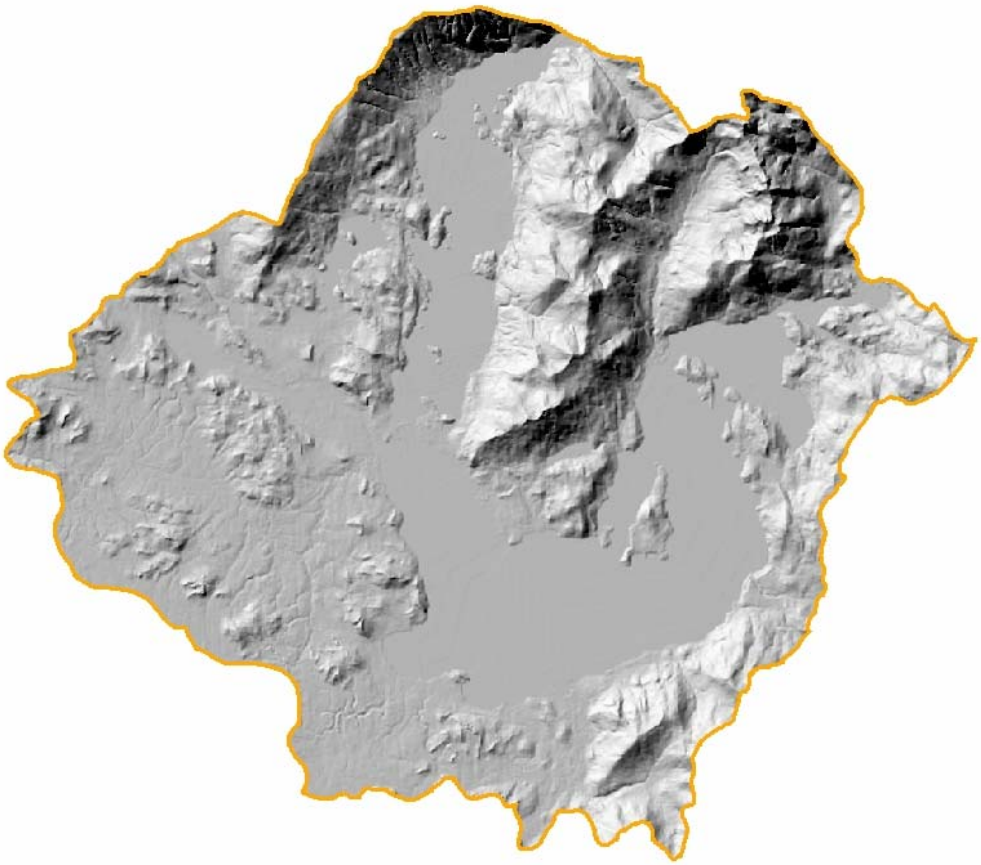
WATERSHED PLANNING IN CLAYOQUOT SOUND

VOLUME 6:
KENNEDY LAKE WATERSHED PLAN



CLAYOQUOT SOUND TECHNICAL PLANNING COMMITTEE

JULY 2006

BRITISH COLUMBIA

Central Region Chiefs Administration
Box 790, Ucluelet, B.C. V0R 3A0

July 10, 2006

Guy Louie and Jim Lornie, Co-Chairs
Clayoquot Sound Central Region Board
Post Office Box 790
100 Hittatsoo Road
Ucluelet, BC V0R 3A0

Dear Guy Louie and Jim Lornie:

Re: Watershed Plan Endorsement for the Tofino - Tranquil (Onadsilth - Eekseuklis), Sydney - Pretty Girl, Bedwell - Ursus - Bulson, Hesquiaht, Kennedy Lake, Upper Kennedy River, Clayoquot River, and Fortune Channel planning units.

On behalf of the Parties to the Clayoquot Sound Interim Measures Extension Agreement, and as recommended by the Central Region Board (CRB) in two letters to the Parties during 2005, we are pleased to endorse the watershed plans for the above watershed planning units.

The Board made several significant recommendations in both their letters, including: specific recommendations about individual plans involving technical content; that a summary plan document be completed to provide a regional synopsis of watershed reserves and other Scientific Panel objectives; that a Beach watershed plan be completed and incorporated into the summary document; and, that legal objectives be established under the *Forest and Range Practices Act*.

We understand the Clayoquot Sound Technical Planning Committee (TPC) has undertaken the following initiatives with regard to those recommendations:

- completion of technical changes for individual plans;
- begun work on a regional summary document, including incorporation of Scientific Panel objectives for the Beach planning unit; and,
- initiated inter-agency discussions with regard to setting legal objectives under the *Forest and Range Practices Act*.

We also understand that following the second public review period and during preliminary work on the regional summary document, the Planning Committee found a small number of minor errors and discrepancies in the GIS analyses results. The Committee determined that these, as well as other inconsistencies between watershed plans, could be addressed without making significant revisions to the watershed plans or the reserve networks. Therefore, they

have incorporated the necessary corrections and changes into the final versions of the watershed plans and the regional summary document.

The Parties are pleased to confirm our support for the CRB recommendations and the efforts by the Planning Committee to address them. We have instructed the TPC to ensure all changes and updates are completed, so that individual watershed plans are ready for public distribution by July 31, 2006. At that time, the plans will take effect as 'Official Watershed Plans'.

The Board made one other significant recommendation in its two letters: that the Parties identify the resources to develop and implement a comprehensive monitoring program. Now that the watershed planning process is drawing to a close, the Parties are pleased to announce we have begun discussions regarding the availability of resources that will allow for the evaluation of outstanding priorities, including the details associated with plan implementation and monitoring. The Parties recognize that these priorities are important steps on the road to sustainable ecosystem management, as envisioned by the Scientific Panel, and are crucial components to the practice of adaptive management. We anticipate our discussions will yield direction on these topics to the Board and the Planning Committee in the near future.

We wish to acknowledge the considerable work required of the CRB to conduct two public reviews of the draft watershed plans during 2005. We especially appreciate the Board's efforts to organize and summarize the results from the public processes and its own reviews, then to structure its subsequent recommendations in order to provide assistance to the Parties' review and evaluation of these plans.

Further, we would like to thank the CRB, the Central Region First Nations, various stakeholders and interest groups, local governments, and members of the public for their contributions to the development of these plans - and, for their thoughtful comments during each review process.

We look forward to a continued close working relationship between the Parties, the Central Region Board, and the Technical Planning Committee to achieve the objectives envisioned by the Scientific Panel. Continued close cooperation between all partners will be instrumental in achieving this goal.

