Location
	Spacing (ha)	Pruning (ha)	
1996	99	0	Fanny Bay
1997	52	12	Fanny Bay
1998	107	29	Fanny Bay and West Thurlow Island
1999	0	0	
2000	0	0	
2001	41	0	West Thurlow Island

➤ Pruning

Stands will be considered for pruning where stand manipulation can be reasonably expected to result in a positive financial return from a harvest of higher quality sawlog-sized conifers, or where stand manipulation is appropriate to achieve other resource management objectives (i.e. wildlife habitat). In addition, stands that qualify for incremental funding will be considered for pruning, as funding (FRBC) becomes available. Table 2 lists the number of hectares pruned over the last six years.

Planning and implementation of pruning activities may consider direction and standards recommended in the *Pruning Guidebook*. Pruning activities must be prescribed under a SP or SMP.

¹⁰ Stand Management Prescription Guidebook, April 1995

➤ **Fertilization**

Stands will be considered for fertilization for biological reasons where a positive financial return from an earlier harvest of sawlog-sized conifers can be realized. Broadcast application of fertilizer for pre- or post-free-growing stand enhancement may be planned if funding is available through FRBC.

➤ **Site rehabilitation**

Site rehabilitation opportunities may exist for backlog satisfactorily restocked (SR) and not satisfactorily restocked (NSR) stands to improve stocking on sites with less than optimal conifer densities or preferred conifer species.

Non-coniferous cover

The majority of these sites are growing alder and cottonwood that is ecologically suited to these sites. Conversion to slower growing, longer rotation coniferous species may only be justifiable where ecologically and economically appropriate. Alder, which frequently establishes naturally on disturbed sites (i.e. slides, roads and landings), is often the most suitable species to rehabilitate these nutrient deficient sites and to control erosion. Alder growing on these sites provides additional stand level biodiversity. On problematic sites alder may be planted to ameliorate any erosion or productivity problems. Nearly all cottonwood and alder mix stands are alluvial, river flat sites suited to cottonwood or alder as primary species. These sites may be short lived, subject to occasional flooding and river channel change and contain fish spawning and rearing habitat, as well as other wildlife values. On ecologically suitable sites, alder and cottonwood may be managed.

Non-preferred coniferous cover

In some cases sites become naturally or artificially stocked with non-preferred conifer species. Examples are Sitka Spruce plantations that are vulnerable to spruce terminal weevil, coastal Douglas-fir plantations on wet hypermaritime/maritime sites, and pure Western Hemlock stands on wet salal sites. These situations are not prevalent on the TFL. However, where they occur, the conversion of these stands to higher productivity, lower risk stands will require a detailed cost/benefit analysis.

Poorly stocked stands

These areas may have low or patchy stocking with conifers. These areas meet minimum stocking standards, however tree quality and form may be less than optimal. These areas will likely produce stands with canopy gaps that provide stand diversity. Increasing stocking in these stands is typically not economical.

Approximately, 2000 hectares of wide spaced Douglas-fir stands have been identified throughout the TFL. These stands contain 30-40 year old Douglas-fir with densities ranging from 400-600 stems/hectare. The trees have decreased value, particularly on better sites, because of rapid growth, heavy and persistent branching, forks and sinuosity. A strategy is currently being developed to determine the appropriate management regime for these stands.

➤ **Silviculture and other Research**

Interfor cooperates with the MoF, MoELP, and DFO, and other independent research institutions such as the Forest Engineering Research Institute of Canada (FERIC), in operational field level research. To date the following research trials have been established throughout TFL 45.

- 1) In 1969, a research trial was established at the head of Knight Inlet to: “determine the extent and nature of adaptive variation within Douglas-fir and to relate this variation with environmental variation, principally climate, for the purpose of developing seed transfer rules or a provenance zone map for the use in planning seed source aspects of reforestation programmes” (Outline of experiment EP. 599.03(KK), Research Branch, Ministry of Forests, Victoria, B.C.). Thirty-year measurements were taken in 2000.
- 2) In recent years the Ministry of Forests has put significant emphasis on anticipating site degradation prior to the construction of roads in areas to be logged. Interfor has collected information to produce ‘road construction class / sideslope /site degradation’ tables to aid in the preparation of site degradation estimates. In the ongoing validation of site degradation estimates field verification measures are periodically undertaken on roads within the TFL. These estimates are then incorporated into the site degradation tables. The most recent measurements were done in 1996 and 1997.
- 3) In 1997, a trial was established in conjunction with BC Research Inc (BCRI) on a weevil resistant spruce at the head of Knight Inlet. Twelve different weevil-resistant stock types were planted, ten were derived from emblings, one from seed, and one from rooted cuttings. Results will be combined with other Licensees across a broad geographical range enabling growth performance and weevil resistance comparisons to be made for Sitka Spruce produced from weevil-resistant sources¹¹.
- 4) Interfor, in cooperation with Fisheries and Oceans Canada, has participated in an ongoing fishery research and enumeration project. This project takes place annually on the Klinaklini River and Devereaux (Mussel) Creek at the head of Knight Inlet.
- 5) A herring-monitoring program, funded by Interfor, is set up each spring to ensure that log storage and booming activities do not disrupt the herring spawning cycle.

¹¹ Estlin M. 1997. Establishment Report for Knight Inlet Spring 1997 Sitka Spruce Research Trial in Block W2500. Draft Report.



Figure 34. Drilling a rock quarry, Frederick Arm

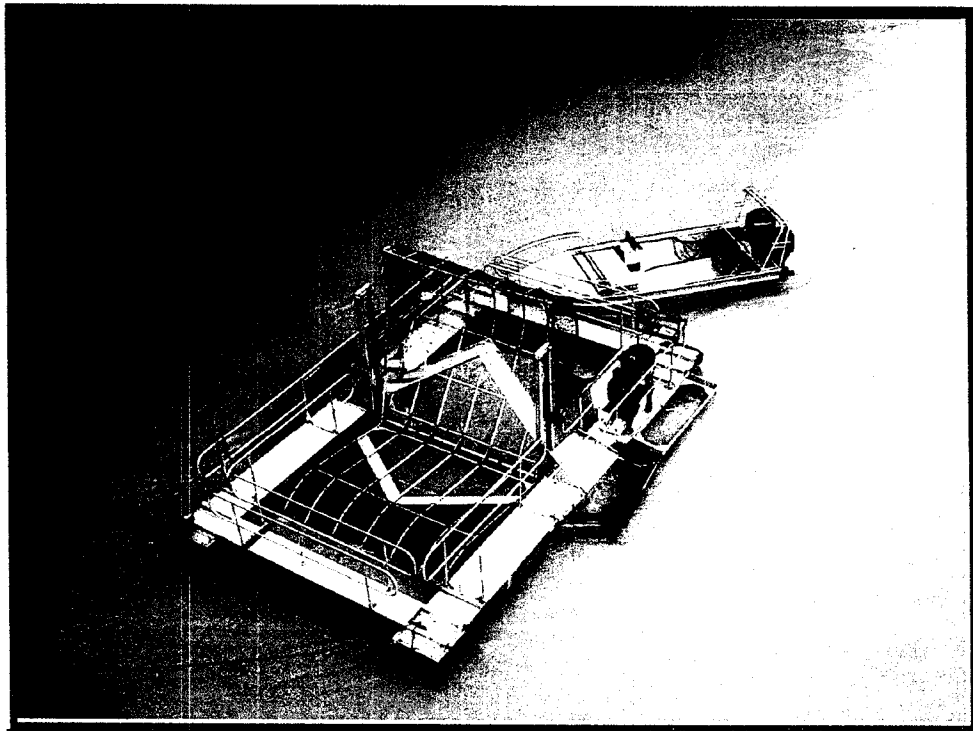


Figure 35. Fisheries and Oceans Canada Fish Wheel – Klinaklini River, Knight Inlet



Figure 36. Fisheries and Oceans Canada Fish Wheel – Klinaklini River, Knight Inlet

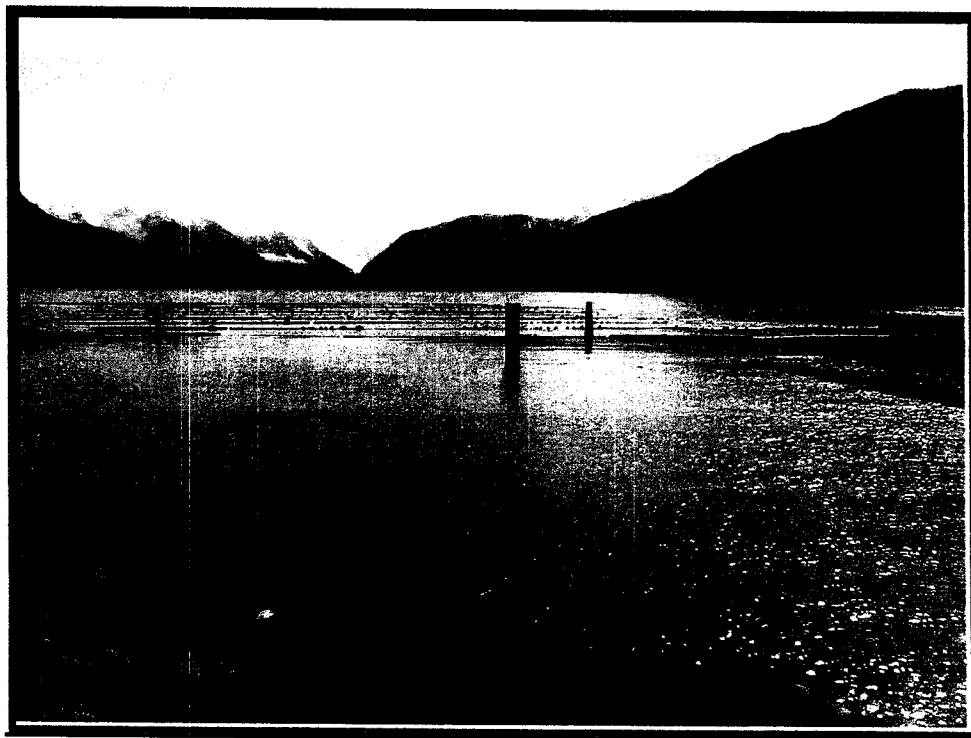


Figure 37. Booming ground, Knight Inlet

3.7 Timber Management

The management strategies for timber focus on attainment of the approved Allowable Annual Cut (AAC) as set by the Chief Forester of BC. This includes several aspects related to determining the rate, methods, and standards of harvesting as described in the following sections.

3.7.1 Timber Supply Analysis

A timber supply analysis has been completed as a component of Management Plan No. 4 (Appendix 12 and 13). The analysis evaluates how current management, including allowance for management of non-timber resources, affects the supply of harvestable timber over a 250-year period. In addition, the analysis includes a 20-year spatial feasibility on proposed harvest levels and quantifies the sensitivity of the results to uncertainty associated with modelling inputs (Appendix 14).

A timber supply model was employed to forecast long-term timber availability under a variety of scenarios. The timber supply analysis provides the technical basis for the Chief Forester of British Columbia to determine an allowable annual cut (AAC) for TFL 45 for the next five years.

The current AAC for TFL 45 is estimated at 220 000 cubic meters, based on the Base Case analysis from Management Plan No. 3. While this AAC represents the harvest level in the short term, there is an associated harvest flow that represents the expected timber availability over the next 250 years. Four concurrent harvest flow objectives have been established for the TFL:

- Maintain an initial harvest level of 220 000 cubic meters per year;
- Decrease the periodic harvest rate in acceptable steps ($\leq 10\%$) when declines are required to meet all objectives associated with the various resources on the land base;
- Do not permit the mid-term harvest to fall below a level reflecting basic maintenance of the productive capacity of the TFL (based on VDYP yield estimates); and
- Achieve an even-flow long-term supply over a 250-year time horizon.

The inventory information used to define the resource characteristics for TFL 45 incorporates a number of recent updates to account for past disturbances, and updated definitions of non-timber resources such as recreation, wildlife and visual quality values.

While approximately 64 920 hectares were determined to be productive forest, only 26 800 hectares (41%) of this area was considered as part of the net timber harvesting land base, the balance having been classified as inoperable, or reserved for other purposes.

The productive forest was subdivided into a number of overlapping management zones. Specific forest cover objectives were set for each zone, based on its management objectives. Management zone forest cover objectives were incorporated into the timber supply analysis procedure.

Three analysis scenarios were completed for this timber supply analysis in support of Management Plan No. 4, specifically:

- Current Management Performance (Base Case) – based on the date of commencement for the preparation of Management Plan No. 4 employing current management assumptions;
- Alternative Management Scenarios – options considered operationally feasible by the Licensee; and
- 20-Year Spatial Feasibility – models the Base Case assumptions spatially, including cutblock adjacency and harvest blocks from Interfor's 5-year plan.

All analyses employed growth and yield estimates developed by J.S. Thrower and Associates. All employed the same land base classification. Using the new growth and yield inputs a timber flow pattern was developed, taking into consideration the timber flow policy stated above.

The Base Case option results in a starting harvest of 220 000 cubic meters for a period of 30 years. The long-term harvest level was determined to be 210 000 cubic meters. Forecasted long-term levels are approximately 9% below the theoretical long run sustainable yield (LRSY), after allowance for non-recoverable losses and wildlife tree retention. LRSY is calculated based on harvesting all stands at culmination of mean annual increment (MAI). Given the imposition of conflicting forest cover and harvest scheduling objectives, the realized long-term level will always be less than the calculated LRSY.

Based on this outcome, a series of sensitivity analyses were completed to test the impact of changing specific input assumptions. In the short-term, the supply of available timber above minimum harvest age reaches critical levels at decades 5, 16 and 23. Unforeseen delays in the availability of timber from second growth stands will have a negative impact on timber supply, as the supply from existing mature volumes must be stretched over a longer time horizon. In addition to this analysis, a number of alternative options have also been completed to assess the impacts of different TFL programs.

The 20-Year Spatial Feasibility option indicates that the short-term harvest can be placed on the ground with all of the Base Case assumptions and cutblock adjacency in place. It was not designed to be an operational plan, but a test of timber availability given the current structural characteristics and spatial distribution of components of the resource, as well as the structural and spatial management objectives associated with the Forest Practices Code.

Based on the outcome of these analyses, it is proposed that the AAC for TFL 45 be set at 220 000 cubic meters. This harvest is maintainable for a period of 30 years. It is then reduced by approximately 8% in decades 4 and 5, to a mid-term level of 186 200 cubic meters. A long-term level of 210 000 cubic meters is achieved in decade 11.

The proposed AAC is supported by four (4) critical factors:

- The Base Case analysis demonstrates that this level is sustainable for three decades;
- Mid-term reductions are reasonable given the productivity of the land base;
- Long-term harvest is maintained within 9% of the productivity of the land base; and
- The 20-Year Spatial Feasibility analysis has demonstrated that the proposed AAC is spatially attainable for 20 years.

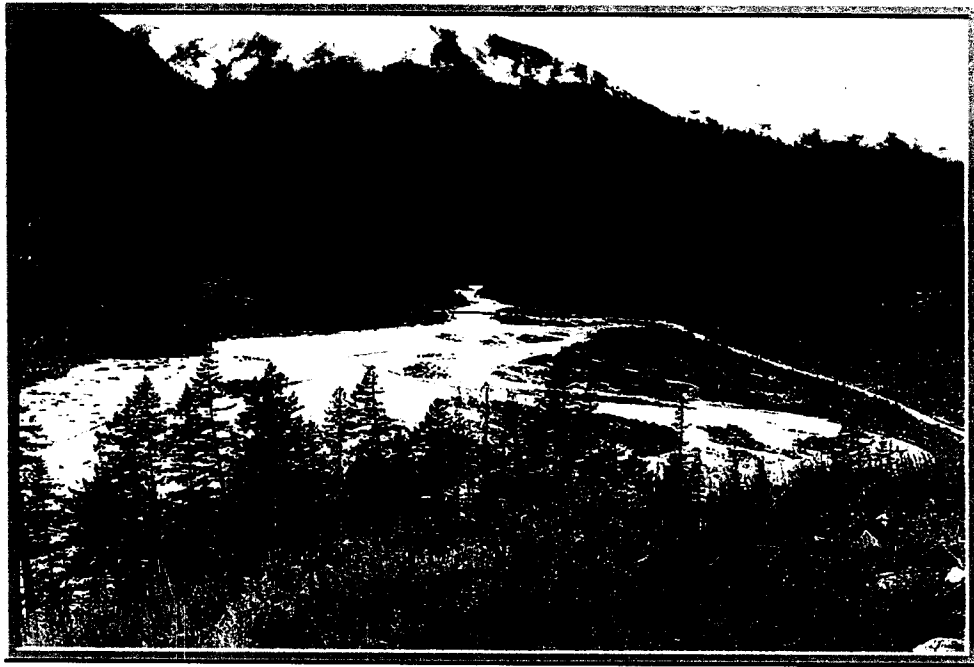


Figure 38. Klinaklini River and West 20km bridge, Knight Inlet (J. Webb)

3.7.2 Timber Harvesting Landbase

The total area of TFL 45 is 231 866 hectares. The calculation of the total net landbase accounts for the deductions with respect to non-productive and non-commercial forest, physical operability, roads, riparian areas, ungulate winter ranges, environmentally sensitive areas, recreation, deciduous-leading forest types, Not Satisfactorily Restocked Areas (NSR), low productivity sites and stand-level biodiversity (Figure 40-42 and Table 3) (refer to Appendix 12).

The timber harvesting landbase for TFL 45 is determined by applying the following reductions, in descending order to the gross landbase:

- Reduction for non-forest and non-productive (lakes, swamps, rock, alpine, etc). All land classified as non-forest or non-productive is excluded from the net timber harvesting landbase;
- Reduction for non-commercial brush (NCBr). Land classified as NCBr is excluded;
- Reduction for inoperable. Land examined for inoperable was based on a number of factors including, economics, physical accessibility, environmental concerns and currently available harvesting systems (i.e., conventional and helicopter);
- Reduction for existing, classified, unclassified and future roads, trails, and landings;
- Riparian Allowances. Riparian allowances are designed to exclude harvesting from areas immediately adjacent to waterbodies, including streams, lakes, swamps and wetlands;
- Reduction for Management Zones (MZs) (formerly Environmentally Sensitive Areas, ESA). All lands classified as MZ (or ESA) are reduced depending on the severity of the constraint and on the category of MZ;

- Reduction for deciduous species. All deciduous leading stands are excluded from the net operable landbase;
- Not Satisfactorily Restocked (NSR) Areas. NSR areas will be added back into the timber producing landbase in the first decade of the simulation, as it is assumed that it will be regenerated within 2 years;
- Low productivity sites. The majority of these areas are included in the Inoperable category; and
- Stand-level Biodiversity. The stand-level biodiversity requirement modelled is the practice of leaving Wildlife Tree Patches (WTPs) by reducing the average volume per hectare that is harvested.



