



IISAAC
WOOD WITH RESPECT®

Sustainable Forest Management Plan

Iisaak Forest Resources Ltd.
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**Tree Farm License 57,
Timber Licenses (T0831, T0834, T0837, T0840, & T0846) &
Tree Farm License 54 (Portion Inside Clayoquot Sound)**

TERM: 2006 - 2011

Licensee Signature:

Name: _____

Derek Drake, R.P.F.
General Manager

Original Date: _____

Update #1 Date: Jan 7, 2011 to add TFL54(Clayoquot Portion)
to the Management Unit

ACKNOWLEDGEMENTS

Iisaak has collaborated with the Department of Forest Resources Management at the University of British Columbia in developing this Sustainable Forest Management Plan. Iisaak would like to acknowledge the contributions of the planning team which was led by Peter Verschoor, RPF (forestry planning consultant) and Dr. Gary Bull (UBC) with the assistance of Kaori Otsu (UBC), Keith Bell, Christopher MacNeal, Matt Hamilton, Nicholas Miller (FRST 424 students), Dr. John Nelson (UBC) and Ralph Wells (UBC).

EXECUTIVE SUMMARY

This document is a Sustainable Forest Management Plan (SFMP) for Iisaak Forest Resources Ltd. It covers Iisaak's complete tenure holdings of approximately 136,450 hectares in Clayoquot Sound, British Columbia. This area is made up of three basic tenures types namely TFL57 (including TLs inside TFL 57), TFL 54 and TLs (T0831, T0834, T0837, T0840, T0843, & T0846) held outside of TFLs. The planning framework presented is subject to the provisions and conditions of the current tenure license documents, the *Forest Act* and regulations, the *Forest and Range Practices Act* and regulations, the *Forest Practices Code of BC Act* and regulations, the Clayoquot Sound Scientific Panel Recommendations, the official Clayoquot Sound Watershed Plans (established via the Clayoquot Sound Land Use Order, 2008), the Clayoquot Sound Watershed Planning Process and other relevant government legislation and associated regulations.

This document is considered to be a dynamic plan with the goal of continual improvement over time. It will be updated and revised on an as needed basis as Iisaak refines its criteria and indicators, management strategies and operational approaches in its pursuit to better define, measure and monitor the ecological, cultural, social and economic objectives of SFM. At a minimum, the plan will be revisited and updated in its entirety at least once every five years.

A planning framework has been developed that provides criteria and indicators that will guide operational activities. The SFMP describes Iisaak's commitments to meeting the Forest Stewardship Council - BC Regional Standards and to implementing a Sustainable Forest Management Planning Framework at a scale and intensity consistent with Iisaak's forestry operations. A monitoring program based on the principles of adaptive management is recommended to continually improve on current management practices.

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1.0 Introduction

1.1 Purpose

The purpose of this Sustainable Forest Management Plan (SFMP) is to describe IISAAC's commitments to the Principles and Criteria of the Forest Stewardship Council (FSC) through the implementation of a set of criteria, indicators and targets for Sustainable Forest Management that is appropriate to the scale and intensity of IISAAC's operations. This SFMP also describes a number of management strategies that provide the operational means by which the targets for Sustainable Forest Management can be met.

This plan builds on the work initiated by IISAAC under its "Public Involvement Project" in 2004¹. This SFMP has been prepared in support of the FSC Regional Certification Standards for British Columbia and is intended to provide the strategic direction for preparation of IISAAC's first Forest Stewardship Plan under the new *Forest and Range Practices Act of British Columbia*. The five-year term of this plan is for the period April 1, 2006 to March 31, 2011.

1.2 IISAAC Forest Resources Ltd.

IISAAC was created in July 1998 through a joint venture agreement between the Nuu-chah-nulth Central Region First Nations and Weyerhaeuser Company to provide a new model of forest management in Clayoquot Sound. This agreement was a direct result of commitments made by the Nuu-chah-nulth Central Region First Nations and MacMillan Bloedel Ltd. (Weyerhaeuser's predecessor) during the 1996 Interim Measures Extension Agreement negotiations with the Province of British Columbia.

In the original agreement the Central Region First Nations held 51% ownership of IISAAC and Weyerhaeuser held the remaining 49% share. As part of the shareholders agreement Weyerhaeuser had a log purchase agreement with IISAAC and a right of first refusal to 49% of the wood volume from TFL 57.

In April 2005 the Central Region First Nations took over 100% ownership of IISAAC when they purchased the 49% share from Weyerhaeuser making IISAAC a 100% privately owned First Nations forest company. This followed Weyerhaeuser's announcement in early 2005 that they

were selling their entire BC coastal forest operations. Weyerhaeuser no longer has any involvement in the forest management of TFL 57 and does not have any rights to the wood from the TFL.

lisaak is an innovative ecologically sensitive forest management services company built on traditional values and respect for the environment. lisaak owns and operates six forest tenures and manages one forest tenure within Clayoquot Sound, covering a total land base of approximately 140149 ha. The forest tenure it manages (TFL 54) is owned by lisaak's parent company Mamook Natural Resources Ltd, who has assigned management responsibilities to lisaak in 2010. Mamook Natural Resources Limited purchased TFL 54 in 2007 from International Forest Products Ltd via a financing and management contract with Coulson Forest Products. In the spring of 2010 Mamook Natural Resources Ltd completed negotiations with Coulson Forest Products that released Coulson from the management and financing contract regarding TFL 54. Coulson Forest Products was permitted to complete their planned harvesting activities by 2012 on active cutting permits in order to capture their investment in the cutting permits.

These tenures are described in detail in section 2.0.

lisaak is primarily a log producer but in late 2009 purchased a small portable bandsaw mill and Mobile Dimension Mill that began earnest production in 2010. In addition a small manufacturing facility was built in 2010 at the mill site that began producing value added tables and chairs. Sales from the Company's mill and value added manufacturing facility have largely been to the local market with some sales to the domestic market. lisaak continues to exploring options to expand its value added facilities on the west coast as well as the marketing of these products.

lisaak sells a portion of its logs on the open market though agreements with independent log brokers or directly through purchase agreements with companies who own and operate saw milling facilities. In addition, lisaak often has a portion of its log production custom cut into specialty and value-added products.

Mission Statement

lisaak's mission statement is *"to apply innovative approaches to the management and conservation of coastal temperate rainforests while maximizing opportunities for current and*

¹ Final Report to the Forest Investment Account: "Public Involvement Project for TFL 57", April 18, 2004.

future generations and to be a successful Central Region First Nations business that improves quality of life through the creation and promotion of social, cultural, economic and ecological benefits through the application of cultural beliefs.”

lisaak has represented a turning point in forest resource management in Clayoquot Sound. A departure from conventional forestry practices, lisaak embraces a conservation-based approach to forest management. lisaak defines conservation-based forestry as forest operations designed to achieve conservation as a primary objective. Conservation-based forestry features a unique approach to ecosystem planning and operations in which lisaak commits to:

- Increasing the participation of First Nations and local communities in resource management.
- Protecting cultural values.
- Implementing the unique Clayoquot Sound Scientific Panel Recommendations for sustainable forestry in Clayoquot Sound which includes the newly established Clayoquot Sound Watershed Plans provided for under The Order Establishing Land Use Objectives for Clayoquot Sound.
- Working collaboratively with local stakeholder groups and local communities.
- Maintaining a continuous reserve network across the Management Unit.
- Identifying, assisting, and developing non-timber forest resources within Clayoquot Sound and specifically within the Management Unit.
- Applying variable retention harvesting systems.
- Collaborating on monitoring initiatives.
- Practicing adaptive management.
- Maintaining Forest Stewardship Council certification.

1.3 The Clayoquot Sound Context

1.3.1 Short History of Clayoquot Sound

Throughout the nineteenth and twentieth century commercial fishing operations were the main economic driver in Clayoquot Sound and the surrounding areas. By the 1950's commercial logging began to get a foothold in the area. By the 1960's many companies, including MacMillan

Bloedel, secured leases on land and began harvesting at a rate consistent with government policy of the time. Harvesting of the area continued relatively unimpeded until 1984 when MacMillan Bloedel attempted to start harvesting on Meares Island. This was met with concern by local First Nations, environmental groups and Tofino residents who blockaded MacMillan Bloedel. In 1985 the Tla-o-qui-aht and Ahousaht First Nations were successful in getting a court injunction that ceased logging on the Island indefinitely pending the settlement of treaties. This was the first blockade of logging in the area, but not the largest.

In the late 1980's and early 1990's the question of how to integrate various forms and levels of resource development, given the significant cultural and ecological values in Clayoquot Sound, initiated high levels of public debate and participation in comprehensive planning processes.

In 1989 the Clayoquot Sound Sustainable Development Task Force was set up by the BC government to create a sustainable development strategy for Clayoquot Sound. The Task Force failed due to disagreements over interim logging and representation at the table. In 1990 the BC government established the Clayoquot Sound Sustainable Development Strategy Steering Committee. Environmental groups walked out following a decision to approve interim logging.

In 1991, after failures of the Clayoquot Sound Sustainable Development Task Force and the Clayoquot Sound Sustainable Development Strategy Steering Committee due to a lack of consensus, the BC government instructed the Commission on Resources and Environment (CORE) to develop a comprehensive land use plan for Vancouver Island.

1.3.2 Clayoquot Sound Land Use Decision

Again, a lack of consensus over land use resulted in Clayoquot Sound being excluded from the CORE process. In April 1993, the BC government announced the Clayoquot Sound Land Use Decision with the goal of bringing resolution to long-standing land use issues in the Sound. The decision permanently protected 34 percent of Clayoquot Sound. It also dedicated 45 percent of the area to sustainable resource use, including sustainable forest management, and placed 17 percent under special management. The remainder of the area - including Meares Island, the District of Tofino, First Nations' reserves, Federal Crown land and private land - was not part of the decision. A map of the 1993 Clayoquot Sound Land Use Decision area is located in Appendix 2.

Later that year, opposition to logging in Clayoquot Sound led to the largest civil disobedience in Canadian history that resulted in the arrests of over 800 people for blockading logging operations. In reaction to the social controversy, the BC government introduced a new strategy to try to resolve the issues in Clayoquot Sound. The government appointed an independent panel, called the Clayoquot Sound Scientific Panel for Sustainable Forest Practices in Clayoquot Sound, which became known simply as the “Scientific Panel”. The Scientific Panel had 19 members including scientists and representatives of the Nuu-chah-nulth Central Region First Nations. The Province gave the Scientific Panel a mandate to review the existing forestry standards and to make recommendations for creating sustainable forest practices that would be the best in the world.

1.3.3 Clayoquot Sound Scientific Panel and the Watershed Planning Process²

The Scientific Panel’s report, which contains over 120 recommendations, was published in five volumes in 1995. In the same year the Province adopted all of the Scientific Panel’s recommendations and assigned a special government team – the Clayoquot Implementation Team – to set in motion their implementation.

One of the key findings of the Scientific Panel is that sustainable ecosystem management requires not only improved forestry practices on the ground, but also a new approach to planning. Central to this approach was the concept that sustainable ecosystem management should mimic Natural Disturbance Regimes. This approach establishes an ecosystem-based management framework in which the primary objective is to sustain the productivity and natural diversity of the region. In particular, the Scientific Panel proposed the development of long-term watershed plans identifying reserves to protect a range of forest values. Many of the Scientific Panel’s recommendations relate to the scope and content of the watershed plans.

In setting out a new framework for planning, the Scientific Panel first organizes long-term management principles into three broad planning themes: watershed integrity, biological diversity, and human values. Each theme comprises several management goals. For each goal, the Scientific Panel goes on to identify a set of management objectives. These objectives include,

² Watershed Planning in Clayoquot Sound – Volume 1: Principles and Process, December 2004.

for example, maintaining soil characteristics, protecting important wildlife habitat, and recognizing First Nations' interests.

The establishment of watershed reserves is the Scientific Panel's key strategy to accomplish these management objectives. In spatial terms, the watershed plans reflect the broader direction that emerges from sub-regional planning, and also provide guidance to more specific site-level plans. In the context of the planning process, the watershed plans are a means of securing the forest values at the heart of ecosystem management objectives.

Watershed plans have been developed in accordance with the principles and recommendations set out by the Scientific Panel to guide the planning process. The plans map and designate the areas that will be set aside as reserves to protect a range of forest values. These reserves are designed to preserve the long-term ecosystem integrity of each watershed planning unit, to protect First Nations' culturally important areas, and to maintain recreational and scenic values. The Plans also map and designate harvestable areas – that is, the land that falls outside of reserves and on which sustainable forest harvesting can take place. The watershed plans do not apply to, Indian Reserves, federal lands, or private land.

The Scientific Panel argues that the people most closely affected by resource management decisions should be responsible for making these decisions. In particular, the Scientific Panel recommends that the Nuu-chah-nulth First Nations of the region be major participants in planning and decision-making in Clayoquot Sound. With this in mind, the government's Clayoquot Implementation Team collaborated with the Central Region Board (CRB) to develop a planning framework with input from government officials, First Nations, elected local governments, labour, forest licensees, and environmental groups. After one year of discussions, the Central Region Chiefs and the provincial government ratified the planning framework for Clayoquot Sound in 1997.

As a result, in 1999, in recognition of the need for a streamlined and cost-effective planning process, the Clayoquot Sound Technical Planning Committee (TPC) was struck by the Parties to the IMEA. This committee is made up of First Nations representatives and technical staff from the Provincial agencies responsible for resource management planning, and is focused solely on watershed planning.

The Watershed Planning Process required that new inventories be developed and that existing inventories be redesigned and/or updated. In a collaborative effort spanning eight years, International Forest Products, MacMillan Bloedel Ltd., IISA AK Forest Resources Ltd., the Ministry of Forests, the Ministry of Sustainable Resource Management and the Central Region First Nations were successful in redesigning, updating and developing the following set of inventory layers in Clayoquot Sound:

- forest cover inventory,
- BEC unit classification,
- terrain and terrain stability mapping,
- terrestrial ecosystem mapping,
- vegetation resource inventory,
- hydroriparian inventory,
- wildlife and wildlife habitat mapping,
- visual sensitivity inventory,
- recreation and tourism inventory,
- landscape inventory (private lands, tenure boundaries, and parks and protected areas),
- fish and fish habitat mapping,
- landslide inventory, and
- archaeological inventory.

The TPC is responsible for preparing all watershed plans in Clayoquot Sound. In keeping with the intent of the Scientific Panel, each plan is subject to public review before it is approved. The TPC submits each plan in draft form to the Central Region Board, which in turn leads a process to solicit public input on the plans. At the end of the public review process, the CRB forwards the draft plans, together with comments and recommendations, to the Central Region Chiefs and the Province for decision and further guidance.

In May 2008 the completed Clayoquot Sound Watershed Plans were established in law by The Order Establishing Land Use Objectives for Clayoquot Sound. This Order establishes Land Use Objectives that recognize the importance of the Clayoquot Sound Watershed Plans in guiding sustainable ecosystem management, and enables the contents of the watershed plans to be

reflected in forest stewardship plans adopted under the *Forest and Range Practices Act*. The Clayoquot Sound Watershed Plans will be updated and modified periodically to reflect new information as it becomes available.

2.0 Management Unit Description

The Management Unit is comprised of Tree Farm License #57 (TFL 57), five small Timber Licenses (TL T0831, T0834, T0837, T0840, and T0846) which were transferred to IISA AK in October 1999 and TFL 54. The entire Management Unit with the exception of two small portions of TFL54 is located exclusively within the boundaries of the Clayoquot Sound Land Use Decision Area (CSLUD, 1993), the Clayoquot Sound UNESCO Biosphere Reserve, and the traditional territories of the Ahousaht, Tla-o-qui-aht and Hesquiaht First Nations. Table 1 shows the approximate breakdown of IISA AK's Management Unit and a map of IISA AK's Management Unit, including surrounding tenures and protected areas, is located in Appendix 1.

Table 1: Management Unit Breakdown

IISA AK Management Unit	Approx. Total Gross Area (ha)	Approx. % of Management Unit
Tree Farm License #57 including TLs inside TFL57	87,393	64%
Timber Licenses Outside TFL57 T0831, T0834, T0837, T0840, and T0846	3,457	2.5%
Tree Farm License 54 (portions inside Clayoquot)	45,600	33.5%
Total	136,450	100%

Figures 1a and 1b show the current age class distribution across IISA AK's Management Unit. Presently, the majority of the Management Unit is classified as old growth.

2.1 Current Management Practices

IISA AK is committed to implementing the Clayoquot Sound Scientific Panel's Recommendations and following the direction of the Watershed Plans across its Management Unit. IISA AK is also

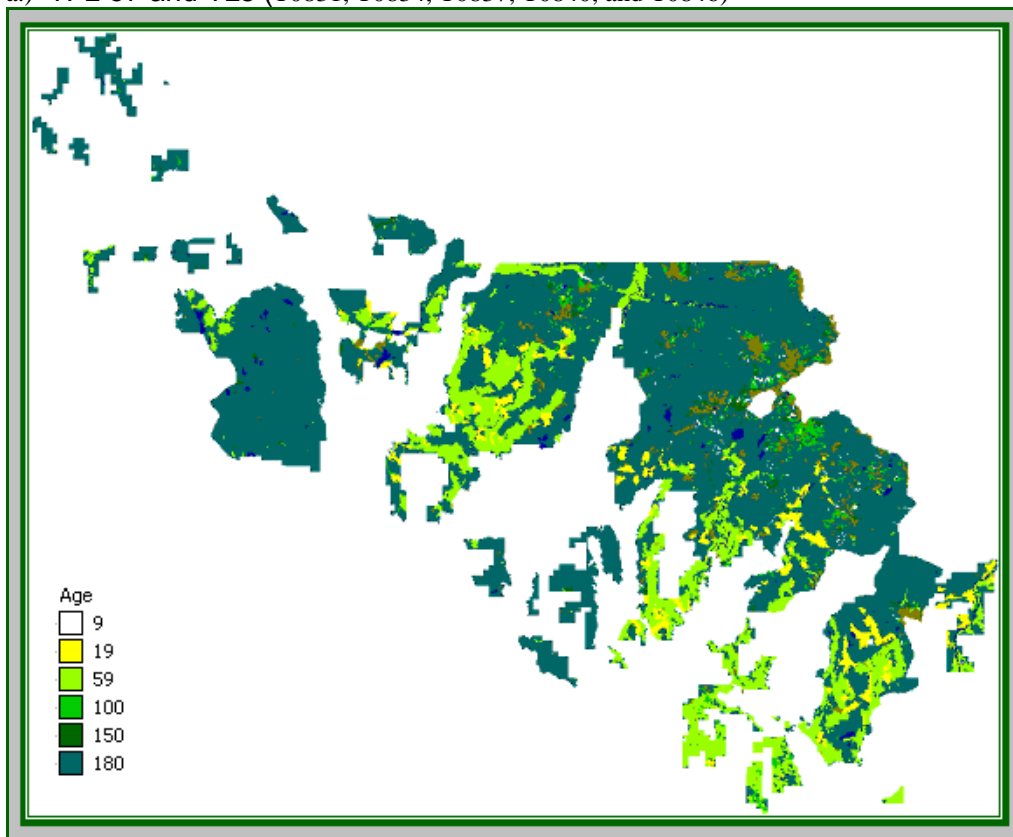
committed to working to refine and update the Panel’s recommendations and Watershed Plans over time as operational experience is gained and new information becomes known.

2.1.1 Natural Disturbance Types and Variable Retention Harvesting

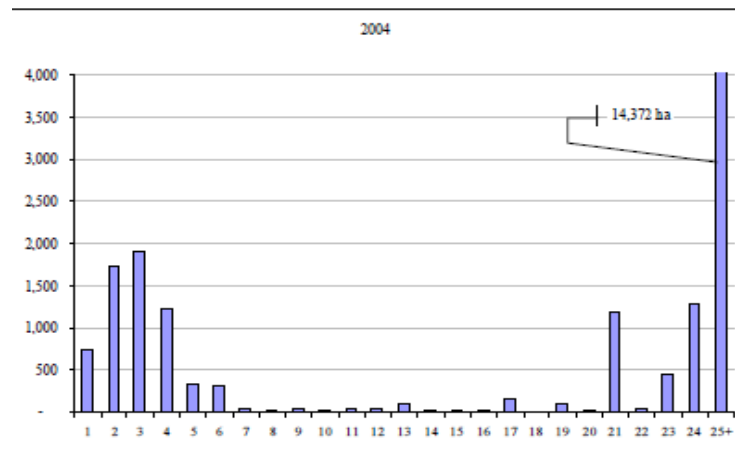
One of the key concepts central to the Panel’s recommendations regarding forestry practices in Clayoquot Sound is that harvest systems should mimic natural disturbance regimes. This resulted in the transition from clearcutting to Variable Retention (VR) harvesting systems. All of IISA AK’s harvesting operations utilize Variable Retention systems with a range of retention options from 15% in areas without significant non-timber values, to 70% or more in areas with high visual, cultural and/or wildlife values (very small cutblocks are exempt from minimum in-block retention requirements).

Figure 1: Management Unit Age Class Distribution

a.) TFL 57 and TLs (T0831, T0834, T0837, T0840, and T0846)



b.) TFL 54 Age Class Distribution



The most common forms of natural disturbance in lisaak’s Management Unit are windthrow events and landslides. These events are generally relatively small and result in irregular edge configurations and landscape patterns.

The majority of lisaak’s Management Unit, which is located within the CWH biogeoclimatic zone, is located within ‘*Natural Disturbance Type (NDT)1 - Ecosystems with Rare Stand-Initiating Events*’³. The mean return interval for NDT1 disturbances is generally 250 years.

Occasionally, however, major windthrow events do occur as a result of hurricane-force winds on certain exposed parts of the Management Unit in portions of the CWHvm1, CWHvm2, CWHvh1 biogeoclimatic zone variants. The mean return interval for these has been approximately 100 years. The areas in which these major wind events occur fall within ‘*Natural Disturbance Type (NDT)3 – Ecosystem with Frequent Stand-Initiating Events*’.

lisaak’s harvest areas are dominated by small openings where no place within the opening is typically greater than two tree heights from the edge of an existing aggregate or stand. lisaak practices two forms of VR; *dispersed retention*, where trees are retained as dispersed individual trees throughout a harvest area and *aggregate retention*, where trees are retained as small intact patches of standing timber within a harvest area.

³ FPC Biodiversity Guidebook, September 1995

2.1.2 Harvesting Systems

A harvesting system typically consists of four phases: falling and bucking, yarding, loading, and hauling. The choice of harvesting system used by IISA AK is shaped by site variables and management objectives. Specific factors affecting IISA AK's choice of harvesting system include:

- topography (slope steepness and variability);
- soil (composition, sensitivity to disturbance);
- silvicultural system (level of retention, number of harvest entries);
- timber characteristics (log size, volume per hectare, and log value);
- potential road access and roading constraints; and
- yarding distance and direction; if cable yarding, desired log suspension (full or partial) is based on risk of detrimental soil disturbance, damage to retained trees, and protection of other resource values.