Sincerely,

Elmer Frank
Chairman
Central Region Chiefs

Mike Lambert
Associate Deputy Minister
Integrated Land Management Bureau

cc. Nelson Keitlah and Rudi Mayser, Co-chairs, Clayoquot Sound Technical Planning Committee

Preface

This plan for the Kennedy Lake watershed planning unit was prepared by the Clayoquot Sound Technical Planning Committee (TPC). Committee membership consists of representatives from the First Nations of Clayoquot Sound and technical staff from provincial agencies. The TPC is co-chaired by one representative each from First Nations and the Integrated Land Management Bureau (ILMB), of the Ministry of Agriculture and Lands[1]. A complete membership list is provided in Appendix 1.

The primary responsibility of the TPC is to complete watershed-level planning for Clayoquot Sound. Watershed plans are compiled in a series of volumes. *Volume 1: Principles and Process* describes the planning process and objectives for the Sound (for planning purposes, the boundaries of the Sound are defined as those established in the Clayoquot Sound Land Use Decision - as shown on Map 1). The remaining volumes, including this document, summarize the results for individual watershed planning units.

In preparing this plan, the TPC followed the recommendations of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound for watershed-level planning and identification of reserves. At times the TPC also sought additional advice from respected specialists in their field of expertise.

The intent of this watershed plan is to guide site-level forest planning and forest harvesting in the Kennedy Lake watershed planning unit, in accordance with the Scientific Panel recommendations for sustainable ecosystem management in Clayoquot Sound.

The effective date of this plan is July 31, 2006. This plan will be subject to periodic updates and amendments to keep it current and to reflect new information.

[1] When the TPC was first established, government representatives included staff from the Ministry of Forests, the Ministry of Environment, Lands and Parks and the Ministry of Small Business, Tourism and Culture. In 2001, responsibility for resource management was transferred to the new Ministry of Sustainable Resource Management (MSRM). In 2005, the MSRM was dissolved and a new agency (Integrated Land Management Bureau, Ministry of Agriculture and Lands) assumed responsibility for land use planning.

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Executive Summary

This watershed plan applies to the entire Kennedy Lake watershed planning unit, which encompasses 29,604 hectares. This planning unit is bounded to the west by numerous watersheds in the Beach and Fortune Channel planning units; to the north by the Clayoquot River and Upper Kennedy River watersheds; to the east by the Maggie River/Draw Creek watershed and a small portion of the Toquart River watershed (both lie outside the Clayoquot Sound planning boundary); and to the south by the Lost Shoe Creek and Sandhill Creek watersheds, which drain directly into the Pacific Ocean.

This watershed plan was developed in accordance with the principles and recommendations set out by the Scientific Panel on Sustainable Forest Practices in Clayoquot Sound to guide planning for sustainable ecosystem management in Clayoquot Sound. The watershed plan does not apply to provincial parks, Indian Reserves, federal lands, or private land.

The purpose of the plan is to map and designate the areas that will be set aside as reserves to protect a range of forest values. The plan also maps and designates the harvestable area – that is, the land that falls outside of reserves and on which sustainable forest harvesting can take place. Within the harvestable area, special management zones are identified. In these areas, certain conditions and limitations are imposed on harvesting and other management activities in order to maintain special and sensitive values including scenic, recreation, tourism and ecosystem values.

Development of the Plan

The Scientific Panel identifies three key ecosystem management planning themes: watershed integrity, biological diversity, and human values including First Nations cultural values. The Panel sets out management goals and objectives for each of these three themes. Overall, this framework forms the backdrop to a planning process that includes broad-based regional and sub-regional plans, watershed-level plans, and site-specific plans.

The Scientific Panel identifies watershed-level planning as the cornerstone to the overall ecosystem-based management planning process. Watershed-level plans give practical meaning to ecosystem management goals and objectives, and also guide the site-level plans that direct forestry activities. Within watershed-level plans, the designation of reserves and special management zones is the key

strategy for achieving the ecosystem management objectives articulated by the Scientific Panel. In the harvestable area, a variable retention silviculture system, rate-of-cut limits and various restoration strategies provide a site-level complement to ecosystem management.

This watershed plan for the Kennedy Lake watershed planning unit was developed by a Technical Planning Committee (TPC) made up of First Nations representatives and technical staff from provincial agencies, led by the Integrated Land Management Bureau of the Ministry of Agriculture and Lands. The TPC relied on the Scientific Panel reports and recommendations, as well as other expert advice, to develop the criteria for establishing reserves and special management zones.

The Kennedy Lake Watershed Reserve Network

The Scientific Panel proposes eight different kinds of reserves to protect forest values. Each of these reserve types serves as a strategy to achieve management objectives within one of the key management themes, as described below. Accompanying maps show the location of individual reserves.

Watershed Integrity

Reserves to protect hydroriparian resources
Approximately 5,266 ha have been designated as hydroriparian reserves. This represents approximately 17.8 percent of the Kennedy Lake watershed planning unit (see Map 7).

Reserves to protect sensitive soils and unstable terrain
Unstable terrain reserves (areas of Class V terrain) cover approximately 339 ha, or 1.1 percent of the unit. Reserves for sensitive soils cover 1,095 ha or 3.7 percent of the land base. These layers overlap other reserves at several locations. Together, unstable terrain reserves and sensitive soils reserves make up 1,434.4 ha or 4.85 percent of the total land base of the Kennedy Lake watershed planning unit (see Maps 8 and 9).

Biological Diversity

Reserves to protect red- and blue-listed plant and animal species
Approximately 772 ha have been set aside in six separate Marbled Murrelet reserves within the Kennedy Lake watershed planning unit. Approximately 63 percent of this area (486 ha) was already reserved for other purposes. These reserves, in combination with other reserves and protected areas, protect approximately 2,129 ha of class 1 and 2 Marbled

Murrelet nesting habitat in this planning unit. This amounts to 55 percent of the total class 1 and 2 habitat remaining in this planning unit. The murrelet reserves cover 2.6 percent of the land base (see Map 11).

Approximately 520 ha, or less than 2 percent of the land base of the Kennedy Lake watershed planning unit, have been designated as reserves for the protection of red- and blue-listed plant communities (Map 10).