Figure 39. Backspar Hoe, West Thurlow Island

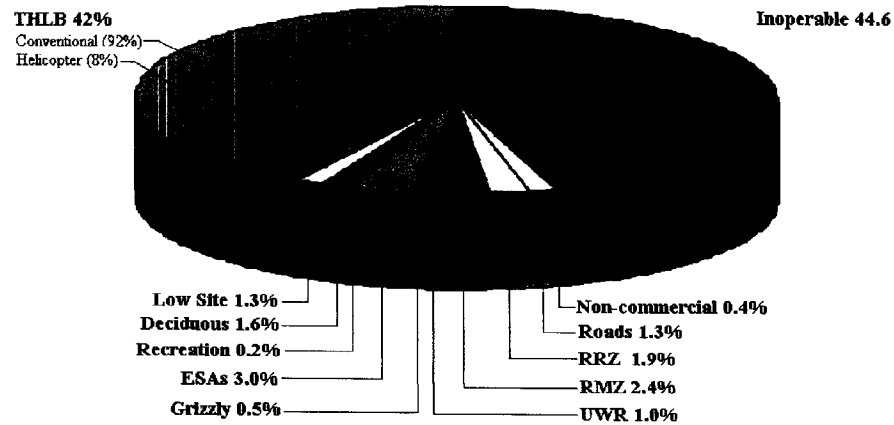


Figure 40. Distribution of the landbase in TFL 45

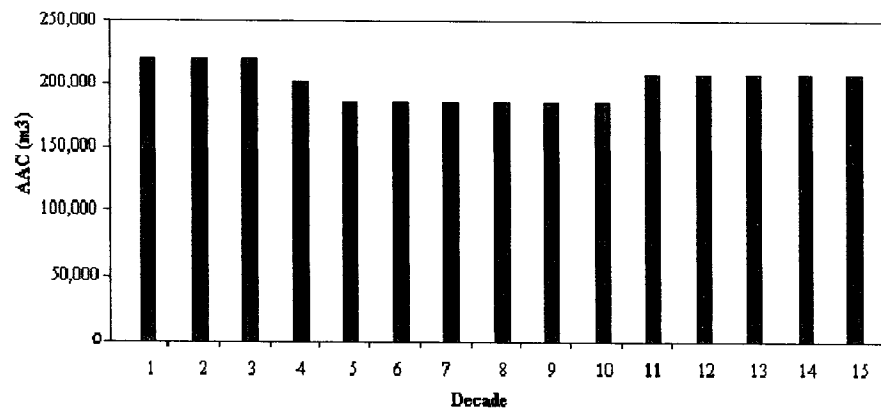


Figure 41. Base Case harvest levels for MP#4

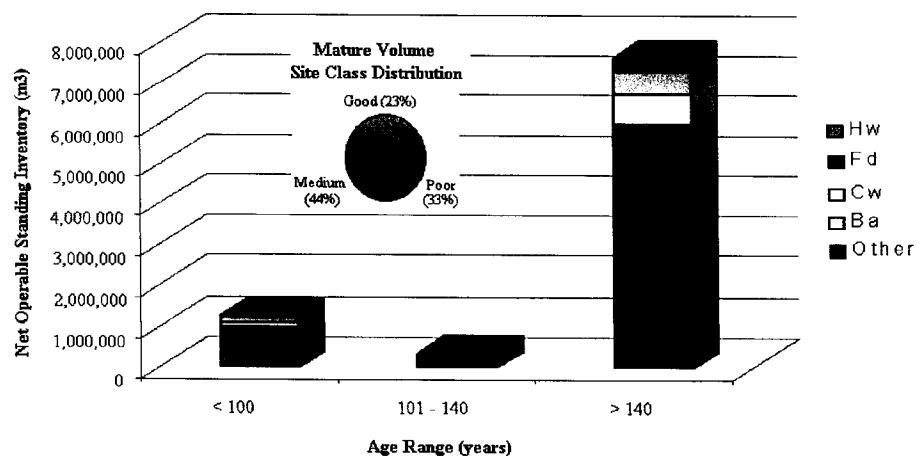


Figure 42. Coniferous volume standing inventory for TFL 45

Table 3: Timber harvesting landbase determination

CLASSIFICATION	PROD AREA (HA)	NET AREA (HA)
Total Landbase	64,918	231,866
Non-productive forest		166,948
Total productive forest	64,918	64,918
Reductions to Productive		
NC (Non-commercial)	238	238
Inoperable/inaccessible	29,194	29,006
Operable:	35,725	35,674
Existing Roads	877	842
Stream Riparian Reserves	1,723	1,217
Stream Riparian Management	4,544	1,544
Lake Riparian Reserves	4	1
Ungulate Winter Range	1,939	678
Grizzly	401	330
ESA 1 - soils	8,664	1,550
ESA 2 - soils	1,059	389
Recreation	3,398	121
Deciduous	2,547	1,043
NSR	497	325
Low <1>	3,926	628
Low <2>	124	48
Low <3>	39	33
Low <4>	72	32
Low <5>	180	65
Low <6>	32	23
Low <7>	3	2
Low <8>	2	0
Total Operable Reductions		8,871
Reduced Landbase:		26,803
Future Changes		
Roads, Trails, Landings		-1,015
NSR		+325
Net Long-term Landbase		26,113

➤ **Non-productive and non-commercial forest**

A total of 166,948 hectares were classified as non-productive forest, lakes, swamps, rock, alpine areas, etc., and were excluded from the timber harvesting landbase, together with 238 ha of non-commercial brush.

➤ **Economic and physical operability**

Operability mapping, including both economic and physical operability, was completed for the TFL in 1994 and approved in 1995. This year, the operability was revisited following its transition from the old Fletcher Challenge

NAD 27 to the updated TRIM North American Datum (NAD) 83. Through this process, a total of 29 006 hectares, including low-productivity sites, were identified as inoperable.

The current productive landbase of 26,918 hectares is comprised of approximately 43% is inoperable, 51% conventionally operable, 2% marginally operable, and 4% operable by helicopter (refer to Appendix 5). The distribution of the operability classification is shown in Figure 45.

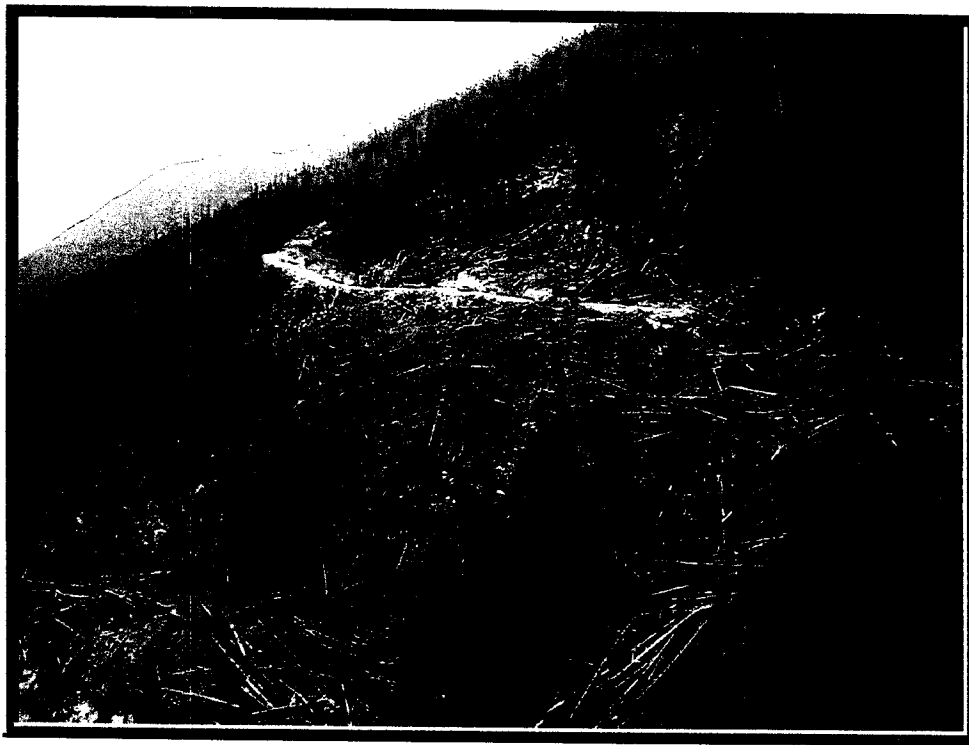


Figure 43. Logging variable retention, Knight Inlet

➤ **Roads, trails and landings**

The area degraded by existing (classified and unclassified) roads, trails and landings is calculated using length (segment of road passing through operable TFL) and width (expected permanent loss in productive growing space). The estimate for area removed for existing roads in MP 4 is 842 hectares.

➤ **Riparian Allowances**

A total of 1 217 hectares were excluded from the timber harvesting landbase that were immediately adjacent to waterbodies, including streams, lakes, swamps and wetlands. Stream and lake buffer widths were determined by comparing a number of sources, including: current management practices, Riparian Management Area Guidebook (MoF and MoELP 1995) and *Operational Planning Regulations of the FPC*. A further 1 544 ha were excluded from the timber harvesting landbase to account for riparian management.

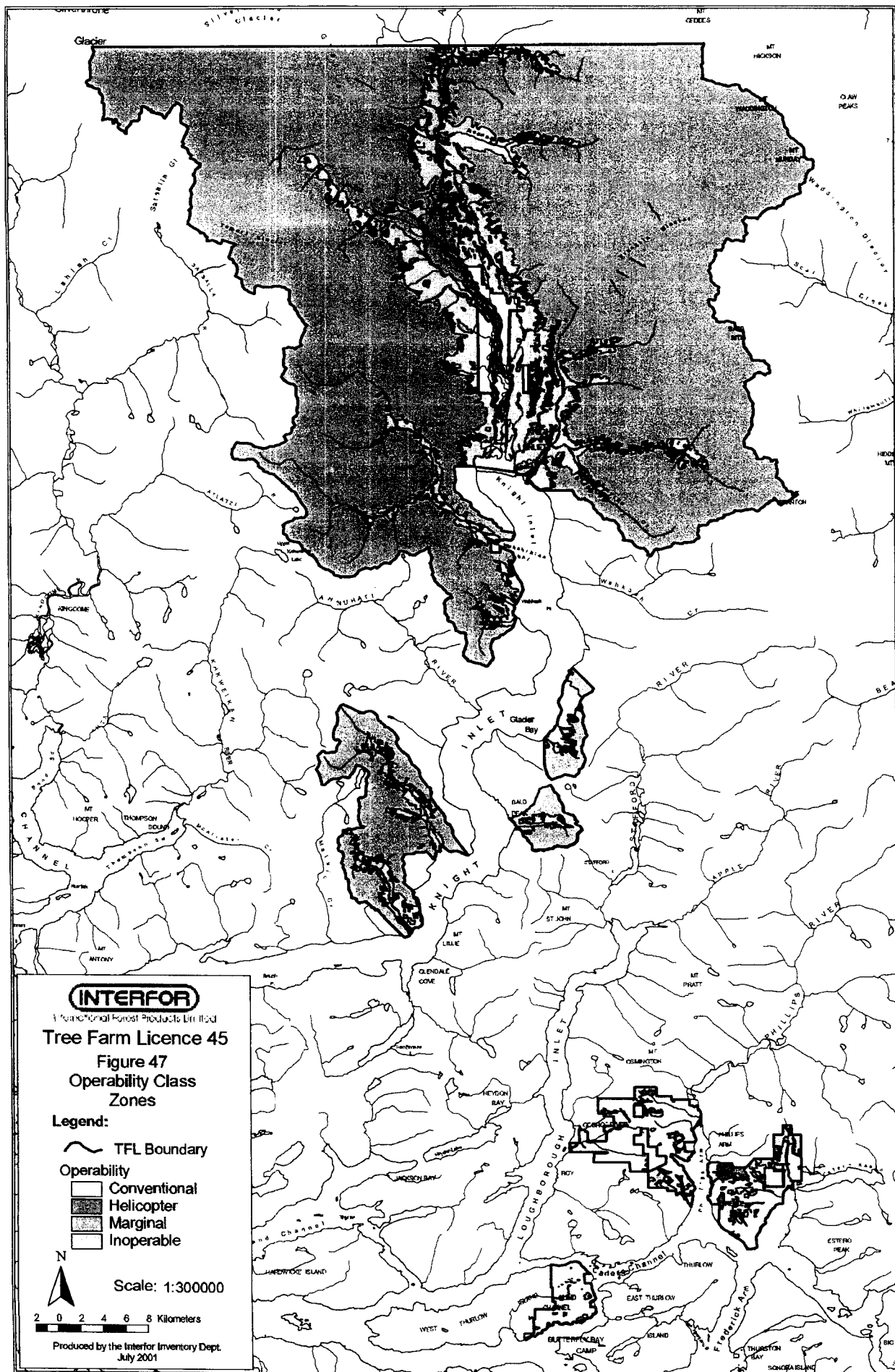


Figure 44

➤ **Management Zones (MZs) (formerly Environmentally Sensitive Areas)**

MZs, as with ESAs, are mapped land units with special management requirements and modelling constraints. Categories of high and moderate sensitivity have been assessed for Slope stability and avalanching, Recreation and Wildlife. Reduction of the area available for harvesting depends on the severity of the management constraint and on the category of MZ (or ESA). All mapping procedures have been completed according to the MoF standards.

➤ **Deciduous-leading forest types**

Only the coniferous component of the forest is considered commercial. All remaining stands dominated by deciduous tree species (1 043 hectares) were deducted in deriving the timber harvesting landbase.



Figure 45. Basalt Bluffs, Knight Inlet

➤ **Not Satisfactorily Restocked Areas**

Not satisfactorily restocked (NSR) areas (325 ha) will be regenerated and contribute to the timber harvesting landbase in the first decade of the simulation. It is assumed that this area will be regenerated within two years.

➤ **Low Productivity Sites**

Sixteen site series found within Knight Inlet, resulting in 831 ha, were classified as low productivity sites due to inherent site factors such as nutrient availability, exposure, and excessive moisture or because they are incompletely occupied by commercial tree species.

➤ **Stand-level Biodiversity (Wildlife Tree patches)**

The only stand level biodiversity requirement modelled will be the practice of leaving wildlife tree patches. WTP are modelled by reducing the average volume per hectare that is harvested in order to account for the trees left.

3.7.3 Existing Forest Cover Information

The forest cover inventory is updated for disturbance (logging updated until Sept 2000) and projected to year end. The inventory has also been updated to NAD 83 base and includes new VRI forest cover attributes in a digital and spatial format compatible with the provincial inventory database.



Figure 46. Low productivity site, Knight Inlet

In 2000, two Biogeoclimatic Ecosystem Classification (BEC) projects were completed. The reports entitled “Terrestrial Ecosystem Mapping (TEM) of International Forest Products Tree Farm Licence 45” and “Potential Site Index Estimates for the Main Commercial Species on TFL 45” are found in Appendix 6 and 7, respectively.

➤ **Volume estimates for existing stands**

All stands with a current age less than 41 years will be assigned to manage stand yield curves, reflecting the silviculture history of the licence. Stands older than 40 years were assigned to VDYP curves.

The cruise adjusted volume scenario used approximately 1800 cruise plots from the Fletcher Challenge Inventory information for TFL 45. This scenario will develop a second complete set of yield curves. Refer to Appendix 12, 'TFL 45 Inventory Audit and Statistical Adjustment' for further details.

➤ **Utilization and compliance**

The standard and level of timber utilization define the species, dimensions and quality of trees that must be cut and removed from the site during harvesting operations. For stands older than 140 years, current utilization standards require trees to be utilized to a minimum of 17.5 centimetres in diameter at breast height and to a minimum top diameter of 15 centimetres. Stump height must not exceed 30 centimetres. The average volumes per hectare estimated for TFL 45 were based on these standards.

3.7.4 Allowable Annual Cut

A comprehensive series of timber supply analysis contained in the Timber Supply Analysis Report for TFL 45 (Appendix 13) form the basis for a recommended AAC of 220 000m³ per year for MP 4 period 2001 to 2006 (including SBFEP apportionment).

The AAC determination considered two main options. The first is the current management strategies (or base case) and the other includes five distinct projects proposed to be explored as licensee scenarios (Appendix 13).

The previous AAC which was set in MP 3 in 1995 was 220,000m³ per year. Table 4 shows the annual allowable cut apportionment from MP 3 as well as the present proposed MP 4.

The AAC represents a target harvest rate for TFL 45 that supports management objectives, issues and opportunities contained in this plan. It establishes a stable base for the planning period from which other factors can be applied and tested. These may include; any additional government requirements, First Nation considerations, new inventories and Forest Renewal B.C. projects.

Table 4: TFL 45 Allowable Annual Cut Apportionment

	Approved AAC Apportionment December 30, 1996	Proposed AAC Apportionment MP 4
Schedule A AAC	13,860	13,860
Schedule B AAC		
SBFEP	10,080	10,080
Licensee	196,060	196,060
Sub-total	206,140	206,140
Total TFL 45 AAC	220,000	220,000
Total Licensee AAC	209,920	209,920

3.7.4.1 20-Year Plan

An analysis of timber supply has been completed as a component of Management Plan No. 4. The analysis evaluates how current management, including allowance for management of non-timber resources, affects the supply of harvestable timber over a 250-year period including a 20-year spatial feasibility on initial harvest levels.

As laid out in the MoF guidelines for the preparation of the 20-year plan, the spatial plan sets out a hypothetical sequence of harvesting over a period of at least 20 years. The 20-year plan utilizes spatial constraints with little or no field information, to test achievement of a harvest level that conforms to current standards and practices as defined for the Base Case in the Timber Supply Analysis Information Package (Appendix 12).

The TFL 45 20-Year Spatial Feasibility analysis has been prepared with these objectives in mind (Appendix 14). It is not designed to be an operational plan, but a test of timber availability given the current structural characteristics and spatial distribution of components of the resource, and the structural and spatial management objectives associated with the Forest Practices Code.

Overall, the results of the 20-Year Spatial Feasibility clearly indicate that the 20-year harvest target, i.e. 220 000 cubic meters per year, can be met with the prioritization of FDP blocks and adjacency green-up requirements. In addition, all forest cover constraints at both the Resource Emphasis Areas (REA) and landscape unit levels were satisfied.

The 20-Year Spatial Feasibility option submitted as part of MP 4 also supports a harvest at least as high as the current AAC.

Approximately 32% of the blocks harvested in the first five years of the 20-Year Spatial Feasibility option are currently included in Interfor's 5-year FDP. Typically, when preparing the 5-year FDP approaches to reviewing old

forest requirements do not replicate those approaches in the timber supply model, i.e. forest planners generally have more flexibility in selecting areas for harvest.

It is important to note, however, that the results of the 20-Year Spatial Feasibility option represent one of the many possible solutions for achieving the Base Case harvest targets.

The results of 20-year spatial feasibility scenario are not to be considered an operational plan. However, the results can assist planning staff with identifying candidate areas for harvesting and areas that may be restricted due to non-timber requirements.

3.7.5 Small Business Forest Enterprise Program (SBFEP)

The current AAC is 10 080 m³.

Consistent with approved MP 3, the management strategies for SBFEP blocks in TFL 45 will continue to conform to the following principles:

- The primary location of SBFEP blocks will be at Knight Inlet to better facilitate sharing facilities among contractors;
- At their request, the Port McNeill Forest District will administer the program on behalf of the Ministry of Forests;
- The SBFEP apportionment will be derived from the Forest Development Plan blocks representing the profile both in terms of timber quality and harvesting chance (including helicopter logging), was determined in mutual agreement by Interfor and the MoF District Manager;
- Harvest plans will be identified in the 5 year Forest Development planning process which will be completed in cooperation with the Port McNeill Forest District;
- Compensation will be paid to the company by the MoF for Interfor's engineering and administrative activities at a mutually agreed upon rate only for cutblocks that SBFEP takes from Interfor's FDP.