The capabilities and limitations of methods and equipment used in the yarding phase are critical in attaining variable-retention silvicultural objectives. Yarding methods used by IISA AK can be grouped into three main categories:

1. Ground-based yarding – Hoe forwarding is the only ground-based yarding method currently being used by IISA AK. There is a necessity to lay down matting and puncheon to limit soil disturbance. Very versatile. Requires good road access to harvest area. Can operate on slopes up to 30-35%. Least expensive yarding method.
2. Cable yarding (e.g. grapple, highlead, skyline) – Can operate on slopes up to 60%+. Dependent on good deflection (poor deflection will significantly increase detrimental soil disturbance levels) and adequate road access to harvest area.
3. Helicopter logging – Very versatile. Can be used in inaccessible areas, on steep slopes and in visually sensitive areas. Weather sensitive. Most expensive yarding method.

For all yarding methods, stand and timber characteristics, such as volume per hectare and log size, influence choice of machine size and power, production rates, and operating costs. In

general, an inverse relationship exists between harvest unit costs (\$/m³), and log size and timber volume per hectare. Indirect costs such as minimizing damage to soil or aesthetic values also influence profitability of harvesting operations. Capital, operating, and labour costs are significantly higher for cable yarding and heli-logging than for ground-based systems. The feasibility of locating and constructing roads determines how close yarding equipment can get to the timber and may be an overriding determinant.

2.2 Tree Farm License #57

TFL 57 is interspersed with TFL 54 (held by MaMook Natural Resources), the Arrowsmith Timber Supply Area, Pacific Rim National Park Reserve, Indian Reserves, private lands, Strathcona Provincial Park, and many smaller Provincial Parks. TFL 57 was created by the subdivision of the Clayoquot portion of TFL 44 (held by Weyerhaeuser) and comprises approximately 32% of the total land area of Clayoquot Sound. Approximately one-quarter of the TFL is accessible by road from the provincial highway system. The remaining three-quarters is water accessible from Tofino and have isolated road systems that end at the various log dumps located throughout the TFL.

TFL 57 is an area-based forest tenure that grants IISA AK the exclusive⁴ right to harvest Crown timber under the terms of the TFL License Agreement. All timber harvested by IISA AK on TFL 57 is approved by the Ministry of Forests and Range through either a cutting permit or road permit. TFL 57 has a term of 25 years and it is replaceable every 10 years. As the holder of TFL 57, IISA AK is responsible to government for the protection, inventory and reforestation of the forest resource as well as management planning, road building and maintenance and operational planning. In addition, IISA AK is responsible for payments to government of all stumpage charges for timber harvested as well as all fixed costs outlined in Table 2 example.

Table 2: Annual Fixed Costs Payable to Government for TFL 57

TFL 57 Properties	Total Size/volume	Annual Rental Rate	Annual Rent	Property Tax
Schedule 'A' Lands	10,872 ha	\$1.85/ha	\$ 20,113.20	-----
Schedule 'B' Lands	97,762 m ³	0.57/m ³	\$ 55,724.34	-----

⁴ Except for volumes allocated to BC Timber Sales (BCTS) and for small volumes approved for harvesting under Special Use Permits (SUP) and Free Use Permits (FUP).

Foreshore Leases	111.3 ha	-----	\$ 25,908.33	\$7,211.11
Dry Land Sorts	5.1 ha	-----	\$ 2,152.50	\$2,458.78
Total			\$103,898.37	\$9,669.89

Source: 2005 assessment roll

Table 3: TFL 57 Land Base Summary

TFL 57 Land Base	Area (ha)
Total Land Base	87,393
Total Productive Land Base – approx. 85%	74,426
Total Non-Productive Land Base (rock, swamps, lakes, and Meares Island) – approx. 15%	12,967
Timber Harvesting Land Base (THLB) – approx. 30%	26,885

Source: Timber Supply Analysis Information Package, TFL 57 Management Plan No. 1, June 5, 2002

TFL 57 is divided into Schedule ‘A’ and Schedule ‘B’ components. Schedule ‘A’ lands are Timber Licenses that have been incorporated into the TFL 57 license area and are managed to the same standards as the rest of the TFL. Schedule ‘B’ lands are simply the “TFL proper”. As Schedule ‘A’ lands are harvested and regenerated they revert to Schedule ‘B’ status leading to the eventual elimination of the Schedule ‘A’ component of TFL 57. Currently TFL 57 has approximately 10,800 ha designated as Schedule ‘A’ lands and 76,600 ha designated as Schedule ‘B’ lands.

IISAAC currently has an application in with the Ministry of Forests and Range requesting the reversion of approximately 2,200 ha of Schedule ‘A’ lands. These timber license areas have now been successfully regenerated and IISAAC has requested that they be reverted to Schedule ‘B’ lands status. IISAAC expects to have this Timber License reversion submission reviewed and approved by the Ministry of Forests and Range in the near future.

2.2.1 History

Harvesting and sawmilling have occurred for over a century in the area now covered by TFL 57. In 1955, Forest Management Licenses (FML) No. 20 (Tofino) and No. 21 (Port Alberni) were awarded to MacMillan Bloedel’s predecessor companies. These two FML’s were later renamed Tree Farm Licenses (TFL) No. 20 and No. 21. In 1984, these two TFLs were combined to form TFL 44.

The AAC for TFL 44 for the period from January 1, 1991 to December 31, 1993 was set at 2.68 million m³. In 1993 the provincial government came out with the Clayoquot Sound Land Use Decision (CSLUD) and the establishment of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound (the Scientific Panel). The CSLUD removed 33,000 hectares of new protected areas from the Clayoquot portion of TFL 44. The Chief Forester of BC re-determined the AAC for TFL 44 effective January 1, 1994 to 2.45 million m³ (a 230,000 m³ AAC reduction). In June 1994 the AAC for TFL 44 was reduced again to 2.228 million m³ to reflect the timber supply impacts of the CSLUD (a 222,000 m³ AAC reduction that was directly attributed to the Clayoquot portion of TFL 44). On July 6, 1995, the provincial government issued a news release announcing acceptance of the Scientific Panel's five-volume report and government's intention to fully implement the report's recommendations. The Chief Forester of BC re-determined the AAC for TFL 44 effective January 1, 1998 to 2.06 million m³ (another 168,000 m³ AAC reduction that was largely the result of implementing the Scientific Panel recommendations in the Clayoquot portion of the TFL).

In the fall of 1998 Iisaak Forest Resources was created as a joint venture company between MacMillan Bloedel and the Nuuchahnulth Central Region First Nations with the purpose of taking over the management of the Clayoquot portion of TFL 44. In October 1999 TFL 44 was subdivided and the Clayoquot portion of TFL 44 (minus the Upper Kennedy and Marion Creek areas) became TFL 57 and was transferred to Iisaak.

2.2.2 Biogeoclimatic Ecosystem Classification

TFL 57 includes three variants of the Coastal Western Hemlock Biogeoclimatic Zone (CWHvh1, CWHvm1 and CWHvm2), one variant of the Mountain Hemlock Zone (MHmm1) and small areas of the Alpine Tundra Zone (AT). Table 4 below provides a description of each Biogeoclimatic zone and variant.

Table 4: Biogeoclimatic Ecosystem Classification (BEC) Summary for TFL 57

Biogeoclimatic Zone	Variant	Description	% of TFL 57
Coastal Western Hemlock Zone (CWH)			
	CWHvh1	Occurs between 0 and 150 m in elevation in the hypermaritime areas of the outer coast of Vancouver Island. The climate is cool with very little snowfall.	21.0%

	CWHvm1	Occurs between 0 and 600 m in elevation on the windward slopes of Vancouver Island. The climate is wet and humid with cool summers and mild winters with little snowfall.	48.0%
	CWHvm2	Occurs between 600 and 900 m in elevation above the CWHvm1 and below the MHmm1. The climate is wet and humid with cool summers and cool winters with substantial snowfall.	21.7%
Mountain Hemlock Zone (MH)			
	MHmm1	Occurs between 900 and 1350 m in elevation above the CWH vm2 and below the AT. The climate features long, wet, cold winters with very high snowfall and short cool moist summers. Growing season frosts are common.	9.0%
Alpine Tundra Zone (AT)		Above 1350 m.	0.3%

Source: Land Information British Columbia BEC classification (MSRM)

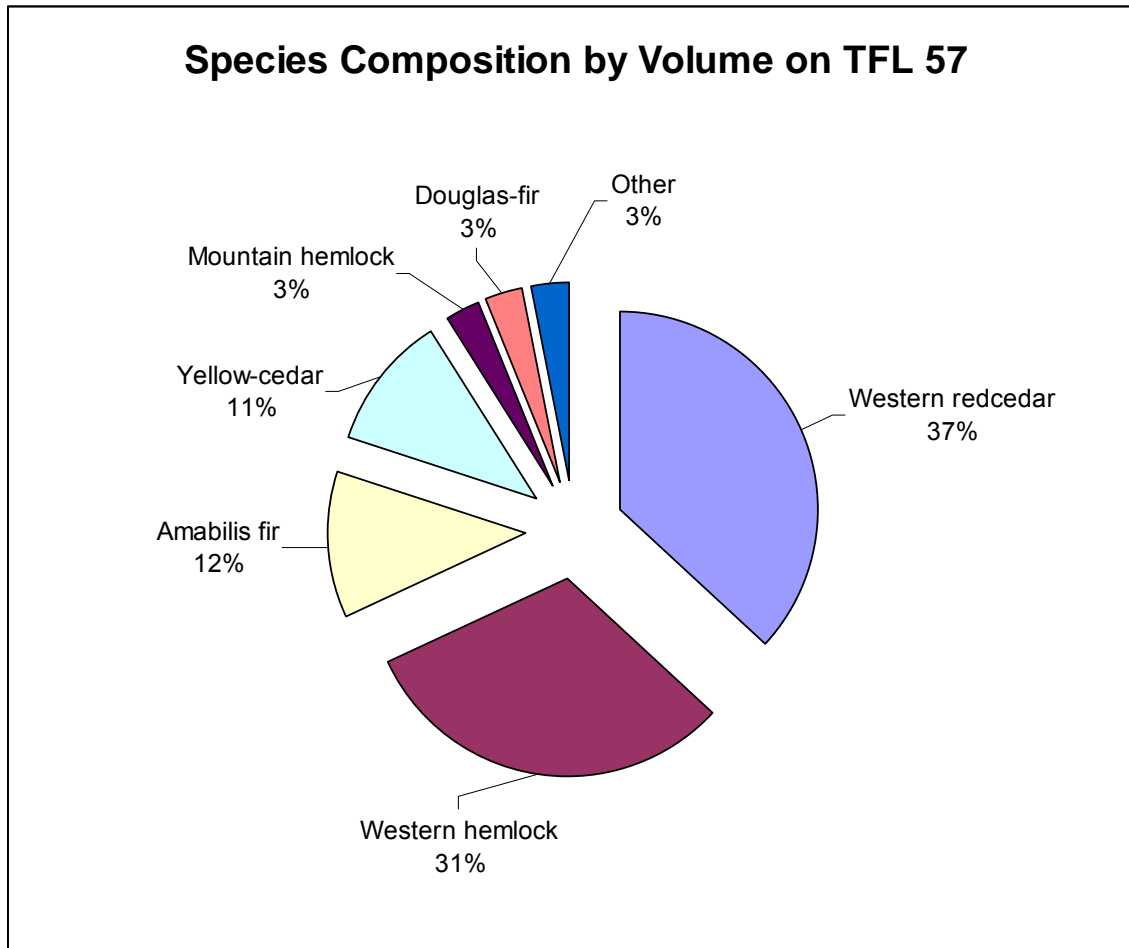
2.2.3 Species Composition and Age Class Distribution

The TFL consists of stands comprised mainly of western redcedar, western hemlock, amabilis fir and yellow-cedar with minor components of Douglas-fir, Sitka spruce, shore pine, red alder, and western white pine. Table 5 shows the breakdown of tree species by volume on the TFL Timber Harvesting Land Base (THLB).

Table 5: Tree Species Composition by Volume on the TFL 57 THLB

Tree Species	Scientific Name	Approximate species % by volume
Western redcedar (Cw)	<i>Thuja plicata</i>	37%
Western hemlock (Hw)	<i>Tsuga heterophylla</i>	31%
Amabilis fir (Ba)	<i>Abies amabilis</i>	12%
Yellow-cedar (Yc)	<i>Chamaecyparis nootkatensis</i>	11%
Mountain hemlock (Hm)	<i>Tsuga mertensiana</i>	3%
Douglas-fir (Fdc)	<i>Pseudotsuga Menziesii</i>	3%
Sitka spruce, western white pine, red alder and shore pine		3%

Source: Analysis completed by Coastal Resource Mapping Ltd., Dec. 6/05

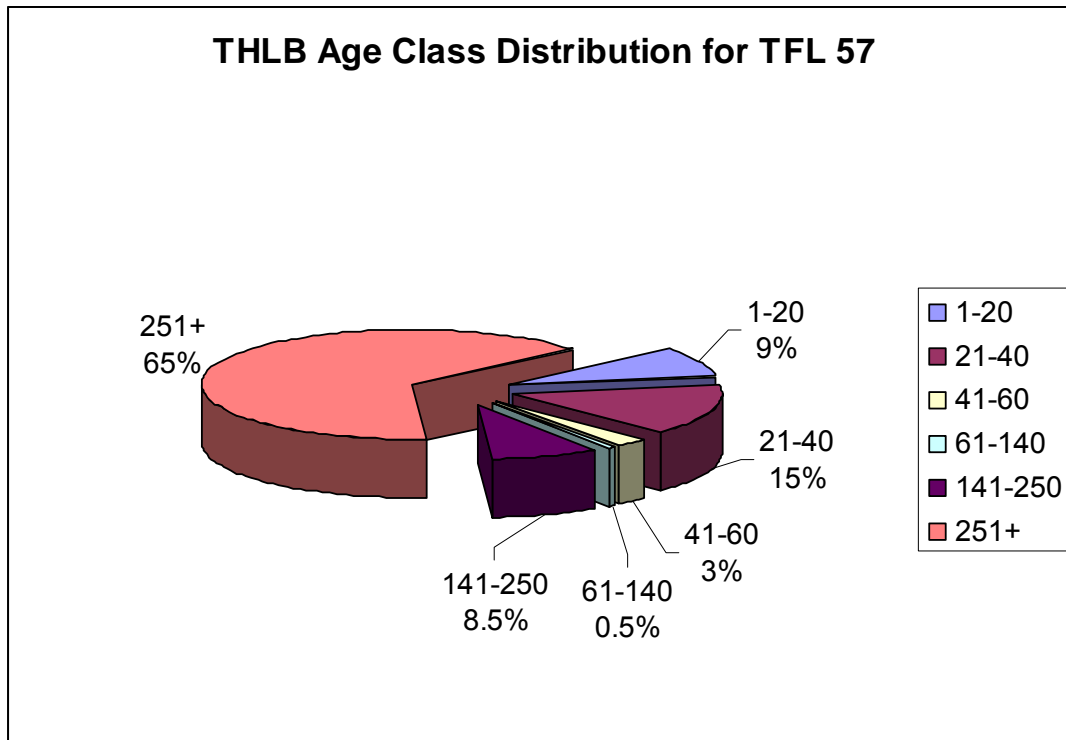
Figure 2: TFL 57 Species Composition on the THLB

Table 6: Age Class Distribution for TFL 57

Age Class	Area of THLB (ha)	% of THLB
0	0	0%
1-20	2,327	8.7%
21-40	4,006	14.9%
41-60	692	2.6%
61-80	42	0.1%
81-100	40	0.1%
101-120	47	0.2%
121-140	40	0.1%

141-250	2,249	8.4%
251+	17,442	64.9%
Total	26,885	100.0%

Source: Timber Supply Analysis Information Package, TFL 57 Management Plan No. 1, June 5, 2002

Figure 3: TFL 57 THLB Age Class Distribution.



Source: Timber Supply Analysis Information Package, TFL 57 Management Plan No. 1, June 5, 2002

2.2.4 Parks

Approximately 33% of Clayoquot Sound is comprised of National and Provincial Parks and Protected Areas. TFL 57 borders twelve of these parks and protected areas, specifically: Pacific Rim National Park Reserve, Strathcona Provincial Park, Clayoquot Arm Provincial Park, Clayoquot Plateau Provincial Park, Kennedy River Bog Provincial Park, Dawley Passage Provincial Park, Tranquil Creek Provincial Park, Gibson Marine Provincial Park, Flores Island Provincial Park, Sulphur Passage Provincial Park, Sydney Inlet Provincial Park and the Megin River Ecological Reserve.

2.2.5 Allowable Annual Cut and the Area-Based AAC Trial Program

The Timber Supply Review (TSR) for TFL 57 was just completed in 2004 as a part of the overall Management Planning Process for TFL 57. Management Plan #1 for TFL 57 was approved by the Ministry of Forests and Range on September 22, 2004. On October 4, 2004 IISA AK signed an *Area-Based Allowable Annual Cut Trial Program Agreement* with the Deputy Minister of Forests making TFL 57 the first forest Management Unit in British Columbia to have its Allowable Annual Cut (AAC) based on the area harvested rather than the timber volume removed. Effective January 1, 2005 the Deputy Chief Forester set the current AAC for TFL 57 at a total of 381 ha, of which 92 ha has been attributed to even-aged harvesting operations and 289 ha to uneven-aged harvesting operations. Table 7 shows the comparison between the previous volume-based AAC for TFL 57 and the new area-based AAC.

Table 7: Allowable Annual Cut for TFL 57

Cut Control Period	TFL 57 AAC Apportionment ⁵				Comments
2000 - 2004					The first cut control period for TFL 57.
	Iisaak	up to 110,390 m3			
	BCTS	up to 13,410 m3			
	Total	up to 123,800 m3			
2005 - 2009					The beginning of the second cut control period for TFL 57 and the start of the Area-Based AAC Trial Program.
		Even-aged⁶	Uneven-aged⁷	Total	
	Iisaak	82 ha	258 ha	340 ha	The AAC is divided between each licensee based on the percentage of the volume-based AAC held prior to the beginning of the trial program.
	BCTS	10 ha	31 ha	41 ha	
	Total	92 ha	289 ha	381 ha	

⁵ On July 2, 2004 the Assistant Deputy Minister of Forests reduced the AAC available to Iisaak by 1,100 m3 as a result of harvest deficiencies for the calendar years 2000, 2001 and 2002. However, this reduction is not reflected in the current AAC apportionment as it is still under dispute by Iisaak.

⁶ Even-aged management applies to harvesting operations where patch openings >0.3 hectares are used.

⁷ Uneven aged areas: Those areas with dispersed style retention of equal or greater than 15% where harvest pattern or scheduling results in a residual stand with at least 3 age classes and a residual canopy closure of >6%. This can include, for example, cutting patterns that result in narrow strips (corridors) <20m wide, patch cuts <0.3ha or individual tree or group selection. This includes by definition any road right of way written to the cutting permit outside of the gross block boundary.

2.2.6 Harvest Summary

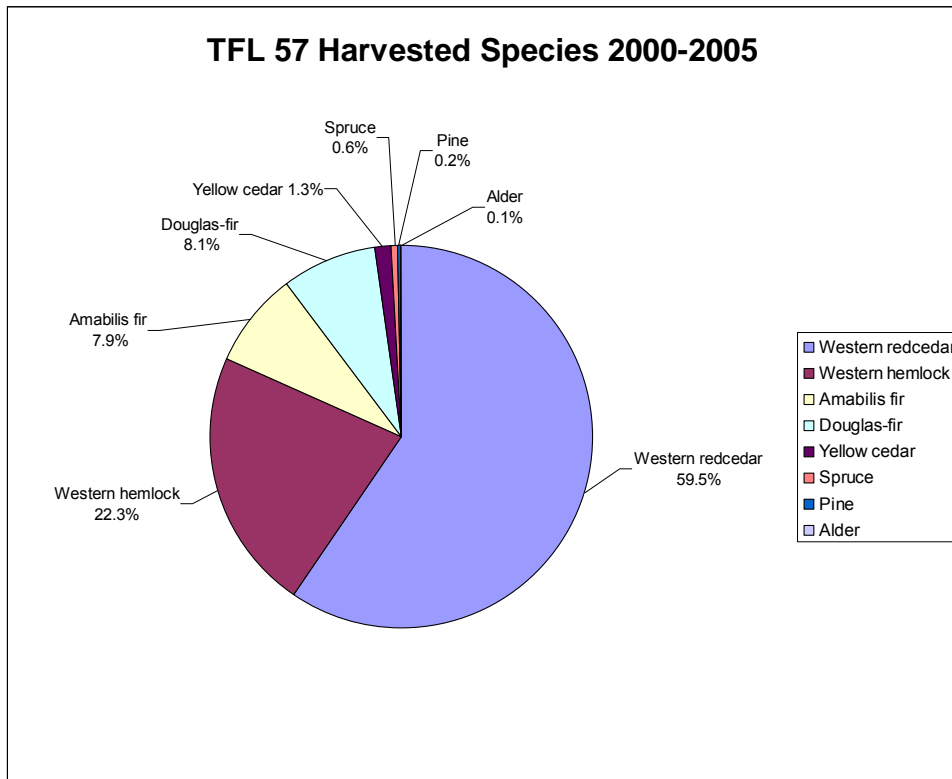
The volume harvested from TFL 57 over the past six years (2000-2005) is presented in Table 8.

Table 8: TFL 57 Six Year Harvesting History

Year	AAC (m3)	Total Harvest Volume (m3)	Comments
2000	up to 110,390	15,626	The first cut control period for TFL 57.
2001	up to 110,390	16,559	
2002	up to 110,390	11,455	
2003	up to 110,390	26,141	
2004	up to 110,390	14,849	
2005 ⁸	82 ha even-aged	81,014	Start of the second cut control period for TFL 57 and the start of the Area-Based AAC Trial Program.
	258 ha uneven-aged		
6 Year Total		165,644	
6 Year Avg.		27,607	

Source: incl. salvage volumes, billable waste volumes, and X and Y grade log volumes. Data for 2000 and 2001 from MoF cut control assessment. Data for 2002 and 2003 generated from Iisaak records. Data for 2004 and 2005 generated from HBS database.

⁸ Iisaak is working with the MoFR under the Area-Based AAC Trial Program to determine how to record the amount of area harvested in 2005 under the even-aged and uneven-aged systems.

Figure 4: TFL 57 Species Breakdown of Harvested Volume for 2000-2005.