Reserves to protect forest-interior conditions in late successional forest

Currently, there are approximately 9,073 ha of old forest within the Kennedy Lake watershed planning unit. This represents 31 percent of the planning unit, and 42 percent of the total forested land base. Of this, the reserve network encompasses approximately 4,880 ha, or 23 percent of the forested land base. To satisfy the Scientific Panel recommendation for a minimum old growth retention of 40 percent, an additional 3,750 ha will have to be retained. Since there are 4,193 ha of old growth outside the reserve network, there is sufficient area remaining to meet this management objective. Map 12 shows the current old-growth forest and forest in interior conditions.

Within the reserve network, 1,726 ha are classed as forest-interior condition. This exceeds the Scientific Panel's old-interior forest recommendations by 4 ha (see Map 13).

Reserves to represent all ecosystems

After the reserve network had been completed, the Committee found that 857 ha had to be added to the reserve network to satisfy ecosystem representation requirements (see Map 14).

Reserves to ensure linkages among watershed-level planning areas

Once watershed-level plans are completed for a number of adjacent watershed planning units in Clayoquot Sound, opportunities for linkage corridors will be evaluated. Where necessary, reserves that create linkages needed to support biodiversity or recreation objectives will be added to the reserve network.

Human Values

Many of the areas designated to protect culturally significant sites, scenic areas and recreational or tourism values are better characterized as special management zones than as reserves. Most of these areas are not excluded from harvesting; however, certain conditions and requirements must be met before harvesting may proceed. Only reserve buffers around recreational and tourism features, certain cultural sites

and scenic features – to the extent they are located within parks or reserves for other values – are excluded from harvesting.

Reserves to protect cultural values

Approximately 11,325 ha, or 38 percent of the Kennedy Lake watershed planning unit, has been identified by the Tla-o-qui-aht First Nations (TFN) as areas of cultural significance. For reasons of confidentiality, the cultural values map included in this report (Map 15) shows only the general locations of sites of cultural importance.

The Ucluelet First Nation (UFN) has cultural interests in the southern portion of the planning unit.

Reserves to protect scenic and recreation/ tourism values

Reserves have not been established for scenic values, although many areas of high significance for scenic values have been preserved within existing parks and reserves for other values. Scenic values within the harvestable area are maintained through management criteria designed to achieve scenic class objectives and standards.

In total, 12,056 ha, or 41 percent, of uplands within the Kennedy Lake watershed planning unit have been assigned scenic class objectives: 4,913 ha to the natural-appearing scenic class objective, 6,044 ha within the minimal alteration class, and 1,099 ha within the small-scale alteration class. The remaining landscape is not classified because it is generally not visible from communities, recreation sites, and travel corridors. Of the scenic class areas, approximately 5,667 ha (47 percent) are included within parks and reserves (see Map 16).

In addition to areas that are assigned scenic class objectives and areas within other kinds of reserves, approximately 1,334 ha containing features of high to very high recreation and tourism significance have been reserved, primarily around large lakes. This represents 4.6 percent of this planning unit. Areas surrounding recreation and tourism reserves have been identified as special management zones (Map 17).

Summary

A total of 9,720 ha, representing 33 percent of the Kennedy Lake watershed planning unit, have been reserved from harvesting in accordance with the recommendations of the Scientific Panel. Map 18 shows the complete watershed reserve network.

The Kennedy Lake Harvestable Area

Once all watershed reserve areas are mapped, the remaining area outside reserves is designated as harvestable area. Forest harvesting and other resource development such as road-building can take place within the harvestable area as long as this development is consistent with the Scientific Panel recommendations relating to operations, the *Forest Practices Code Act*, the *Forest and Range Practices Act*, and the watershed plan. All forest harvesting will take place in accordance with the Variable Retention Silvicultural System designed to preserve the characteristics of natural forests.

Within the harvestable area, special management zones have been identified where additional conditions and limits are imposed on forest harvesting and other operational activities. These conditions and limits ensure that the special and sensitive values in these areas - including scenic, recreation, tourism and ecosystem values - are maintained. Map 20 shows the location of the harvestable area, including Special Management Zones, as well as the reserve network.

The harvestable area within the Kennedy Lake planning unit encompasses 9,163 ha of the productive forest, representing 31 percent of the planning unit, or 43 percent of the forested land base. Special management zones comprise 7,898 ha, 86 percent of the harvestable area.

Forest management within harvestable areas is also subject to hydrological rate-of-cut limits, in accordance with Scientific Panel recommendation R3.1. Rate-of-cut limits applicable to watersheds within this planning unit are set out in Chapter 3. Map 21 shows the locations of these watersheds.

Harvesting systems will be determined at the site level in accordance with watershed-level objectives. The selection of systems and their application will be consistent with the recommendations set out by the Scientific Panel with respect to harvesting methods and equipment.

Amendments, Implementation and Monitoring

The plan will be subject to minor updates, as well as major scheduled and unscheduled amendments, as outlined in Volume 1, Chapter 4. Implementation and monitoring of the plan will be the joint responsibility of provincial resource agencies, First Nations, forest tenure holders and partners who share the common goal of sustainable ecosystem management in Clayoquot Sound, as discussed in Volume 1, Chapter 5.

1.0 The Kennedy Lake Planning Unit

1.1 The Physical Landscape

The Kennedy Lake watershed planning unit is located in the south corner of the Clayoquot Sound Land Use Decision area. This planning unit is bounded to the north by the Clayoquot River and Upper Kennedy River watersheds, to the west by the Fortune Channel planning unit face drainages, and to the south by numerous small drainages in the Beach planning unit. The Draw Creek/Maggie River watershed and the Toquart River headwaters define the boundary to the east, outside the Clayoquot Sound Land Use Decision area. Map 2 shows the location of the Kennedy Lake planning unit within the Land Use Decision boundaries.

The Kennedy Lake planning unit boundaries coincide with the entire area covered by the Kootowis Creek watershed, all watersheds draining into the lower Kennedy River (between Tofino Inlet and Kennedy Lake), and all watersheds draining into Kennedy Lake (except for the Clayoquot River and the upper Kennedy River). The total area of these watersheds, and hence the planning unit, is 29,604 ha, making it the second largest watershed planning unit in Clayoquot Sound.

Kennedy Lake is the only watershed planning unit in the Sound located downstream from another planning unit. All watersheds in both the Clayoquot River planning unit and Upper Kennedy planning unit drain into the Kennedy Lake unit. The total drainage from these other planning units contributes to the total flow carried by the lower Kennedy River and discharged into Tofino Inlet. As a result, the lower Kennedy River watershed is by far the largest in Clayoquot Sound. With a total drainage area of 55,013 ha, this watershed is more than double the second largest watershed, the Megin River (24,047 ha).