For additional discussion, refer to Appendix 11 (SBFEP Carry Forward).

3.7.6 Cut Control

Periodic cut requirements for TFLs are legislated in the *Forest Act*. The holder of a Tree Farm Licence must ensure that:

- The volume of timber harvested during a calendar year is not less than 50% nor more than 150% of the allowable annual cut;
- The volume of timber harvested during a 5 year cut control period is not less than 90% nor more than 110% of the total of the allowable annual cuts available during that 5-year period; and
- Volume of timber harvested during a calendar year includes: avoidable residue, unavoidable residue, avoidable waste, and unavoidable waste, as determined by an assessment.

As specified in the TFL licence document, for the purposes of the definition of '5-year cut control period' in the *Forest Act*, the 5-year period for TFL 45 begins on January 1, 1998.

Cut control periods effected by the term of MP 4 are:

- January 1, 1998 to December 31, 2002
- January 1, 2003 to December 31, 2008

3.7.7 Product Objectives

The timber management strategies are guided by fibre requirements that focus on the manufacture of solid wood products. Strategies and development aim to optimize both the long-term use of the forest landbase of TFL 45 and stand development and growth for the benefit of society, the stability of the company and the local communities. Determination of product objectives contributes to this goal and provides objectives for silviculture treatment planning, budgeting and harvest scheduling.

Product objectives are intended to ensure that:

- To as great an extent as possible, H and I grade sawlogs, or better, suitable for manufacture of clear, appearance-merch, select and structural lumber are produced (with 50 cm \pm 15 cm average DBH for final harvest and 30 cm \pm 5 cm average DBH for commercial thinning);
- A spectrum of log grades, including clear material will be produced over the long-term to provide opportunity for value added manufacturing;
- Rotation ages will dovetail with requirements for other resource values visual quality and biological diversity;
- Incremental silviculture opportunities will only be considered when they achieve positive rates of return. Where FRBC or Ministry of Forests funding is available, incremental silviculture projects will be considered in light of government-specified discount rates and economic assumptions for calculating rates of return.

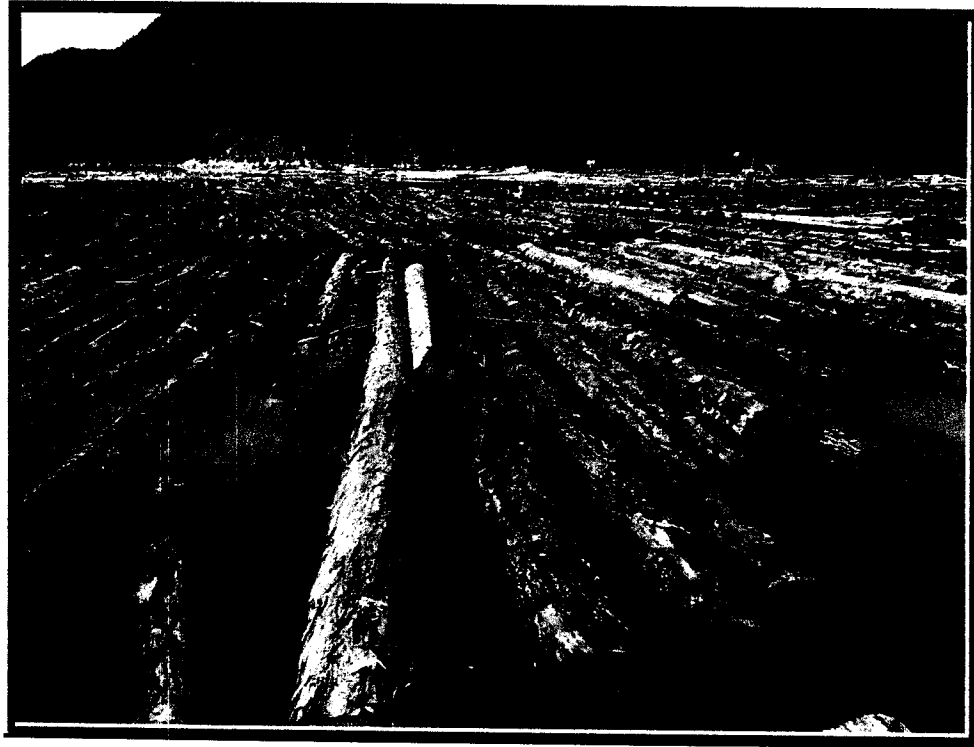


Figure 47. Log booms, West Thurlow Island

➤ **Late Seral Stage Forest Product Objectives**

The current log production objective for TFL 45 is:

- Harvest primarily late seral stage forests to produce conifer logs suitable for manufacturing of solid wood products ranging from “specialty products” through to commodity structural lumber.

Company wide coastal log production dictates the upgrading and modification facilities in order to match the timber resources with customer lumber requirements.

➤ **Second Growth Product Objectives**

Strategies that will be implemented specifically in consideration of product objectives are:

- Tree species selection will be based on ecological suitability, reliability, productivity and value; and
- Where feasible, target stocking levels, rotation ages, and silviculture treatments will be planned to achieve sawlog grade specifications with highest value.

3.7.8 Maximizing Value from the Harvest

As part of the strategy for timber management, Interfor pursues ways to increase the economic value from the forest. The company investigates economically viable opportunities and implements programs where feasible. Interfor will continue to do this during the term of MP 4. Strategies considered to increase value are:

- Developing availability of sufficient operating areas to optimize:
 - Operational efficiencies;
 - Environmental objectives;
 - Employment stability;
 - Seasonal accessibility; and
 - Silvicultural systems and harvesting methods.
- Increasing utilization levels derived from:
 - Minimizing fibre loss due to breakage.
- Higher product value recovery obtained from:
 - Cooperating with complimentary businesses for entrepreneurial utilization of wood and wood by-products; and
 - Encouraging value added initiatives both internal and external to the company.

3.7.9 Harvesting the Profile

Harvesting the full profile of the contributing forest landbase, to the extent feasible, is part of a timber planning strategy. In TFL 45, the profile of the forest is considered in terms of both its operability classification and by site distribution. Interfor is currently harvesting a spectrum of operable classes, including helicopter. The AAC for MP 4 is based on the aggregate of conventional and helicopter operability classes.

Previous harvesting patterns within the TFL were primarily based on operating units that included the full range of species types. The operability classification completed for MP 4 identifies harvesting opportunities.

Figure 50 provides the recent log production profile for TFL 45. Grades under 200m³ were omitted from the figure. Figure 51 shows the distribution of conventional vs. helicopter logging within TFL 45 as well as within each forest district.



Figure 48. Second growth Hemlock, West Thurlow Island

3.8 Resource Management

Tree Farm Licence 45 is located on the mainland coast and the majority of it is found in Knight Inlet. Smaller areas of the TFL are also found in Phillips Arm and Frederick Arm, as well as on West Thurlow Island. This TFL has timber values as well as spectacular scenery and an abundance of other natural resources. Through the management plan process these resource values are identified for integration with development proposals. Interfor will manage its operations in compliance with all appropriate legislation, rules and standards pertaining to the specified resources.

Resource planning and management in TFL 45 is guided by inventory requirements and planning initiatives, including Interfor's Sustainable Forest Plan and Environmental Management System. As part of the planning process, new resource inventory data has been collected for MP 4 according to government standards. The resource planning objective for TFL 45 is to maintain a comprehensive set of inventories that will facilitate strategic planning requirements.

A Geographic Information System (GIS) for the management of broad-scale TFL resource inventories has implemented. Information collected is registered to government TRIM standard map base, at a 1:20,000 scale. The GIS facilitates analysis and map presentation requirements.

Management activities for TFL 45 will integrate resource planning procedures that are responsive to changing standards in recognition of the general needs for industry, environment and society. The integration of new activities is anticipated to occur through the planning period, as they are approved for implementation by government.

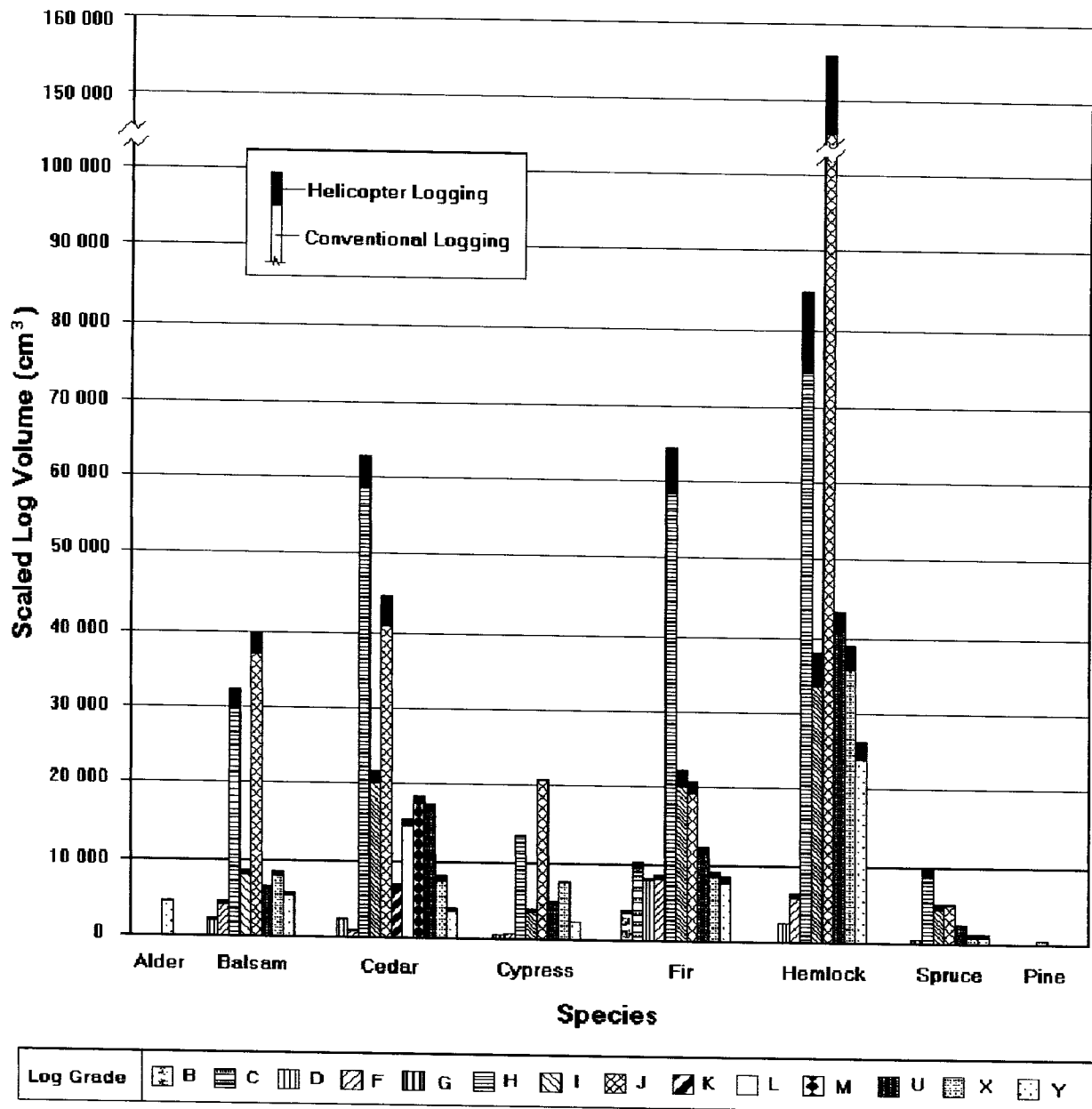


Figure 49. Scale Grade Distribution for TFL 45 during the term of MP 3.

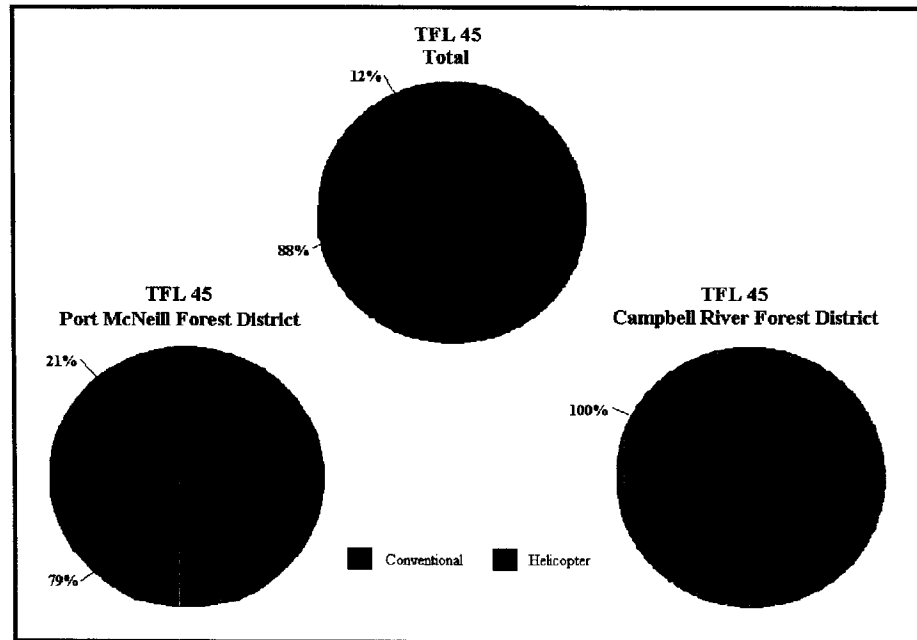


Figure 50. Distribution of logging within TFL 45 and each Forest District.

3.8.1 Access Management / Structures

The public and other resource users will be given access to roads in the TFL, unless otherwise approved by the MoF District Manager. Under some circumstances road access will be restricted, for reasons of safety, security, environmental conditions or other conditions that may affect the operations of the licensee. The commercial use of roads by others within the TFL may result in road use charges that apply to the maintenance costs or costs of road modification arising out of such use. The public assumes a reasonable risk associated with the use of industrial forest roads.

Non-operational roads are maintained in a condition suitable for fire or emergency access wherever they effectively serve this purpose. Roads not required will be 'put to bed' using methods, such as waterbarring, crossditching, road fill pull-back, and removal of culverts and bridges if necessary, to stabilize road prisms and reduce erosion risk. Access management concerns will be addressed in the Forest Development Plan, in which the current road construction, maintenance and deactivation program is identified.

Post harvesting site degradation due to temporary and permanent access structures, and harvesting related soil disturbance is monitored as part of the *Environmental Management Program*. The *Inspection Report for New Roads*, and the *Inspection Report for Road Deactivation, Site Rehabilitation or Roadside Site Preparation* reports total area of permanent site degradation and identifies outstanding post harvesting works. The reports produce a priority risk assessment of any identified concerns.

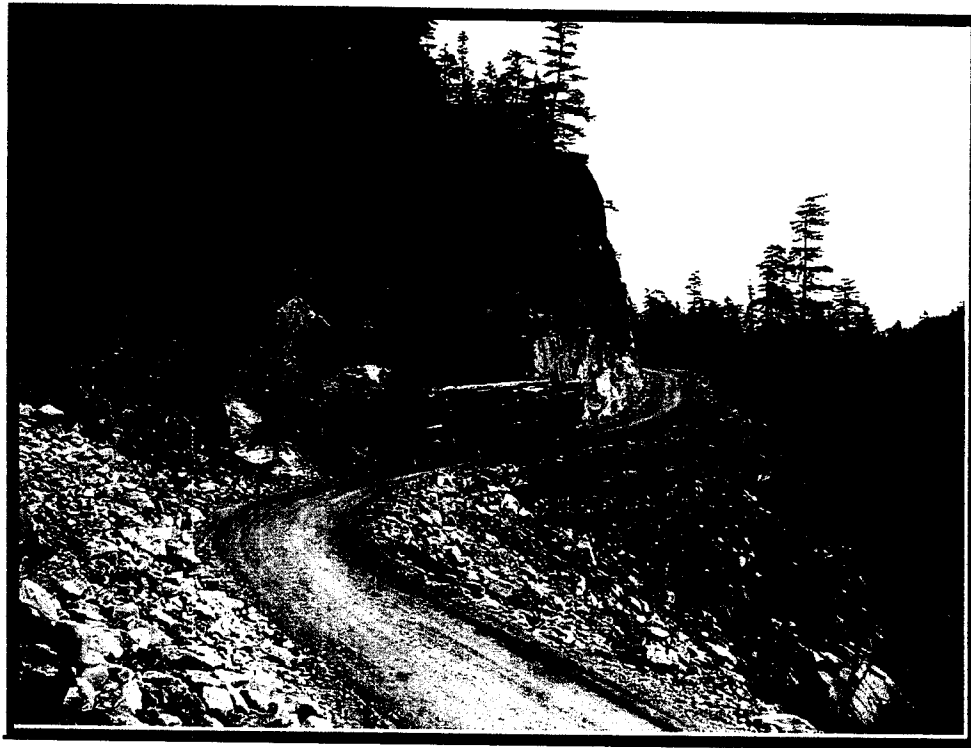


Figure 51. Loaded logging truck – West Klinaklini Mainline, Knight Inlet

3.8.2 Forest Health

➤ Significant Pests and Impacts

Field staff monitor the incidence and levels of insect pests and disease within the TFL and maintain communication with the Ministry of Forests regarding aerial and other detection surveys. Several pests are of concern at the present time.

The common forest health factors found to have a possible impact on this plan are as follows:

- Dwarf Mistletoe;
- Spruce Weevil;
- Apple Ermine Moth;
- Root Rot;
- Browse;
- Ambrosia Beetle;
- Windthrow; and
- Residual tree damage.

The general management strategies for these common forest health factors are as follows:

Dwarf Mistletoe

This disease has always existed in mature hemlock stands within the TFL at a moderate level. A three-meter knockdown of all residual trees is done concurrent with harvesting activities if prescribed in the SP. If the pronounced rate of growth and vigorous characteristics of the advanced regeneration and young conifers are able to outgrow existing and potential infections of dwarf mistletoe then the three meter rule may not apply. Diseased trees or infected trees will not be accepted as well spaced trees during stocking or free growing surveys. Planting of Hw adjacent to the block boundaries will be minimized. With respect to variable retention silviculture, Interfor does not propose sanitation strategies for over-storey infection sources.

Spruce Terminal Weevil

Although planting of sitka spruce (Ss) is very minimal on the TFL, sitka spruce weevil is a concern. Since some sites are ecologically suited for spruce, it has been prescribed but on a limited basis. Weevil resistant Ss is used for planting, if available.



Figure 52. Spruce weevil, Knight Inlet

Apple Ermine Moth

This introduced species was recently identified by Dr. Fred Neusdorfer. It is a defoliator of the Pacific crab apple, which is present throughout the Klinaklini estuary. Pacific crab apple is a potential food source for grizzly bears. To date, no control measures have been identified (refer to Figure 58).

Root Rot

The root rots known to occur in the TFL are *Heterobasidion annosum*, *Armillaria ostoyae*, and *Phellinus weirri*. Infection risk and management strategies are identified in the silviculture prescription. The planting of more resistant species is the primary method used to control these diseases. Recommended tree species for regeneration will be tolerant or at least have moderate susceptibility to the host root rot(s). Alternative controls include stumping immediately post harvest and performing bridge tree removal at the time of juvenile spacing.