2.3 Timber Licenses T0831, T0834, T0837, T0840, and T0846 (Outside TFL 57).

Apart from TFL 57, IISA AK owns five small Timber Licenses that lie within the boundaries of the CSLUD area. These timber licenses are area-based forest tenures that grant IISA AK the exclusive⁹ right to harvest Crown timber under the terms of the Timber License Agreements. All timber harvested by IISA AK on these timber licenses is approved by the Ministry of Forests and Range through either a cutting permit or road permit. As Table 9 shows each timber license has a fixed term and is not replaceable once timber is removed. Regardless of how much or how little timber IISA AK has harvested on any one of these timber licenses they will revert back to the Crown on their expiry date and any timber harvesting opportunities that may remain within these timber licenses will be lost. As the holder of these five timber licenses, IISA AK is responsible to government for protection, road building and maintenance, operational planning and reforestation. In addition, IISA AK is responsible for payments to government of all stumpage

⁹ Subject to provisions under the *Forest Act*.

charges for timber harvested as well as all fixed costs outlined in Table 10. Once timber is harvested from a Timber License area, and it has been successfully regenerated, it is Iisaak's responsibility to apply to have those areas removed from the timber license area and reverted to the Arrowsmith TSA. At that point Iisaak no longer has any rights or responsibilities to that reverted parcel of land.

These five Timber Licenses are bordered by one or more of TFL 54 (held by MaMook Natural Resources), TFL 57, the Arrowsmith Timber Supply Area, and the Pacific Ocean. All are water accessible and only TL T0846 has a developed road system, dry land sort and log dump infrastructure in place.

Table 9: Terms of Timber Licenses (outside TFL)

Timber License	Location	Gross Area Remaining	Harvesting History	Expiry Date¹⁰
T0831	Easter Lake	174 ha	0% harvested	April 26, 2013
T0834	Sydney Inlet	487 ha	0% harvested	April 26, 2011
T0837	Pretty Girl	249 ha	0% harvested	April 26, 2011
T0840	Hesquiaht Lake	473 ha	0% harvested	April 26, 2011
T0846	Bedingfield	2214 ha	≈ 25% harvested	April 26, 2013

Table 10: Annual Fixed Costs Payable to Government for Timber Licenses (outside TFL)

Timber License	Location	Annual Rent
T0831	Easter Lake	\$321.90
T0834	Sydney Inlet	\$381.10
T0837	Pretty Girl	\$460.65
T0840	Hesquiaht Lake	\$525.40
T0846	Bedingfield	\$4,027.45
Total		\$5716.50

Source: 2005 Annual Rent Assessment

¹⁰ Iisaak requested an extension to the terms of these licenses. In response, the Regional Executive Director for the Coast Forest Region granted Iisaak's request and gave the maximum allowable extension under Regulation of 3 years. This extension is reflected in this table.

Table 11: Timber License Land Base Summary

Land Base Summary	Timber License (outside TFL)					
	T0831	T0834	T0837	T0840		T0846
Total Land Base	174 ha	487 ha	249 ha	473 ha		2214 ha
Total Land Base Reductions (rock, swamps, lakes, rivers and Watershed Plan Reserves)	55 ha	131 ha	74 ha	163 ha		795 ha
Estimated Timber Harvesting Land Base (THLB) ¹¹	119 ha	356 ha	175 ha	310 ha		1419 ha

Table 12: Original Timber License Terms

Timber License Agreement Summary	Timber Licenses (outside TFL)					
	T0831	T0834	T0837	T0840		T0846
Date of Issue	Apr. 27, 1981	Apr. 27, 1981	Apr. 27, 1981	Apr. 27, 1981		Apr. 27, 1981
Original Term	29 yrs	27 yrs	24 yrs	27 yrs		29 yrs
Original Expiry Date	Apr. 26, 2010	Apr. 26, 2008	Apr. 26, 2005	Apr. 26, 2008		Apr. 26, 2010

2.3.1 History

Timber Licenses across British Columbia were implemented in 1979 following an amendment to the *Forest Act* to replace an array of what were referred to as “old temporary tenures”. This set of five timber licenses was granted to MacMillan Bloedel on April 27, 1981 to replace their old temporary tenures in Clayoquot Sound. Table 12 shows the original terms of each timber license.

These five timber licenses were approved for transfer from MacMillan Bloedel to IISA AK at the same time that TFL 44 was subdivided to create TFL 57 (i.e. October 1999).

¹¹ IISA AK is not responsible for Management Planning or Inventory Analysis on these Timber License areas, and therefore, there is no accurate determination of the true THLB for these Timber Licenses – the numbers in this table should be viewed as rough approximations.

2.3.2 Biogeoclimatic Ecosystem Classification

All five timber licenses are located at low elevations and lie entirely within the Coastal Western Hemlock Biogeoclimatic Zone. Table 13 below provides a description of the percentage of each Biogeoclimatic zone and variant in each Timber License.

Table 13: Biogeoclimatic Ecosystem Classification (BEC) Summary of Timber Licenses

Biogeoclimatic Zone	Variant	Timber License					
		T0831	T0834	T0837	T0840		T0846
Coastal Western Hemlock Zone (CWH)							
	CWHvh1	----	----	----	----		41%
	CWHvm1	100%	100%	100%	100%		59%
	CWHvm2	----	----	----	----		----

Source: Land Information British Columbia BEC classification (MSRM)

2.3.3 Species Composition

The five timber licenses consist of stands comprised mainly of western redcedar, western hemlock, yellow-cedar and amabilis fir with minor components of Douglas-fir and Sitka spruce.

Table 14: Species Breakdown by Volume on Timber License THLB

Tree Species	Scientific Name	Timber License Approximate Species % Composition by Volume					
		T0831	T0834	T0837	T0840		T0846
Western redcedar (Cw)	<i>Thuja plicata</i>	67%	74%	45%	54%		55%
Western hemlock (Hw)	<i>Tsuga heterophylla</i>	19%	18%	27%	23%		28%
Amabilis fir (Ba)	<i>Abies amabilis</i>	6%	1%	5%	16%		9%
Yellow-cedar (Yc)	<i>Chamaecyparis nootkatensis</i>	6%	7%	22%	7%		4%
Douglas-fir (Fdc)	<i>Pseudotsuga Menziesii</i>	2%	0%	0%	0%		3%
Sitka spruce (Ss)	<i>Picea sitchensis</i>	0%	0%	1%	0%		1%

Source: Analysis completed by Coastal Resource Mapping Ltd., Dec. 6/05

Table 14 shows the breakdown of tree species by volume on the Timber Harvesting Land Base (THLB) for each Timber License.

2.3.4 Allowable Annual Cut

All five Timber Licenses have an unregulated cut. The areas covered by these Timber Licenses do not contribute to the Chief Forester's calculations in his determination of the Allowable Annual Cut for the Arrowsmith TSA, and therefore there is no AAC apportionment attributed to these Timber License areas. This relates back to the original intent of these tenures - they were issued for the purpose of liquidating all merchantable timber volumes contained on the Timber License area during the specified term of the license agreement. Sustainable harvest levels are not a legislated requirement of these particular forest tenures due to their historical origins.

2.3.5 Harvesting History

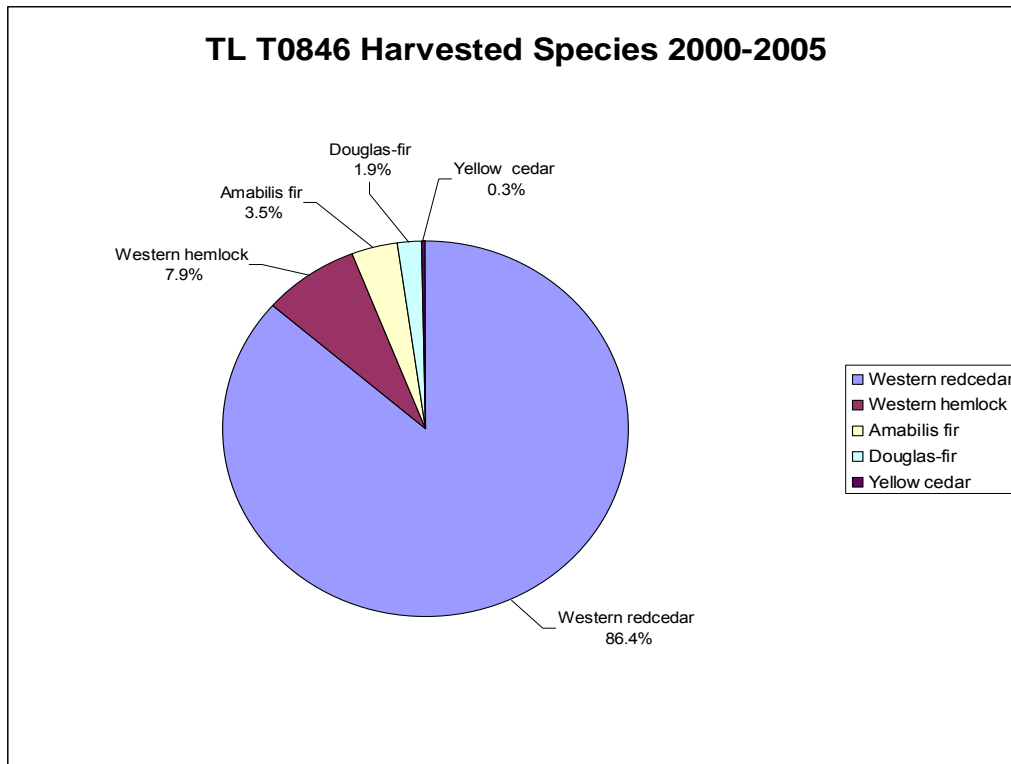
The volume harvested from each Timber License over the past 6 years is presented in Table 15 below.

Table 15: Timber License Six Year Harvesting History

Year	Total Harvest Volume (m3)					
	TL T0831	TL T0834	TL T0837	TL T0840	TL T0843	TL T0846
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
2002	0	0	0	0	0	33,552
2003	0	0	0	0	0	9,639
2004	0	0	0	0	0	1,645
2005	0	0	0	0	0	8,878
6 Year Total	0	0	0	0	0	53,714
6 Year Annual Avg.	0	0	0	0	0	8,952

Source: incl. salvage volumes, billable waste volumes, and X and Y grade log volumes. Data for 2002 and 2003 generated from IISA AK records. Data for 2004 and 2005 generated from HBS database.

Figure 5: Timber License T0846 Species Breakdown of Harvested Volume for 2000-2005.



2.4 Tree Farm License #54

TFL 54 is interspersed with TFL 57 (held by IISA Forest Resources), the Arrowsmith Timber Supply Area, Pacific Rim National Park Reserve, Indian Reserves, private lands, Strathcona Provincial Park, and many smaller Provincial Parks. TFL 54 was created by the subdivision of blocks 4 and 5 of TFL 46 (held by Fletcher Challenge Canada) in December 1991. On December 30, 1991 TFL 54 was transferred to International Forest Products Ltd. On March 28, 2007 TFL 54 was transferred to Mamook Natural Resources Ltd. TFL 54 comprises approximately 18% of the total land area of Clayoquot Sound. Less than 15% of the TFL is accessible by road from the provincial highway system. The remaining 85% is water accessible from Tofino and has isolated road systems that end at the various log dumps located throughout the TFL.

TFL 54 is an area-based forest tenure that grants Mamook (delegated to lisaak) the exclusive¹² right to harvest Crown timber under the terms of the TFL License Agreement. All timber harvested by lisaak on TFL 54 is approved by the Ministry of Forests and Range through either a cutting permit or road permit. TFL 54 has a term of 25 years and it is replaceable every 10 years. As the holder of TFL 54, Mamook (delegated to lisaak) is responsible to government for the protection, inventory and reforestation of the forest resource as well as management planning, road building and maintenance and operational planning. In addition, Mamook (delegated to lisaak) is responsible for payments to government of all stumpage charges for timber harvested as well as all fixed costs outlined in Table 2 example.

Table 16: Annual Fixed Costs Payable to Government for TFL 54

TFL 54 Properties	Total Size/volume	Annual Rental Rate	Annual Rent	Property Tax
Schedule 'A' Lands	0 ha	\$1.85/ha	\$ 0.00	-----
Schedule 'B' Lands	66759 m3	0.57/m3	\$ 38052.63	-----
Foreshore Leases	ha. not currently available	-----	\$ not currently available	\$ not currently available
Dry Land Sorts	ha. not currently available	-----	\$ not currently available	\$ not currently available
Total			\$ 38052.63	\$ not currently available

Source: 2010 assessment roll

Table 17: TFL 54 Land Base Summary

TFL 54 Land Base	Area (ha)
Total Land Base	49,298
Total Productive Land Base – approx. 98%	48,121
Total Non-Productive Land Base (Meares Island, Watershed Reserves, Generated Reserves, Inoperable, roads) – approx. 50%	24,035
Timber Harvesting Land Base (THLB) – approx. 50%	24,086

Source: Timber Supply Analysis Information Package, TFL 54 Management Plan No. 4, June, 2005

TFL 54 is divided into Schedule 'A' and Schedule 'B' components. Schedule 'A' lands are any Timber Licenses or Private Lands that have been incorporated into the TFL 54 license area and

¹² Except for volumes allocated to BC Timber Sales (BCTS) and for small volumes approved for harvesting under

are managed to the same standards as the rest of the TFL. Schedule 'B' lands are simply the "TFL proper". As Schedule 'A' lands are harvested and regenerated they revert to Schedule 'B' status leading to the eventual elimination of the Schedule 'A' component of TFL 54. TFL 54 has 0.0 ha designated as Schedule 'A' lands and 49,298 ha designated as Schedule 'B' lands. Approximately 123 ha of private lands were removed from TFL 54 in 2006 by International Forest Products Ltd.

2.4.1 History

History of the TFL and the AAC (modified excerpts from 2008 AAC Rationale)

In May 1955 the Maquinna Forest Management Licence (FML) No. 22 was awarded to British Columbia Forest Products Limited. In July 1981, FML22 was replaced by TFL 22, which was amalgamated in July 1983 with TFL 27 to form TFL 46. TFL 46 was transferred to Fletcher Challenge Canada Limited in September 1988. In December 1991, TFL 46 was subdivided and blocks 4 and 5 (the west coast portion) of the TFL became TFL 54. TFL 54 was transferred to International Forest Products Limited on December 30, 1991. On March 28, 2007 TFL 54 was transferred to Mamook Natural Resources Limited (Mamook). Mamook is a holding company based in Ucluelet and owned by a group of five First Nations—Ahousaht, Hesquiaht, Tla-o-qui-aht, Toquaht, and Ucluelet. On April 16, 2007, the general manager of Mamook stated in a letter to the deputy chief forester that Mamook accepts and will implement management as described in the TFL 54 Management Plan and timber supply analysis documents submitted by the previous licensee. MaMook announced in March 2007 that it intends to harvest and mill timber from TFL 54 according to the standards of the Forest Stewardship Council with the goal of achieving certification by the Council.

The AAC determined in 1991 in conjunction with Management Plan No. 1 for TFL 54 was 180,000 cubic metres, of which 8991 cubic metres were allocated to the small business forest enterprise program (SBFEP). In May 1994, the chief forester determined temporary AAC reductions totaling 42,000 cubic metres for the TFL under Part 15 (now AAC Rationale for TFL 54 Page 7 Part 13) of the *Forest Act* as an interim measure to account for newly protected areas and anticipated changes to management resulting from the CSLUD. The resulting AAC of 138,000 cubic metres was allocated as 129,009 cubic metres to the licensee and 8991 cubic

Special Use Permits (SUP) and Free Use Permits (FUP).

metres to the SBFEP, and remained in effect until 1996. In 1996, there was still a large amount of uncertainty as to how the implementation of the Scientific Panel's recommendations would influence timber supply. The Clayoquot Sound Technical Planning Committee had not yet completed the watershed plans, which define the crucial network of reserve areas for ecosystem integrity. For the 1996 determination, a simplified version of an area-based analysis was used to account for Scientific Panel recommendations such as watershed rate-of-cut limits and old growth retention. Based on the results of this analysis the chief forester decided to apply the rate-of-cut limits to the timber harvesting land base instead of to the total watershed area as was intended by the Scientific Panel. This decision intentionally constrained the timber supply to a level below the former AAC, and possibly the rate intended by the Scientific Panel, to address the uncertainty around the implementation of the Panel's recommendations. Based on the simplified analysis, a harvest rate of approximately 125 hectares per year could be maintained in the short term. Because the previous analyses pre-dated the area-based AAC trial program, the harvest rate was converted to a total annually harvestable volume using the average volume per hectare of old growth on the TFL. The resulting annual harvest volume of 75 750 cubic metres was determined as the new AAC by the chief forester for TFL 54 in 1996. That AAC, which included consideration of the CSLUD, was allocated as 66 759 cubic metres to the licensee and 8991 cubic metres to the SBFEP. This represented a decrease of 58 percent from the AAC in effect before the CSLUD, or a decrease of 45 percent from the AAC of 138 000 cubic metres resulting from the 1994 temporary AAC reduction.

In the most recent determination in January 2000, the deputy chief forester maintained the AAC at 75 750 cubic metres, due to continued uncertainty because the watershed plans were not yet completed.

All the watershed plans that are currently intended to be completed have now been released and are established as 'objectives set by government' under FRPA. Additionally, a detailed timber supply analysis has been completed in support of this determination that accounts for the new watershed plan reserve networks. The Scientific Panel intended the rate-of-cut limits to be applied to the entire watershed area. In the timber supply analysis, watershed rate-of-cut limits were applied to the productive forest area which resulted in a harvest rate only slightly below that which could have been attained had the entire watershed been used. For this determination, the licensee applied to include TFL 54 in the area-based AAC trial program under the *Tree Farm Licence Area-based Allowable Annual Cut Trial Program Regulation*. TFL 54 is now included in that program, as recognized in Schedule A of the regulation.

2.4.2 Biogeoclimatic Ecosystem Classification

TFL 54 includes three variants of the Coastal Western Hemlock Biogeoclimatic Zone (CWHvh1, CWHvm1 and CWHvm2), one variant of the Mountain Hemlock Zone (MHmm1) and small areas of the Alpine Tundra Zone (AT). Table 4 below provides a description of each Biogeoclimatic zone and variant.

Table 18: Biogeoclimatic Ecosystem Classification (BEC) Summary for TFL 54

Biogeoclimatic Zone	Variant	Description	% of TFL 54
Coastal Western Hemlock Zone (CWH)			
	CWHvh1	Occurs between 0 and 150 m in elevation in the hypermaritime areas of the outer coast of Vancouver Island. The climate is cool with very little snowfall.	24.0%
	CWHvm1	Occurs between 0 and 600 m in elevation on the windward slopes of Vancouver Island. The climate is wet and humid with cool summers and mild winters with little snowfall.	45.0%
	CWHvm2	Occurs between 600 and 900 m in elevation above the CWHvm1 and below the MHmm1. The climate is wet and humid with cool summers and cool winters with substantial snowfall.	22.0%
Mountain Hemlock Zone (MH)			
	MHmm1	Occurs between 900 and 1350 m in elevation above the CWH vm2 and below the AT. The climate features long, wet, cold winters with very high snowfall and short cool moist summers. Growing season frosts are common.	8.8%
Alpine Tundra Zone (AT)		Above 1350 m.	0.2%

Source: Land Information British Columbia BEC classification (MSRM)

2.4.3 Species Composition and Age Class Distribution

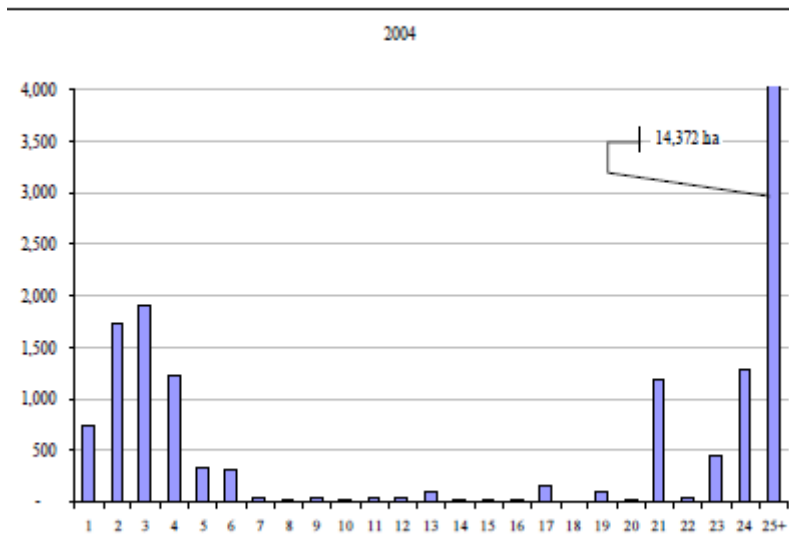
The TFL consists of stands comprised mainly of western redcedar, western hemlock, amabilis fir and yellow-cedar with minor components of Douglas-fir, Sitka spruce, shore pine, red alder, and western white pine. Table 19 shows the breakdown of tree species by volume on the TFL Timber Harvesting Land Base (THLB).

Table 19: Tree Species Composition by Volume on the TFL 54 THLB

Tree Species	Approximate species % by volume
Western redcedar (Cw)	58%
Western hemlock (Hw)	24%
Amabilis fir (Ba)	5%
Yellow-cedar (Yc)	8%
Sitka spruce (Ss)	2%
Douglas-fir (Fdc)	2%
Shore pine (Pl)	1%

Source: TFL 54 MP 4 Information Package June 2005, JS Thrower and Associates Ltd, TFL 54 Inventory Adjustment, Nov 23/04

Table 20: Age Class Distribution for TFL 54



Source: Timber Supply Analysis Information Package, TFL 54 Management Plan No. 4, June, 2005

2.4.4 Parks

Approximately 33% of Clayoquot Sound is comprised of National and Provincial Parks and Protected Areas. TFL 54 borders most of these parks and protected areas. Refer to the FMU Map in Appendix 1 for specific locations.

2.4.5 Allowable Annual Cut and the Area-Based AAC Trial Program

The Timber Supply Review (TSR) for TFL 54 was just completed in 2008 as a part of the overall Management Planning Process for TFL 54. Management Plan #4 for TFL 54 was approved by the Ministry of Forests and Range on September 4, 2008. TFL 54 is included in the *Area-Based Allowable Annual Cut Trial Program Agreement* and as such TFL 54 is only one of two TFLs (TFL 57 is the other) to have its Allowable Annual Cut (AAC) based on the area harvested rather than the timber volume removed. Effective September 4, 2008 the Deputy Chief Forester set the current AAC for TFL 54 at a total of 320 ha. Table 7 shows the comparison between the previous volume-based AAC for TFL 54 and the new area-based AAC.

Table 21: Allowable Annual Cut for TFL 54

AAC Summary (Area based)					December 10, 2010
TFL 54 - Ma-Mook Natural Resources Ltd.					
	2004 to Nov. 4th	2004 - 2009	January 1 to December 31, 2010	2010 Weighted Average	
	(1)	(2)-(4)			
Days	365	365	365	365	
Schedule A AAC (a)	152	0	0	0	
Schedule B:					
Crown - BCTS (b)	8,991	38	38	38	
Crown - FRA & Other (c)	0	0	0	0	
Licensee (d)	66,608	282	282	282	
Schedule B AAC (b+c+d)	75,599	320	320	320	
Total Licensee AAC (a+d)	66,759	282	282	282	
Total AAC (a+b+c+d)	75,750	320	320	320	
Schedule B Prorate	0.998	1.000	1.000	1.0	

Notes:

1 - Effective Nov. 5, 2004, the AAC is being managed on an area basis in accordance with the TFL Area Based AAC Trial Program Regulation. The conversion to area is the volume of any apportionment divided by 75,750 m³ (total volume AAC) x 320 ha (total area AAC. Example: 8,991/75,750*320 = 38 ha

2 - Effective Sep. 5, 2008, the DCF determined that the AAC remains at 320 ha.