Lakes are scattered throughout the planning unit. Kennedy Lake, the most prominent feature in the plan area, covers 6,475 ha - making it the largest lake on Vancouver Island. It is divided at Kennedy Lake Narrows into two limnologically-separate basins: Clayoquot Arm and the Main Arm. Other larger lakes in the planning unit include Muriel Lake (145 ha), Angora Lake (31 ha), an unnamed lake near the mid-point along the east side of Kennedy Lake (22 ha), Ilthpaya Lake (AKA Lost Lake) (17 ha), and Wanetta Lake (10 ha) at the upper end of Kootowis Creek.

Elevations within the planning unit range from sea level at the Kennedy River mouth on Cannery Bay in Tofino Inlet to 1,4670m at Hidden Mountain (also known as Acosta Peak) on the northern boundary. This peak is situated at the juncture of two mountain ridges which extend south into the planning unit, encircling the Sand River watershed. The more striking is the Maitland Range, also known as the North Ridge. Forming the western edge of the Sand River basin, its steep terrain dominates the peninsula between Clayoquot Arm and the Main Arm. Another prominent peak, Mount Maitland (1,288m) on the ridge east of Sand River, obstructs the view of the higher Hidden Peak. The entire southern and most of the eastern portions of this planning unit are part of the Estevan Coastal Plain, an extensive low-lying region. This area, locally referred to as the Kennedy Flats, is drained by low gradient, slow-flowing streams; the largest being Kootowis Creek, Staghorn Creek, and Thunderous Creek. Map 3 illustrates the topographic relief of the planning unit.

The climate in the Kennedy Lake unit, as throughout the west coast of Vancouver Island, is temperate and very wet. Mean daily temperatures near sea level range from 5° in January, to 15° in August. Annual precipitation ranges from 400 to 500 cm, increasing to over 700 cm at higher elevations further inland.[2] Most precipitation falls between October and May. As distance from the ocean increases, there is less marine influence and mean daily winter temperatures tend to be lower. As a result, higher precipitation levels at inland locations contribute to increased snow accumulation. Snow packs at higher elevations tend to linger into late spring and summer.

1.2 The Ecological Landscape

Approximately 73 percent of the Kennedy Lake watershed planning unit supports forests dominated by western redcedar, western hemlock, mountain hemlock, yellow-cedar, and amabilis fir. Bodies of water and, at higher elevations, exposed rock cover the remaining area.

Two biogeoclimatic ecosystem classification (BEC) zones occur in the Kennedy Lake watershed planning unit: the Coastal Western Hemlock (CWH) and the Mountain Hemlock (MH). The CWH zone occupies approximately 97 percent of the planning unit and is represented by three variants. The CWHvh1 variant, the Southern Very Wet Hypermaritime, occurs adjacent to and near the coastline, at elevations

[2] Johannes, M., C. Robinson, & K. Hyatt. 1999. Kennedy Lake Watershed Atlas Series – Volume 1: Watershed Overview, A Working Atlas. Northwest Ecosystem Institute, Lantzville, BC.

below 200 metres. It occupies approximately 39 percent of the planning unit. The CWHvm1 variant, the Submontane Very Wet Maritime, occurs below 600 meters elevation, and covers approximately 52 percent of the planning unit. The CWHvm2 variant, the Montane Very Wet Maritime, located on the upper slopes at elevations between 600 and 800 m., covers approximately six percent. The MH biogeoclimatic zone is characterized by one variant, and one sub-variant. The MHmm1 variant, the Windward Moist Maritime, occupies three percent of the planning unit, at elevations of 900+ meters. The MHmmp1 sub-variant, the Windward Moist Maritime Parkland, occurs above 1200m, and occupies less than 1.0 percent of the planning unit. Refer to Map 4 for BEC variant locations.

57 different vegetated ecosystems are represented in the Kennedy Lake planning unit.

Fifty-seven different vegetated ecosystem types are represented within the Kennedy Lake watershed planning unit. The most common are Western Hemlock/Amabilis Fir - Blueberry (AB) in the CWHvm1 and CWHvm2 variants – which occupy almost 21 percent of the planning unit area; and, the Western Hemlock/Western Redcedar - Salal (HS) in the CWHvh1, CWHvm1 and CWHvm2 variants, at 26 percent.

Approximately 42 percent of the Kennedy Lake forested land base supports ecosystems that are over 140 years old; and, approximately 40 percent is less than 40 years old. Available records indicate corporate scale harvesting began during the 1930s, but did not exceed 100 ha per annum until the 1950s[3]. Previously-harvested areas now support second growth forests of various ages, as shown on Map 5.

This planning unit contains nesting habitat for the Marbled Murrelet, a red-listed bird species. Studies indicate a direct correlation between Marbled Murrelet nesting habitat suitability and old growth forests. Nesting habitat has therefore been lost in the portions of this planning unit that have been harvested.

The Kennedy Lake watershed supports Chinook, Chum, Coho, Pink, and Sockeye Salmon; Rainbow, Steelhead and Cutthroat Trout; Dolly Varden Char; and Peamouth Chub.

Kennedy Lake Provincial Park and Clayoquot Arm Provincial Park protect important Sockeye foreshore spawning habitats. These areas have been described as "provincially significant" because it is unusual

[3] *Ibid.*

for Sockeye to spawn in lakes.[4] Spawning near the upper end of Clayoquot Arm, which occurs as deep as 20 metres below the lake surface, accounts for the majority of Sockeye spawning throughout the entire Kennedy Lake watershed. The Clayoquot Sound Sustainable Development Strategy Steering Committee[5] reported that the Kennedy system accounted for more than 95% of the Sockeye production in Clayoquot Sound. Also, there is evidence that this watershed supports at least four genetically distinct Sockeye populations. The Kennedy Lake section of the Long Beach Unit of Pacific Rim National Park Reserve (PRNPR) also protects salmon spawning habitat.

Johannes *et al* confirm Sockeye spawning for the several foreshore areas on Kennedy Lake, as well as in the Staghorn and Muriel watersheds.[6] With regard to other species, they report the following:
- Chinook spawning in the lower Kennedy River mainstem and in the Muriel Lake and Sand River watersheds;
- Chum spawning in the lower Kennedy River mainstem and Cold Creek;
- Coho in at least 15 creeks – including Kootowis, Cold, Staghorn, Muriel, Thunderous, Hydro, Angora, Boat Launch, and Sand River;
- Steelhead in the lower Kennedy River, Thunderous Creek, Sand River, Angora Creek and the Muriel watershed; and,
- Cutthroat and Dolly Varden from Staghorn Creek, Thunderous Creek, Angora Creek, Sand River, Baffle Creek, and the Muriel Lake watershed.