Browse

Deer, elk and moose browse is a concern on cedar plantations and on re-contoured roads. If browse is determined to preclude the achievement of regeneration or free growing standards, protection devices or methods will be prescribed to ensure that these standards are achieved. Deer are not currently a concern to reforested stands. On limited specific sites in the northern part of the TFL moose browse is a concern.

Ambrosia beetle

This insect reduces wood quality in felled timber by tunnelling into the wood. Felled wood should be removed as soon as possible to minimize insect damage. Traps may be set in the dryland sort to minimize the impact.

Windthrow

Windthrow is a natural occurrence and is evident throughout the TFL on an ongoing basis. It may occur as the result of some major windstorm event and could have the capacity to attract disease and pests, and become a fire hazard. Blocks are designed to minimize their potential for blowdown by using one or more of the following techniques:

- feathering edges (leave more windfirm trees and species),
- aligning the boundary parallel to damaging winds
- locating the boundary and cutblock configuration using topographic features.

In the event windthrow occurs, then an assessment will be done to determine its potential for salvaging and what actions may be necessary to stabilize the boundary to the windfirm edge.

Residual tree damage

Falling and harvesting activities will be conducted in a manner to minimize damage to retained trees. Interfor will use partial or full suspension cable yarding and helicopter logging as required to minimize damage to retained trees. If there is incidental damage to retained trees, they will continue to be retained consistent with the primary objective of retention, unless required for safety.

Significant Pests and Impacts

At this point, losses due to insects, disease and mammals are minimal on the TFL. Harvested stands are expected to meet regen delay and achieve free growing status, given the endemic level of pests on the TFL at this time. Other than the current procedures in place to monitor and control pests, no major programs are planned.

➤ Strategies and Detection

Annual monitoring on TFL 45 will occur to detect any significant forest pest occurrences. Detection will occur initially at the planning stage (Forest Development Plan) and again at the silviculture prescription stage. As stands are monitored from establishment to final harvest, inspections will occur by ground and air.

Treatments will be based on the best data available, and will be designed to solve the specific problem in the most effective and cost-efficient manner. These may involve biological or manual methods approved for use on Crown Lands.



Figure 53. Windthrow, West Thurlow Island

3.8.3 Riparian Management

All streams within the TFL were classified using gradient analysis based system as indicated in the Local Area Agreement, Vancouver Forest Region (MoELP Vancouver Island and Lower Mainland Regions 1999)¹² as well as local knowledge, Silviculture Prescriptions and archive fish inventory data.

¹² The Local Area Agreement is being used as the basis for this gradient analysis and that International Forest Products have not signed onto the Local Area Agreement.

Overview information is updated as part of the annual development planning process and will be complemented with any information obtained from the Ministry of Environment, Lands and Parks (MoELP) and the Fisheries and Oceans Canada (DFO).

Under the guidance of trained fisheries biologists detailed fisheries inventories are collected through extensive field evaluation. Biologists will also be consulted to gather site specific information for road construction, culvert or bridge installation. Stream classification inventories are collected in consideration of the current *Fish-stream Identification Guidebook*.

Planning requirements for riparian areas are contained in the *Operational Planning Regulation* of the *FPCBC Act*. The regulations specify requirements pertaining to: riparian classes of streams; minimum widths of riparian reserve zones and riparian management zones; riparian classes of wetlands; minimum widths of riparian reserve zones and riparian management zones for wetlands; riparian classes of lakes; minimum widths of riparian reserve zones; and riparian management zones for lakes.

Interfor is committed to cooperative management of salmonoid and other anadromous fish resources and will comply with regulations for managing riparian areas in consultation with MoF, MoELP, and DFO. As more comprehensive operational fish and fish habitat inventories are collected under Forest Renewal BC Operational Inventories land-based programs, they will be used to provide guidance to management of identified fish species.

Maintenance of water quality in all watercourses including those identified as having specific resource concerns is addressed jointly by Interfor and local fishery-resource agency staff both through the Forest Development Plans and on site inspections prior to operations.

➤ **In Stream Wood Salvage**

Interfor has no plans for recovering wood volume from below high water mark. The liabilities associated with the Forest Practices Code, the beneficial contribution of Large Woody Debris (LWD) to the maintenance of fish habitat, and the likely increase in sedimentation associated with in-river salvage preclude any consideration for a salvage program.

Mitigating action will be considered where large log-jams are considered to be impassable to migrating spawners, where there is risk of severe channel scouring, or risk of property loss. No action will be taken without prior consultation with local MoELP and/or DFO offices.

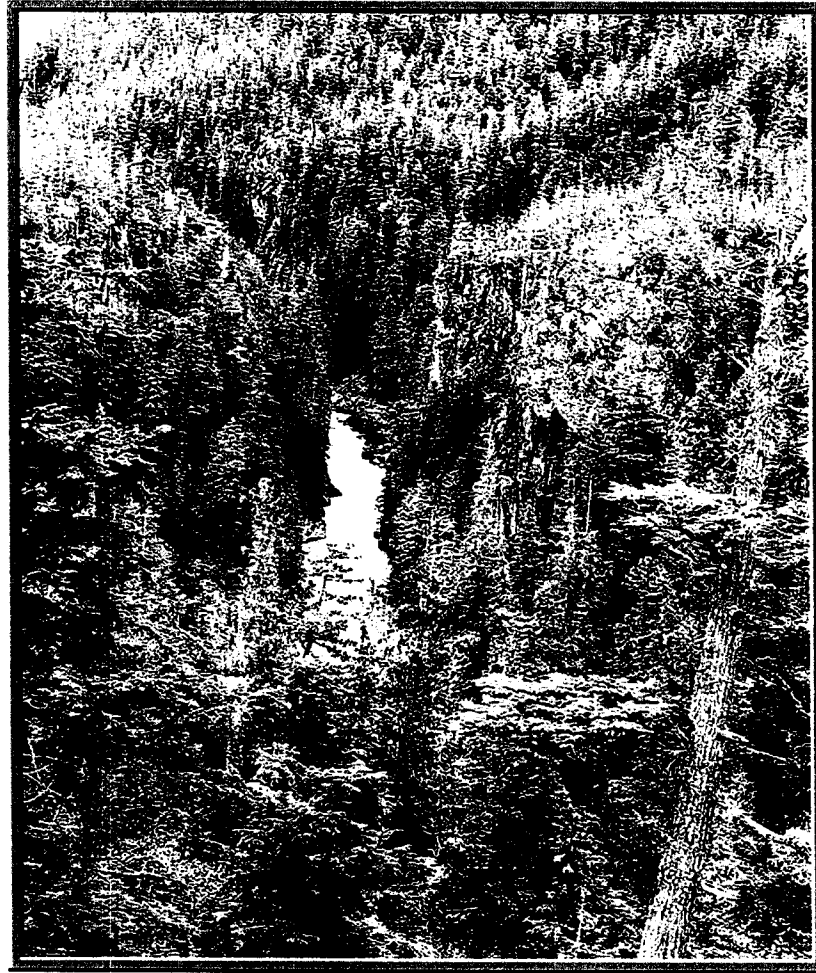


Figure 54. Klinaklini River Canyon, Knight Inlet (J. Webb)

3.8.4 Biodiversity and Wildlife

The maintenance of biological diversity will occur through the resource planning procedures employed in the TFL. Planning for biological diversity at both the landscape and stand level will be in consideration of the procedures outlined in the *Landscape Unit Planning Guidebook*, *Biodiversity Guidebook*, and the strategies outlined in this Management Plan. Other guidebooks that provide recommendations for maintaining biological diversity from a 'coarse filter' approach to the 'fine filter' approach are the current *Riparian Management Areas Guidebook*, *Managing Identified Wildlife: Procedures and Measures* and the future CCLCRMP recommendations (draft expected spring 2001).

➤ Wildlife Management Areas

Ungulate Winter Ranges

Mountain goat, black-tailed deer, and a small population of moose reside within TFL 45. Since the implementation of ungulate winter ranges (UWRs) in 1984, there have been a number of changes to their placement and borders.

Last year (2000), Interfor and FRBC implemented a review of all winter ranges designated within TFL 45, past and present, in order to document and improve the present state of the winter ranges. Winter ranges were evaluated via remote sensing to check for border shifting due to NAD 83 update as well as to ensure winter range management objectives are maintained. All changes to winter ranges will be reviewed by Ministry of Environment, Lands and Park Staff and integrated into their Winter Range data base being developed for MoELP Region 1.

There are 23 mountain goat proposed winter ranges, six black-tailed deer proposed winter ranges, and four mountain goat/black-tailed deer proposed winter ranges in TFL 45 (refer to Figure 56 for their placement within the TFL). Although there is a small population of moose within the Klinaklini drainage, there are no moose winter ranges designated within Interfor's tenure. However, within the Klinaklini drainage, grizzly bear management area overlap with and are used by moose as winter range.

70 percent of the winter ranges are designated as reserves with 100% withdrawal from the timber harvesting landbase. The objective of assigning 100% netdown to these areas is to maintain the existing habitat value by retaining 100% of the identified area. Forest cover constraints will be assigned to the remaining winter ranges and will be protected through seral stage distribution approach. Specifically, within the operable portion of the area:

- No more than 20% in age class 1 (1-20 years); and
- At least 20% is greater than or equal to age class 5 (≥ 101 years).

Grizzly Bear

There are 12 designated grizzly bear management areas within TFL 45 (refer to Figure 58 for their placement within the TFL). These areas first appeared on Interfor's 1993 Forest Inventory Base Maps and are believed to originate from Tony Hamilton and the Ministry of Environment. In 1994 Ministry of Environment staff reviewed the mapped habitat but they were not modelled in the timber supply analysis for Management Plan No.3. No changes have been made to the original ranges.

Current management strategies for the management areas in estuaries will be designated as reserves with 100% withdrawal from the timber harvesting landbase. Seral stage distribution will be assigned to the remaining grizzly bear management areas as indicated in the Landscape Unit Planning Guide (1999). The seral stage distribution will differ depending on its Landscape Unit Biodiversity Emphasis Option, BEC variant and Natural Disturbance Type.



Figure 55. Wildlife Tree, Frederick Arm

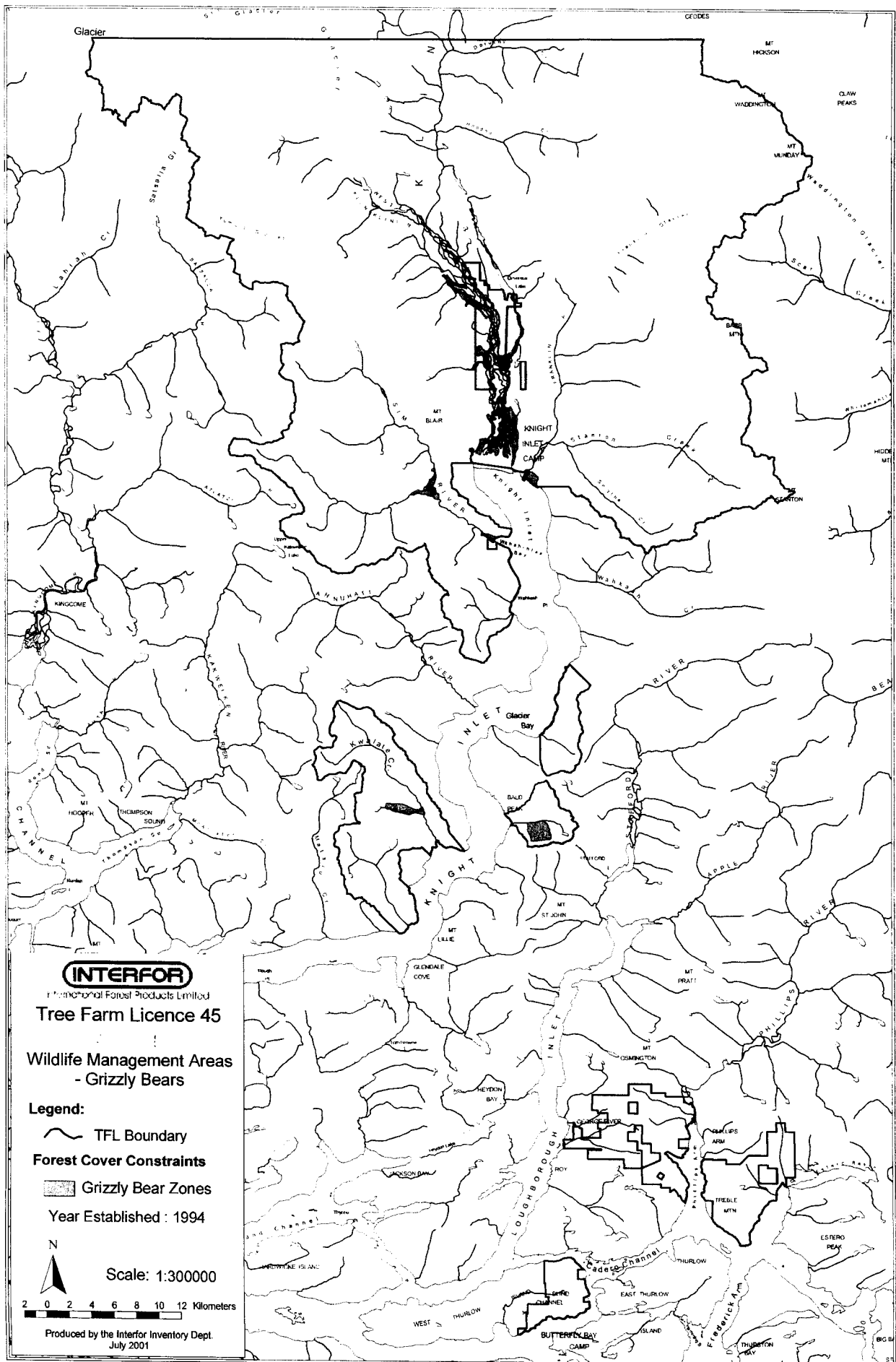


Figure 57



Figure 58. Grizzly bear habitat - Klinaklini Estuary (new CCLCRMP Protected Area), Knight Inlet

➤ Identified Wildlife

At present, there are few fine filtered management strategies implemented within TFL 45. The Identified Wildlife Management Strategy aims to specify certain species and plant communities that might not be maintained by broad, coarse filter management that is provided by the Landscape Unit Planning Guide and Riparian Management Guidebook. These species/plant communities are managed through the establishment of Wildlife Habitat Areas (WHAs), implementation of General Wildlife Measures (GWMs), and/or through recommendations that may be considered by planning teams when developing resource management zone objectives at higher level plans (such as the CCLCRMP process).

Table 5 lists the Identified Wildlife Species occurring in Campbell River and Port McNeill Forest District for Outer Fiordland (OUF) and Northern Pacific Range (NPR) Ecosection, respectively (from *Managing Identified Wildlife: Procedures and Measures* 1999). When the CCLCRMP process is finalized and Wildlife Habitat Areas and the activities (GWM) that are allowed within them are implemented, these species will be managed according to the guidelines indicated by the *Managing Identified Wildlife: Procedures and Measures*.

Certain Identified Wildlife Species with widespread habitat needs that cannot be captured within discrete areas, habitat requirements must be addressed over larger areas, such as regions and subregions. Once the CCLCRMP process is completed, these species (i.e., grizzly bear and fisher), will be managed according to the higher level plans identified in the CCLCRMP process and *Managing Identified Wildlife: Procedures and Measures*.

Table 5: Identified Wildlife Species present in Campbell River and Port McNeill Forest District.

Species	Campbell River (OUF) ^A	Port McNeill (NPR) ^B
Tailed Frog (<i>Ascaphus truri</i>)	√	√
Northern goshawk (<i>Accipiter gentillus</i> ssp. <i>atricapillus</i>)	√	√
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	√	√
Keen's long-eared myotis (<i>Myotis keenii</i>)	√	√
Fisher (<i>Martes pennanti</i>)		√
Grizzly bear (<i>Ursus arctos horribilis</i>)	√	√
Mountain goat (<i>Oreamnos americanus</i>)	√	√

A Outer Fiordland

B Northern Pacific Range

➤ Other Wildlife

Other wildlife species not covered under the Identified Wildlife Strategy (small game, black bear etc.) will be presently managed at the stand level through retention of landscape and stand level prescriptions and riparian zones until the CCLCRMP process is finalized and can provide further guidance to Interfor on the higher level management of these species. Wildlife Habitat Features (bald eagle nests, denning sites etc.) will be identified at the stand level and maintained through stand level prescriptions such as wildlife trees and wildlife tree patches. Maintenance of the riparian zone will also provide a high degree of protection for many other important features at the stand level. For example, in Clayoquot Sound, about 72% of forest-dwelling vertebrate species make significant use (i.e., breed) within the riparian areas¹³.

Interfor's operational staff is continuously looking for ways of enhancing wildlife habitat in second growth stands. Whether a stand is being entered for a commercial thinning, a juvenile spacing or a brushing treatment, wildlife habitat and biodiversity are considered where possible.

A Biogeoclimatic Ecological Classification overview for TFL 45 is illustrated in Figure 59.

➤ Biodiversity

The Forest Practices Code Biodiversity Guidebook provides objectives and strategies to meet biodiversity objectives at both the landscape unit and stand level. Biodiversity emphasis options have been assigned to the draft Landscape Units within TFL 45 and can be found on Figure 59. Table 6 lists all the landscape units, BEC Variants with associated natural disturbance type and total area within the TFL.

The lower biodiversity emphasis option applies to Landscape Units (LUs) of Knights East, Gray, Thurlow and Estero. These areas are identified as where other social and economic demands, such a timber supply, are the primary management objective. Intermediate biodiversity emphasis options has an equal emphasis on timber production and biodiversity conservation. It is applied to five of the 11 Landscape Units within the TFL (i.e., Klinaklini Glacier, Lower Klinaklini, Middle Klinaklini, Sim, and Lull-Sallie). Franklin and Anhuhati-Kwalate

Table 6: BEC Variant and total area for each Landscape Units within TFL 45.

Landscape Unit (area of LU covered by TFL)	BEC Variant ^a	NDT	Area in TFL (ha)
Ahnuhati-Kwalate (25%)	CWHvm1	1	2,051
	CWHvm2	1	941
	MHmm1	1	217
	MHmmp	5	43
	ZZZ ^a		4,752
Estero (24%)	CWHdm	2	899
	CWHvm1	1	1,432
	CWHvm2	1	1,440
	MHmm1	1	612
	MHmmp	5	68
Franklin (95%)	CWHms2	2	2,452
	CWHvm1	1	19
	CWHvm2	1	82
	CWHws2	2	4,265
	MHmm1	1	259
	MHmm2	1	3,138
	ZZZ		58,439
Gray (21%)	CWHdm	2	548
	CWHvm1	1	3,452
	CWHvm2	1	1,387
	MHmm1	1	217
	MHmmp	5	101
Klinaklini Glacier (47%)	CWHms2	2	395
	CWHws2	2	1,256
	MHmm2	1	1,804
	ZZZ		39,648
Knight East (11%)	CWHvm1	1	1,294
	CWHvm2	1	606
	MHmm1	1	197
	ZZZ		2,497
Lower Klinaklini (83%)	CWHms2	2	12,981
	CWHws2	2	7,432
	MHmm2	1	5,845
	ZZZ		27,860
Lull-Sallie (14%)	CWHvm1	1	1,494
	CWHvm2	1	687
	MHmm1	1	288
	ZZZ		1,658
Middle Klinaklini (2%)	CWHms2	2	72
	CWHws2	2	83
	MHmm2	1	3
	ZZZ		2,042
Sim (95%)	CWHvm1	1	4,646
	CWHvm2	1	1,395
	CWHws2	2	396
	MHmm1	1	646
	MHmm2	1	16
	ZZZ		27,815
Thurlow (5%)	CWHmm1	2	1,357
	CWHxm	2	640
Total			231,866

source data: SI-BEC Maps, Blackwell and Associates (2000)

^a area not classified



Figure 60. Variable retention, West Thurlow Island (second growth)

Landscape Unit have high biodiversity emphasis options thus giving biodiversity conservation a higher priority over timber harvest.