3 - The average AAC for 2010 is based on 365 days, as no changes occurred during this time.

4 - Schedule B Prorate = Schedule B THLB/Total THLB = 24,086/24,086 = 1.000, Total THLB = 24,086 ha, Schedule A THLB = 0 ha. Schedule B THLB = 24,086 ha

TOTAL AREA = 49,298 ha (Nov 5, 2005 Chief Forester AAC Determination)

2.4.6 Harvest Summary

The volume harvested from TFL 54 over the past six years (2000-2005) is presented in Table 8.

Table 22: TFL 54 Six Year Harvesting History

Year	AAC (m3 and ha)	Total Harvest Volume (m3)	Total Harvest Area (ha.)
2005	66759 m3	6,359	N/A
2006	66759 m3	1,882	N/A
2007	66759 m3	33,262	N/A
2008	66759 m3 & 282 ha	106,617	TBD Sep 04, 2008 start of ABAAC
2009	282 ha	86,920	TBD
2010	282 ha	112,028	TBD
6 Year Total		347,068	TBD
6 Year Avg.		57,845	TBD

Source: Data for 2005 and 2007 from MoF cut control assessment. Volume Data for 2008 to 2010 generated from HBS database incl. salvage volumes, billable waste volumes, and X and Y grade log volumes.

Figure 8: TFL 54 Species Breakdown of Harvested Volume for 2006-2010.

Tree Species	2006	2007	2008	2009	2010	Average over 3 years
Western redcedar (Cw)	278	5268	64587	TBD	TBD	48.1%
Western hemlock (Hw)	267	21751	19536	TBD	TBD	28.5%
Amabilis fir (Ba)	12.3	6097	13134	TBD	TBD	13.2%
Yellow-cedar (Yc)	0	84	5643	TBD	TBD	3.9%
Mountain hemlock (Hm)	0			TBD	TBD	0.0%
Douglas-fir (Fdc)	0	125	6850	TBD	TBD	4.8%
Sitka spruce, western white pine, red alder and shore pine	0.8	1852	222	TBD	TBD	1.4%

3.0 SFM Planning Framework

3.1 *Background*

The 1992 Earth Summit, or United Nations Conference on Environment and Development (UNCED), called upon all nations to ensure sustainable development, including the management of all types of forests. The summit produced a Statement of Forest Principles, conventions on biodiversity, climate change and desertification, and a plan of action for the 21st century called Agenda 21, all of which have implications for forest management.

Following the 1992 summit, Canada convened an International Seminar of Experts on Sustainable Development of Boreal and Temperate Forests. This seminar, held in Montréal in 1993 and sponsored by the Conference on Security and Cooperation in Europe (CSCE), focused specifically on criteria and indicators and how they can help define and measure progress towards sustainable development of forests.

Subsequently, an initiative was launched among non-European temperate and boreal countries to develop and implement internationally agreed criteria and indicators for sustainable forest management. The Montréal Process began in June 1994, in Geneva, with the first meeting of the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests.

In 1995, the release of the Canadian Council of Forest Ministers (CCFM) Framework of criteria and indicators for sustainable forest management, and subsequent reports in 1997 and 2000, were important steps in implementing Canada's commitments in the national forest strategies, as well as the forestry commitments made at UNCED. In 2003, a revision to the CCFM criterion and indicators demonstrated Canada's continued commitment to achieving sustainable forest management practices. The goal was to ensure the continued relevance of the indicators to Canadian values and improve the ability to report on indicators to assess progress toward sustainable forest management at the national level.

3.2 SFM Framework

Building on the work completed through these international and national processes, IISA AK has initiated the development of its own specific set of Criteria and Indicators (C&I) as part of its sustainable forest management plan. A localized description of C&I recognizes and provides for the unique cultural, ecological, economic and social conditions of Clayoquot Sound and supports the company's commitment to FSC certification.

Criteria and indicators have been developed into a framework that addresses the essential components of sustainable forest management. The framework will allow for the intended outcomes of the plan and systems for achieving them to be displayed. The framework is composed of criteria, indicators, targets, and strategies. The terms are defined below¹³:

Criterion - is a category of conditions or processes by which sustainable forest management may be assessed and is characterized by a set of related indicators that are monitored periodically to assess change.

Indicator - is a quantitative or qualitative measure (measurement) of an aspect of a criterion which can be measured or described and which, when observed periodically, will demonstrate trends.

Target - is a clearly defined, quantitative statement describing the desired future state of an indicator.

Strategy - Operational procedures that outline methods for successful implementation of sustainable forest management.

The framework for this plan ties together elements of the FSC BC Regional Standard and the CCFM criteria and applies them to IISA AK's selected criteria for Sustainable Forest Management. This integration structures the plan in a way that will assist independent FSC third party auditors in their assessment of the plan. The framework carefully evaluates FSC principles that apply to

¹³ The definitions that came out of the Montreal Process for Criteria and Indicators of Sustainable Forest Management have been utilized.

lisaak's social, economic, environmental, and cultural objectives. lisaak's criteria are listed in table 1 below, with the selected FSC principles and CCFM criteria listed beside those to which they most closely apply. Although the way in which Criteria and Indicators are utilized under the Montreal Process (CCFM) are not necessarily the same as their use under FSC, lisaak has attempted to match them against each other in developing their own set of 14 Criteria for SFM. A comprehensive FSC-BC Cross Reference Matrix of how all FSC criteria have been addressed is located in Appendix 5.

Table 23: SFM Framework

lisaak's Criteria for SFM	FSC Principle	CCFM Criteria
<i>Cultural Values</i>		
Criterion 1: First Nations customary and legal rights are recognized and respected.	Principle 3: Indigenous peoples' Rights.	Criterion 6: Society's Responsibility
Criterion 2: Free and informed consent is obtained from First Nations shareholders directly impacted by forest management activities.	Principle 3: Indigenous peoples' Rights.	Criterion 6: Society's Responsibility
Criterion 3: First Nations training, employment and capacity building.	Principle 4: Community Relations and Worker's Rights.	Criterion 6: Society's Responsibility
<i>Economic Values</i>		
Criterion 4: Sustained economic benefits are generated by forest operations.	Principle 5: Benefits from the Forest.	Criterion 5: Economic and Social Benefits.
Criterion 5: Economic opportunities are sustained for non-timber forest products.	Principle 5: Benefits from the Forest.	Criterion 5: Economic and Social Benefits.
<i>Ecological Values</i>		
Criterion 6: Soil condition and productivity of forests are sustained.	Principle 5: Benefits from the Forest.	Criterion 2: Ecosystem Condition and Productivity.
	Principle 6: Environmental Impacts.	
	Principle 7: Management Plan	Criterion 3: Soil and Water.
	Principle 9: Maintenance of High Conservation Value Forests	
		Criterion 4: Role

		in Global Ecological Cycles
Criterion 7: Genetic and species diversity are sustained.	<p>Principle 6: Environmental Impacts.</p> <p>Principle 7: Management Plan</p> <p>Principle 9: Maintenance of High Conservation Value Forests</p>	Criterion 1: Biological Diversity.
Criterion 8: Forest ecosystem diversity is sustained.	<p>Principle 6: Environmental Impacts.</p> <p>Principle 7: Management Plan</p> <p>Principle 9: Maintenance of High Conservation Value Forests</p>	<p>Criterion 2: Ecosystem Condition and Productivity.</p> <p>Criterion 4: Role in Global Ecological Cycles</p>
Criterion 9: Water quality and flow are sustained.	<p>Principle 6: Environmental Impacts.</p> <p>Principle 9: Maintenance of High Conservation Value Forests</p>	<p>Criterion 2: Ecosystem Condition and Productivity.</p> <p>Criterion 3: Soil and Water.</p>
Criterion 10: High Conservation Value Forests attributes are maintained.	<p>Principle 5: Benefits from the Forest.</p> <p>Principle 6: Environmental Impacts.</p> <p>Principle 9: Maintenance of High Conservation Value Forests</p>	<p>Criterion 1: Biological Diversity.</p> <p>Criterion 2: Ecosystem Condition and Productivity.</p> <p>Criterion 3: Soil and Water.</p> <p>Criterion 4: Role in Global Ecological Cycles</p>

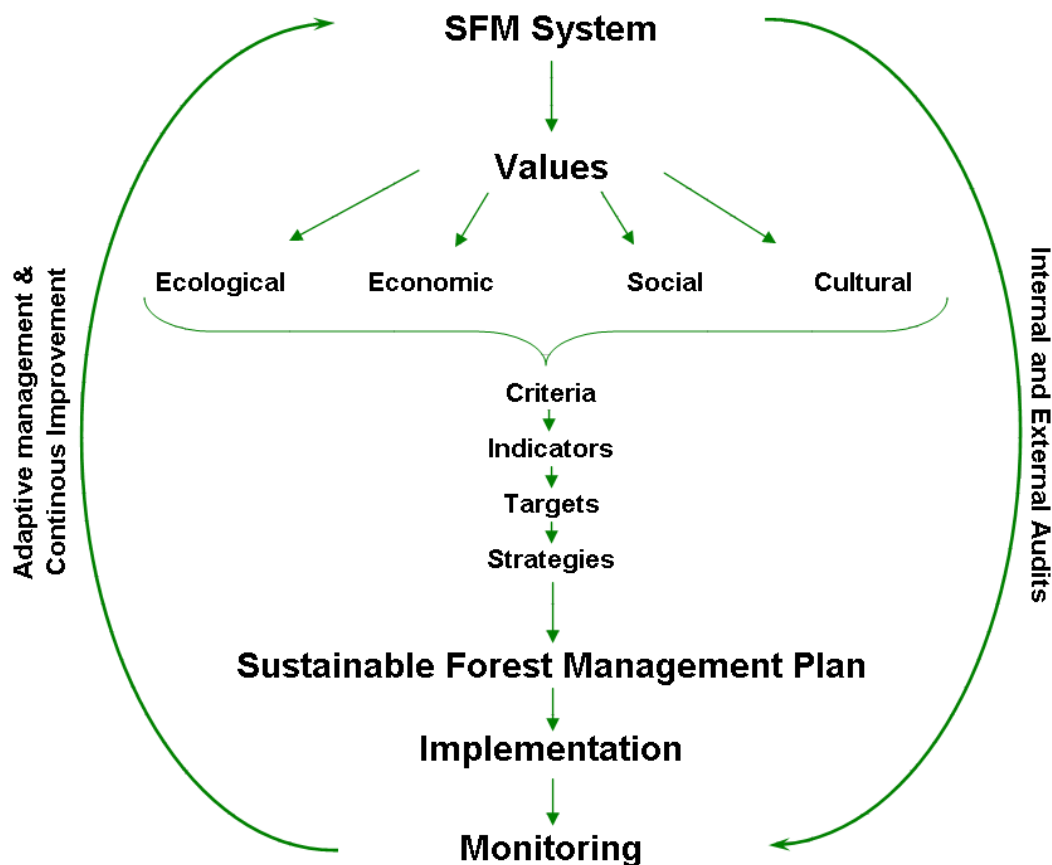
Social Values	FSC Principle	CCFM Criteria
Criterion 11: Forest management shall respect all national and local laws and administrative requirements.	Principle 1: Compliance with Laws and FSC Principles	Criterion 5: Economic and Social Benefits.
Criterion 12: Economic benefits and contributions to the local communities are sustained.	<p>Principle 1: Compliance with Laws and FSC Principles</p> <p>Principle 5: Benefits from the Forest.</p>	Criterion 5: Economic and Social Benefits.
Criterion 13: The diversity of public interests are sustained in forest management planning	Principle 4: Community Relations and Worker's Rights.	Criterion 5: Economic and Social Benefits.

processes.		Criterion 6: Society's Responsibility
Criterion 14: Tourism, recreation and scenic values are sustained through forest management activities.	Principle 4: Community Relations and Worker's Rights.	Criterion 5: Economic and Social Benefits.

3.3 SFM Planning Process

A successful sustainable forest management planning process creates a process that allows for the continuous improvement of criteria, indicators, targets and strategies. Figure 3 shows how all the components of SFM come together.

Figure 9: SFM Planning Process



4.0 Monitoring Criteria & Indicators

Global concern regarding the extensive destruction of forest areas has led to national and international initiatives to create and test Criteria and Indicators (C&I) for sustainable forest management. C&I are tools that can be used to model, evaluate and implement sustainable forest management. C&I can be identified at various levels: global, regional, national and at the local Forest Management Unit level. At the local level C&I assist in the assessment of sustainability and facilitate the implementation of better management practices. Criteria and Indicators characterize the essential components of Sustainable Forest Management and provide a framework for answering fundamental questions about the importance of forest ecosystems to an array of ecological, social and economic values.¹⁴ They also provide important “checkpoints” or proof to the public that a forest manager is actively working towards, or achieving, desired outcomes.

While the C&I developed at national and regional levels are helpful in providing strategic guidance they are not necessarily applicable at the forest Management Unit level, particularly within the Clayoquot context. As a result, a need for the development of a comprehensive C&I set that could be adapted to specific conditions of IISA AK’s operations was identified. These locally developed C&I form an integral part of IISA AK’s Sustainable Forest Management Plan and help define IISA AK’s in-house Monitoring Plan and Adaptive Management Strategy and commitments.

4.1 Cultural Values

Criterion 1: First Nations legal and customary rights are recognized and respected.

Indicator 1: Consultations occur with all First Nations who have expressed a territorial land claim for any area of proposed development. Areas that are under claim as traditional territory by one or more individual First Nation Bands are subject to consultation with each band.

Indicator 2: The long-standing aspirations and needs of the Central Region First Nations, based on traditional occupation and use of the land and waters, are recognized and supported.

¹⁴ The Montreal Process.

Indicator 3: Sites of special cultural significance will be recognized and protected.

Target 1: IISA AK will comply with their CMT Management Guidelines as part of their Environmental Management System.

Target 2: IISA AK will comply with the identified Culturally Significant Area protocols (including consultation processes) contained within the Clayoquot Sound Watershed Plans.

Criterion 2: First Nations are effectively engaged and provide free and informed consent prior to the commencement of forest management activities.

Indicator 4: Agreed upon protocols (either written or understood) with individual First Nations regarding the sharing of information, working towards common goals and the mutual recognition of each other's interests are in place and effectively being implemented.

Indicator 5: Traditional Ecological Knowledge and Values of the Central Region First Nations will be recognized and incorporated, where appropriate, into land use planning and decision-making processes. The confidential nature of this information will be respected where appropriate.

Indicator 6: Written or verbal consent will be received from the appropriate First Nations elected council or representative prior to the commencement of harvesting on their traditional territories.

Criterion 3: First Nations training and employment opportunities are promoted and encouraged.

Indicator 7: Training and employment opportunities are provided directly by IISA AK.

Target 1: On an annual basis provide summer employment and training opportunities to qualified local First Nations students enrolled in a recognized forestry or natural sciences program who demonstrate initiative and a desire to learn and develop.

Target 2: Periodic participation in events such as Forestry Day and High School Career Fairs to provide information to First Nations students on opportunities in the forest sector.

Target 3: By 2010, target 50% of IISA AK's employees to be of First Nations descent.

Indicator 8: Conditions stipulated in IISA AK's forestry services contract awarding process will encourage and promote training and employment opportunities of First Nations members through its contractors.

4.2 Economic Values

Criterion 4: Sustained economic benefits are generated by forest operations.

Indicator 9: Fibre flow is planned and managed at sustainable levels.

Target 1: On an annual basis Iisaak will plan and forecast harvest volume targets appropriate to current market conditions and planning issues.

Target 2: On a five year basis Iisaak will target harvest of their full cut allocation as stipulated under legislated cut control requirements.

Indicator 10: Payments for contracting services hired and for stumpage, annual rent and tax payments to government are kept current.

Indicator 11: A positive return on investment and economic benefits to shareholders is generated from forest operations.

Target 1: On an annual basis the average value of all stands harvested is greater than the overall average delivered log cost.

Target 2: Iisaak will target a medium to long term return on investment better than that of a current low risk or guaranteed investment.

Criterion 5: Economic opportunities are sustained for non-timber forest products (NTFP).

Indicator 12: Road access within Iisaak's Management Unit will be sustained.

Target 1: Iisaak will not deactivate road systems and/or restrict access to non-timber forest products, except in areas where the structural integrity of non-economic bridges creates a public safety or environmental hazard; where water management mitigation measures may require cross-ditching or the temporary removal of culverts; or other identified environmental (e.g. slope stability) or safety concerns necessitate corrective action; or where the presence of non-timber forest products is low to nil.

Indicator 13: Non-timber forest products operations and/or businesses operating in the management unit are not hindered.

Target 1: For the life of this plan there are no significant reductions in NTFP opportunities over the land base due to forest operations, except where there may be a direct conflict with ecosystem restoration activities (e.g. conversion of off-site Douglas-fir sites), or where a greater benefit can be achieved from another use.

Target 2: For the life of this plan opportunities will be provided that allow for non-timber forest product stakeholders to voice their interests and concerns.

4.3 Ecological Values

Criterion 6: Soil condition and the productivity of the forests are sustained.

Indicator 14: Percent of area impacted by permanent access structures such as roads (including temporary and semi-permanently deactivated roads), landings and borrow pits.

Target 1: For the life of this plan less than 5% of the THLB (CSSP R5.7) will be impacted by permanent access structures. This will be monitored annually.

Target 2: With due consideration for Criterion 5, Target 1, road deactivation will be carried out where necessary to treat or prevent negative environmental impacts or mitigate public safety hazard issues.

Indicator 15: Percent soil disturbance in each harvested cutblock

Target 1: FPPR Sec 35 will apply - maximum 5% soil disturbance of sensitive soils, maximum 10% soil disturbance of non-sensitive soils and maximum 25% of roadside areas, or rehabilitation to within these limits prior to the regeneration date.

Indicator 16: Percent of harvested areas compliant with Silviculture Prescriptions or Site Plans that have been prepared by a Registered Professional Forester.

Target 1: By the target date specified in a Silviculture Prescription or Site Plan 100% of cutblocks will have met the stated regeneration delay target timelines with a potential variance of 10%.

Target 2: On the regular review of silviculture obligations all cutblocks will be on target with the approved stocking density and species composition targets specified in a Silviculture Prescription or Site Plan.

Target 3: By the target date specified in a Silviculture Prescription or Site Plan, 100% of cutblocks will be declared free-to-grow with a potential variance of 10%.

Indicator 17: The number of hectares lost due to landslides attributed to harvesting and road building activities.

Target 1: All class IV terrain or areas showing signs of instability that are being considered for forest development will either not be developed or will be assessed by a qualified geotechnical professional whose concerns and recommendations will be addressed in operational plans.

Target 2: All class V terrain verified by a qualified geotechnical professional will not be developed.

Criterion 7: Genetic and species diversity are sustained.

Indicator 18: Percent of rare, threatened, vulnerable and endangered plant and animal species and their habitats protected.

Target 1: At the landscape level, as per the Clayoquot Sound Watershed Plan Reserves and associated management strategies to protect Red- and Blue-Listed Plant and Animal Species and Forest-Interior Conditions in Late-Successional Forests:

- 100% of red-listed plant communities (site series) will be reserved,
- 50% of blue-listed plant communities (site series) will be reserved, and
- At least 20% of late successional forests retained to be in a forest-interior condition will be reserved.

Target 2: Site level assessments for red and blue listed species will be completed for proposed cutblocks by a qualified professional, which could include an R.P.F. and/or R.P.Bio. Site Plans will consider the recommendations of the assessment.

Target 3: Site level inventories/assessments will identify critical habitat features (e.g. bear dens, eagle nests and Marbled Murrelet nests) and provide recommendations to manage impacts of harvesting.

Indicator 19: The percent area covered by tree species will be maintained at natural levels in all harvest units.

Target 1: The stocking levels of all harvest units will be monitored to ensure that stocking consists of ecologically appropriate species in proportions consistent with the Approved Stocking Standards at the landscape level

Target 2: BC Provincial Seed Transfer Regulations will be adhered to with respect to all reforestation activities conducted by the company.

Target 3: Site level retention will be reasonably representative of the original stand prior to harvest in both species profile and stand structure. This will be monitored and assessed at the post harvest inspection stage.

Indicator 20: The percent of late successional forests, age class 8 (141 – 250 yrs) and 9 (older than 250 yrs), protected.

Target 1: As per the Clayoquot Sound Watershed Plan Reserves targets for Late Successional Forest Representation, at least 40% of age classes 141 years and older will be maintained in each Watershed Planning Unit of which a minimum of 20% (or 8% at the watershed level) must be in interior forest condition.

Criterion 8: Forest ecosystem diversity is sustained

Indicator 21: The percent of ecosystems protected in their natural state.

Target 1: Per the Clayoquot Sound Watershed Plan Reserves for Ecosystem Representation:

- At least 30% of each site series will be reserved,
- At least 50% of rare site series (which may or may not include red- and blue-listed plant communities) will be reserved, and
- At least 20% of each site series/dominant tree species/age class groupings for groupings of 201-400 years and 401-600 years will be reserved.

Indicator 22: Course Woody Debris (CWD) will be retained within post-harvest cutblocks at levels consistent with legal requirements, in volumes and distribution patterns that do not compromise acceptable fire hazard risk and ability to achieve regeneration standards, while optimizing the recovery of economic merchantable material.

Target 1: A minimum of 4 logs per ha each with diameter minimum 30cm at one end and length of 5m minimum will be retained.

Target 2: There will be sufficient plantable spots in a post-harvest setting necessary to achieve acceptable stocking densities measured at the standards unit level as per Site Plan.

Target 3: The fire hazard risk in a post-harvest setting will be acceptable to the manager.

Target 4: Bucking cards will be provided to all loggers involved in log manufacturing.

Criterion 9: Water quality and flow are sustained.

Indicator 23: The variation in water flow and water quality within the watersheds of the Management Unit will be maintained within the natural range.

Target 1: IISA AK will comply 100% with the Clayoquot Sound Watershed Plan Rate-of-Cut Requirements for individual watersheds within the management unit.

Target 2: IISA AK's operations will be consistent with the Clayoquot Sound Watershed Plan management strategies to protect hydrosiparian systems.

Target 3: IISA AK will construct/remove culverts and bridges in accordance with Standard Operating Procedures and Fisheries Timing Windows identified in their Environmental Management System; or during times and using methods

specifically approved by the relevant governmental body such as the Department of Fisheries and Oceans; or using methods that involve no in-stream work.

Criterion 10: High Conservation Value Forests (HCVF) attributes are maintained.

Indicator 24: Specific measures will be implemented to ensure the maintenance and/or enhancement of HCVF attributes consistent with the precautionary approach.

Target 1: Iisaak will participate in an HCVF assessment of its management unit with a final target date of September 2009. Iisaak proposes that the management recommendations of the CSSPR and the subsequent Watershed Plans adequately manage for conservation of high conservation forest values.