Juvenile salmonids utilize all these creeks and rivers, as well as associated lakes, waterbodies and off-channel areas, as rearing habitat.

The presence of several species of concern (Cutthroat, Dolly Varden, Sockeye, and Peamouth Chub) indicates that watersheds in this planning unit have high biodiversity values.

In response to historical fisheries habitat degradation caused by many resource users in the Kennedy Flats, International Forest Products Limited (Interfor) initiated, coordinated and completed a significant amount of in-stream fish habitat restoration work since 1995 on several watersheds.

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[4] Ministry of Water, Land and Air Protection (2003) *Clayoquot Arm Provincial Park, Purpose Statement and Zoning Plan*. Environmental Stewardship Division. August 2003; and, MWLAP (2003) *Kennedy Lake Provincial Park, Purpose Statement and Zoning Plan*. Environmental Stewardship Division. August 2003

[5] The Clayoquot Sound Sustainable Development Strategy Steering Committee. 1992. Clayoquot Sound Sustainable Development Strategy, Second Draft of the Strategy Document. August 1992.

[6] Johannes, M., & L. Hanslit. 1999. Kennedy Watershed Atlas Series: Watershed Information System. Northwest Ecosystem Institute, Lantzville, BC.

Black Bears are common in Clayoquot Sound. Throughout the Sound, early spring and spring bear feeding habitat tends to be limited; however, this may not be the case for this planning unit. Due to a long harvesting history with the subsequent creation of early seral communities, there should be an abundant supply of fruit-bearing shrubs, grasses and forbs. However, as conifer regrowth advances on these sites, the understory will be lost. Since young forests tend to develop into dense thickets with closed canopies, most previously-harvested areas in this planning unit will not continue to provide bear forage opportunities. For the same reasons, young forests lack high value summer and fall feeding habitat. Low-lying and rich wetland, marsh and bog sites tend to have open canopies, and therefore provide exceptions to this. Since such areas are common in the Kennedy Flats, sufficient forage opportunities may remain to maintain the historical bear population. During summer and fall, moderately-high and high value feeding habitat should be relatively common at higher elevations. There are likely to be good low elevation bear feeding opportunities in late summer to late fall due to the high number of salmon spawning streams located in this planning unit. Coastal Black Bears preferentially select large diameter trees for their winter den sites, so harvesting has affected the availability of this critical habitat element.

Recent population numbers for Columbian Black-tailed Deer and Roosevelt Elk are unavailable for this planning unit, but deer are not common in this area and elk are infrequent visitors. It's likely that forest harvesting increased spring and summer forage opportunities for both species, by establishing early seral plant communities at lower elevations. However, as discussed above, these will gradually decline as forests develop on these sites and out-compete understory forage plants. Both deer and elk benefit from the mild winter conditions and longer growing season common to much of the Sound. Winter habitat needs are not as critical in this area because most of the Kennedy Lake planning unit lies within the shallow snowpack zone and winter temperatures tend to be mild. Furthermore, winter conditions at mid elevations tend to be moderated by proximity of the ocean. In turn, this contributes to longer growing seasons, and spring forage availability is advanced. At the stand level, high retention levels, rate-of-cut restrictions, and minimum old growth requirements are expected to provide sufficient critical habitat and security cover, while contributing to increased forage production.

1.3 Human Values

Two members of the Nuu-chah-nulth Central Region have territorial interests in the Kennedy Lake watershed planning unit: the Tla-o-qui-

aht First Nations and the Ucluelet First Nation. This planning unit lies entirely within the traditional territory of the Tla-o-qui-aht First Nations (TFN). The Ucluelet First Nation (UFN) has interests in the southern portion. There are four TFN First Nations Reserves located wholly or partially within the planning unit: the largest, Clayoqua #6 (44.5 ha), is situated between the mouths of the Clayoquot River and Cold Creek; Winche #7 (16.2 ha) is on the north shore of Kennedy Lake, near the outlet of the upper Kennedy River; Okeamin #5 (9.7 ha) is near the outlet of the lower Kennedy River; and Ilthpaya #8 (1.4 ha) is on the north side of the lower Kennedy River near the Muriel Lake Creek outlet. Refer to Map 6 for locations.

First Nations' values are discussed in the Scientific Panel's *Report 3: First Nations' Perspectives Relating to Forest Practices Standards in Clayoquot Sound*. In the following passages in *Report 5*, the Scientific Panel highlights the close connection between Nuu-chah-nulth culture and the natural resources of the region:

> Nuu-chah-nulth people view the forest and its resources as gifts of the Creator, to be used with respect and to be maintained by careful stewardship through the legislative power of tribal government found within "hahuulhi." Traditional practices of resource management include harvesting of selected trees and other forest products; highly selective controlled burning to promote production of berries, to provide grazing areas for deer, and to produce firewood; and monitoring and controlled use of all lands and waters and their resources through stewardship of hereditary chiefs.
>
> Within each community, chiefs' territories - rivers and fisheries, hunting and gathering areas, and portions of the ocean - are delimited by boundary markers such as easily recognizable topographic features. While permanent Nuu-chah-nulth villages are situated along the coast of Clayoquot Sound, economic and cultural activities (e.g., hunting, fishing, plant gathering, and spiritual practices) occur throughout the region, from the ocean and offshore islands to remote places in the mountains. For example, culturally modified trees, places of spiritual significance (especially caves, streams, pools, waterfalls, and offshore islands) which are often personal to individuals and families, and areas used for traditional activities are scattered widely across the landscape. These places and the area's forests and water resources are essential for Nuu-chah-nulth economic, cultural, and spiritual well-being, yet both have been threatened, depleted, or damaged by the activities of non-indigenous peoples.[7]

The Kennedy Lake watershed planning unit contains important land-based and freshwater recreational and tourism features.

The planning unit contains important recreation and tourism features, including Kennedy Lake Provincial Park, Kennedy River Bog

[7] *Report 5*, p.38

Provincial Park, the Kennedy Lake section of Pacific Rim National Park Reserve, and a large portion of Clayoquot Arm Provincial Park.