Landscape Units are established in order to allow long-term planning of resource management activities. Interfor is currently focused at completing Priority Biodiversity planning in TFL 45. Priority Biodiversity planning establishes retention of old growth forest as well as stand structure through Wildlife Tree Retention (WTR).

Landscape Level Strategies - Old Growth Retention

Old growth retention is achieved by the establishment of Old Growth Management Areas (OGMAs). OGMAs are the most important component of the code for managing the conservation of biological diversity (Landscape Unit Planning Guide 1999). Following the methods outlined in the Landscape Unit Planning Guide and Biodiversity Guidebook, Table 7 lists the factors required to determine the amount of OGMAs to be included into the contributing landbase. Note that the information provided in Table 7 is for demonstration purposes only. These tables are based on the MoELPs 1:250,000 BEC Mapping for the province. Table 7a is based on the new SI-BEC mapping and will replace Table 7.

Stand Level Strategies – Wildlife Tree Retention

Wildlife Tree Retention protects trees with valuable biological attributes, such as internal decay, crevices, large brooms present, etc. WTR requirements are calculated according to the BEC subzone and the targets specified for each. Table 8 lists the Landscape Unit, BEC subzone and % WTP retention required for when LU's are designated and not designated (from the Wildlife Tree Retention Report) within TFL 45. Table 8a is based on the new SI-BEC maps and will replace Table 8.

Specifically, stand level strategies to achieve biodiversity emphasis objectives include:

- Upon the approval of MP 4 and without establishment of LUs for TFL 45, Wildlife Tree Patch requirements for the whole TFL will be determined in accordance with the recommendations of Table A3.2 of the Landscape Unit Planning Guide (refer to MP 4 Table 8/8a);
- Upon the establishment of LUs for TFL 45, by the District Manager, Wildlife Tree Patch requirements for each LU will be determined in accordance with the recommendations of Table A3.1 of the Landscape Unit Planning Guide (refer to MP 4 Table 8/8a);

When possible, all Wildlife Tree Patches and old seral requirements will be captured from constrained and non-contributing landbase (i.e., areas which do not contribute to the AAC such as riparian, wildlife, ESA, gullies, inoperable, and other constrained areas)¹⁴ and integrated with the implementation of variable retention (refer to Section 3.6.1. Variable Retention)

- Where required, Wildlife Tree Patch areas will be designed in consideration of the recommended distribution of suitable WTPs across the landscape contained in the Landscape Unit Planning Guide and Biodiversity Guidebook;
- Silviculture Prescription will assess wildlife tree requirements on or adjacent to a proposed cutblock, and describe how values are accommodated; and
- Wildlife Tree Patches will be mapped and recorded as part of the documentation of the Silviculture Prescription for an area, and removed from the net area to be reforested.

¹⁴ Ministry of Forests, August 25, 1997. *Memorandum Re: Achieving Acceptable Biodiversity Timber Impacts.*

Table 7: Landscape Unit Summary for OGMA determination for TFL 45 (to be replaced by 8a).

Landscape Unit	Draft Biodiversity Emphasis Option	Total Forested Area ha	Area Required to Meet Old Growth Biodiversity Targets		Area Old Growth in Non-Contributing Forest		Additional Old Growth Required to meet BEO	
			%	Area (ha)	%	Area (ha)	%	Area (ha)
Ahnuhati - kwalate	High							
CWH vm1		4,690	19.0	891	21.8	1,021	0.0	0
CWH vm2		1,781	19.0	338	36.4	648	0.0	0
MHmm1		322	28.0	90	19.9	64	8.1	26
Franklin	High							
CWH dm		926	13.0	120	4.2	39	8.8	81
CWH vm1		1,380	na	0	0.0	0	0.0	0.0
CWH vm2		710	19.0	135	14.3	102	4.7	33
CWH ws2		3278	na	0	0.0	0	0.0	0
MH mm1		708	28.0	198	11.9	85	16.1	113
MH mm2		805	na	0	0.0	0	0.0	0
Klinaklini Glacier	Intermediate							
CWH ws2		2,392	39.9	955	39.9	955	0.0	0
MH mm2		746	55.9	417	55.9	417	0.0	0
Knight East	Low							
CWH dm		78	9.0	7	16.3	13	0.0	0
CWH vm1		12,316	13.0	1,601	13.4	1,647	0.0	0
CWH vm2		5,536	13.0	720	44.1	2,443	0.0	0
MH mm1		1,539	19.0	292	40.6	624	0.0	0
Lower Klinaklini	Intermediate							
CWH dm		43	na	0	0.0	0	0.0	0
CWH ds2		1,481	na	0	0.0	0	0.0	0
CWH vm1		9,734	na	0	0.0	0	0.0	0
CWH vm2		597	na	0	0.0	0	0.0	0
CWH ws2		7,394	na	0	0.0	0	0.0	0
MH mm1		193	na	0	0.0	0	0.0	0
MH mm2		3,499	na	0	0.0	0	0.0	0
Lull-Sallie	Intermediate							
CWH vm1		11,789	13.0	1,533	20.8	2,455	0.0	0
CWH vm2		4,523	13.0	588	64.4	2,914	0.0	0
MH mm1		1,463	19.0	278	53.0	776	0.0	0
Middle Klinaklini	Intermediate							
CWH ds2		9,341	9.0	841	7.9	739	1.1	102
CWH ws2		6,969	9.0	627	11.8	821	0.0	0
ESSF mw		550	na	0	0.0	0	0.0	0
ESSF mw h		86	9.0	8	5.2	5	3.8	3
IDF ww		483	13.0	63	23.6	114	0.0	0
MH mm2		1,257	19.0	239	29.4	370	0.0	0
MH mm2e		40	19.0	8	38.7	16	0.0	0
Sim	Intermediate							
CWH vm1		3,243	13.0	422	0.7	22	12.3	400
CWH vm2		1,252	13.0	163	0.0	1	13.0	163
MH mm1		511	na	0	0.0	0	0.0	0
MH mm2		2	na	0	0.0	0	0.0	0
Estero	Low							
AT		19		0	0.0	0	0.0	0
CWH dm		6,576	9.0	592	6.7	444	2.3	148
CWH vm1		2,651	13.0	345	31.1	823	0.0	0
CWH vm2		4,250	13.0	553	35.6	1,511	0.0	0
CWH ws2		7	na	0	0.0	0	0.0	0
CWH xm2		4	na	0	0.0	0	0.0	0
MH mm1		1,144	19.0	217	57.2	655	0.0	0
Gray	Low							
AT		1	na	0	0.0	0	0.0	0
CWH dm		5,377	9.0	484	0.7	36	8.3	448
CWH vm1		10,490	13.0	1,364	12.0	1,257	1.0	107
CWH vm2		4,247	13.0	552	46.2	19,64	0.0	0

CWH ws2		22	na	0	0.0	0	0.0	0
MH mm1		894	19.0	170	54.7	488	0.0	0
Thurlow	Low							
CWH dm		1,381	9.0	124	3.2	45	5.8	80
CWH mm1		7,601	9.0	684	20.6	1,568	0.0	0
CWH vm1		5,206	13.0	677	6.0	314	7.0	363
CWH vm2		56	13.0	7	54.1	30	0.0	0
CWH ws2		124	9.0	11	4.3	5	4.7	6
CWH xm2		22,842	9.0	2,056	5.1	1,158	3.9	898

Source data: 1:250,000 BEC maps MoF
na information not available with forest cover maps

Table 8a. Landscape Unit Summary for OGMA determination within TFL 45.

Landscape Unit	Draft BEO	Total Forested Area ^a	Area Required to Meet Old Growth Biodiversity Targets		Area Old Growth in Non-contributing Forest		Additional Old Growth Required to meet BEO	
			ha	%	area (ha)	%	area (ha)	%
Ahnuhati - kwalate	High							
CWH vm1		1750	19	332.5	64.5	1128.0	0.0	0.0
CWH vm2		808	19	153.5	92.6	748.0	0.0	0.0
MH mm1		192	28	53.8	100.0	192.0	0.0	0.0
MH mmp		4	0	0.0	100.0	4.0	0.0	0.0
Franklin	High							
CWH ms2		2121	13	275.7	40.4	857.0	0.0	0.0
CWH vm1		19	19	3.6	78.9	15.0	0.0	0.0
CWH vm2		79	19	15.0	83.5	66.0	0.0	0.0
CWH ws2		3101	13	403.1	50.8	1574.0	0.0	0.0
MH mm1		230	28	64.4	89.1	205.0	0.0	0.0
MH mm2		2430	28	680.4	87.0	2114.0	0.0	0.0
Klinaklini Glacier	Intermediate							
CWH ms2		340	9	30.6	53.2	181.0	0.0	0.0
CWH ws2		1065	9	95.9	52.5	559.0	0.0	0.0
MH mm2		1611	9	145.0	84.2	1357.0	0.0	0.0
Knight East	Low							
CWH vm1		1,206	13	156.8	41.4	499.0	0.0	0.0
CWH vm2		509	13	66.2	69.2	352.0	0.0	0.0
MH mm1		159	19	30.2	91.2	145.0	0.0	0.0
Lower Klinaklini	Intermediate							
CWH ms2		11033	9	993.0	43.3	4775.0	0.0	0.0
CWH ws2		6207	9	558.6	45.8	2845.0	0.0	0.0
MH mm2		4874	19	926.1	80.9	3942.0	0.0	0.0
Lull-Sallie	Intermediate							
CWH vm1		1,327	13	172.5	55.7	739.0	0.0	0.0
CWH vm2		561	13	72.9	80.9	454.0	0.0	0.0
MH mm1		213	19	40.5	100.0	213.0	0.0	0.0
Middle Klinaklini	Intermediate							
CWH ms2		70	9	6.3	41.4	29.0	0.0	0.0
CWH ws2		73	9	6.6	74.0	54.0	0.0	0.0
MH mm2		2	19	0.4	100.0	2.0	0.0	0.0
Sim	Intermediate							
CWH vm1		3533	13	459.3	62.2	2197.0	0.0	0.0
CWH vm2		1087	13	141.3	91.1	990.0	0.0	0.0
CWH ws2		219	9	19.7	73.5	161.0	0.0	0.0
MH mm1		578	9	52.0	99.1	573.0	0.0	0.0
MH mm2		13	19	2.5	100.0	13.0	0.0	0.0
Estero	Low							
CWH dm		895	9	80.6	21.3	191.0	0.0	0.0
CWH vm1		1410	13	183.3	20.5	289.0	0.0	0.0
CWH vm2		1382	13	179.7	37.8	522.0	0.0	0.0
MH mm1		514	19	97.7	70.0	360.0	0.0	0.0
MH mmp		2	na	0.0	0.0	0.0	0.0.0.0	0.0.0.0
Gray	Low							
CWH dm		542	9	48.8	22.3	121.0	0.0	0.0

CWH vm1		3,412	13	443.6	25.9	883.0	0.0	0.0
CWH vm2		1367	13	177.7	37.2	508.0	0.0	0.0
MH mm1		199	19	37.8	80.9	161.0	0.0	0.0
MH mmp		9	0	0.0	0.0	0.0	0.0.0.0	0.0.0.0
Thurlow	Low							
CWH mm1		1341	9	120.7	14.5	194.0	0.0	0.0
CWH xm		609	9	54.8	22.7	138.0	0.0	0.0

source data: SI-BEC Maps, Blackwell and Associates (2000)

^a for within TFL 45 only

Table 8: WTP requirements for the Landscape Units for TFL 45 (to be replaced by Table 8a).

Landscape Unit (Total Area)	BEC Subzone	Crown Forested (NC + THLB)	THLB	% Subzone Available for Harvest	% THLB Harvested	% WTP Retention when LU's Designated	% WTP Retention when LU's Not Designated
Ahnuhati - kwalate	AT	0	-	0.0	-	0.0	3.0
(31994.3)	CWH vm	6,47	2,171	33.6	28.9	3.0	6.0
	MH mm	322	21	6.5	-	0.0	3.0
Franklin	AT	3	-	0.0	-	0.0	3.0
(72025.4)	CWH dm	926	512	55.3	40.8	7.0	10.0
	CWH vm	2,091	983	47.0	49.5	7.0	10.0
	CWH ws	3,278	922	28.1	45.4	4.0	7.0
	MH mm	1,589	77	4.8	72.8	5.0	8.0
Klinaklini Glacier	CWH ws	2,392	696	29.1	64.2	6.0	9.0
(92324.3)	MH mm	746	50	6.8	83.9	6.0	9.0
Knight East	AT	68	-	0.0	-	0.0	3.0
(41695.3)	CWH dm	78	61	77.7	40.0	9.0	12.0
	CWH vm	17,857	7,813	43.8	37.6	5.0	8.0
	MH mm	1,539	54	3.5	7.0	0.0	3.0
Lower Klinaklini	AT	4	9	68.2	-	4.0	7.0
(65277.1)	CWH dm	43	14	31.8	57.5	6.0	9.0
	CWH ds	14,81	954	64.4	37.3	7.0	10.0
	CWH vm	10,331	5694	55.1	41.0	7.0	10.0
	CWH ws	7,394	4370	59.1	40.4	7.0	10.0
	MH mm	3,692	767	20.8	55.4	5.0	8.0
Lull-Sallie	AT	53	-	0.0	-	0.0	3.0
(30057.8)	CWH vm	16,312	7,707	47.2	36.5	5.0	8.0
	MH mm	1,463	187	12.8	0.2	0.0	3.0
Middle Klinaklini	AT	23	-	0.0	-	0.0	3.0
(94449.3)	CWH ds	9,341	21	0.2	85.2	6.0	9.0
	CWH ws	6,969	13	0.2	78.0	5.0	8.0
	ESSF mw	636	-	0.0	-	0.0	3.0
	IDF ww	483	-	0.0	-	0.0	3.0
	MH mm	1,297	-	0.0	-	0.0	3.0
Sim	CWH vm	4,494	1,660	36.9	42.8	5.0	8.0
(36665.5)	MH mm	513	61	11.9	18.9	0.0	3.0
Estero	AT	28	-	0.0	-	0.0	3.0
(18519.7)	CWH dm	6,605	4,290	64.9	63.4	10.0	13.0
	CWH vm	7,061	2,877	40.7	37.9	5.0	8.0
	CWH ws	7	5	78.0	14.2	6.0	9.0
	CWH xm	4	-	0.0	-	0.0	3.0
	MH mm	1,164	149	12.8	29.6	1.0	4.0
Gray	AT	1	-	0.0	-	0.0	3.0
(27449.6)	CWH dm	5,377	4,825	89.7	86.6	15.0	18.0
	CWH vm	14,733	9,238	62.7	70.0	10.0	13.0
	CWH ws	22	22	98.1	35.9	10.0	13.0
	MH mm	894	108	12.1	40.5	2.0	5.0
Thurlow	CWH dm	1,381	1265	91.6	86.0	15.0	18.0
(43726.5)	CWH mm	7,601	5,260	69.2	85.2	12.0	15.0
	CWH vm	5,261	4,645	88.3	86.6	14.0	17.0
	CWH ws	124	97	78.6	53.4	10.0	13.0
	CWH xm	22,842	17,634	76.8	77.5	12.0	15.0

Source data: 1:250,000 BEC maps MoF

Table 9a. WTP requirements for the Landscape Units within TFL 45.

Landscape Unit	BEC Subzone	Productive Area	THLB	% subzone available for harvest	%THLB harvested	% WTP ^a
Ahnuhati - kwalate	CWH vm1	1750	-	36	0	2
	CWH vm2	808	-	7	0	0
	MH mm1	192	-	0	0	0
	MH mmp	4	-	0	0	0
	CWH ms2	2121	550	60	44	7
Franklin	CWH vm1	19	-	21	0	0
	CWH vm2	79	-	16	0	0
	CWH ws2	3,101	145	49	9	3
	MH mm1	230	-	11	0	0
	MH mm2	2,430	18	13	6	0
Klinaklini Glacier	CWH ms2	340	58	47	36	6
	CWH ws2	1,065	-	48	0	3
	MH mm2	1611	-	16	0	0
Knight East	CWH vm1	1206	526	59	74	10
	CWH vm2	509	50	31	32	3
	MH mm1	159	-	9	0	0
Lower Klinaklini	CWH ms2	11,033	3,378	57	54	8
	CWH ws2	6,207	560	54	17	4
	MH mm2	4,874	73	19	8	0
Lull-Sallie	CWH vm1	1327	373	44	63	7
	CWH vm2	561	6	19	6	0
	MH mm1	213	-	0	0	0
Middle Klinaklini	CWH ms2	70	-	59	0	4
	CWH ws2	73	-	26	0	1
	MH mm2	2	-	0	0	0
Sim	CWH vm1	3,533	418	38	31	4
	CWH vm2	1,087	-	9	0	0
	CWH ws2	219	49	26	84	8
	MH mm1	578	-	1	0	0
	MH mm2	13	-	0	0	0
Estero	CWH dm	895	47	79	7	10
	CWH vm1	1,410	289	80	8	6
	CWH vm2	1,382	183	62	21	5
	MH mm1	514	9	30	0	1
	MH mmp	2	-	0	0	0
Gray	CWH dm	542	155	78	37	9
	CWH vm1	3,412	1,857	74	73	11
	CWH vm2	1,367	589	63	69	10
	MH mm1	199	14	19	37	0
	MH mmp	9	-	0	0	0
Thurlow	CWH mm1	1,341	457	86	40	10
	CWH xm	609	78	77	17	7

source data: SI-BEC Maps, Blackwell and Associates (2000)

^a for within TFL 45 only



Figure 61. Tumult Creek and Block W2900B (variable retention), Knight Inlet (J. Webb)

3.8.5 Visual Landscape Management

Visual landscape management for the TFL is based on known scenic areas as shown in Figure 63. The report, Visual Landscape Inventory Update by Recreation Resources Ltd. (2000) has been written in the context of managing scenic values in TFL 45 consistent with the Forest Practices Code impact objectives (refer to Appendix 7). The purpose of the inventory was to standardize interpretation of landscape resources in BC; capture essential information regarding landscape characteristics; and provide a measure of landscape sensitivity in order to guide landscape management within the working forest. Specifically, the Visual Landscape Inventory includes:

- update EVC, VAC, BR, VC, VR, VSC ratings/codes,
- determine RVQC;
- detailed mapping which delineates the landscape visible from main travel corridors and classifies the landscape characteristics and sensitivity to alteration;
- digital database which contains all of the visual landscape inventory attributes, as well as an evaluation of landscape sensitivity. The data base is linked to the visual landscape inventory spatial map, so that the landscape attributes of each polygon on the map are described;

- records of public input, including original public notices from newspapers, and the originals of completed surveys returned by stakeholders that were contacted as part of the public input program conducted for the RFI/VLI update; and
- landscape report that includes a printout of the landscape attributes, as well as information on how the landscape inventory was completed.