Target 2: Within 12 months of completion of the HCVF assessment, Iisaak will have completed an HCVF Management Strategy for the management unit if any further management modifications are required to address HCVF.

4.4 Social Values

Criterion 11: Forest management shall respect all national and local laws and administrative requirements.

Indicator 25: The number of infractions and/or incidences of non-compliance with legislation and regulatory requirements.

Target 1: 100% of all MOFR and other government inspections in compliance. A variance of 10% is expected.

Indicator 26: All applicable stumpage, taxes, rent, and other charges shall be paid in a timely manner as prescribed by law or contract.

Indicator 27: An Environmental Management System (EMS) is kept up-to-date and is being effectively implemented.

Criterion 12: Economic benefits and contributions to the local¹⁵ communities are sustained.

Indicator 28: Sourcing of goods and services purchased from local suppliers companies and organizations.

Target 1: Goods and services will be sourced locally if available at competitive prices.

Indicator 29: Contracting opportunities offered to local contracting companies and individuals for bid.

¹⁵ Local refers to residents of the Alberni-Clayoquot region.

Target 1: Contracting opportunities will be offered to qualified local contracting companies and individuals where the service can be provided to the required standards at a competitive price.

Indicator 30: Number of local employees as a proportion of total employees.

Target 1: At least 50% of Iisaak employees will be sourced from the local pool of qualified labour dependant on local capacity and cost competitiveness.

Indicator 31: Log production made available to local processing facilities.

Target 1: Subject to Iisaak's strategy to seek markets that provide optimal return, there will be opportunities for local prospective buyers to bid on logs produced by Iisaak's forest operations.

Criterion 13: The diversity of public interests is sustained in forest management planning processes.

Indicator 32: Various collaborative, advisory and consultative processes are in place to effectively engage and solicit feedback from stakeholders.

Target 1: A flexible meeting schedule will be maintained with the M.O.U. Working Group¹⁶ to discuss issues of interests and/or concern to members on an ongoing basis.

Target 2: Stakeholder consultations (formal and informal) will occur to share information and receive feedback on proposed operational plans and forest management activities. Stakeholder groups include but are not limited to:

- Central Region Board
- District of Tofino Mayor & Council
- Chief and Council and general membership of the Hesquiaht, Ahousaht and Tla-o-qui-aht, Ucluelet and Toquaht First Nations
- District of Ucluelet Mayor & Council
- Clayoquot Biosphere Trust Board of Directors
- Pacific Rim National Park Reserve (Parks Canada)
- Others as contained in Iisaak's Stakeholder List as updated from time to time

Target 3: On appointment, a copy of all current plans will be available for review at the Iisaak office to respond to questions and to inform and update stakeholders on the progress of the plan's implementation.

¹⁶ The M.O.U. Working Group is a group created out of the Memorandum of Understanding signed between Iisaak Forest Resources and Greenpeace Canada, Greenpeace International, Natural Resources Defense Council, Sierra Club of BC, and the Western Canada Wilderness Committee in June 1999. The M.O.U. Working Group is comprised of members from Iisaak Forest Resources, the Clayoquot Biosphere Trust, the Friends of Clayoquot Sound, Greenpeace Canada, Sierra Club of BC and the Central Region First Nations.

Target 4: IISAAC's website is periodically updated to share information and will contain contact details if more information is desired by interested parties.

Indicator 33: Stakeholder interests and concerns are documented and, where appropriate, a description is provided of any changes made to the plan as a result of the feedback received.

Criterion 14: Tourism, recreation and scenic values are sustained through forest management activities.

Indicator 34: Forest management activities carried out within the management unit will address on tourism and recreation opportunities and address scenic values where they are significant.

Target 1: IISAAC will maintain consistency with the objectives of Clayoquot Sound Watershed Plan Reserves and associated management strategies established to protect Scenic, Tourism and Recreation Values.

Indicator 35: Documented rationales regarding how tourism, recreation and scenic values have been considered will be included in operational plans prepared by a Registered Professional Forester.

5.0 Management Strategies

Management strategies provide the operational means by which the targets for each indicator of sustainability can be met. The strategies presented in this section are intended to provide direction to help link the strategic goals of SFM to operational practices.

The Clayoquot Sound Scientific Panel Recommendations and the Clayoquot Sound Watershed Plans provide many of the strategies for ecological, cultural and social sustainability that IISAAC has committed to implementing. Some of the strategies presented in this SFMP are simply restating the Panel's recommendations, while others were developed to specifically address principles of SFM and/or FSC. All strategies are consistent with the: Clayoquot Sound Watershed Plans, Clayoquot Sound Scientific Panel recommendations, FSC-BC Regional Standard and Provincial and Federal legislation and regulation.

All strategies will be updated on an as needed basis as new data, impacts or concerns arise that result in a need for a change in management direction.

5.1 First Nations Involvement Strategy

Iisaak Criteria and Indicator:

Criteria: 1, 2, 3

Indicators: 1, 2, 3, 4, 5, 6, 7, 8

Purpose:

To ensure that First Nations are properly consulted and are involved in forest resource management decision making processes.

Rationale:

Iisaak's Management Unit lies solely within the traditional territories of the five Central Region First Nations. Iisaak is owned entirely by the five Central Region First Nations, with each Nation holding a 20% share. Although the company's strategic direction is provided by a Management Board made up of members from each of the five shareholder Nations, at the operational level Iisaak has to be diligent that no individual shareholder Nation's legal and traditional rights are violated as a result of the company's activities. As a First Nations-owned forestry company, one of Iisaak's goals is to recognize the individuality of each First Nations shareholder and to work closely with the First Nation in whose traditional territory Iisaak is proposing operations in any given year.

Strategy:

1. Identify and maintain reserves to protect cultural values. Discuss with the individual First Nations a variety of culturally important areas including; sacred areas, historic areas, and current use areas to be protected. These areas must be determined by the individual First Nations and protected in ways consistent with traditional knowledge – follow the guidance provided in the Watershed Plans to protect culturally significant areas.
2. Ensure that the First Nations are involved in the inventory, analysis, and planning of higher level forestry activities.
3. Comply with Iisaak's CMT Management Guidelines as part of their Environmental Management System.
4. Engage the Central Region First Nations Chief and Council and general membership in the planning and managing of forest operations in the management area.

5. Monitor these strategies to ensure they are applied and implemented effectively – adjust accordingly to remain effective.
6. Be a profitable company that provides economic dividends to each shareholder nation from the development of the forest resources in their traditional territory. This is a critical factor towards building independent, healthy and sustainable communities.

5.2 Socio-Economic Strategy

Iisaak Criteria and Indicator:

Criteria: 4, 5, 12, 13, 14

Indicators: 9, 10, 12, 13, 28, 29, 30, 31, 32, 33, 34

Purpose:

To ensure that the socio-economic benefits to local communities from the forests are maintained.

Rationale:

Local residents rely on the forest industry for economic and social benefits. Economic benefits may be directly provided through employment or expenditures in the local community. Indirect economic benefits may come in the form of spin-off jobs in the local communities, road access that supports local tourism and recreation businesses and jobs created from the harvesting of non-timber forests products. Social benefits are directly correlated with economic benefits that a successful forest sector will provide.

Strategy:

1. Identify markets for timber products that provide optimal return on investments.
2. Plan current and future harvesting to meet AAC obligations.
3. Within reasonable economic limits, maintain road systems that provide access to non-timber forest products.
4. Within reasonable economic limits, maintain road systems that provide access to recreation areas.
5. Within reasonable economic limits, maintain road systems that provide access to areas used for tourism.
6. Maintain consultation with stakeholders directly affected by management operations.

7. When possible purchase goods and services from local providers.
8. When possible employ local residents.
9. Monitor these strategies to ensure they are applied and implemented effectively.

5.3 Soil Productivity Strategy

Iisaak Criteria and Indicator:

Criteria: 6

Indicators: 14, 15, 16, 17

Purpose:

To ensure that soil productivity is not adversely affected beyond its natural range of variability by forest management activities.

Rationale:

Soil productivity is defined by the CSSP as the capacity of a soil, in its normal environment, to support plant growth. Forest management activities such as road building, loading, hoe chucking, and falling may impact soil productivity. A reduction in soil productivity may result in reduced vegetation growth, loss of productive forested area, loss of vegetation and negative impacts to streams. These can result from erosion and compaction, which in turn can cause long-term impacts to biological, chemical, and physical soil processes.

Strategy:

1. Operations will be consistent with, and improve upon through adaptive management where possible, the Scientific Panel Recommendations and the Clayoquot Sound Watershed Plan reserve network to protect the stability and productivity of forest soils.
2. All Class V terrain will be reserved.
3. All Class IV terrain or terrain exhibiting signs of instability will be assessed by a qualified professional. All recommendations of this report will be incorporated into the block and/or road design. Iisaak will manage to a low risk for post-harvest landslides.
4. Minimize soil disturbance during harvesting by:
 - Restricting ground-based logging to hoe forwarding or similar low-impact yarding methods.

- Using partial or full suspension cable yarding or heli-logging where practical.
 - Operating in accordance with the EMS Rainfall Shutdown Guidelines.
5. Where irreplaceable soil values are on or near a proposed road location, move the proposed road location or do not build the road.
 6. For all roads consistently greater than 55% slopes use full bench cuts and end haul or other special construction techniques, or seek qualified professional advice.
 7. The maximum percentage of harvestable area in permanent access to be less than 5% by watershed planning unit. This will be monitored annually and a report generated that tracks the percentage of the THLB within each watershed planning unit (where harvest activities have occurred in that year) impacted by permanent access structures.
 8. Road running surface width should not exceed 4.5m unless used for a turn around, curve, or special needs such as heavy industrial use, recreational traffic or general safety as determined by the manager.
 9. All access trails will be rehabilitated in accordance with the timelines and standards specified in relevant site and/or operational plans.
 10. On portions of cutting units where sensitive soils have been identified implement high levels of retention.
 11. Ensure that harvested areas are regenerated in a timely manner to maintain slope stability.
 12. Re-vegetate deactivated roads, and fill/cut slopes where necessary to reduce risk of soil erosion.
 13. Monitor these strategies to ensure they are applied and implemented effectively.

5.4 Coarse Woody Debris (CWD) Strategy

Iisaak Criteria and Indicator:

Criteria: 8

Indicators: 22

Purpose:

To ensure adequate coarse woody debris (CWD) is present throughout Iisaak's Management Unit while optimizing the recovery of economic merchantable wood from harvest settings.

Rationale:

Coarse woody debris provides shelter and habitat for many organisms. The CSSP has indicated the necessity of retaining CWD within harvested areas. Forest management activities can reduce the amount and quality of CWD within management areas. Reduction in quality CWD can result in loss of habitat, structure or shelter. Maintaining an appropriate volume and quality of CWD will provide structure and habitat for wildlife, plant or other organisms found throughout forest ecosystems.

For a forest company to be successful these long term ecological considerations must be balanced with economic viability. In this respect the recovery of merchantable wood must be optimized during harvesting operations while managing for the aforementioned values.

Strategy:

1. Forest planners will ensure adequate retention of high value CWD in blocks.
2. CWD will be maintained through the use of variable retention harvesting systems.
3. Any blowdown of in-block retention areas will not be salvaged unless it threatens other values (e.g. wildlife movement, spawning habitat, etc.) or compromises access or the safety of forest workers and/or users. Areas of blowdown provide live trees, snags, downed wood, or wood in streams, which are habitat for many organisms in present and future stands.
4. Bucking cards will be used to minimize merchantable waste created by in-block log manufacturing and to communicate to logging crews what constitutes an economically acceptable piece of wood.
5. The Manager will ensure that billable waste volume, as determined by waste surveys, will be consistent with block level economic and ecologic targets.
6. There will be an emphasis on retaining larger pieces of CWD whenever possible since most post-harvest units often contain far fewer larger pieces of CWD relative to total CWD levels and larger pieces of CWD offer a greater contribution to ecosystem health and function.
7. Slash burning will only be used as a last resort to manage unacceptably high levels of CWD.
8. Monitor these strategies to ensure they are applied and implemented effectively.

5.5 *Species Management Strategy*

Iisaak Criteria and Indicator:

Criteria: 7

Indicators: 18, 19, 20

Purpose:

To ensure management strategies are in place to protect red and blue listed plant and animal species population and to sustain species diversity within Iisaak's Management Unit.

Rationale:

The CSSP define biological diversity as “the diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them”. This definition includes both the diversity of species, function of ecosystems and habitats that they depend on. The CSSP acknowledges, “maintenance of biological diversity is inextricably related to the long-term maintenance of healthy, productive ecosystems”. To maintain biological diversity it is vital that rare or threatened species are protected. In BC, the Ministry of Environment ranks the relative scarcity of species, which is done through a colour-coded system. “Red-listed” species are the rarest in BC and include endangered or threatened indigenous species or subspecies. “Blue-listed” species are those identified as being vulnerable to human activity or natural events. By applying the Ministry of Environment system of designation, the Scientific Panel recommended that reserves be established at the watershed level to conserve red and blue listed species. Additionally, the Panel recognized that some species require added protection measures at the site level, and that planning for species protection may also occur at the sub-regional level.

Numerous red and blue listed species and regionally important species have been selected as “identified wildlife” species under Forest and Range Practices Act. Within the South Island Forest District, species listed as “identified wildlife” that possibly use the forested habitats in Iisaak's operating area include the Northern Goshawk, Marbled Murrelet, and Keen's Long-eared Myotis. Iisaak's operating area also provides a range of habitats used by a range of species; including Columbia black tailed deer, black bears, and other vertebrates. Management concerns tend to focus on providing habitat for larger mammals and managing the habitat requirements of threatened or endangered species. Habitat requirements of other wildlife species are dealt with

through a coarse filtered approach of biodiversity management by maintaining a well-distributed representation of ecosystems.

Strategies:

1. Operations will be consistent with, and improve upon through adaptive management where possible, the Scientific Panel Recommendations and the Clayoquot Sound Watershed Plan reserve network to protect biological diversity.
2. Respect the following established Watershed Plan reserves:
 - 1) Reserves to protect red- and blue-listed animal species and plant communities;
 - 2) Reserves to protect forest-interior condition in late successional forest;
 - 3) Reserves to represent all ecosystems;
 - 4) Reserves to ensure linkages among watershed-level planning areas.
3. A qualified professional will complete a site level wildlife habitat assessment in all cutblocks. Site Plans will incorporate the recommendations of the assessment.
4. Implement variable retention harvest system and protect hydriparian reserves to provide a mix of security cover, thermal cover, and forage for ungulates and other wildlife species.
5. Where applicable, look for opportunities to use site level reserves to increase the amount of interior forest in the watershed reserve network (eg. by maintaining some connectivity between site level and watershed level reserves). This is most important in those watershed planning units where current levels of interior old growth are less than 20% of total forested area.
6. Implement appropriate forest management strategies to protect bald eagle nests, following provincial guidelines for South Island Forest District.
7. Retain previously known or discovered black bear den sites as part of a wildlife tree patch or retained forest aggregate during layout activities.
8. Retain coarse woody debris of various diameters to provide habitat requirements for a range of species.
9. Monitor these strategies to ensure they are applied and implemented effectively.

Table 24: Red- and Blue-Listed Plant Communities, Clayoquot Sound (August 2002)

Rare Plant Communities	Rank	Associated Ecosystem Units in Clayoquot Sound		
		BEC unit	Site Series Number	Symbol
<u>Red-Listed</u>				
<i>Picea sitchensis</i> / <i>Maianthemum dilatatum</i>	S2	CWHvh1	08	SL
<i>Picea sitchensis</i> / <i>Rubus spectabilis</i>	S2	CWHvm1	09	SS
<i>Thuja plicata</i> - <i>Picea sitchensis</i> / <i>Oplopanax horridus</i>	S1S3	CWHvh1	07	SD
[<i>Anaphalis margaritacea</i> – <i>Aster foliaceus</i>	S2	MHmm1	00	n/a]
[<i>Carex macrocephala</i>	S1S2	CWHvh1	00	n/a]
[<i>Phlox diffusa</i> - <i>Selaginella wallacei</i>	S2	MHmm1	00	n/a]
[<i>Picea sitchensis</i> / <i>Trisetum canescens</i>	S2	CWHvh1	09	ST]
<u>Blue-Listed</u>				
<i>Alnus rubra</i> / <i>Maianthemum dilatatum</i>	S3	CWHvh1	10	AL
<i>Picea sitchensis</i> / <i>Kindbergia oregana</i>	S3	CWHvh1	15	SK
<i>Picea sitchensis</i> / <i>Polystichum munitum</i>	S3	CWHvh1	17	SW
<i>Thuja plicata</i> – <i>Chamaecyparis nootkatensis</i> / <i>Lysichitum americanum</i>	S3	CWHvm2	11	RC
<i>Thuja plicata</i> - <i>Picea sitchensis</i> / <i>Polystichum munitum</i>	S2S3	CWHvh1	05	RF
<i>Thuja plicata</i> - <i>Tsuga heterophylla</i> / <i>Polystichum munitum</i>	S3	CWHvm1	04	RS
<i>Thuja plicata</i> - <i>Tsuga heterophylla</i> / <i>Polystichum munitum</i>	S3	CWHvm2	04	RS
<i>Thuja plicata</i> - <i>Picea sitchensis</i> / <i>Lysichitum americanum</i>	S3	CWHvh1	13	RC
<i>Thuja plicata</i> - <i>Picea sitchensis</i> / <i>Lysichitum americanum</i>	S3	CWHvm1	14	RC
<i>Tsuga heterophylla</i> - <i>Thuja plicata</i> / <i>Gaultheria shallon</i>	S3	CWHvm1, 2	03	HS
[<i>Abies amabilis</i> - <i>Picea sitchensis</i> / <i>Oplopanax horridus</i>	S3	CWHvm1	08	AD]
[<i>Abies amabilis</i> - <i>Picea sitchensis</i> / <i>Oplopanax horridus</i>	S3	CWHvm2	08	AD]
[<i>Populus balsamifera</i> ssp. <i>Trichocarpa</i> / <i>Cornus stolonifera</i>	S3	CWHvm1	10	CD]
[<i>Tsuga heterophylla</i> – <i>Picea sitchensis</i> / <i>Rhytidadelphus loreus</i>	S3	CWHvh1	04	HM]
[<i>Picea sitchensis</i> / <i>Calamagrostis nootkatensis</i>	S3	CWHvh1	16	SR]
[<i>Picea sitchensis</i> / <i>Carex obnupta</i>	S3	CWHvh1	18	SE]
[<i>Picea sitchensis</i> / <i>Malus fusca</i>	S3	CWHvh1	19	SC]
xxxxxxxxxx				
xxxxxxxxxx				
<u>Yellow-Listed</u>				
<i>Tsuga mertensiana</i> – <i>Abies amabilis</i> / <i>Vaccinium alaskaense</i>	S3/S4	MHmm1	01	MB

Source: BC Conservation Data Centre, August 2002 (updated August 2009)

Notes on ranking system:

 S1 = **Critically Imperiled** in the nation or province because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the province. Typically 5 or fewer occurrences or very few remaining individuals (<1,000).

 S2 = **Imperiled** because of rarity (typically 6-20 extant occurrences or few remaining individuals) or because of some factor(s) making it vulnerable to extirpation or extinction.

S1S3, S2S3 = is used to indicate uncertainty about the exact status of a taxon. May fall within one or the other ranking.

S3 = Vulnerable provincial either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction.

S4 = Apparently Secure—Uncommon but not rare, and usually widespread in the nation or province. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.

[]: Denotes communities which are not classified as distinct ecosystem units in the TEM data base which supports sub-regional and watershed level planning; these communities may, however be encountered at the site level of planning.

**Table 25 - Red and Blue Listed Species Likely Present on Vancouver Island
(Updated August 2009)**

GROUP	SPECIES LIKELY PRESENT IN FORESTED HABITATS ON VANCOUVER ISLAND	
	Red	Blue
Amphibians and Reptiles		Red-legged frog
Birds	Northern Goshawk (laingi ssp.)	Great Blue Heron
	Marbled Murrelet	Northern Pygmy-owl (swarhi ssp.)
		Western Screech Owl (saturatus ssp.)
		Peregrine Falcon (pealei ssp.)
		Pine Grosbeak (carlottae ssp.)
		White-tailed Ptarmigan (saxatilis spp)
		Band-tailed Pigeon
		Olive-sided Flycatcher
Mammals	Wolverine (vancouverensis ssp.)	Roosevelt Elk
	Vancouver Island Water Shrew	Vancouver Ermine
	Keen's Long-eared Myotis	Townsend's Big-eared Bat
	Vancouver Island Marmot	

5.6 Ecological Representation Strategy

Iisaak Criteria and Indicator:

Criteria: 7, 8

Indicators: 19, 20, 21, 22

Purpose:

To ensure that all ecosystems are represented in a natural state across Iisaak's Management Unit in order to provide suitable habitat for all species and ecological functions.

Rationale:

Ecological representation is one of the most efficient and effective means of maintaining biological diversity and ecosystem function while maximizing resource opportunities on the land base. The overall goal of ecological representation is to provide areas where biota and natural processes can occur in their natural condition without human impact. Representing a portion of each ecosystem in an unmanaged form is an important first step towards maintaining biological diversity because it serves four important roles. First, it helps to account for the organisms that are too poorly known or numerous to manage on an individual basis. Second, it provides a buffer against risks, which tend to be higher in the managed portion of the land base. Third, it provides the opportunity for natural disturbances and succession to occur without interventions. Finally, larger unmanaged areas can provide benchmarks to compare the effects of management in the harvestable portion of the land base.

Strategies:

1. Operations will be consistent with, and improve upon through adaptive management where possible, the Scientific Panel Recommendations and the Clayoquot Sound Watershed Plan reserve network to protect biological diversity.
2. Respect the following established Watershed Plan reserves:
 - Reserves to protect red- and blue-listed animal species and plant communities;
 - Reserves to protect forest-interior condition in late successional forest;
 - Reserves to represent all ecosystems;
 - Reserves to ensure linkages among watershed-level planning areas.
3. Monitor these strategies to ensure they are applied and implemented effectively.

5.7 Strategy to maintain the natural species and stand structure profile

Iisaak Criteria and Indicator

Criteria: 7

Indicator: 19

Purpose:

To ensure that the species and stand structure profile is maintained on the Management Unit at or near natural levels.

Rationale:

Criteria 6.3.7 and 6.3.8 of the FSC Regional Certification Standards for British Columbia ask for “an assessment of the current and predicted future extent to which management results in stand types and stand level attributes that are compatible with RONV.” Specifically, the regional standards require silviculture treatments to maintain a diversity of tree species and stand types compatible with RONV (rate of natural variability) at the landscape level and to contain measures to ensure the maintenance and/or restoration of stand structure at both the stand and landscape levels.