Clayoquot Arm Provincial Park was established to protect the biological values associated with a west coast rainforest and high value salmonid habitat, and to provide recreation opportunities in a wilderness setting. Recreation activities include fishing, canoeing, kayaking, swimming, windsurfing, hiking, nature appreciation, camping and hunting. The portion of this park that lies within this planning unit covers 2,218 ha: 1,286 ha of forest upland plus all islands within Clayoquot Arm, and 932 ha of lake surface.

Kennedy Lake Provincial Park was established to protect high-value sensitive salmon spawning habitat, and to support lakeside day-use recreational activities such as beach and picnic use, swimming, windsurfing, fishing, canoeing, and waterskiing. Park facilities include a picnic area and boat launch. This park is divided into two separate parcels situated on either side of the National Park. The provincial park covers 270 ha: 152 ha of lake surface and 118 ha onshore.

Kennedy Bog Provincial Park was established to protect a significant low-elevation bog ecosystem and adjacent upland forest habitat, and to provide opportunities for nature appreciation, fishing, canoeing and kayaking. This park covers 11 ha.

The south shore of Kennedy Lake is home to the Long Beach Unit of Pacific Rim National Park Reserve (PRNPR). This section, locally known as Swim Beach, covers 441 ha: 225 is lake surface or shallow mudflat, and 216 is upland forest. Parks Canada's mandate stipulates that human use in this area must occur within the context of maintaining ecological integrity. The area provides facilities for lakeside day-use recreation activities.

There are other important recreation and tourism features within the planning unit. For example, there are several road-accessible informal and formal rest and picnic spots, adjacent to Highway 4 and to logging roads, which provide lake access with scenic mountain and lake views. Many locations are popular picnic or swimming spots for residents and visitors, and some -- such as the Ministry of Forests and Range Clayoquot Arm Beach Recreation Site -- provide camping in undeveloped settings.

Other recreation-related features in this planning unit include maintained trails (such as the Norm Godfrey Nature Trail, near the outlet of Kennedy Lake) and self-guided nature education tours (such

as the Fisheries Restoration Interpretive Trail and Drive). The Norm Godfrey Trail, located within the Clayoquot Arm Beach Recreation Site, offers a one-km boardwalk trail that passes through an old growth cedar stand to arrive at a secluded sandy beach on Kennedy Lake. The Fisheries Restoration Interpretive Trail and Drive, a project co-ordinated by the Central Westcoast Forest Society, offers a unique opportunity to learn about stream ecology in a rainforest setting, and about a large-scale fisheries habitat restoration project. This project incorporates tours, on-site presentations, and information and interpretative signs located at regular intervals along a five-km hiking trail (which follows a deactivated logging road) and a 16 km drive.

Much of the planning unit outside the parks is within Tree Farm Licences 54 and 57, which are held, respectively, by International Forest Products Limited (Interfor) and Iisaak Forest Resources Limited (Iisaak). TFL 54 occupies several parcels scattered throughout the southern and western portions of the planning unit. Iisaak's TFL consists of scattered parcels interspersed with Interfor's TFL; and, occupies the entire North Ridge peninsula. The remainder of the planning unit lies within the Arrowsmith Timber Supply Area, consisting of timber licence areas managed by the Ministry of Forests and Range or by British Columbia Timber Sales. Map 6 shows the location of the various tenures.

The Pacific Rim Highway (Highway 4) is the only paved road access into Clayoquot Sound. It enters the Kennedy Lake planning unit in the northeast corner, east of the upper Kennedy River mouth, then more-or-less follows the east side of Kennedy Lake until it meets the boundary of Pacific Rim National Park Reserve near the southern boundary of the planning unit. All residential, commercial and recreational highway traffic destined for communities and parks in Clayoquot Sound and northern Barkley Sound use Highway 4. The utility supply corridor for west coast communities, including land lines for electricity, telephone, etc., runs parallel to the highway.

There are thirty-eight mineral tenures in this planning unit. The potential for future mineral development ranks high to very high.

2.0 The Kennedy Lake Watershed Reserve Network

The network of reserves set out in this watershed plan represents the cornerstone of the Scientific Panel's ecosystem management strategy for Clayoquot Sound. For a summary of the reserve types and how they address ecosystem management objectives, as well as details of the inventories and technical analyses involved in the designation of the various reserves, see Volume 1.

2.1 Reserves to Protect Watershed Integrity

Watershed integrity is one of the three primary themes of sustainable ecosystem management identified by the Scientific Panel. The strategy for achieving this goal is the designation of reserves to protect the integrity of the hydroriparian system and of forest soils.

2.1.1 Hydroriparian reserves

Hydroriparian zones distribute water through the environment and provide valuable habitat.

The Scientific Panel recognizes the paramount importance of water bodies and their immediate vicinity, describing these zones as the "skeleton and circulation system of the ecological landscape." Hydroriparian ecosystems distribute water through the environment, and also contain the richest and most diverse habitats. These systems are crucial to the protection of watershed integrity.

For a description of the hydroriparian inventory assembled in accordance with the Scientific Panel's classification system, please refer to Volume 1. Due to the lack of detailed hydroriparian inventories for this planning unit, a 50 metre default reserve was applied uniformly along all lakeshores and stream banks.

Approximately 5,266 ha have been designated as hydroriparian reserves for the Kennedy Lake planning unit. This represents approximately 17.8 percent of the total land base of the unit. The hydroriparian reserves are shown on Map 7.

2.1.2 Sensitive soils and unstable terrain reserves

Only stable terrain and resilient soils will be available for forest harvesting.

To reduce the risk of erosion, the Scientific Panel recommends that "only stable terrain and resilient soils should be available for forest harvesting operations."[8] Watershed plans therefore must include reserves to protect sensitive soils and unstable terrain.

[8] *Report 5*, p.169.

The single criterion established for the designation of reserves to protect unstable slopes is that all Class V terrain – that is, the terrain most at risk of slides due to forest harvesting – must be reserved. Sensitive soils requiring reserves at the watershed level are grouped into six categories: bedrock terrain; shallow organic matter; organic soils; blocky and bouldery colluvial material; active colluvial cones or fans and alluvial fans; and poor growing sites.

Unstable terrain reserves (areas of Class V terrain) cover approximately 339 hectares. 1,095.4 ha of the land base are set aside in sensitive soils reserves. These layers overlap with other reserve layers at several locations. Together, unstable terrain reserves and sensitive soils reserves cover 1,434 ha (5 percent) of the total land base of the unit. The locations of these reserves are shown on Map 8 and Map 9.