Specifically, five landscape characteristics are identified and become the basis for the measure of landscape sensitivity. The landscape characteristics are:

- EVC (Existing Visual Condition), measures the present level of landscape alteration caused by human activities;
- VAC (Visual Absorption Capability), measures the landscape's ability to absorb alteration and maintain its visual integrity;
- BR (Biophysical Rating), measures the degree to which the biophysical characteristics of a VSU creates visual interest and draws peoples attention;
- VC (Viewing Condition), measures the condition under which the VSU is most commonly viewed;
- VR (Viewer Rating), measures the number of people likely to view the VSU and the preferences, expectations or concerns they have about how they would like the VSU to look; and
- VSC (Visual Sensitivity Class), an overall measure of the sensitivity of the VSU to visual alteration.

The inventory identifies and assesses the visual landscape for the purpose of establishing the current and future visual quality objectives and for establishing the management zones for application for management criteria in the timber supply analysis (refer to Figure 62, 63 and Appendix 12).

Visual landscape design principles will be employed in forest development planning in scenic areas to better integrate timber harvesting and road building activities with the visual landscape setting within which they occur.

The primary tool for implementing visual management is a variable retention harvesting system (refer to Section 3.6.1 Variable Retention). Visuals are currently managed as per Appendix 7.

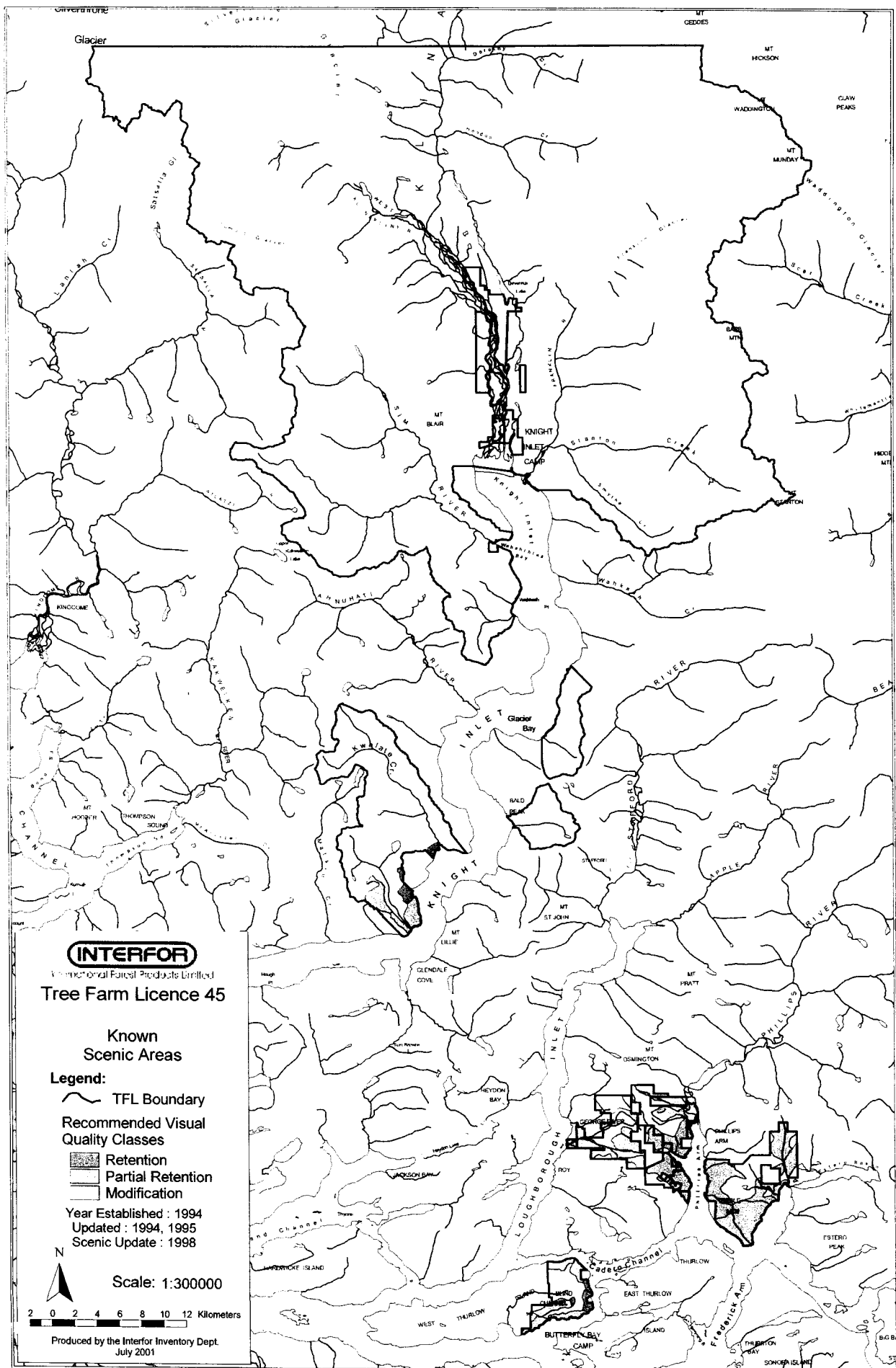


Figure 62

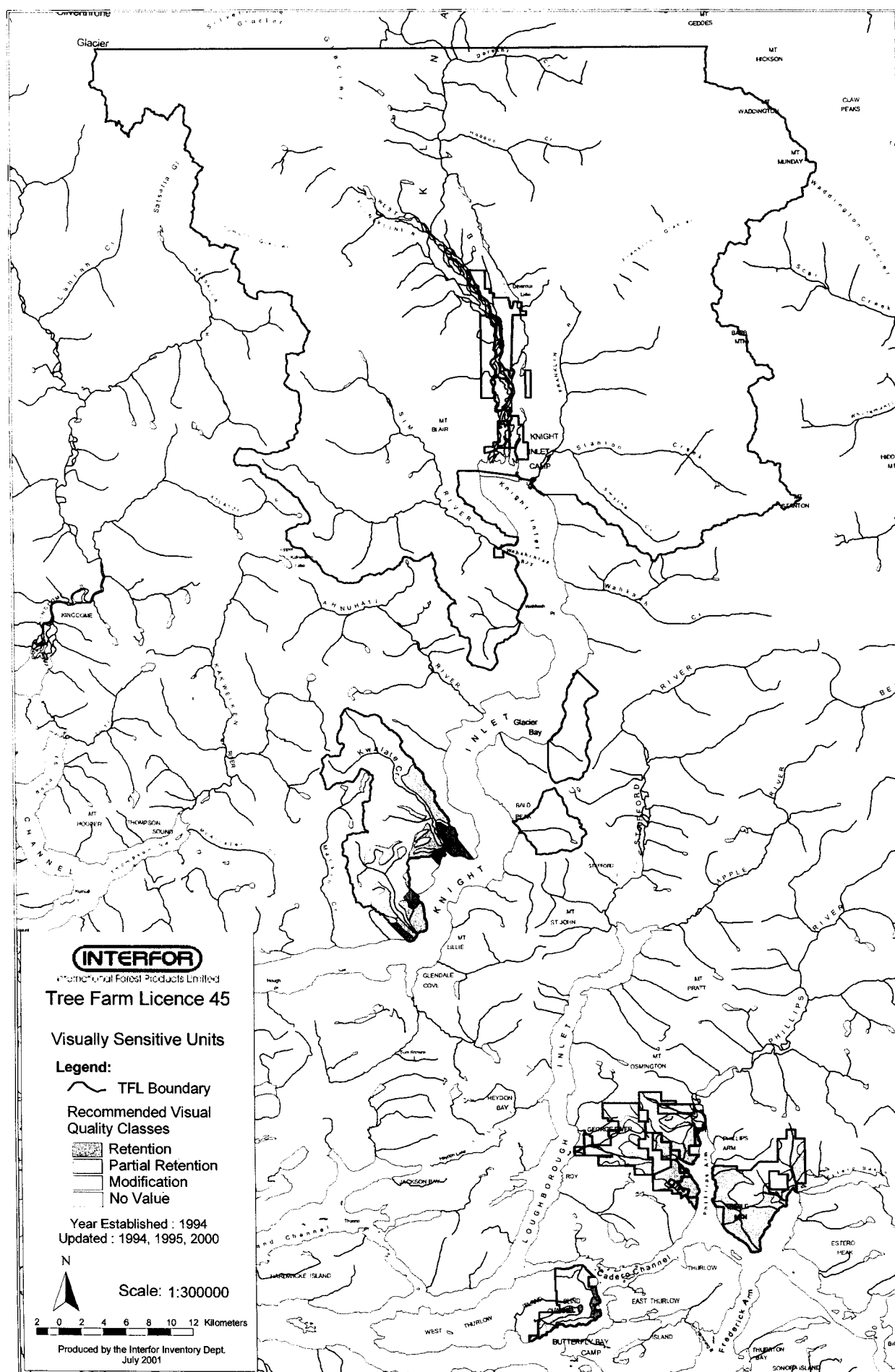


Figure 63

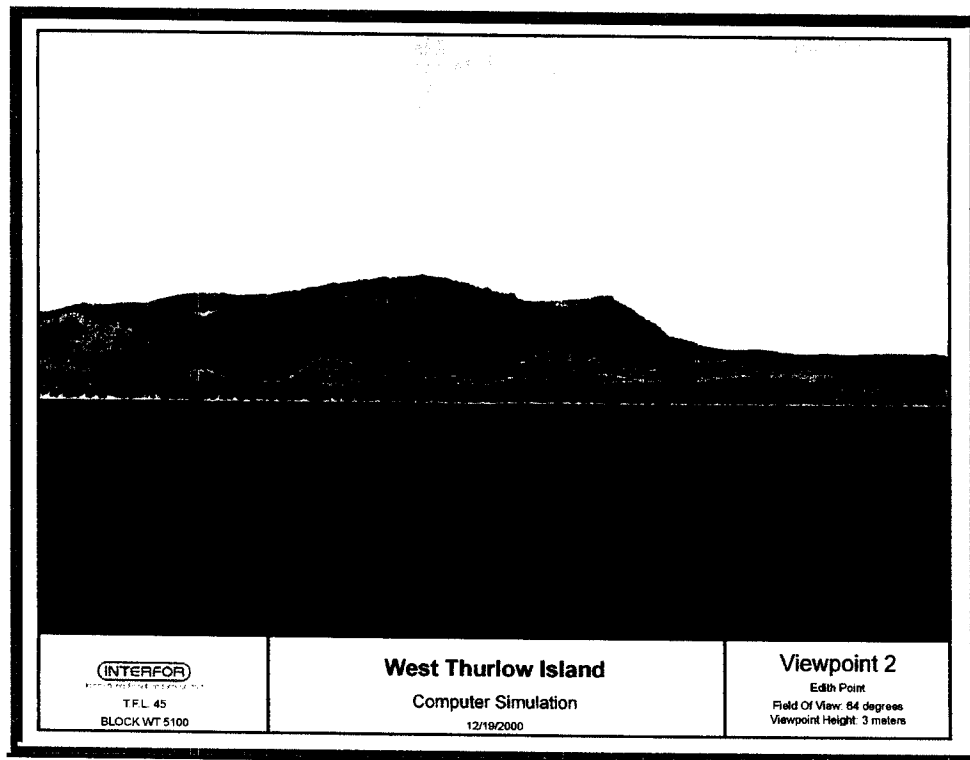
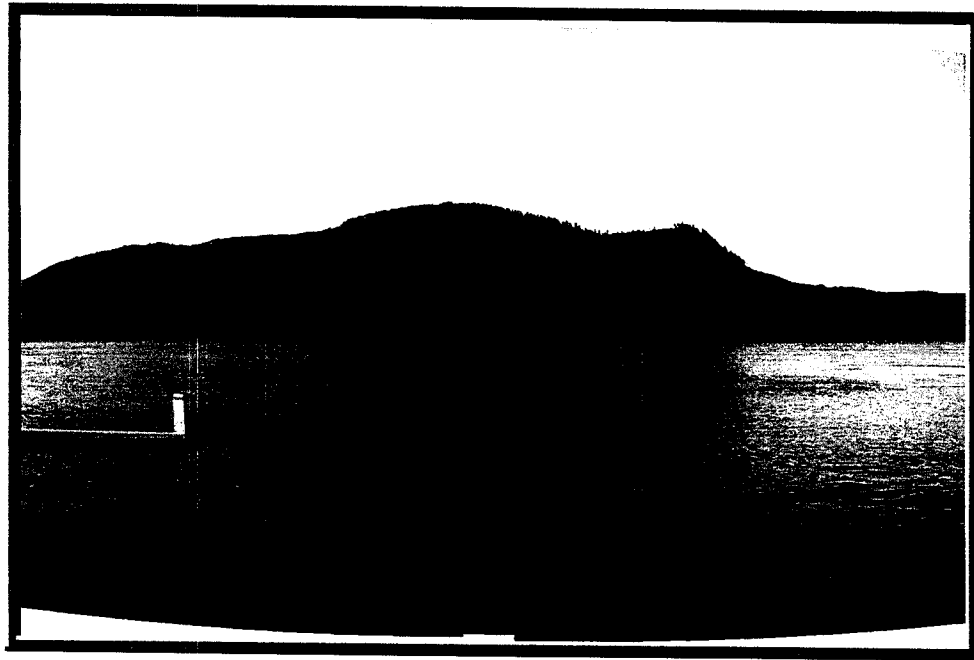


Figure 64. Visual Impact Assessment Model, West Thurlow Island

3.8.6 Forest Cover Inventory

➤ Forest Cover History

The original inventory of old growth timber was prepared by Fletcher Challenge Limited or its predecessor companies during the period 1968 to 1971. From that time to present it was periodically updated for harvesting, road construction, reforestation, silvicultural treatments, and TFL area amendments. It was also updated in the seventies with several area-intensive cruises, mostly in the larger blocks identified for logging.

In the 1980s the inventory was digitally captured for processing in a PAMAP Geographic Information System (GIS) environment. In the 1990s it was converted to a Terrain Resource Information Mapping (TRIM) base in an Arc/Info GIS format. Until recently Interfor used this base for all TFL 45 strategic and operational planning.

➤ New Vegetation Resources Inventory Phase I (or Forest Cover)

While working with the previous inventory it became evident that the forest information had become incompatible, in some respects, with present day forest and non-forest management expectations. The original inventory was created solely for the forest cover data needs of the 1960's and 1970's. The old growth (141+ years) was classified to a very broad level. Some data attributes requirements, such as crown closure, were never collected and others, such as height, were not summarized to present day standards. Some forest stands not considered commercial were never included in the inventory base.



Figure 65. Sim Creek (J. Webb)

To address these issues, a new TFL 45 forest inventory, called a Vegetation Resources Inventory (VRI) Phase I inventory, was started in 1996 and finished in 2000 (Figure 66). It is completed to a digital and spatial format compatible with the current provincial inventory standard for VRI Phase I. Also all spatial information is photo controlled to the provincial TRIM standard.

The inventory is updated to year 2000 to account for harvesting disturbances and silviculture activities since the 1996/97 aerial photography. Stand growth was also projected to year 2000 using the Ministry of Forest's Forest Cover Attribute Processing (FCAP) system in an Arc/Info GIS base. Use of GIS ensures that spatial relationships between various inventory attributes are maintained throughout the analysis process.

➤ **Ecosystem Classification**

Ecosystem management is becoming an integral part of current and future of forest management. Started in 1997 and completed in 2000, ecosystem mapping to a site series level now exists for TFL 45. Results were written up in the report "Terrestrial Ecosystem Mapping (TEM) of International Forest Product's Tree Farm, Licence 45" (refer to Appendix 6). The TEM mapping was Quality Certified by the Ministry of Forests on August 2, 2000 (Appendix 6).

➤ **Site Index Estimates**

One of the main features of the inventory is the assignment of site index values and their use in growth and yield predictions. There is a general recognition that current site index values for old growth on the coast are undervalued. One solution to this is to associate site index information with the ecological site series units as classified in TEM. Site series units are known correlate strongly with site productivity. A Site Index - Biogeoclimatic Ecological Classification (SIBEC) database is published for the province and outlined in a report called "Site Index Estimates by Site Series for Coniferous Tree Species in British Columbia". The reliability of many of the predicted site index values in this database is fairly low due to the lack of hard data, especially in the TFL 45 region.

From 1997 to 2000 a site index - ecosystem correlations project was completed in the TFL. New site indices were derived base on local forest productivity as expressed in TEM site series units. The results are outlined in the report is entitled "Potential Site Index Estimates for the Main Commercial Species on TFL 45".

Future Requirements

Inventory auditing, an important check of a forest inventory, has never been completed in TFL 45. VRI Phase II, or the random ground sampling of TFL 45, is sampling process that is very similar to auditing. Not having an audit on TFL 45 makes it especially important to complete a VRI Phase II in TFL 45. VRI Phase II is now planned for the summer of year 2001 but the results will not available in time for the timber supply analysis of this management plan.

3.8.7 Management Zones (MZs) (formerly Environmentally Sensitive Areas ESA)

Management Zones (or Environmentally Sensitive Areas) were determined and submitted to government agencies as part of the preparation of the MP 4 for TFL 45. Mapping procedures were completed according to MoF standards. MZ categories of high and moderate sensitivity have been assessed for:

- Slope stability;
- Wildlife; and
- Recreation.

MZ (ESA) maps are used in identifying sensitive areas for operational planning and in providing the basis for applying a net down procedure in the Timber supply analysis (Appendix 8).

➤ Slope Stability

In 1993, unstable (Es1) and potentially unstable (Es2) Management Zones were identified. However, this project did not cover all forested areas within the TFL, especially areas that may be within the operability limits. In 2000, Interfor contracted Jacques Whitford and Associates to update and improve the slope stability mapping (Figure 68). Appendix 12 is the contractors report explaining the adjustments, extensions and/or significant changes that were made to the TFL slope stability and avalanching ESAs.

➤ Wildlife

In 1995, MoELP provided Interfor with a series of draft Ew maps that show the location of Ew polygons for mountain goat, black-tailed deer and grizzly bear. The management of Environmentally Sensitive Areas for wildlife will be achieved through Wildlife Management Areas. Wildlife Management Areas are discussed in Section 3.8.4.

➤ Recreation Management Planning

Under the requirements for managing Tree Farm Licences under the *Forest Act*, the Recreation Features Inventory was updated for TFL 45 (refer to Figure 69 and Appendix 7). This update uses the 1998 Resource Inventory Committee (RIC) Standard. The 1998 standard has been revised to:

- Allow more detail in coding polygons;
- Separate visual values from the recreation inventory; and
- Separate inventory from analysis.