Strategy:

At the landscape level:

1. Iisaak will follow the recommendations and conditions set out in the CSSPR and the Watershed Plans for watershed level reserves. These include:
 - Reserves to protect old growth forests (a minimum 40% retention of old growth across the landscape).
 - Reserves to protect forest interior conditions within old growth reserves (a minimum 20% of the old growth retention will consist of interior old growth).
 - Reserves to protect red and blue listed animal species and plant communities.
 - Reserves to represent all ecosystems. The reserve network will represent a minimum of 30% of each site series and 50% of rare site series (less than 2% of the total or less than six occurrences throughout the landscape unit). At least 20% of each site series

dominant tree species group for groupings of 201 to 400 years and 401 to 600 years larger than 2 hectares in size will be reserved.

- Reserves to provide linkages among watershed planning areas.
2. IISA AK will ensure that the Timber Supply Review (an integral part of the Management Plan) will only consider those stand types that are economically and physically operable to be part of the Timber Harvesting Land Base (THLB). This will ensure that stand types that are not harvestable for economic reasons do not contribute to the AAC. For example, a high elevation stand of hemlock and amabilis fir of low value that is only accessible by helicopter would not be considered economically operable under current or near future foreseeable market conditions. Thus, these types of stands would not be considered part of the THLB and would not contribute any area to the AAC. Careful analysis of the forest inventory across the landscape, along with ensuring only those stand types that can be harvested economically are included in the cut, will ensure that IISA AK's harvesting is reflective of the timber profile in the THLB.
 3. Variable retention harvesting systems, in conjunction with established reserve networks, will ensure a representative proportion of all species and stand types are well distributed across the landscape.

At the site level:

IISA AK will apply variable retention harvesting in all cutblocks. A minimum of 15% of the original forest within the cutblock will be retained except for very small cutting units less than four tree lengths across (where the block is surrounded by a matrix of mature timber). Retention can be left as either dispersed (single trees or small groups of trees <0.1 ha in size), aggregate (larger groups of trees >0.1ha in size), or a combination of both. Retention will be reasonably representative of the original stand in both species composition and stand structure, taking into account other factors such as safety, windfirmness, visual quality objectives, cultural values, wildlife, biodiversity, and riparian values, and harvesting logistics. A post-harvest assessment will be conducted for all blocks that will verify whether these measures are being successfully implemented.

One of the key concepts central to the Panel’s recommendations regarding forestry practices in Clayoquot Sound is that harvest systems should mimic natural disturbance regimes. This resulted in the transition from clearcutting to Variable Retention (VR) harvesting systems. All of lisaak’s harvesting operations utilize VR systems with a range of retention options from 15% in areas without significant non-timber values, to 70% or more in areas with high visual, cultural and/or wildlife values (very small cutblocks surrounded by a matrix of mature timber are exempt from minimum in-block retention requirements). The most common forms of natural disturbance in lisaak’s Management Unit are windthrow events and landslides. These events are generally relatively small and result in irregular edge configurations and landscape patterns.

The majority of lisaak’s Management Unit, which is located within the CWH biogeoclimatic zone, is located within ‘*Natural Disturbance Type (NDT)1 - Ecosystems with Rare Stand-Initiating Events*’¹⁷. The mean return interval for NDT1 disturbances is generally 250 years.

Occasionally, however, major windthrow events do occur as a result of hurricane-force winds on certain exposed parts of the Management Unit in portions of the CWHvm1, CWHvm2, and CWHvh1 biogeoclimatic zone variants. The mean return interval for these has been approximately 100 years. The areas in which these major wind events occur fall within ‘*Natural Disturbance Type (NDT) 3 – Ecosystem with Frequent Stand-Initiating Events*’.

lisaak’s harvest areas are dominated by small openings where no place within the opening is greater than two tree heights from the edge of an existing aggregate or stand. lisaak practices two forms of VR; *dispersed retention*, where trees are retained as dispersed individual trees throughout a harvest area and *aggregate retention*, where trees are retained as intact patches (greater than or equal to 0.1 ha) of standing timber within a harvest area.

All cutblocks will be reforested with ecologically appropriate tree species as specified in the applicable Stocking Standards for lisaak’s management unit. Regeneration will occur through natural regeneration, planting of seedlings produced from local provenances, or (most commonly) a combination of both. Regeneration surveys will verify whether successful regeneration with ecologically appropriate species is occurring on cutblocks.

In portions of the management unit where previous management activities have resulted in stand conditions that are inconsistent with FSC – BC standards (eg – large areas of the Kennedy flats

¹⁷ FPC Biodiversity Guidebook, September 1995

were planted to Douglas fir in the 1960's which is not ecologically or silviculturally suitable for this area), restoration plans will be identified and carried out where it is economical to do so.

5.8 Old Growth Habitat Strategy

Iisaak Criteria and Indicator:

Criteria: 7, 8, 10

Indicators: 20, 21, 24

Purpose:

To ensure that old growth stands and habitat features are present across Iisaak's Management Unit throughout the short and long-term.

Rationale:

Old growth forest is defined by the CSSP as a "forest that contains live and dead trees of various sizes, species, composition, and age class structure" with the dominant age class being "141 years or older". Old growth forests are part of a slowly changing but dynamic ecosystem represented in climatic forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another. Old growth stands provide structural and microclimate conditions required by many species. Bunnell suggests about one third of vertebrate species present in BC's forests are associated with old growth stands or habitat elements. Many of the species that depend on old growth forests in the Clayoquot Sound require special management attention.

Strategies:

Fine and coarse-filter approaches are used to implement strategies that are consistent with the CSSP recommendations and the Clayoquot Sound Watershed Plans for ensuring the presence of old growth habitat and features.

Coarse Filter:

The concept behind the coarse filter approach is to leave large areas of land undisturbed by human presence to provide adequate representation of ecological land units. Much of the old growth habitat requirements will be dealt with through the use of protected areas and Watershed Plan reserve areas. The CSSP recommendations ensure that a minimum of 40% of old growth is maintained in permanent reserves and protected areas, which is reflected in the reserve network and management strategies contained in the Clayoquot Sound Watershed Plans. These reserves of old growth forest provide large units of undisturbed forest habitat.

Old growth forest characteristics will be maintained at the stand level as well as through an extensive reserve network and a variable retention approach to harvesting. Applications of variable retention will help to promote old growth characteristics in developed areas.

Fine Filter:

Strategies employed at the stand level to retain old growth elements include the following:

1. Forest planners will be aware of, and design harvesting patterns to retain a component old growth habitat and structure including large live trees, quality CWD, intact shrub and herbaceous communities, and snags / wildlife trees. This will be implemented in a manner that allows for due consideration of safety, harvesting and road logistics, forest health, and site-specific habitat features and requirements.
2. Advanced regeneration and suppressed understory trees will be retained where feasible to provide additional structural complexity and on-site diversity.
3. Infrequently occurring and/or slower growing plant species such as Yew (*Taxus brevifolia*), White pine (*Pinus monticola*), or Cascara (*Rhamnus purshiana*) will be targeted for retention where possible and may be planted if they are a preferred or acceptable conifer species in the approved stocking standards for a given Standards Unit.
4. Variable retention harvesting will be used to ensure patches of old growth are left, where possible, in various sizes and distribution patterns within and around harvest units.
5. Connectivity between large old growth reserves will be maintained where possible. Strategic placement of site level reserves can help increase the amount of interior old growth in the reserve network.
6. Monitor these strategies to ensure they are applied and implemented effectively.

5.9 Hydroriparian and Hydrological Management Strategy

Iisaak Criteria and Indicator:

Criteria: 6, 9

Indicator: 14, 15, 17, 23

Purpose:

To ensure that hydroriparian areas and their attributes are not adversely impacted by Iisaak's management activities.

Rationale:

A hydroriparian area is defined by the CSSP as “the land adjacent to the normal high water line in a stream, river, lake, or pond and extending to the portion of land that is influenced by the presence of the adjacent ponded or channeled water”. Hydroriparian areas typically exemplify a rich and diverse vegetative mosaic reflecting the influence of available surface water. Hydroriparian areas often contain habitat, travel corridors, and home ranges for a large number of animals. The soils found in hydroriparian areas are often of high moisture content and prone to compaction. Organisms found in hydroriparian areas tend to be dependent on riparian vegetation for habitat and forage. Forest management activities such as road building, loading, hoe forwarding, falling may cause long-term degradation to hydroriparian areas if not carried out carefully.

The quality and quantity of water is an integral component of an ecosystem. Forest ecosystems and their inhabitants rely on a consistent rate of high quality water to support them. Forest management activities may impact water quality in a variety of ways such as increases in water temperature, turbidity, and sedimentation. Forest management activities may affect water quantity by either reducing, or increasing flow rates. Disturbances to streambeds and banks are a leading cause in changing natural hydrologic functions. Managing forest activities to provide protection to both watercourses and riparian ecosystems will minimize impacts.

Strategy:

1. Identify all streams, waterbodies and wetlands potentially affected by harvesting activities during cutblock layout.

2. Apply a system of stream classification and management strategies consistent with the spirit and intent of the CSSP hydrologic classification system as illustrated in Figure 7 and Table 20.

Figure 10: Hydrologic Classification System

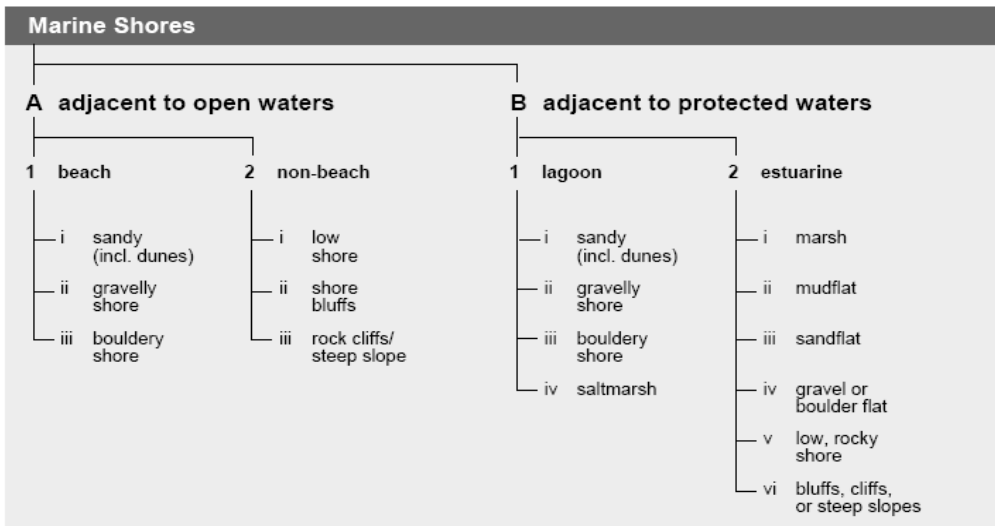
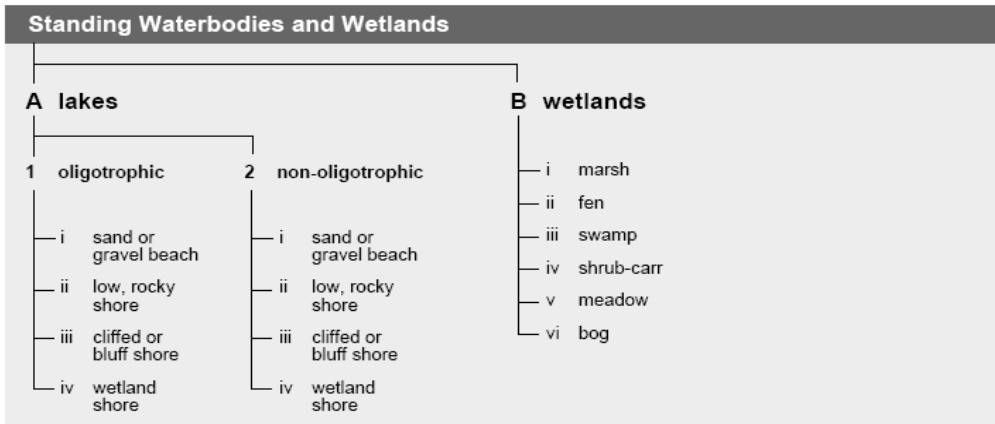
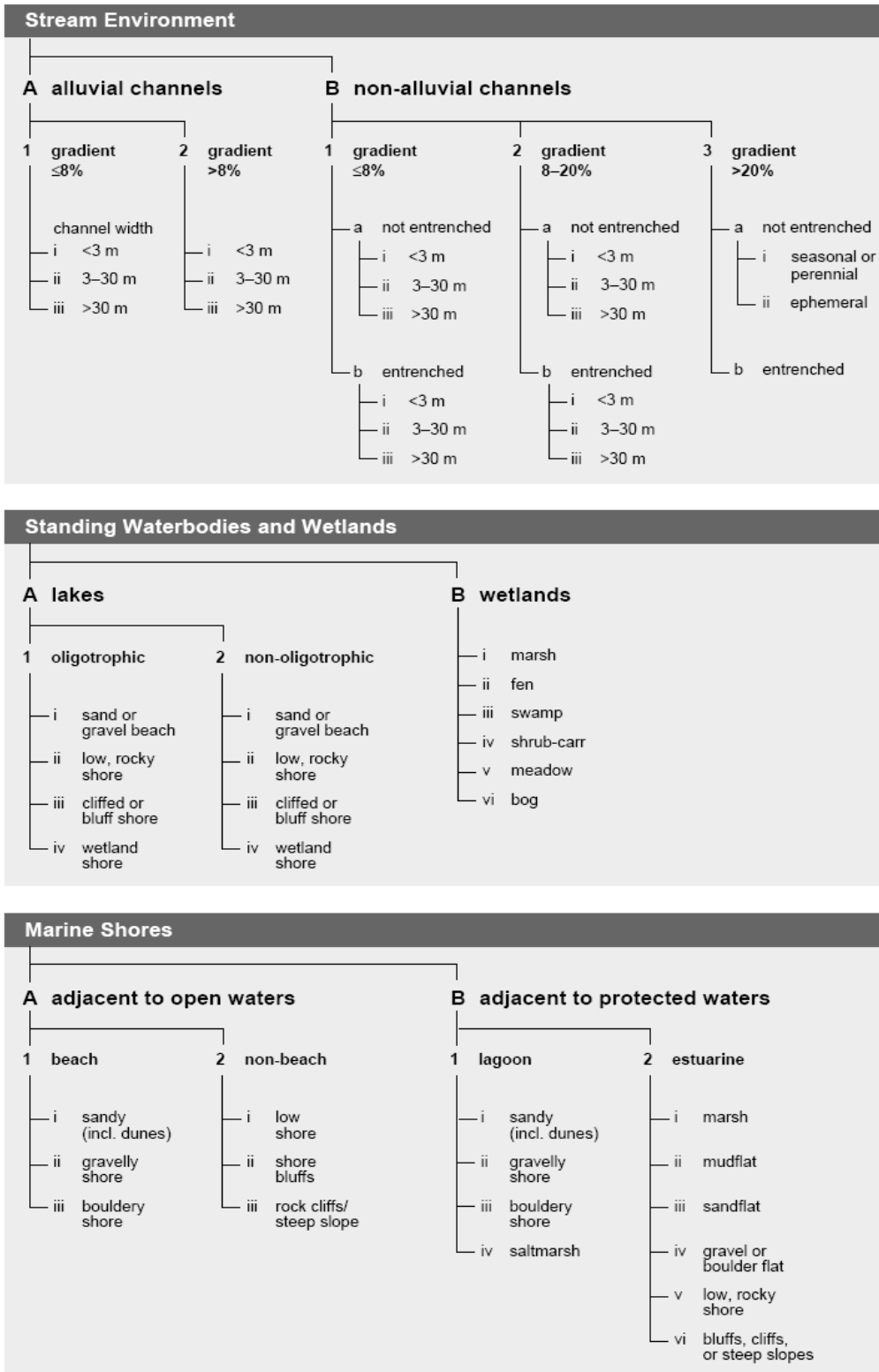


Table 26 – Hydroriparian Reserve Designations¹⁸

STREAMS		LAKES AND WETLANDS		MARINE SHORES	
Class	Width (m)	Class	Width (m)	Class	Width (m)
A1i	Entire Floodplain*	A1i	30 ¹	A1i	150
A1ii	Entire Floodplain*	A1ii	30 ¹	A1ii	150
A1iii	Entire Floodplain*	A1iii	30 ¹	A1iii	150
A2i	50	A1iv	30 ¹	A2i	150
A2ii	50	A2i	30 ^{1,2}	A2ii	100
A2iii	50	A2ii	30 ^{1,2}	A2iii	100
B1ai	Entire Floodplain**	A2iii	30 ^{1,2}	B1i	100
B1aii	Entire Floodplain*	A2iv	30 ^{1,2}	B1ii	100
B1aiii	Entire Floodplain*	Bi	Hydroriparian influence ³	B1iii	100
B1bi	30***	Bii	Hydroriparian influence ³	B1iv	100
B1bii	50***	Biii	Hydroriparian influence ³	B2i	100
B1biii	50***	Biv	Hydroriparian influence ³	B2ii	100
B2ai	50**	Bv	Hydroriparian influence ³	B2iii	100
B2aii	50	Bvi	Hydroriparian influence ³	B2iv	100
B2aiii	50			B2v	100
B2bi	30***			B2vi	100
B2bii	50***				
B2biii	50***				
B3ai	20				
B3aii	0**				
B3b	20****				

* Minimum 50m reserve

** Ephemeral, no general reserve required but may require evaluation by a professional biologist for any special management prescriptions.

*** Or to the top of slope, whichever is greater. An additional 30m “no machine zone” if the tops of the slope are actively being undercut.

**** If the sides of the slope are stable treat as a B3a.

¹ A special management zone extending from the reserve an additional 20m or to the edge of hydroriparian influence, whichever is greater, is subject to retention harvesting.

² Reserve is 30 meters or to edge of hydroriparian influence, whichever is greater.

³ On sloping edges of wetlands, designate same reserve as for lakes.

¹⁸ All hydroriparian widths are measured in horizontal distance.

3. Follow the spirit and intent of the rate-of-cut requirements for individual watersheds as outlined in the Clayoquot Sound Watershed Plans and the CSSP recommendations, specifically:
 - Limit the area cut in any watershed larger than 500 ha in total area to no more than 5% of the watershed area within a five-year period.
 - In primary watersheds of 200–500 ha in total area, limit the area cut to no more than 10% of the watershed area within a 10-year period. (This prescription provides flexibility for harvesting within small watersheds.)
 - In any watershed larger than 500 ha in total area, and primary watersheds of 200–500 ha in total area in which harvest has exceeded 20% of the watershed area in the most recent 10 years, allow no further harvest until the watershed conforms with the specified rate-of-cut.
 - In any watershed specified in the previous recommendations and in which the recent harvest is greater than 5% in the last five years, but less than 20% in the last 10 years, allow no further cutting until a watershed sensitivity analysis and stream channel audit have been completed. If these assessments indicate significant hydrological disturbance, substantial or chronic increase in sediment yield, or significant deterioration in aquatic habitat, cease harvesting until undesirable conditions are relieved. Otherwise, harvest may continue at a rate which will bring the drainage unit within the recommended rate-of-cut limits within five years.
 - *Subject to available funding and resources*, in any watershed larger than 500 ha in total area (and primary watersheds of 200–500 ha in total area) in which harvest has occurred, require a watershed sensitivity analysis and stream channel audit once every five years. Where such assessments identify hydrological disturbance, substantial increase in sediment yield, or significant deterioration in aquatic habitat, cease harvesting until these conditions are relieved. If such conditions are recognized at any other time, sensitivity analysis and/or stream channel audit shall be undertaken immediately.
 - In watersheds where the harvestable area is less than 30% of the total area, allow resource managers to use professional judgment to vary these standards without changing the intent to regulate rate of harvest to minimize hydrological change.
 - Periodically review these recommendations and reformulate as the results of monitoring accumulate.
 - In watersheds important for their scenic values, complying with the visual landscape management objectives may restrict the rate-of-cut below the limits specified above.
4. Support restoration efforts of degraded hydro-riparian zones and water bodies.
5. Follow accepted provincial guidelines for culvert and bridge design and placement. Consult a professional engineer when required.
6. Monitor these strategies to ensure they are applied and implemented effectively.

5.10 High Conservation Value Forests Strategy

Iisaak's Criteria & Indicators Program:

Criteria: 10

Indicator: 24

Purpose:

To ensure a precautionary approach to the management of High Conservation Values Forests (HCVF).

Rationale:

The Forest Stewardship Council (FSC) defines high conservation value forests as those forests that possess one or more of the following attributes:

1. Forest areas containing globally, regionally or nationally significant: concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

1.1 Forest areas that include the critical habitats of globally, nationally or provincially threatened species.

1.2 Forest areas that include the **critical habitats** of endemic species.

1.3 Forest areas that support: unusually high naturally occurring species diversity, migratory concentrations of species or individuals, or other rare ecological or evolutionary phenomena.

1.4 Large forest areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

1.5 Forest areas associated with high-value fish habitat and other critical aquatic habitat.

2. Forest areas that are in or contain rare, threatened or endangered ecosystems.

2.1 Forests designated as threatened or endangered at global, continental or national levels (e.g. **Ecoregions** or large forests designated as critical, endangered or vulnerable by WWF, WRI or Global Forest Watch).

2.2 Plant communities designated as endangered or threatened (Red List) or vulnerable (Blue List) by the BC Conservation Data Centre.

2.3 Forest areas containing mature and old forest where those age classes are becoming rare due to human activities.

2.4 Forest areas that are under-represented in protected areas.

3. Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control).

3.1 Where downslope or downstream consequences of landslides, sediment production or snow avalanches are significant (e.g., spawning habitat, transportation or communication infrastructure), forest areas associated with unstable terrain (Class IV, V), highly erodible soils or snow avalanche starting zones.

3.2 Forest areas on the **management unit** that protect the water supply of the community and individual water users identified through licensing data and consultation.

3.3 Forests required for maintenance of flow regimes and/or flood prevention in other critical watersheds (e.g., riparian stands, forest stands above the H60 line in snowmelt-dominated watersheds).

4. Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

4.1 Forest areas that are the direct source of a significant portion of the **local** community's food supply identified through consultation.

4.2 Forest areas that are the direct source a significant portion of materials used directly for community or ceremonial purposes by the **local** community, as identified through consultation (e.g., wood, skins, and other non-food materials).

4.3 Forest areas that are of cultural, religious or spiritual significance for the **local** community, or otherwise critical to its traditional cultural identity identified through consultation.

Strategies:

IISA AK is participating in a spatially explicit HCVF assessment of its management unit with a final target date of August 2009. IISA AK proposes that the management recommendations of the CSSPR and the legally established CS Watershed Plans adequately manage and maintain the attributes associated with High Conservation Value Forests.

This HCVF is unique in that the legally established Watershed Plans that are the basis of the analysis were developed through extensive public, stakeholder and professional input and are signed off by the Rights Holders. The HCVF spatial analysis is testing the results of these plans against the HCVF indicators and provides a very reproducible tool for the monitoring and adaptive management of the CS Watershed Plans with respect to the HCVF indicators.