2.2 Reserves to Protect Biological Diversity

The Scientific Panel acknowledges that "maintenance of biological diversity is inextricably related to the long-term maintenance of healthy, productive ecosystems."[9] A series of reserves provide strategies to advance this management objective.

2.2.1 Reserves to protect red- and blue-listed species

The protection of rare species is a key strategy for maintaining biological diversity.

A key strategy for maintaining biological diversity is the protection of rare or threatened species. The Scientific Panel recommends that reserves be established at the watershed level to protect red-listed and blue-listed plant and animal species. At the same time, the Panel notes that some species require protection measures at the site level, and that planning for species protection may also occur at the sub-regional level.

Plant Species

There are three red-listed and eight blue-listed plant communities in the Kennedy Lake planning unit. See Appendix 2 for the Conservation Data Centre's list of red and blue-listed plant communities in Clayoquot Sound.

The red-listed communities are Sitka spruce/false lily-of-the-valley Very Wet Hypermaritime 1 (CWHvh1/SL); Sitka spruce/tall trisetum Very Wet Hypermaritime (CWHvh1/ST); and, Sitka spruce/ salmonberry Very Wet Maritime (CWHvm1/SS). Following advice from the Conservation Data Centre (CDC), the TPC reserves all red-

[9] *Report 5*, p.200

listed plant communities occurring in structural stages 6 and 7 (mature and old forest). In total, 73 ha of red-listed site series are reserved.

The eight blue-listed plant communities found in the Kennedy Lake planning unit are:

- red alder / false lily-of-the-valley (CWHvh1/AL);
- western redcedar - Sitka spruce / skunk cabbage (CWHvh1/RC);
- western redcedar - Sitka spruce / sword fern (CWHvh1/RF);
- amabilis fir - Sitka spruce / devil's club (CWHvm1/AD);
- western redcedar - Sitka spruce / skunk cabbage (CWHvm1/RC);
- western redcedar - western hemlock / sword fern (CWHvm1/RS);
- amabilis fir - Sitka spruce / devil's club (CWHvm2/AD); and,
- western redcedar - western hemlock / sword fern (CWHvm2/RS).

The TPC was advised to reserve 50 percent of blue-listed plant communities occurring in structural stages 6 and 7. In total, 447 ha of blue-listed site series are reserved.

The list of rare natural plant communities provided by the CDC includes three yellow-listed ecosystems found in this planning unit, which have been given a "vulnerable/apparently secure" ranking: Amabilis Fir - Western Redcedar/Three-leaved Foamflower (CWHvm2/AF); Western Redcedar - Yellow-Cedar/Skunk Cabbage (CWHvm2/RC); and, Mountain Hemlock - Amabilis Fir/Blueberry (MHmm1/MB). In the Kennedy Lake watershed planning unit, MHmm1/MB is a relatively common ecological unit, encompassing 607 ha or just over two percent of the total planning unit area. For this reason, the TPC decided it was not necessary to set aside more of this site series than was already reserved by other reserve layers. GIS analysis indicates approximately 44 percent of the MHmm1/MB overlaps with other reserves. For the CWHvm2/AF and CWHvm2/RC plant communities, 78% and 99%, respectively, overlaps with other reserve layers. Individual rare plants will be reserved at the site level when identified.

In total, 520 ha, or 2 percent of the land base of the Kennedy Lake watershed planning unit have been designated as reserves for the protection of red- and blue-listed plant communities. The locations of red and blue-listed plant communities incorporated into the reserve network are shown on Map 10.

Animal Species

55 percent of all Class 1 and 2 Marbled Murrelet habitat has been reserved.

Dawn and dusk Marbled Murrelet surveys during 1996, 1997 and 1998 support the conclusion that all watershed planning units in Clayoquot Sound contain nesting habitat for this provincially red-listed bird. For the Kennedy Lake Watershed Planning Unit, Water, Land and Air Protection biologists (Leigh-Spencer, 2005) identified six reserves to protect murrelet nesting habitat. These reserves cover 772 ha, or 2.6 percent of the planning unit. Approximately 486 ha of these reserves were already reserved for other reasons, accounting for 63 percent of the total murrelet reserve area. Reserves were established to capture important nesting habitat which had been confirmed during helicopter assessments. Additional important habitat is included in reserves for other purposes and in protected areas. In total, approximately 55 percent of all class 1 and 2 murrelet nesting habitat remaining in this planning unit has been protected in the various reserve layers and protected areas. The location of murrelet reserves is shown on Map 11.

Other animals that are vulnerable or of particular management concern in Clayoquot Sound include Roosevelt Elk, Black Bear and Black-tailed Deer. For elk, a blue-listed species, the reserve network focuses on hydroriparian zones, thereby capturing riparian forest ecosystems which provide high value winter habitat. Given that elk are infrequent visitors to this planning unit, the amount and location of reserved areas -- along with the suite of management strategies recommended by the Science Panel -- are more than adequate to accommodate the habitat needs for this species. Should individual animals become resident in this planning unit, there would be sufficient habitat available to provide for their needs throughout the year.

Suitable habitat for Black Bear is represented in reserves and protected areas throughout the planning unit. Specific reserves for this species have therefore not been established. Harvesting in the past would have compromised denning opportunities somewhat in the Kennedy Flats; however, den habitat availability is expected to be fairly good to excellent for the remainder of the planning unit.

Forest harvesting in this planning unit likely increased spring and summer forage for Black-tailed Deer, a regionally-important species, but it is not known if this led to an actual increase in numbers. Since this planning unit lies predominately within the low snowpack zone, it is not considered crucial to protect areas with high winter habitat values. At the stand level, high retention levels, rate-of-cut restrictions, and minimum old growth requirements are expected to provide and maintain sufficient forage and overwintering habitat, and security cover, for the small number of deer in the area.

2.2.2 Reserves to protect forest-interior conditions in mature forests

The Scientific Panel recognizes the importance of retaining old growth forests, and of ensuring that these areas are large enough to maintain conditions similar to those in the interior of historic forests.

Currently, approximately 9,073 ha or 42 percent of the forested land base of the Kennedy Lake planning unit is covered by old growth forests over 141 years old. Thirty-six percent of this old growth (3,309 ha) is currently in forest-interior condition. The amount of old growth forest, and the amount of old interior forest, are currently well above the minimum amounts recommended by the Scientific Panel. Please refer to Map 12 showing the current locations of old growth and interior old growth forests in the Kennedy Lake planning unit.