In addition to the update, the Recreation Features Inventory for TFL 45 includes:

- Detailed mapping, which documents the location and distribution of recreation features and activities in TFL 45;
- A digital database which contains all of the recreation feature and attributes as well as evaluation of feature sensitivity and significance. The data base is linked to the recreation inventory spatial map, so that the recreation attributes of each polygon on the map are described;

- Photography and documenting key recreation features within TFL 45; and
- Records of public input, including original public notices from newspapers, and the originals of completed surveys returned by stakeholders that were contracted as part of the public input program conducted by RFI update. A list of who was contracted is included in the public input binder.

The Recreation Analysis and Management Strategy (RAMS) report has been updated according to the January 4, 1999 standard provided by the Vancouver Forest Region. The original RAMS report was prepared in July 1994 and revised in October 1995, using the April 1994 and May 1994 Recreation Features Inventory and Visual Landscape Inventory as main data sources.

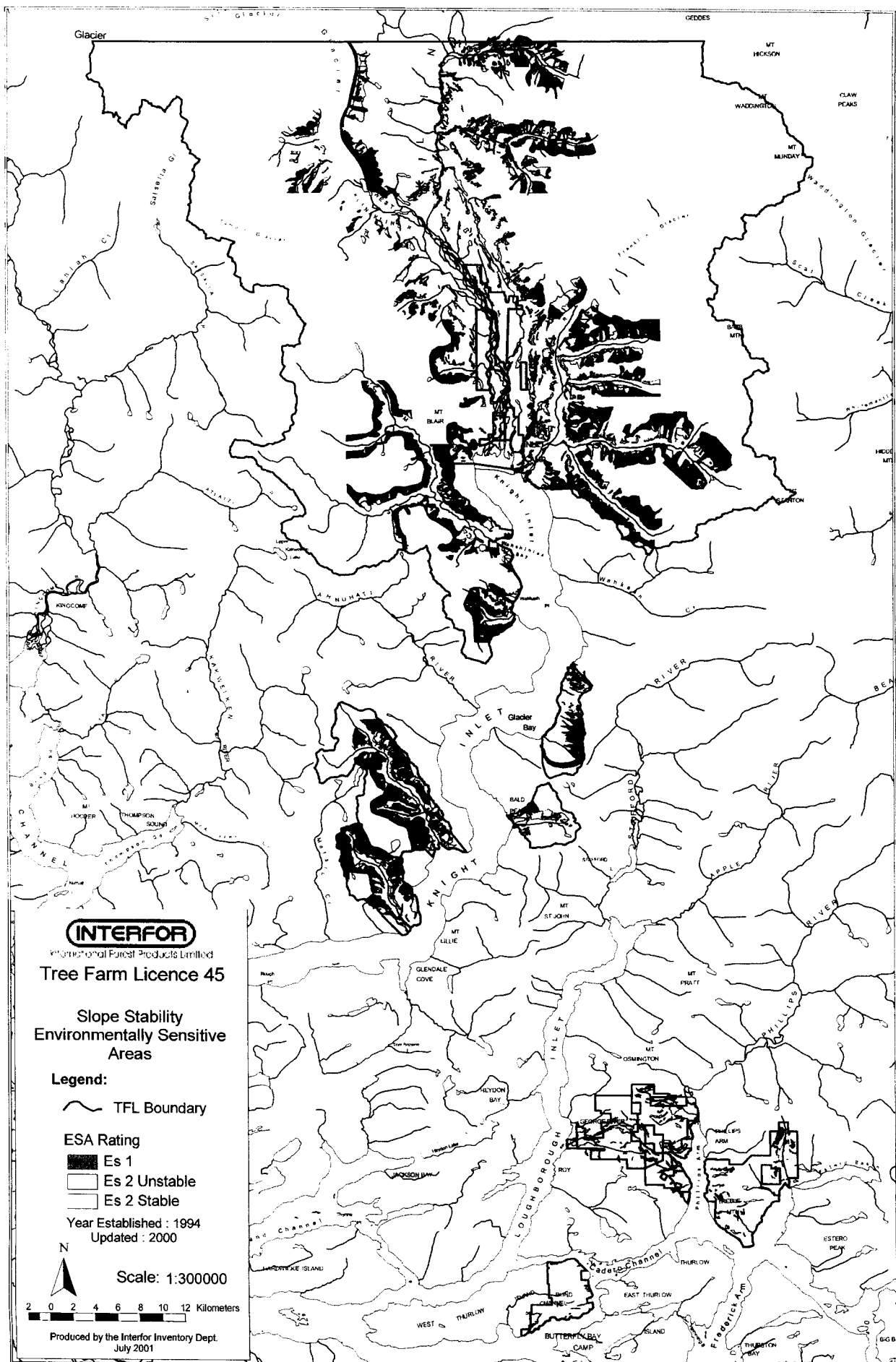


Figure 67

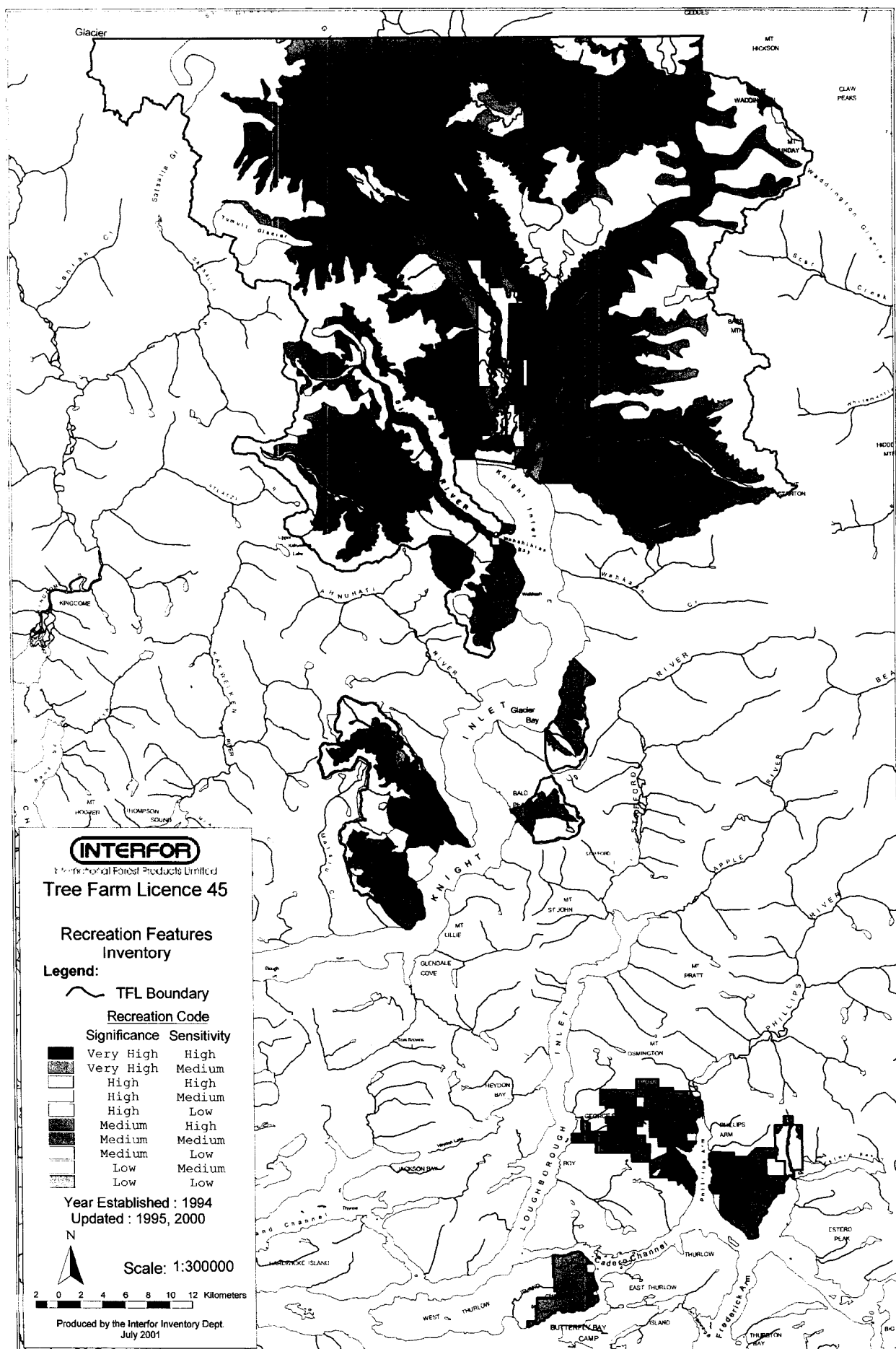


Figure 68

The Recreation Analysis and Management Strategy Report provides an overview of the landscape and recreation resources in TFL 45 (Appendix 10). The report draws together key biophysical feature information contained in the recreation and landscape inventories. It provides an assessment of recreation and landscape resources in TFL 45 and outlines management options based on supply and demand.

As TFL 45 is divided into two distinct geographical areas, North and South, the analysis is separated into two areas and are described as Recreation Management Units (RMUs) with specific management options and scenarios provided for each.

The limited (aircraft or boat) access and remote locations of TFL 45 (refer to next heading) are important factors which can be expected to continue to influence the type and levels of recreation use, and the management of recreation and landscape resources in this TFL.

➤ **Access**

TFL 45 located primarily in Knight Inlet is a rugged, remote mainland coastal inlet. It is quite isolated, is not located on any major travel routes, and can be dangerous boating waters with few safe anchorages. A smaller southern portion of the TFL is located in Cordero Passage (Frederick Arm, Phillips Arm and West Thurlow Island). These areas are relatively easily accessible and are on travel routes for other destinations. All areas are only accessible by boat, float plane or helicopter. Float plane, boats, and helicopters are used to access the head of Knight Inlet. Commercial air and boat charter services are based in Campbell River and Port McNeill. Flight time from Campbell River to the head of Knight Inlet is approximately 60 minutes.



Figure 69. Float plane landing, Knight Inlet (J. Webb)

➤ Commercial Tourism

The geographical location of TFL 45 has a strong impact on the types of tourism and commercial recreational use. These geographical and physical differences between the two TFL units (north and south) affects tourism in numerous ways. The primary recreational use of the Cordero area is boating and ocean fishing. Several permanent fishing lodges/resorts are located in Cordero Passage. Shoal Bay Resort in Cordero Passage offers ocean kayaking. Interfor maintains a hiking trail on West Thurlow Island.

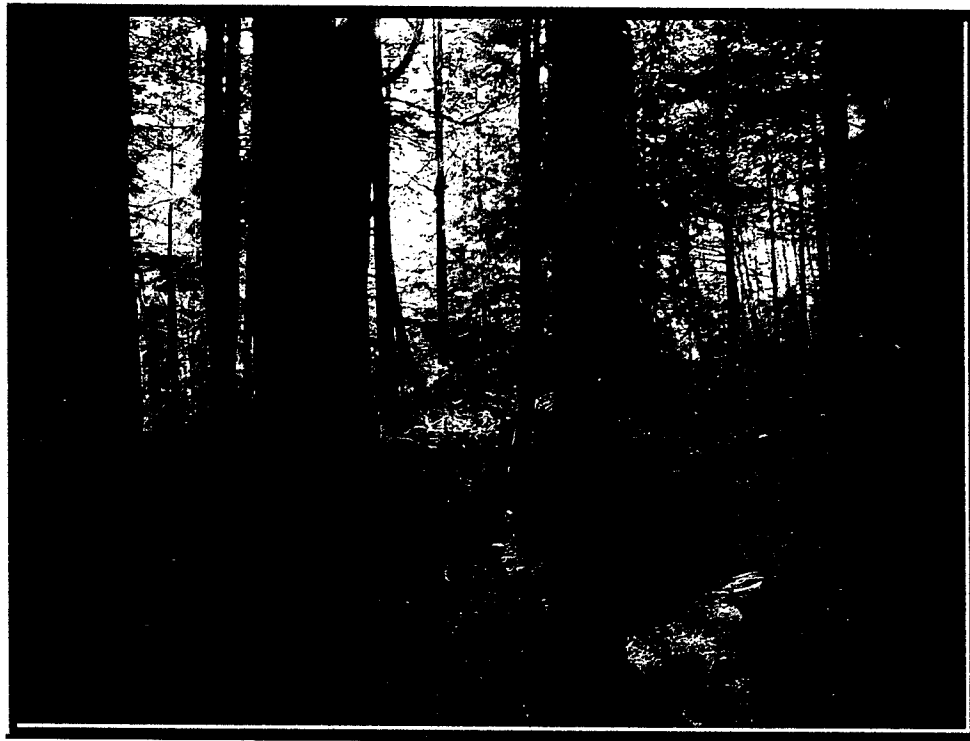


Figure 70. Forest Management Trail, West Thurlow Island

In contrast the recreational use in Knight Inlet is more specifically for guided grizzly and black bear watching and hunting and technical mountain climbing. Climbing parties make the trip to Mount Waddington each year, starting from the head of Knight Inlet. In the TFL portion of Knight Inlet there is one permanent fishing lodge and a number of transient lodges that move throughout the year.

3.8.8 Archaeological Resources

Archaeological Inventory and impact assessments have been conducted on West Thurlow Island and Phillips Arm previous to 1989 (c. 1971, 1972) and in 1993 respectively. Interfor will consult with Homalco, Kwakiutl-Laich-Kwil-Tach Treaty Association (representing the Campbell River, Cape Mudge, Comox and Kwiakah Bands), Kwakiutl District Council (KDC) (represents Da_naxda_xw, and Mamalilikula-Qwe_Qwa_Sot_Enox) to identify and locate important spiritual and cultural areas within TFL 45. Due to the sensitive nature of this information, any other cultural heritage resources are not directly available to Interfor and may be brought forward, by First Nations, during the consultation process and will require appropriate management prescriptions to be developed. In order to facilitate the acquisition of cultural heritage information, formal agreements may need to be developed with individual First Nations.

The Archaeological Potential Maps for the Central Coast will be reviewed during the preparation of the operational plans. To date, both the high and moderate potential areas are concentrated immediately adjacent to the shoreline, generally below the topographic break to the beach from the uplands and precludes incursions into the culturally sensitive areas.

The protection of all archaeological resources is governed by the *Heritage Conservation Act*. Interfor's responsibility to conduct Archaeological Impact Assessments is specified in the Operational Planning Regulations and requirements of the *FPCBC Act*.

Should previously unrecorded cultural heritage resource features be discovered during operations, Interfor will notify the appropriate agencies and take steps to manage these resources as required.

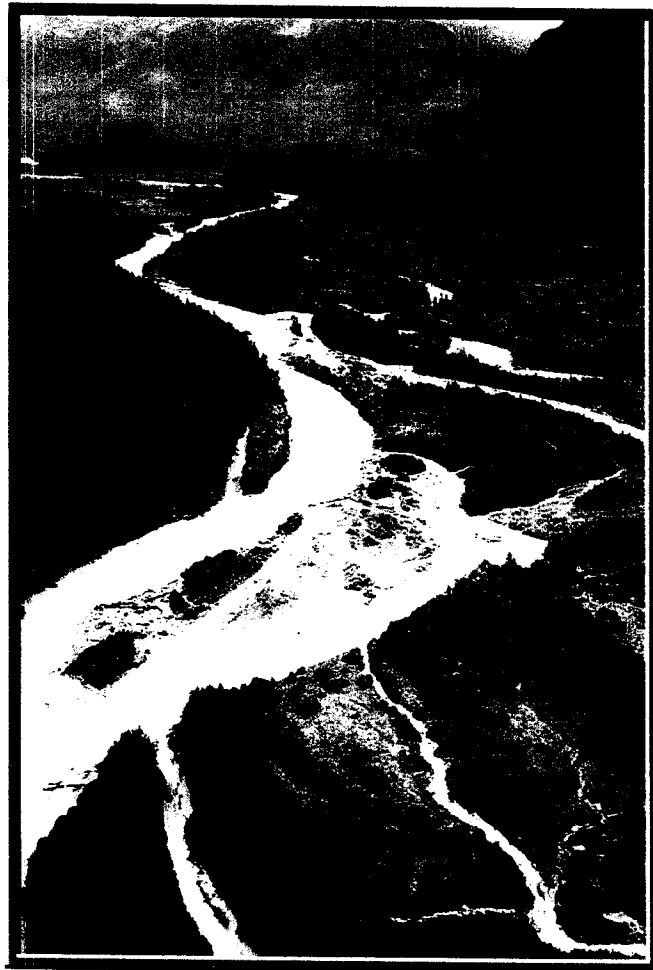


Figure 71. Klinaklini Valley at Indian Reserve (J. Webb)

3.8.9 Community Watershed Assessment

Although there are no community watersheds that lie within TFL 45's boundaries, residents and resort guests at Blind Channel on West Thurlow Island obtain domestic water supply from a creek in TFL 45. This creek and others with water licences will be managed on a site-specific basis and will be in accordance with the procedures outlined by the Ministry of Environment, Lands and Parks and *Forest Practices Code of BC Act*.

3.8.10 Trappers and Guide Outfitters

There are numerous registered trapping licences within TFL 45 (Table 9). Trap-line licensees will be notified of proposed activities through the regular public viewing of the development plans. Comments received through public viewing will be considered and plans revised where appropriate.

Table 9: Registered Trap Areas in TFL 45.

Trap Area	Landscape Unit(s)
T0115T942	Klinaklini Glacier; Lower Klinaklini; Sim
TR0115T919	Gray
TR0115T920	Thurlow
TR0115T930	Franklin; Klinaklini Glacier; Knight East; Lower Klinaklini; Middle Klinaklini; Sim
TR0115T935	Ahmuhati-kwalate; Lull-Sallie
TR0115T937	Lower Klinaklini
TR0115T941	Franklin; Lower Klinaklini; Sim
TR0115T947	Franklin
TR0115T963	Knight East; Gray; Phillips
TR0215T005	Estero; Phillips
TR0215T007	Estero; Gray; Phillips

3.8.11 Cave Management

Cave features are not commonly found in TFL 45. However, there is one known cave in Phillips Arm. Cave management guidelines will be followed in accordance with the procedures outlined by the Ministry of Forests and *Forest Practices Code*. Interfor is committed to working with various special interest groups in the management of these features.

3.8.12 Aquaculture Operations

The Aquaculture Industry is a significant employer on the Mainland Coast. Interfor will continue to work cooperatively with this industry to ensure that both interests are mutually compatible.

3.8.13 Forest Renewal BC

Interfor operations staff are actively preparing comprehensive Forest Renewal Plans for TFL 45 for the term of MP 4. FRBC project proposals are submitted periodically, to deal with various aspects of forest management including projects relating to:

Inventories

- Non-timber resources such as fisheries and wildlife;
- Harvest system Classification

Forestry

- A variety of silviculture treatments such as spacing;
- Type II Silviculture Analysis;

Watershed

- Road deactivation and rehabilitation of disturbed areas;

Restoration

- Enhancement of fisheries and wildlife habitat; and

Education

- Training for contract crews, local and First Nations communities.

4 SOCIO-ECONOMIC CONSIDERATIONS

Interfor is a publicly traded company on the Toronto Stock Exchange (TSE). TFL 45 represents 5.8 percent of Interfor's current AAC of 3.6 million cubic meters. Interfor expects to operate a business which provides competitive returns to shareholders, provides stable well paid employment to forest workers and professionals, manages forest resources in a sustainable manner and contributes to government revenues.