Within 6 months of completion of the HCVF assessment, lisaak will have completed an HCVF Management Strategy for the management unit if any further management modifications are required to address HCVFs.

lisaak has proposed that the Scientific Panel Recommendations and associated landscape level and site level planning requirements serve to adequately manage for High Conservation Forest Values. Following the completion of the HCVF Assessment the details of any modifications to HCVF management will be identified and addressed. It is expected that tracking the affect of harvesting operations on the HCVF indicators will be a key monitoring tool that can be summarized yearly or at least every 5 years in conjunction with cut control. The HCVF document and subsequent monitoring of the indicators will be available via the Stakeholder Engagement Strategy.

It is suggested that this HCVF monitoring is an ideal fit for the CS Technical Planning Committee's mandate for monitoring and adaptive management and could be made inclusive of all tenures in Clayoquot Sound.

5.11 Legal and Administrative Strategy

lisaak Criteria and Indicator:

Criteria: 4, 11

Indicators: 9, 10, 25, 26

Purpose:

To ensure lisaak is following all national, provincial and local laws and administrative requirements.

Rationale:

lisaak has continually endeavored to operate within all applicable laws and administrative requirements. Successful forest stewardship requires operating within required laws or administrative requirements.

Strategy:

1. lisaak management will ensure operations are compliant with all applicable laws, regulations, policy and administrative requirements.
2. In the event that non-compliance occurs, lisaak management will be cooperative with compliance and enforcement personnel during the course of any subsequent investigations.
3. All direct lisaak employees will be made aware of all applicable national and local laws as they apply to their job description.

4. Contractors working for lisaak will be required to be aware of all applicable national and local laws as they apply to their job description.
5. lisaak will ensure the use of qualified individuals to complete work.
6. All employees and contractors will be made aware of lisaak's Environmental Management System.
7. All direct lisaak employees will be trained in understanding lisaak's Safety Manual and conduct safety meetings at an interval appropriate to the scale and intensity of concurrent field operations.
8. All lisaak contractors will be required to conduct work in compliance with the standards set out by the BC Worker's Compensation Board and will be subject to periodic review of compliance by lisaak staff.
9. Monitor these strategies to ensure they are applied and implemented effectively.

5.12 Recreation and Tourism Strategy

lisaak Criteria and Indicator:

Criteria: 14

Indicators: 33, 34

Purpose:

To ensure opportunities for recreational and tourism activities are not diminished in lisaak's Management Unit throughout the short and long term.

Rationale:

Clayoquot Sound provides unique opportunities for recreation and tourism and must be managed accordingly. In 1978, the *Ministry of Forests Act* and the *Forest Act* established recreation as one of the resource mandates of the ministry. These regulatory documents require that recreational features be identified, evaluated for present and future significance, and mapped.

There is evidence that past and present forest practices have affected recreation and tourism in both positive and negative ways. Harvesting operations can have a negative impact on features and values that are important for recreation and tourism (e.g. scenic values). The CSSPR

recognizes physiographic, fish and wildlife and scenic values as core to ecosystem based management and the Clayoquot Sound Watershed Plans account for this.

Strategies:

1. Operations will be consistent with, and improve upon through adaptive management where possible, the Scientific Panel Recommendations and the Clayoquot Sound Watershed Plan management strategies to protect recreation and tourism values. Specifically:
 - Reserves to protect recreation and tourism values; and
 - CSSP recommendations for the protection of scenic values.
2. On going consultation including public review of plans will be conducted to address new issues.
3. Monitor these strategies to ensure they are applied and implemented effectively.

5.13 Visual Quality Strategy

Iisaak Criteria and Indicator:

Criteria: 12

Indicators: 33, 34

Purpose:

To recognize the importance of protecting the scenic values contained within Iisaak's Management Unit.

Rationale:

The District Manager has designated Clayoquot Sound as a known scenic area. Iisaak's operational land base is within the *Clayoquot Sound Scenic Resource Inventory*, which defines the extent of areas visible from important travel routes, recreation sites, and communities. Recreational and tourism businesses represent a significant portion of the local economy. Visual Quality Assessments are required prior to alterations of the landscape. The purpose at the site level is to assist planning towards maintaining visual quality in conjunction with management activities.

Strategies:

1. Operations will be consistent with, and improve upon through adaptive management where possible, the Scientific Panel Recommendations and the Clayoquot Sound Watershed Plan management objectives to protect scenic values. A description of the Scenic Class Objectives found within IISA AK's Management Unit is provided in Table 21.
2. Use landscape design principles in the layout of harvest blocks and in the development of Silviculture Prescriptions or Site Plans.
3. Ensure that stakeholders are involved in the Visual Impact Assessment process around any potentially controversial or sensitive areas if there is expected to be a significant impact to visual quality.
4. Monitor these strategies to ensure they are applied and implemented effectively.

Table 27 - Scenic Class Objectives for IISA AK's Management Unit

SCENIC CLASS OBJECTIVES	SCENIC CLASS DEFINITION	APPLICATION
Unaltered	No alteration	May apply to provincial parks, and areas captured in reserves for other values
Natural-appearing	Alteration not discernible to casual observer	Visible areas inside and outside scenic corridors where landscape has limited ability to absorb change, is in pristine or retained condition, and has high biophysical rating, viewing condition and viewer ratings
Minimal alteration	Alteration may be apparent but not clearly evident	Visible areas inside and outside scenic corridors where landscape has moderate ability to absorb change, is in a pristine or retained condition, and has moderate biophysical rating, viewing condition and viewer ratings
Small-scale alteration	Alteration must remain subordinate in the landscape	Visible areas inside and outside scenic corridors where landscape has a relatively high ability to absorb change, is in a highly to excessively altered condition, and has low biophysical rating, viewing condition and viewer rating
Moderate alteration	Alteration dominant	Does not apply to Clayoquot Sound
Highly altered	Alteration out of scale	Does not apply to Clayoquot Sound
Intensively	Alteration greatly out of scale	Does not apply to Clayoquot Sound

5.14 Monitoring Plan and Adaptive Management Strategy

Iisaak Criteria and Indicator:

Criteria: All

Indicators: All

Purpose:

To devise meaningful, practical, and cost effective methods of monitoring the multiple objectives of Sustainable Resource Management including processes that will allow the easy integration of new knowledge and experience back into forestry management practices.

Rationale:

The CSSP recommended in R3.19 that an adaptive management strategy be implemented to “incorporate new knowledge and experience” and “establish research and monitoring programs to assess effectiveness of these initial recommendations in meeting ecological, cultural, scenic, and economic objectives and to improve recommendations on an ongoing basis”. As stated in the Executive Summary, one of the main objectives of this SFMP is to:

“...be a dynamic plan with the goal of continual improvement over time. It will be updated and revised on an as needed basis as Iisaak refines its criteria and indicators, management strategies and operational approaches in its pursuit to better define, measure and monitor the cultural, ecological, social and economic objectives of SFM across its Management Unit.”

In order to achieve this goal Iisaak is committed to incorporating the concepts of monitoring and adaptive management as a fundamental component of sustainable forest management.

The CSSP recommends monitoring the effects of plans and checking against management objectives to facilitate adjustments to better achieve intended goals; that is, employ adaptive management procedures. Adaptive management is defined by CSSP as “the rigorous combination of management, research, and monitoring so that credible information is gained and management activities can be modified by experience. Adaptive policy acknowledges institutional barriers to change and designs means to overcome them”. Adaptive management will take on four steps; 1) Plan 2) Monitor 3) Evaluate, and 4) Adjust.

Monitoring and adaptive management responsibilities coexist within two jurisdictions in Clayoquot Sound. These two levels are differentiated as:

1.) Clayoquot Sound Technical Planning Committee's Monitoring and Adaptive Management of Clayoquot Sound Science Panel Recommendations and Clayoquot Watershed Plans. This may also include delegated or recognized organizations, institutions, committees, government, stakeholders, rights holders and recognized working groups assembled from any of the above, including IISAAK representation. Some ad-hoc monitoring by individuals or organizations also occurs at this level but is outside the sphere of the local communities, stakeholders and rights holders. Typical representation at these monitoring and adaptive management initiatives and Monitoring Working Group may include but is not limited to the following: CSTPC Reps, FN reps, BC Government Reps, Federal Reps, Municipal Government Reps, Federal and BC Parks Reps, Licensee Reps, University Reps/students, ENGOs, Clayoquot Biosphere Reserve reps, various natural resource professionals, social specialists, cultural specialists, economic specialists, interested community members, etc.

Responsibility for research, monitoring and adaptive management at the broader scale of Clayoquot Sound and as outlined in the CSSPR and Clayoquot Sound Watershed Plans lies with the Clayoquot Technical Planning Committee. The scope and scale of a global Clayoquot Sound Research, Monitoring and Adaptive Management Program is beyond the scope of a licensee and by definition requires significant stakeholder and rights holder input and funding. Funding has not typically been an obstacle to this work in the past as numerous sources are secured or available. Examples of potential and historical funding sources include: Forestry Canada, CS Biosphere Trust, Forest Investment Account, various foundations and grants, Federal and Provincial grants and research programs, in-kind contributions, private and corporate donations, etc.

Since the adoption of the CSSPRs countless research projects have been funded, initiated and completed under the authority and guidance of numerous delivery agents and funding sources. Though much of this research and monitoring is valid and useful in its own right; the continuity, context, relevance, location of, access to, and priorities assigned to these works is not clear or easily available for the forest manager or individual interested in this work and in need of the results.

At present there is a Clayoquot Sound Monitoring Working Group in place made up of various stakeholders and rights holders including the Clayoquot Sound Technical Planning Committee. This group has been condensed out of a much larger stakeholder group in an attempt to bring some functionality to the process of building a meaningful and functional Research, Monitoring and Adaptive Management Program that fulfils the objectives outlined in the CSSPR and Clayoquot Sound Watershed Plans.

2.) lisaak's "In House" Monitoring Plan and Adaptive Management Strategy-

Many of lisaak's operational inputs and outputs are assessed, measured and updated regularly or on an annual basis. In recent years this information has not been summarized into a common public document as was the case under the old Annual Report requirement. Changes in regulation and the development of computer software and electronic reporting of activities, data, maps, etc to the various government agencies was implemented for efficiency and to reduce the amount of paper. Much of this information is still available publically on the internet but is not consolidated into a final report.

Locally developed C&I contained in this SFMP and numerous operational inputs and outputs of lisaak's business form an integral part of lisaak's "in-house" Monitoring Plan and Adaptive Management Strategy commitments.

Strategies:

1.) Clayoquot Sound Technical Planning Committee's Monitoring and Adaptive Management

lisaak has been, and continues to be actively involved in all the research, monitoring and adaptive management initiatives through direct participation in planning, prioritization, letters of support and in-kind contributions. Monitoring, research and adaptive management in Clayoquot Sound is in need of direction, focus and accountability for deliverables. lisaak will maintain this as one of its business objectives through direct participation with the designated or delegated authorities that have the responsibility to deliver an effective Research, Monitoring and Adaptive Management Program for Clayoquot Sound under the guidance of the CSTPC. lisaak will initiate conversations with the CSTPC to confirm the Company's role as a lead proponent for research, monitoring and adaptive management under the jurisdiction of the CSTPC. The Company will also discuss and make offers to the CSTPC to be designated as the lead delivery

agent for an accountable and effective research, monitoring and adaptive management program under the jurisdiction of the CSTPC.

Once a proper indexing or web based library is available, lisaak will be able to use this information more extensively and incorporate relevant information into its Monitoring Plan and Adaptive Management Strategy. Links to known research on the lisaak website are currently limited to a few local agencies. Some of the known relevant monitoring and adaptive management studies and reports are maintained on the office server and categorized by topic.

lisaak also provides direct input to the monitoring and adaptive management of the CS Watershed Plans through its site level assessments and verification of on the ground reserve features that are identified during field work. This information is forwarded directly to the CSTPC for eventual spatial updating of the CS Watershed Plans with better on the ground information. This is a requirement contained in the CS Watershed Plan documents.

2.) lisaak's "In House" Monitoring Plan and Adaptive Management Strategy-

lisaak will continue to participate and provide direct guidance and support to the "external" process mentioned in section 1.) above.

lisaak will adhere by the adaptive management approach to determine the effectiveness of its management decisions and operational practices for all "in house" research, monitoring and adaptive management. lisaak's Monitoring and Adaptive Management practices typically measure operational variables, inputs and outputs as well as specifically targeted projects that have been identified and designed to fill specific information gaps in either the environmental, social, cultural or economic portions of the business.

Monitoring will be either implementation monitoring or effectiveness monitoring:

1. **Implementation monitoring:** lisaak will monitor to ensure that plans allowing for sustainable forest management are implemented. Such plans include; Sustainable Forest Management Plan, Forest Stewardship Plan, TFL #57 Management Plan, and lisaak's EMS system.
2. **Effectiveness monitoring:** lisaak will determine if management decisions are implemented successfully and if the objectives of plans are being achieved.

Effectiveness monitoring may or may not require third party evaluators for expertise in determining success in different aspects.

Monitoring will track the Sustainable Forest Management Plan targets and indicators and the degree to which IISAAC is meeting these targets and indicators. The following procedures will be implemented:

1. Continuous evaluation of management and operational decisions, objectives, and targets through post activity onsite observations.
2. IISAAC employees and contractors will be encouraged to provide feedback on the possible adjustments to current practices that better meet IISAAC's targets.
3. Appropriate action will be taken based on feedback provided and corrective action reports.
4. Duplicate procedures two through four.
5. Monitor these strategies to ensure they are applied and implemented effectively.
6. The format, content and results of IISAAC's "in-house" Monitoring and Adaptive Management strategies will be summarized annually in The Annual Monitoring, SFM and Adaptive Management Report. This report is appended to this SFMP and will be updated/replaced annually with the objective of establishing baseline information, identifying trends and opportunities for continual improvement through adaptive management. This report will be available for public review via the company's website, open houses, direct requests, or from time to time at meetings, etc. The template for the above mentioned report may be updated as required based on new information and opportunities for improvement.

6.0 FOREST MANAGEMENT SCENARIOS

TFL 57 and TLs

Through the use of Forest Planning Studio (FPS) – ATLAS program, version 6.0. FPS-ATLAS, a modeling tool designed to determine harvest levels using a range of both spatial and temporal constraints, IISAAC modeled four different forest management scenarios in the process of developing their set of SFM criteria, indicators and targets. FPS-ATLAS was developed by the University of British Columbia and Giz Systems. The four scenarios were all consistent with the

strategic Watershed Plans for the Clayoquot Sound Land Use Decision Area, the Clayoquot Sound Scientific Panel Recommendations, FSC Regional Certification Standards for British Columbia, Management Plan #1 for TFL #57, the TFL #57 license agreement, and the AAC determination for TFL #57.

The following four scenarios were modeled at ten year intervals over 250 years:

1. harvesting across the entire Management Unit,
2. harvesting only in the developed watersheds¹⁹ within the Management Unit,
3. harvesting only second growth stands, and
4. no timber harvesting.

Each scenario reported age class distribution, harvest rate, growing stock, and carbon accumulation over time. By comparing the constraints applied in each of these four scenarios it assisted IISAAC in developing a workable, cost-effective set of indicators and targets of sustainable forest management that IISAAC's could reasonably apply to its Management Unit.

TFL 54

- See Timber Supply Analysis Report (Timberline March 2006)

"This Timber Supply Analysis Report has been prepared in support of Management Plan No. 4 for TFL 54. This document presents the harvest level that has been found to be sustainable, describes the methods by which it was calculated, and shows the impact of that level of harvest on other resource values. Many sensitivity analyses have been conducted to test the assumptions underlying the base case scenario.

This timber supply analysis is significantly different from previous analyses for TFL 54, and from analyses recently completed for other TFL's. This difference is due primarily to three issues:

- the requirement that an area-based harvest level be determined as defined under the ABAAC Pilot Project Legislation and Regulations;
- the implementation of the Scientific Panel Recommendations that amongst many recommendations, suggest area based planning within Watershed Planning Units establishment of reserve networks; maintaining watershed rates of cut, and
- the widespread use of variable retention (VR), multi-entry silvicultural systems that leave between 15% and 70% of volume after the first pass.

¹⁹ Chapman (1998) defines previously developed drainages as watershed with more than 2% development since 1900.

This timber supply analysis for does not model any of the proposed modifications to the Scientific Panel Recommendations, arising from adaptive management, as identified in the Conservation and Sustainable Forestry Plan (Management Plan No. 4) for TFL 54. Any approved modifications will be modeled at the time of the next timber supply analysis.”

6.1 Growth and Yield

TFL 57 and TLs

Estimations of growth and yield data used to determine timber volumes within IISA AK's Management Unit were derived from the British Columbia Forest Service's Arrowsmith Timber Supply Area Analysis Report. This data has been generated through two different growth and yield models; a variable density yield prediction (VDYP) model, version 6.4a, and the table interpolation program for stand yields (TIPSY), version 1.4.

The VDYP model, developed by the British Columbia Forest Service Resources Inventory Branch, estimated volumes of natural/unmanaged coniferous and deciduous stands. VDYP also estimated managed deciduous stand volumes. Yields for coniferous managed stands were estimated using TIPSY, developed by the British Columbia Forest Service, Research Branch. TIPSY also estimated yields from stands that were historically harvested, but are currently managed to present standards. These estimations allowed for area-weighted assumptions of site index and regeneration to be imported for each analysis unit. Future regenerated volume estimates took into account certain factors such as managing for root disease and gains resulting from tree improvements.

These timber volume estimations assume specific utilization levels for establishing appropriate minimum tree and log dimensions being removed from a site. Utilization levels constrain minimum diameters for both the base and top of the tree, along with specifying maximum stump height. The utilization levels are in conjunction with Ministry of Forests and Range standards.

Actual timber volumes may differ from estimates used in this analysis. Volume predictions are subject to uncertainty due to doubts in inventories. These doubts include structure estimations of site productivity, inadequate experience with second-growth in BC, disturbance regimes, and the lengthy period required for trees to grow. In order to recognize uncertainty measures were taken

when applying the ATLAS modeling program to each scenario to ensure it was conducted conservatively. These measures included reducing the mean annual increment, which resulted in an increased rotation averaging 20-30 years above the expected stand-level growth rate.

TFL 54

- See Timber Supply Analysis Report (Timberline March 2006)

“This Timber Supply Analysis Report has been prepared in support of Management Plan No. 4 for TFL 54. This document presents the harvest level that has been found to be sustainable, describes the methods by which it was calculated, and shows the impact of that level of harvest on other resource values. Many sensitivity analyses have been conducted to test the assumptions underlying the base case scenario.

This timber supply analysis is significantly different from previous analyses for TFL 54, and from analyses recently completed for other TFL’s. This difference is due primarily to three issues:

- the requirement that an area-based harvest level be determined as defined under the ABAAC Pilot Project Legislation and Regulations;
- the implementation of the Scientific Panel Recommendations that amongst many recommendations, suggest area based planning within Watershed Planning Units establishment of reserve networks; maintaining watershed rates of cut, and
- the widespread use of variable retention (VR), multi-entry silvicultural systems that leave between 15% and 70% of volume after the first pass.

This timber supply analysis for does not model any of the proposed modifications to the Scientific Panel Recommendations, arising from adaptive management, as identified in the Conservation and Sustainable Forestry Plan (Management Plan No. 4) for TFL 54. Any approved modifications will be modeled at the time of the next timber supply analysis.”

6.2 Variable Retention Harvesting

A variable retention harvesting system is applied to each opening throughout lisaak’s THLB per the recommendations of the CSSP. The purpose of variable retention is to preserve characteristics and mimic natural forests within managed stands with the goal of maintaining ecological and ecosystem integrity. Variable retention allows for preservation of various forest structures and habitat components.

The various levels of retention lisaak applies are:

- Light retention: 15-30%

- Moderate retention: 31-50%
- Moderate-heavy retention: 51-70%
- Heavy retention: 71%+

Site sensitivity and resource values determine the level and pattern of retention. Retention constraints have been incorporated into the modeling sequence according to attributes displayed at a site-specific level.

6.3 Planning Scenarios

During the modeling process Iisaak's Management Unit was separated into two different segments (TFL 57 and Iisaak's Timber Licenses). TFL 57 occupies an area of 87,393 hectares while Iisaak's Timber Licenses (TL) comprises of the remaining 3,807 hectares of Iisaak's Management Unit.

A harvest level of 123,800 m³/yr for TFL 57 was used for each of the four scenarios to represent an approximated volume-based AAC for TFL 57²⁰. The harvest level reflects a combination of an Iisaak AAC of 110,390 m³/yr and a BC Timber Sales AAC of 13,410 m³/yr. If a non-declining even flow (NDEF) was not initially achieved, harvest levels were adjusted until an NDEF long-term sustainable yield was determined.

Intentions of the model exercise were to determine, under different sets of constraints, the impacts on the long-term sustainable yield. The forested land base occupied by the TLs that are not within TFL 57 (which have unregulated harvest levels) were modeled to determine their sustainable cut levels through this modeling exercise as well.

TFL 54

- See Timber Supply Analysis Report (Timberline March 2006)

“This Timber Supply Analysis Report has been prepared in support of Management Plan No. 4 for TFL 54. This document presents the harvest level that has been found to be sustainable, describes the methods by which it was calculated, and shows the impact of that level of harvest on other resource values. Many sensitivity analyses have been conducted to test the assumptions underlying the base case scenario.

²⁰ The current AAC for TFL 57 is Area-Based and has no specific volume measure associated with it.