In mid-1998 Interfor undertook a restructuring program to address the immediate need to reduce overhead costs, and aggressively pursue the very real need to reduce costs and capital spending. Staffing requirements throughout both Interfor forest operations offices and sawmills were under review and all non-core business related jobs and discretionary expenditures eliminated.

1999 was a year of significant progress for Interfor. The restructuring program, which began in June 1998, had a material impact on our cost structure, financial performance and balance sheet. Significant strides were made during the year in worker safety and towards independent certification of our forestry practice. In December 1999 Interfor achieved ISO 14001 Certification of Coastal Woodlands.

Interfor made significant progress on all fronts in 2000. Highlights included:

Financial

- earned \$27.6 million after tax
- repaid \$83.2 million in debt
- re-purchased \$12.4 million in shares
- invested \$11.9 million in high return projects

Environmental

- increased percentage of helicopter and variable retention logging
- awarded SFI Certification of Coastal Woodlands
- awarded ISO 14001 Certification of Interior Operations
- received Millennium Business Award for Environmental Achievement

Safety

- reduced Medical Incident Rate (MIR) by 26%
- achieved best overall MIR in BC manufacturing sector
- achieved best MIR of any operating mill in BC (Adams Lake Lumber)
- awarded Canadian Society of Safety Engineers Award (Squamish Lumber)

Community and First Nations Activities

- held Annual General Meeting at Squamish
- signed Memorandum of Understanding with Squamish District
- signed Timber Harvesting Agreement with community of Ucluelet

- signed Community Involvement Agreement with Hesquiaht First Nation

These accomplishments and the momentum we have built since mid-1998, place Interfor in an excellent position to pursue strategies consistent with our goal to achieve sustainable long-term profitability.

At the end of 2000, Interfor received a “clean” audit from the Forest Practices Board for our West Coast operations on Vancouver Island. This represents a significant endorsement of our practices. In addition, we continue to make advances in New Forestry. Interfor is Canada’s leader in low-impact helicopter logging the largest operation of its kind in Canada. We added a fifth side to our helicopter logging operations in 2000 and are now heli-logging about one-third of our annual harvest.

In December 2000, Interfor became the first BC forest company operating on publicly-owned land to receive environmental certification to the American Forest & Paper Association’s Sustainable Forestry Initiative (SFI)SM Standard, when our Coastal Woodlands group was certified to SFI. SFI certification provides additional verification for customers, shareholders and others that our practices meet internationally recognized standards for environmental management. As part of the SFI certification process, we established a Public Advisory Committee consisting of individuals from communities within our operating areas. We are also pleased to have as scientific advisor to our certification program, renowned forest ecologist Dr. Hamish Kimmins of the Faculty of Forestry at the University of British Columbia. The advisory committee and Dr. Kimmins have provided valuable insight on our activities from a community and scientific perspective and will continue to assist us in implementing and refining our certification goals.

In May 2000, Interfor was honoured to be chosen as one of 12 companies from around the world to receive the inaugural Millennium Business Award for Environmental Achievement -- awarded jointly by the United Nations Environmental Programme and the International Chamber of Commerce. In presenting the award, the UNEP/ICC recognized Interfor’s commitment to environmental management, including our:

- leadership role in the use of low-impact helicopter logging;
- use of variable retention logging (as an alternative to clearcutting);
- introduction of systems to monitor environmental performance (in both forestry and milling operations);
- compliance record under the BC Forest Practices Code;
- reforestation practices;
- involvement and partnerships with employees, communities and First Nations groups; and forest certification activities.

In 2000 Interfor’s safety performance had improved considerably from previous years, with an overall 26% reduction in the Company’s Medical Incident Rate (MIR). In addition to the improvement in results, Interfor recorded the best overall MIR in the manufacturing sector of the BC industry in 2000 and two of our facilities were singled out for specific recognition:

- our Adams Lake Lumber operation recorded the lowest MIR of all reporting mills in British Columbia; and
- our Squamish Lumber operation received the Canadian Society of Safety Engineer’s Award for its workplace and community outreach programs.

Also in 2000, Interfor broke new ground in developing and enhancing long-term relationships with our operating communities and with First Nations, on whose traditional territories we operate. As a first step, we took our

Annual General Meeting out of Downtown Vancouver and held it in the community of Squamish, on traditional Native territory. At that meeting, we entered into a new relationship with the District of Squamish by signing a Memorandum of Understanding outlining our commitment to work together on issues of mutual concern. At the meeting, we also agreed to work with the Squamish First Nation to develop cooperative relationships and mutually beneficial business opportunities. During the year, we signed a similar Community Involvement Agreement with the Hesquiaht First Nation, on Vancouver Island, and entered into a community-based Timber Harvesting Agreement with the Ucluelet Economic Development Corporation. These agreements, and others already in place, provide economic benefits for the communities and First Nations where we operate. They also represent another step toward more local involvement in the management and use of local resources -- a direction Interfor fully supports.

In 2001, Interfor reported net earnings before restructuring costs of \$300,000 or \$0.01 per share in the 1st quarter of 2001 compared with net earnings of \$7.6 million or \$0.23 per share in the immediately preceding quarter, and with net earnings of \$7.9 million or \$0.22 per share in the 1st quarter 2000.

In commenting on the Company's results, President and Chief Executive Officer Duncan Davies said, "We are facing a much more difficult market environment this year. Pricing in Japan has weakened in response to the devaluation of the Yen, and the U.S. market is being undermined by a slowdown in economic activity. Compounding the situation, chip prices have fallen by more than 20% compared with last quarter, and stumpage rates have increased. We adjusted our logging plans and sawmill operating programs during the quarter to keep inventories at acceptable levels.

On April 4th, 2001 the Government of British Columbia announced its decision on land use for the Central Coast region of the Province, following more than three years of public consultation. This decision creates a number of new protected areas, defers logging in other areas and commits to an ecosystem-based forest management regime on those areas available for logging. Interfor believes its timber harvesting rights in the area will be reduced by 600,000 m³ per year, which is equivalent to approximately one-sixth of the Company's licence volume on the Coast. The actual reduction in harvesting activity will be determined over the next two to three years as the Provincial Government makes its decisions on the deferred areas and on regulatory measures for the region.

To adjust, Interfor has announced plans to restructure and downsize its coastal woodlands operations, and to permanently close its Fraser Mills manufacturing facility later this year.

"The decision to downsize our woodlands operations and to close Fraser Mills is a difficult one but we feel that we had no choice under the circumstance," said Davies. "The loss of cut in the Central Coast will add to the reductions made from land use and regulatory decisions by the Provincial Government in other regions. Over the last five years, our company has lost more than one million cubic metres of annual harvesting rights. Even before the Central Coast decision, our coastal mills were operating on a curtailed basis due to insufficient log supply. Going forward, we believe sawmills will have to operate on a minimum two shift basis to be competitive. With less supply available following this announcement we felt we had to move forward to consolidate our operations to improve the log supply to our remaining mills."

As expected, the Softwood Lumber Agreement expired at the end of March 2001 without replacement measures in place. On April 2nd U.S. producers filed petitions with the U.S. Department of Commerce calling for countervail duties and anti-dumping provisions in the range of 70-80%. The Department of Commerce has until April 23rd, 2001 to decide whether to proceed with an investigation of the petitioners' claims. Interfor categorically rejects the

petitioner's claims and is prepared, along with other B.C. and Canadian producers, to conduct a vigorous defence against their allegations. That said, Interfor continues to encourage the Canadian government to begin senior level discussions with their U.S. counterparts with the objective of finding a constructive and long-lasting solution to this dispute.

The balance of 2001 holds a number of significant challenges. The Japanese market continues to be plagued by economic difficulties, and the U.S. market is being impacted by the dispute over softwood lumber and the possible imposition of duties. In addition, chip prices are expected to continue to weaken and stumpage rates are likely to increase following changes to the system earlier this year.

The combination of these factors is expected to negatively impact Interfor's operating plans and financial performance through the balance of 2001.

Interfor's objectives with respect to employment and economic opportunities are to maintain an economically viable forest harvesting operation to provide continued employment, and contribute to the sustainability of the local economy.

To achieve these objectives, TFL 45 must achieve a level of profitability over an economic cycle consistent with Interfor's cost of capital. To create and maintain continued employment opportunities in harvesting, silviculture, forest management, forest product manufacturing and other initiatives, there are economies of scale directly related to the level of the AAC and the efficiency of the planning process.

4.1 Economic Profile

In support of continuing forest management activities outlined in MP 4, for TFL 45, consideration has been made of the socio-economic contribution on the local community, and the Provincial economy. In order to make the assessment, some assumptions, facts, and statistics were borrowed from a report produced for the Economics and Trade Branch of the Ministry of Forests, and a forest industry review by Price Waterhouse.

Campbell River is the largest community closest to TFL 45. Because of its proximity to TFL 45, and its role as a regional service centre, the majority of those employed in TFL 45 forestry and logging activities reside in Campbell River and changes to the AAC will have the greatest impact here. Provincially, approximately 275 direct logging milling and 578 indirect and/or induced jobs for a total of 854 Person Years (PYs) of employment can be attributed to TFL 45 (Table 10). Direct jobs are those in harvesting, silviculture, administration, and wood processing. Indirect jobs are found in shipping and in forestry related construction, consulting and associated government ministries. Induced jobs are those in government services like health care and education, and in local retailing of daily purchases like groceries and more significant purchases like homes and cars.

Over the past five years, the average pre-tax compensation and benefits for forestry employment is approximately \$63 323. This is significantly higher than the average pre-tax compensation and benefits for B.C. of approximately \$42 000¹⁵. In the event of forest industry job loss, there is a significant negative impact on individuals and affected families. This is attributable to "a stable work history in an industry with relatively good wage levels. Displaced forestry workers suffer emotionally and in some instances they do not qualify for social assistance programs

¹⁵ Price Waterhouse, *The Forest Industry in British Columbia*, -1999, June 2000.

because of their accumulated property”¹⁶. A significant adjustment in the standard of living should be expected. Many forestry jobs are specialized and it is doubtful that acquired skills would be transferable to industries like tourism. FRBC funded projects are expected to mitigate job loss, but not necessarily income loss.

Employment from TFL 45 also plays a significant part in generating local revenue and in the provision of community services. Continued employment levels help to stabilize or improve property values, thereby maintaining revenue from property taxes. These taxes are derived from both the residential and commercial sector, which rely on secure employment levels in the forest industry.



Figure 72. Knight Inlet Camp

4.2 Provincial Contribution

All of the harvested wood from TFL 45 leaves the area to be processed. As a result, changes in AAC levels impact beyond the local economy. Lower Mainland mills rely almost exclusively on logs supplied from coastal sources, including TFL 45. Logs supplied by TFL 45 supports approximately 275 Person Years of direct logging, silviculture, administration, and processing employment. Indirect and induced employment is estimated at 578 Person Years (Table 10). It is estimated that the former 220 000 m³/year AAC of TFL 45 generated in the order of \$42.6 million in pre-tax compensation and benefits, \$4.8 million in stumpage revenue, and \$15.0 million in Employment Insurance and Canada Pension Plan contributions, personal income tax, corporate income tax, provincial sales tax, property tax, taxes included in electricity rates, B.C. Corporation tax and other taxes. The weighted average pre-tax compensation and benefits for TFL 45 related employment is estimated at \$50 000 per year. Estimated government revenue is \$90 000 per 1 000 m³ of AAC.

¹⁶ Commission on Resource and Environment, Vancouver Island Land Use Plan, February 1994, cited in Crane Management Consultants Ltd.

Table 10: TFL 45 Economic Impacts, five-year average (1995-1999).

Base AAC 220,000	Person Year (PY) per 1 000 m ³ (a)	Number of jobs	Estimated Compensation and Benefits (b)	Estimated EI, CPP and Income Tax (c)	Estimated Induced Taxation (d)
Local logging, silviculture and administration	.47	103	\$6,515,000	\$352,000	\$356,000
Provincial processing (lumber, plywood, etc.)	.78	172	\$10,881,000	\$5,874,000	\$595,000
Indirect and induced employment	2.63	578	\$25,269,000	\$5,781,000	\$2,004,000
Total direct and indirect	3.95	854	\$42,665,000	\$12,007,000	\$2,955,000
Stumpage ^(e)	\$4,840,000				
Total Government Revenue EI, CPP, taxes and stumpage	\$19,803,000				
Weighted average compensation and benefits per job	\$50,000				
Government Revenue per 1 000m ³ of AAC	\$90,000				

(a) Based on Person Year (PY) per 1000 m³ of harvest coefficients, determined from Price Waterhouse, *The Forest Industry in British Columbia* – 1999, June 2000. Five-year average for AAC calculated from Table 3, Source MoF in Council of Forest Industries, *British Columbia Forest Industry Statistical Tables* - 2000,

(b) Based on Price Waterhouse, *The Forest Industry in British Columbia* – 1999, June 2000, Table 8.

(c) Based on Price Waterhouse, *The Forest Industry in British Columbia* – 1999, June 2000, Table 6. Taxation includes Employment Insurance (EI), Canada Pension Plan (CPP), and personal income tax.

(d) Ibid: Includes provincial sales tax, corporate income tax, property tax, taxes included in electricity rates, B.C. Corporation tax, and other taxes.

(e) Average (five-year) stumpage paid = \$22/m³.

5 ANNUAL REPORT

Under the terms of the TFL 45 Licence document Interfor may be required to deliver to the Regional Manager, and District Manager a TFL 45 Annual Report for the preceding calendar year. Reporting requirements are contained in Section 11.00 of the TFL Licence document.

6 CONTRACTOR CLAUSE

Some timber within the tree farm licence area must be available for harvest by others under timber sale licences, pulpwood tenures and woodlot licences. A minimum portion of the harvest must be harvested by contractors.

In accordance with the Licence agreement and to meet the requirements under the legislated in the Forest Act, the Company will ensure that each calendar year during the term of the Licence:

- the Licensee will ensure that not less than 50% of the AAC volume harvested from Schedule B Land within the Licence area is harvested by persons under contract to the Interfor;
- compliance is calculated in accordance with the method prescribed under the Forest Act and regulations;
- if the volume of timber harvested by contract is less than the volume required, the Regional Manager may require the Licensee to pay an amount determined as follows: the volume required minus the volume harvested by contractors multiplied by the average stumpage rate charged for sawlogs in statements issued to the Licensee in respect to timber harvested under this Licence; and
- that the contractor clause conditions will be amended if required, to meet new harvest standards or cut control requirements that may occur because of changing environmental practices.

6.1 Schedule B Prorate

Table 11: TFL Landbase Schedule AAC Prorate

	Schedule A	Schedule B	Total
Total TFL Landbase	721	231,145	231,866
Non-productive	258	166,690	166,948
Productive	464	64,455	64,918
Reductions to Productive Landbase	267	8,604	8,871
Net Operable Landbase	178	25,935	26,113
Prorate	0.7	99.3	100

7 PLAN REVISION

The Management Plan may need revision to accommodate changes as identified by the Chief Forester of the province or by the company. The Chief Forester in a notice given to the Company, may require that the Management Plan be amended or replaced. The notice will specify why the Management Plan needs revision and the extent of changes required in accordance with the Licence agreement.

8 REVIEW STRATEGY

The strategy for reviewing the TFL 45 management plan provides several opportunities to receive comments from persons interested in or affected by activities planned under this licence. This review process will include the following:

- resource agencies,
- licensed resource users,
- First Nations,
- local governments,
- public.

The measures for inviting comment concerning the plan will be dependent upon the target audience and issues identified. A variety of methods such as referrals to agencies, public viewings and community presentations will be used.

8.1 Management Plan 5

The 20-month timeline for the preparation of MP 5 will begin in March 2005. Key dates in the preparation of MP 9 include:

January 2005	Licensee will invite comments regarding the licensee's performance in respect of MP 8,
March 2005	Regional Manager will provide the Licensee with a review of Licensee's performance in respect of MP 4, and guidelines for preparation of MP 5,
July 2005	Licensee will submit timber supply information package to Timber Supply Branch, Licensee will submit a Draft Management Plan No 5, Public viewing and agency review of Draft MP 5,
October 2005	Timber Supply Branch accepts timber supply information package, Licensee will submit summary of public review comments on Draft MP 5
January 2006	Licensee will submit timber supply analysis report, Licensee will submit 20-year plan.
July 2006	Licensee will submit proposed MP 5 and a summary of public review comments,
November 2006	MP 5 will take effect.

8.1.1 Draft Management Plan 5

Draft MP 5 will be available for review by interested persons, during normal business hours at Interfor's Campbell River office for a period of two months.

Individual notification letters of the draft MP 5 public comment period will be sent to government agencies and key community organizations, and to previous respondents who requested further information. The letters will be mailed one to two weeks prior to public viewing. Advance notice will be sent to First Nations.

Notification of the draft MP 5 public comment period and the public viewing will be advertised in three newspapers. Advertisements will run consecutively for two weeks starting three weeks in advance of the public viewing.

Draft MP 9 public input

June 2005

advertising will invite comment on draft MP 5,

July-August 2005

Draft MP 5 available for public review.

The public will be invited to respond within a 60-day period following the viewing date. Summary of public comments received and our response will be forwarded to the MoF Regional Manager.

8.1.2 Key Similarities and Differences; MP 3 and MP 4

➤ Landbase

	MP 3	MP 4
Total TFL Landbase (hectares)	243,000	231,866
Productive Forest (ha)	54,075	64,918
Reductions to Productive Forest (ha)	24,641	38,115
Net Timber Harvesting Landbase	29,434	26,803

Differences in the gross TFL landbase can be attributed to a new digital dataset provided by Resource Tenures and Engineering Branch. The changes are mostly located at height of land and in alpine regions.

The increase in productive forest can be attributed to the new Vegetation Resource Inventory and the fact that the previous inventory was primarily a merchantable timber inventory that did not delineate all areas of continuous forest cover.

The difference in the net timber harvesting landbase can be mostly attributed to the fact that MP 3 buffers for riparian areas was pre-Forest Practices Code. Other notable changes in netdowns included new methodology for determining area in roads, and the use of biogeoclimatic zone mapping to account for low productivity sites.

➤ Inventories

During the term of MP 3 there has been extensive inventory work completed. Most notably:

- New Vegetation Resource Inventory (VRI) inventory database;
- Current definition of operability, updated to new VRI inventory and TRIM NAD 83 map base;
- Updated definitions of Management Zones (MZs) formerly Environmentally Sensitive Areas (ESAs);
- Updated recreation features inventory;
- Visual Quality Classes as per the original VQO Buyback Strategy;

- Definition of riparian buffers consistent with Riparian Management Area Guidebook;
- Updated wildlife habitat inventory;
- Updated Stream / Riparian Classifications;
- Updated Slope Stability Review for Es2 polygons originally mapped and classified in 1993;
- Expanded Slope Stability Mapping for areas previously unmapped and unclassified;
- New Terrestrial Ecosystem Mapping (TEM);
- New Potential Site Index Estimates for the Main Commercial Species on TFL 45.

➤ Management Practices

Since MP 3 Interfor has implemented an Environmental Management System (EMS). Interfor has received certification to the International Environmental Management Standard, ISO 14001, for all Coastal Woodlands forestry and logging operations. Interfor also received certification to the Sustainable Forestry InitiativeSM program standard developed under the American Forest and Paper Association. Both certifications have been verified through independent third party audits conducted by KPMG Quality Registrar Inc.