This timber supply analysis is significantly different from previous analyses for TFL 54, and from analyses recently completed for other TFL's. This difference is due primarily to three issues:

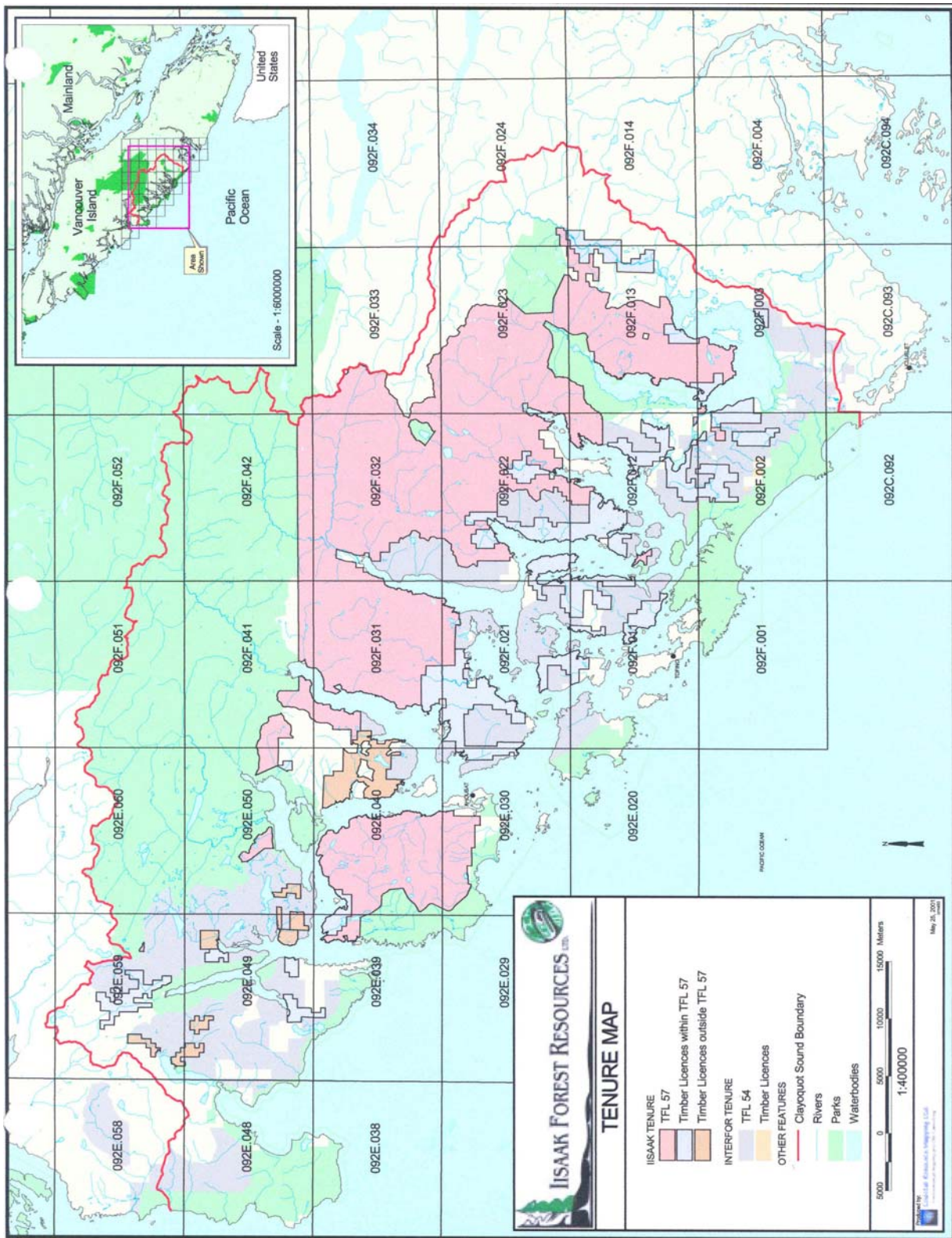
- the requirement that an area-based harvest level be determined as defined under the ABAAC Pilot Project Legislation and Regulations;
- the implementation of the Scientific Panel Recommendations that amongst many recommendations, suggest area based planning within Watershed Planning Units establishment of reserve networks; maintaining watershed rates of cut, and
- the widespread use of variable retention (VR), multi-entry silvicultural systems that leave between 15% and 70% of volume after the first pass.

This timber supply analysis for does not model any of the proposed modifications to the Scientific Panel Recommendations, arising from adaptive management, as identified in the Conservation and Sustainable Forestry Plan (Management Plan No. 4) for TFL 54. Any approved modifications will be modeled at the time of the next timber supply analysis.”

6.4 Results

The results of this modeling exercise contributed to the development of the specific set of IISAAC's Indicators and Targets of Sustainable Forest Management, appropriate to the scale and intensity of IISAAC's operations, as presented in section 4.0 of this plan.

APPENDIX 1: Map of Management Unit (TFL 57, TLFs and TFL 54)



APPENDIX 3: Definitions

Adaptive management: The rigorous combination of management, research, and monitoring so that credible information is gained and management activities can be modified by experience.

Allowable Annual Cut: The allowable rate of timber harvest from a specified area of land. The chief forester sets AACs for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the [Forest Act](#).

Bedrock: The native consolidated rock underlying the earth's surface.

Biogeoclimatic zone: A large geographic area with a broadly homogeneous macroclimate. Each zone is named after one or more of the dominant climax species of the ecosystems in the zone, and a geographic or climatic modifier.

Biological diversity: The variability among living organisms on the earth, including the variability within and between species and within and between ecosystems.

Blue-listed species: In British Columbia, the designation of an indigenous species, subspecies, or population as being vulnerable or at risk because of low or declining numbers or presence in vulnerable habitats.

Clearcut: An area of forest land from which all merchantable trees have recently been harvested.

Climax forests: A forest community that represents the final stage of natural forest succession for its environment.

Coarse woody debris: Sound and rotting logs and stumps that provide habitat for fungi, plants, animals, and their predators.

Cutblock: An area of land identified in a cutting permit or road permit as an area from which the holder of an agreement is entitled to cut trees.

DBH (Diameter at Breast Height): Diameter of a tree stem 1.3 meters above ground.

Deactivation: To deactivate the road in accordance with the prescribed requirements.

Developed watersheds: Watersheds having greater than 3% degree of development, which may include forestry operations, roads, or housing.

Ecosystem: The organisms in a plant population and the biotic and abiotic factors which impact on them.

Ecological land unit: areas of land with similar biological, geological, and climatic environments.

Ecosystem Based Management: an integrated approach based upon scientific principles and institutional considerations for natural resources management

Ephemeral: Streams that may contain water for only a short period of time.

End hauling: Removal of excess materials from one section of road to another or to a designated waste area.

Entrenched: Stream channels that are confined within fluvially eroded gullies or valleys of some depth.

Folisol: A great group of soils in the Organic order.

Forest development plan: an operational plan guided by the principles of integrated resource management (the consideration of timber and non-timber values), which details the logistics of timber development over a period of usually five years.

Forest resources: Resources or values associated with forest land, including but not limited to water, wildlife, fisheries, recreation, timber, range, and heritage.

Free growing stand: 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.

Full time employment: A person working 180 days in a year or more.

Glaciofluvial: Pertaining to the channelized flow of glacier meltwater.

Glaciomarine: pertaining to processes, sediments, and landforms associated with glacier termini in marine waters, such as receding glaciers in fjords and ice shelves.

Glacial till: Accumulations of unsorted, un-stratified mixtures of clay, silt, sand, gravel, and boulders; the usual composition of a moraine.

Gleysols: Poorly drained mineral soils with a high or fluctuating water table that are characterized by gleyed or mottled colours.

Habitat: The place where an organism lives and/or the conditions of that environment including the soil, vegetation, water, and food.

Hoe forwarding: Using a hoe to harvest timber.

Hydrological features: Water-related features visible at the land surface, such as stream channels, seepage zones, springs, and soil moisture, including soil moisture characteristics as deduced from vegetation characteristics.

Hydrology: The scientific study of the distribution and characteristics of water at and close to the Earth's surface.

Intrusive rock: Relatively hard, naturally formed mineral or petrified matter; stone.

Local resident: An individual residing in Tofino, Ucluelet, or Port Alberni

Mass movement: Down slope gravitational movement of earth materials by processes such as rock fall and debris slides.

Mean Annual Increment (MAI): The average annual increase in volume of individual trees or stands up to the specified point in time. The MAI changes with different growth phases in a tree's life, being highest in the middle years and then slowly decreasing with age. The point at which the MAI peaks is commonly used to identify the biological maturity of the stand and its readiness for harvesting.

Metamorphic rock: Any rock derived from other rocks by chemical, mineralogical and structural changes resulting from pressure, temperature or shearing stress.

Microclimate: Climate of small areas, especially insofar as this differs significantly from the general climate of the region. Stands often create microclimates

Mineral soil: Soil made up of eroded parent geologic materials; mineral soils contain no, or very little, organic material.

Ministry of Forests and Range: Provincial government ministry responsible for the management and protection of the province's forest and range resources.

Natural disturbance regimes: Historic patterns (frequency and extent) of fire, insects, wind, landslides, and other natural processes in an area.

Net Area to be Reforested (NAR): Area in a cutblock where reforestation is required.

Non-declining even flow (NDEF): Sustainable yield that does not decline over time.

Non-timber forest products: All goods derived from forests of both plant and animal origin other than timber and firewood.

Operational plan: Means a forest stewardship plan, woodlot license plan, range use plan or range stewardship plan.

Old growth: A forest that contains living and dead trees of various sizes, species, composition, and age-class structure. Old growth can be defined as any forest older than 141 years.

Part time employment: A person working less than 180 days a year.

Perennial stream: Carry flowing water continuously throughout the year.

Podzol: Type of light-colored soil found predominantly under coniferous forests and on moorlands in cool regions where rainfall exceeds evaporation.

Porosity: The amount of pore (void) space present, expressed as a percentage of the total volume of the material.

Protected Areas: Areas such as provincial parks, federal parks, wilderness areas, ecological reserves, and recreation areas that have protected designations according to federal or provincial statutes.

Rate-of-cut: The proportion of the watershed area allowed to be cut each year.

Recreation: Any physical or psychological revitalization through the voluntary pursuit of leisure time.

Red-listed species: The designation of an indigenous species, subspecies, or population as endangered or threatened because of its low abundance and consequent danger of extirpation or extinction. *Endangered* species are any indigenous species threatened with imminent extinction or extirpation throughout all or a significant portion of their range in B.C. *Threatened* species are any indigenous species that are likely to become endangered in B.C. if factors affecting that vulnerability are not reversed.

Regeneration: The renewal of a tree crop through either natural means (seeded on-site from adjacent stands or deposited by wind, birds, or animals) or artificial means (by planting seedlings or direct seeding).

Reserves: Areas established to protect ecosystem integrity or other forest values that are reserved from harvesting.

Riparian area: The land adjacent to the normal high water line in a stream, river, lake, or pond and extending to the portion of land that is influenced by the presence of the adjacent ponded or channeled water.

Rotation: The planned number of years between the formation or regeneration of a tree crop or stand and its final cutting at a specified stage of maturity.

Salmonid fish: Family of fish including salmon, trout, char, whitefish, and grayling.

Sedimentation: The process of deposition of matter carried in water; usually the result of the reduction of water velocity below the point at which it can transport the material.

Sensitive soils: Forest land areas with a moderate to high likelihood of increase in landslide frequency due to logging or road building activities.

Silviculture prescription: A site-specific integrated plan to carry out one or a series of silviculture treatments.

Site preparation: The preparation of a site by manual, mechanical, or chemical means to create favourable conditions to promote the establishment of the regeneration crop.

Snag: A standing dead tree or part of a dead tree.

Soil productivity: The capacity of a soil, in its normal environment, to support plant growth.

Stocking: A measure of the area occupied by trees.

Sub-regional: Includes large areas made up of aggregations of watersheds.

Terrain: An area of land or ground.

Tree Farm License (TFL): TFLs are privately managed Sustained Yield Units. TFLs are designed to enable owners of Crown-granted forest lands and old temporary tenures or the timber licenses which replace them, to combine these with enough unencumbered Crown land to form self-contained sustained yield management units.

Timber Harvest Land Base (THLB): The portion of the total area of a management unit considered to contribute to, and be available for, long-term timber supply. The harvesting land base is defined by reducing the total land base according to specified management assumptions.

Timber Licenses (TL): Area-based tenures which revert to the government when merchantable timber on the area has been harvested and the land reforested. Many of these licenses have been incorporated into tree farm licenses.

Watershed: Total region draining into a given waterway, lake, or reservoir; a drainage basin.

Yarding: The hauling of felled timber to a landing.

APPENDIX 4: Glossary of Acronyms

AAC	Allowable Annual Cut
AIA	Archaeological Impact Assessment
BEC	Biogeoclimatic Ecosystem Classification
CCFM	Canadian Council of Forest Ministers
CSLUD	Clayoquot Sound Land Use Decision
CSSP	Clayoquot Sound Scientific Panel
CWD	Coarse Woody Debris
CMT	Culturally Modified Tree
EMS	Iisaak's Environment Management System
FIA	Forest Investment Account
FPS	Forest Planning Studio
FSC	Forest Stewardship Council
FSP	Forest Stewardship Plan
HCV	High Conservation Values
HCVF	High Conservation Valued Forests
Iisaak	Iisaak Forest Resources Ltd.
NDT	Natural Disturbance Type
NAR	Net Area to be Reforested
NDEF	Non-Declining Even Flow
SFM	Sustainable Forest Management
SFMP	Sustainable Forest Management Plan
TIPSY	Table Interpolation Program for Stand Yields
THLB	Timber Harvesting Land Base
TSA	Timber Supply Area
TSR	Timber Supply Review
TL	Timber Licenses
TFL	Tree Farm License
VDYP	Variable Density Yield Prediction
VIA	Visual Impact Assessment
VQO	Visual Quality Objective

APPENDIX 5: Means to Address FSC Principles and Criteria

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #1: Compliance with laws and FSC Principles Forest management shall respect all applicable laws of the country, in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.</p>	<p>Criterion 1.1. Forest management shall respect all national and local laws and administrative requirements</p>	<p>SFMP – Indicators 9, 25, 26 & 27 SFMP - Legal and Administrative Strategy</p>
	<p>Criterion 1.2. All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.</p>	<p>SFMP - Indicators 10 & 26</p>
	<p>Criterion 1.3. In signatory countries the provisions of all binding international agreements shall be respected</p>	<p>SFMP - Indicator 25</p>
	<p>Criterion 1.4. Conflicts between laws regulations and the FSC Principles and Criteria shall be evaluated for the purpose of certification on a case by case basis by the certifiers and the involved or affected parties.</p>	<p>No conflicts currently exist in Management Unit</p>
	<p>Criterion 1.5. Forest management areas are protected from illegal harvesting, settlement of other unauthorized activities</p>	<p>SFMP – Indicator 27 Provincial and Federal laws Iisaak EMS Document</p>
	<p>Criterion 1.6. Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria</p>	<p>SFMP – Indicator 27 Sustainable Forest Management Plan Iisaak EMS Document</p>
<p>Principle #2: Tenure and use rights and responsibilities Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.</p>	<p>Criterion 2.1. Clear evidence of long-term forest use rights to land shall be demonstrated.</p>	<p>TFL 57 License Agreement Unextinguished First Nations rights to the forest resource</p>
	<p>Criterion 2.2. Local communities with legal or customary tenure or use rights shall maintain control to the extent necessary to protect their rights and resources over forest operations unless they delegate control with free and informed consent to other agencies.</p>	<p>SFMP - Indicators 1, 2, 3, 4, 5 & 6 SFMP - First Nations Involvement Strategy Iisaak shareholder structure Clayoquot Sound Watershed Plans</p>
	<p>Criterion 2.3. Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.</p>	<p>Provincial law No such disputes currently exist on Management Unit</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #3: Indigenous peoples' rights The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.</p>	<p>Criterion 3.1. Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.</p>	<p>SFMP - Indicators 1, 2, 3, 4, 5 & 6 SFMP – FN Involvement Strategy Iisaak shareholder structure Clayoquot Sound Watershed Plans CSSP Recommendations 2006 Interim Measures Extension Agreement</p>
	<p>Criterion 3.2. Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.</p>	<p>SFMP - Indicators 1, 2, 3, 4, 5 & 6 SFMP – FN Involvement Strategy Iisaak shareholder structure Clayoquot Sound Watershed Plans CSSP Recommendations 2006 Interim Measures Extension Agreement</p>
	<p>Criterion 3.3. Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.</p>	<p>SFMP - Indicators 1, 2, 3, 4, 5 & 6 SFMP – FN Involvement Strategy Iisaak shareholder structure Clayoquot Sound Watershed Plans CSSP Recommendations 2006 Interim Measures Extension Agreement</p>
	<p>Criterion 3.4. Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.</p>	<p>SFMP - Indicators 1, 2, 3, 4, 5 & 6 SFMP – FN Involvement Strategy Iisaak shareholder structure Clayoquot Sound Watershed Plans CSSP Recommendations 2006 Interim Measures Extension Agreement</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #4: Community relations and worker's rights Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.</p>	<p>Criterion 4.1. The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.</p>	<p>SFMP - Indicators 7, 8, 13, 28, 29, 30, 31 & 34 SFMP - Socio-Economic Strategy</p>
	<p>Criterion 4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.</p>	<p>SFMP – Indicators 25 & 27 Iisaak EMS Document</p>
	<p>Criterion 4.3. The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organisation (ILO).</p>	<p>Provincial and Federal law</p>
	<p>Criterion 4.4. Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups (both men and women) directly affected by management operations.</p>	<p>SFMP - Indicators 4, 5, 6, 32 & 33 SFMP - First Nations Involvement Strategy & Socio-Economic Strategy</p>
	<p>Criterion 4.5. Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.</p>	<p>SFMP – Indicators 1, 2 & 3 SFMP – First Nations Involvement Strategy Clayoquot Sound Watershed Plans CSSP Recommendations 2006 Interim Measures Extension Agreement</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #5: Benefits from the forest Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.</p>	<p>Criterion 5.1. Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.</p>	<p>SFMP – Indicators 1 – 35 SFMP – All strategies Clayoquot Sound Watershed Plans CSSP Recommendations Financial Statements</p>
	<p>Criterion 5.2. Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.</p>	<p>SFMP – Indicators 12, 13 & 31</p>
	<p>Criterion 5.3. Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.</p>	<p>SFMP – Indicator 27 SFMP - Coarse Woody Debris Strategy Iisaak EMS Document</p>
	<p>Criterion 5.4. Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.</p>	<p>SFMP – Indicators 12, 13, 34 & 35 SFMP - Socio-Economic Strategy</p>
	<p>Criterion 5.5. Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.</p>	<p>SFMP – Indicators 6 - 24 SFMP - Hydroriparian and Hydrological Management Strategy, Soil Productivity Strategy, Coarse Woody Debris Strategy, Species Management Strategy, Ecological Representation Strategy, Old Growth Habitat Strategy, Maintaining the Species Profile Strategy, High Conservation Value Forests Strategy, Recreation and Tourism Strategy, Visual Quality Strategy & Adaptive Management Strategy</p>
	<p>Criterion 5.6. The rate of harvest of forest products shall not exceed levels which can be permanently sustained.</p>	<p>AAC Rationale for TFL 57 Timber Supply Review for TFL 57 CSSP Recommendations Clayoquot Sound Watershed Plans</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #6: Environmental impact Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.</p>	<p>Criterion 6.1. Assessment of environmental impacts shall be completed appropriate to the scale, intensity of forest management and the uniqueness of the affected resources and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.</p>	<p>SFMP – Indicators 1, 2, 3, 14 - 23 Iisaak EMS Document Site Plan Road Layout & Design Logging Plan Terrain Stability Assessments</p>
	<p>Criterion 6.2. Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.</p>	<p>SFMP – Indicator 18 SFMP - Species Management Strategy</p>
	<p>Criterion 6.3. Ecological functions and values shall be maintained intact, enhanced, or restored, including: a) Forest regeneration and succession. b) Genetic, species, and ecosystem diversity. c) Natural cycles that affect the productivity of the forest ecosystem.</p>	<p>SFMP – Indicators 14 - 24 SFMP - Ecological Representation Strategy, Soil Productivity Strategy, HCVF Strategy, Old Growth Habitat Strategy Site Plans</p>
	<p>Criterion 6.4. Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.</p>	<p>SFMP – Indicators 18, 20, 21 & 24 SFMP - Ecological Representation Strategy & HCVF Strategy</p>
	<p>Criterion 6.5. Written guidelines shall be prepared and implemented to: control erosion, minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.</p>	<p>SFMP – Indicators 14, 15, 17 & 23 SFMP - Soil Productivity Strategy & Hydroriparian and Hydrological Management Strategy Iisaak EMS Document Site Plans & Logging Plans Road Layout & Design</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #6: Environmental impact Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.</p>	<p>Criterion 6.6. Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.</p>	<p>Iisaak EMS Document Site Plans Stand Management Prescriptions</p>
	<p>Criterion 6.7. Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.</p>	<p>Iisaak EMS Document</p>
	<p>Criterion 6.8. Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.</p>	<p>No biological control agents are used on Management Unit</p>
	<p>Criterion 6.9. The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.</p>	<p>Manage for ecologically appropriate species on the Management Unit</p>
	<p>Criterion 6.10. Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:</p> <ul style="list-style-type: none"> a) entails a very limited portion of the forest management unit; and b) does not occur on HC VF areas; and c) will enable clear, substantial, additional, secure, long term conservation benefits across the forest management unit 	<p>No forest land conversion occurring on Management Unit – 100% forest land use.</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #7: Management plan A management plan appropriate to the scale and intensity of the operations shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.</p>	<p>Criterion 7.1. The management plan and supporting documents shall provide:</p> <ul style="list-style-type: none"> a) Management objectives. b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands. c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories. d) Rationale for rate of annual harvest and species selection. e) Provisions for monitoring of forest growth and dynamics. f) Environmental safeguards based on environmental assessments. g) Plans for the identification and protection of rare, threatened and endangered species. h) Maps describing the forest resource base including protected areas, planned management activities and land ownership. i) Description and justification of harvesting techniques and equipment to be used. 	<p>Sustainable Forest Management Plan AAC Rationale for TFL 57 CSSP Recommendations Clayoquot Sound Watershed Plans Site Plans Logging Plans Timber Supply Review for TFL 57 Management Plan #1 for TFL 57</p>
	<p>Criterion 7.2. The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.</p>	<p>Sustainable Forest Management Plan to be updated at least once every five years</p>
	<p>Criterion 7.3. Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.</p>	<p>Iisaak EMS Document Conditions of services contracts</p>
	<p>Criterion 7.4. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the management plan.</p>	<p>The SFMP, or parts thereof, will be made available at the discretion of the manager</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #8: Monitoring and assessment Monitoring shall be conducted appropriate to the scale and intensity of forest management to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.</p>	<p>Criterion 8.1. The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.</p>	<p>Sustainable Forest Management Plan SFMP – Adaptive Management Strategy</p>
	<p>Criterion 8.2. Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators: a) Yield of all forest products harvested. b) Growth rates, regeneration and condition of the forest. c) Composition and observed changes in the flora and fauna. d) Environmental and social impacts of harvesting and other operations. e) Costs, productivity, and efficiency of forest management.</p>	<p>Sustainable Forest Management Plan SFMP – Indicators 9 – 35 SFMP – Adaptive Management Strategy Timber Supply Review for TFL 57 Management Plan 1 for TFL 57 Financial Statements</p>
	<p>Criterion 8.3. Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."</p>	<p>Iisaak sales & inventory tracking records</p>
	<p>Criterion 8.4. The results of monitoring shall be incorporated into the implementation and revision of the management plan.</p>	<p>Sustainable Forest Management Plan SFMP – Adaptive Management Strategy</p>
	<p>Criterion 8.5. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.</p>	<p>Results will be made available at the discretion of the manager</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #9: Maintenance of high conservation value forests Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.</p>	<p>Criterion 9.1. Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.</p>	<p>SFMP – Indicator 24 High Conservation Value Forest Assessment currently being developed</p>
	<p>Criterion 9.2. The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.</p>	<p>SFMP – Indicator 24 High Conservation Value Forest Assessment & Strategy currently being developed</p>
	<p>Criterion 9.3. The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.</p>	<p>SFMP – Indicator 24 High Conservation Value Forest Strategy currently being developed</p>
	<p>Criterion 9.4. Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.</p>	<p>SFMP – Indicator 24 SFMP – Adaptive Management Strategy High Conservation Value Forest Strategy currently being developed</p>

PRINCIPLE	CRITERIA	MEANS TO ADDRESS
<p>Principle #10: Plantations Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.</p>		<p>N / A</p>

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