4,880 ha of old forest (23 percent of the total forested land base) are located within provincial parks and within reserves proposed for other values (e.g. hydroriparian, terrain, soils, murrelets, etc.). In order to satisfy the Scientific Panel recommendation for retention of 40 percent of the forested area as old growth, another 3,750 ha will have to be retained during harvesting operations.

Approximately eight percent of the forested land base is in forest-interior condition and captured by the reserve network.

Recommendation 7.16 of *Report 5* recommends that a minimum of 20 percent of the retained old forest should be reserved in forest-interior condition. The total forested land base for this planning unit is 21,575 hectares. Applying Scientific Panel recommendations, 8,630 ha (40 percent) must be retained as old growth; and, a minimum of 1,726 ha (20 percent) must be forest interior. At this time, 1,726 ha, or 8 percent of the forested land base, is encompassed within the reserve network as forest-interior condition. Map 13 shows the location of the old growth and old-interior forest within the reserve network in the Kennedy Lake planning unit.

2.2.3 Reserves to represent all ecosystems

The Panel recommends that reserves to represent all ecosystems be added to the reserve network "as necessary, to ensure that the entire variety of ecosystems is represented in the reserve system to maintain plants, animals, and other organisms that have specific habitat requirements."[10] Representation of all ecosystems is an essential component of biological diversity.

As shown in Table 2.1, two biogeoclimatic zones are represented within the Kennedy Lake planning unit: the Coastal Western Hemlock (CWH) zone and the Mountain Hemlock (MH) zone. The CWH is represented

[10] *Report 5*, p. 171.

by three variants: the CWHvh1 (Southern Very Wet Hypermaritime), the CWHvm1 (Submontane Very Wet Maritime) and the CWHvm2 (Montane Very Wet Maritime). These variants occur below 800 metres. The Mountain Hemlock zone includes one variant, the MHmm1 (Windward Moist Maritime), and one sub-variant, the MHmmp1 (Windward Moist Maritime Parkland). These occur above 800 metres. Refer to Map 4 for the biogeoclimatic classification of this planning unit.

Table 2.1 Biogeoclimatic zones, subzones and variants occurring in the Kennedy Lake planning unit

Biogeoclimatic Zone	Subzone	Variant	Location	Total Area
Coastal Western Hemlock (CWH)	Very Wet Hypermaritime (CWHvh)	Southern (CWHvh1)	Sea level up to 200 m	11,447 ha
	Very Wet Maritime (CWHvm)	Submontane (CWHvm1)	Below 600 m	15,191 ha
	Very Wet Maritime (CWHvm)	Montane (CWHvm2)	Between 600 and 900 m	1,853 ha
Mountain Hemlock (MH)	Moist Maritime (MHmm)	Windward (MHmm1)	Above 800 m near the outer coast	995 ha
	Moist Maritime (MHmm)	Windward, Parkland (Mhmmp1)	Depending on location, begins between 1200 and 1250 m.	34 ha
Total				**29,520 ha.**

57 different ecosystem types (site series) are found in the Kennedy Lake unit.

Fifty-seven different naturally-vegetated ecosystem types (site series) occur in the Kennedy Lake planning unit: 18 different site series in the CWHvh1, 17 different site series in the CHWvm1; 13 in the CHWvm2; seven in the MHmm1; and two in the MHmmp1. The most common forested ecosystems are Western Hemlock/Amabilis Fir - Blueberry (AB) in the CWHvm1 and CWHvm2 variants (which occupy almost 21 percent of the planning unit area); and, the Western Hemlock/Western Redcedar - Salal (HS) in the CWHvh1, CWHvm1 and CWHvm2 variants, occupying 26 percent.

Many of the site series occurring in the Kennedy Lake planning unit are defined as rare; that is, they cover less than two percent of the planning unit or exhibit less than 6 occurrences. Table 2.2 gives an overview of the occurrence and extent of rare site series within the different variants.

Table 2.2: Rare site series in the Kennedy Lake Planning Unit

Variant	Rare Natural Vegetated Site Series			
	#	Area (ha)	% of variant	% of PU
CWHvh1	15	2,269	19.8	7.7
CWHvm1	12	1,243	8.2	4.2
CWHvm2	12	371	20.0	1.3
MHmm1	6	183	18.6	0.6
MHmmp1	2	8	22.3	0.03
All	47	4,074	n/a	13.8

In total, 47 rare site series cover approximately 4,074 ha, or 13.8 percent, of the planning unit.

Once the reserves for all other values were mapped, the planning committee determined the degree to which the existing reserve network achieved the recommended ecosystem representation targets. In the Kennedy Lake planning unit, 14 ecosystems were found to be underrepresented in the existing reserve network:

- CWHvh1 /HS, /RC, /RF, /RS, /SF, and /YG;
- CWHvm1 /AD, and LC;
- CWHvm2 /AB, /HD, /HS, /LC, and YG; and,
- MHmm1 /AB.

The following three site series-dominant tree species-age class groups were also underrepresented:

- CWHvm1 / HS / YC / 201 - 400;
- CWHvm2 / HS /YC / 201 - 400; and,
- MHmm1 / MB / CW / 201 - 400.

Ecosystem polygons in underrepresented units had to be added to the reserve network to satisfy representation requirements. All other ecosystem units were represented in the reserve network, in many cases well above the minimum thresholds.

Approximately 857 ha were added to the reserve network to ensure complete ecosystem representation. Map 14 shows the location of ecosystem units added to the reserve network.

2.2.4 Reserves to ensure linkages between watershed planning areas

The Scientific Panel recommends that watershed planning areas be linked in order "to accommodate migration routes, to provide connectivity among plant and animal populations, or to accommodate recreational opportunities." [11] While such linkages are primarily an objective of sub-regional plans, the Panel also acknowledges that this objective can only be realized after some watershed-level planning has taken place.

Reserves to ensure linkages among watersheds will be established once watershed-level plans are completed for adjacent watersheds.

Once watershed-level plans are completed for a number of adjacent watershed planning units in Clayoquot Sound, opportunities for linkage corridors will be evaluated. Where necessary, reserves that create linkages to support biodiversity or recreation objectives will be added to the reserve network.

2.3 Reserves to Protect Human Values

The Scientific Panel recognizes that "many aspects of the Clayoquot Sound environment are important to people – both First Nations and others – for cultural, spiritual, and scenic values, and for recreational and tourism use."[12] Accordingly, reserves to protect these values at the watershed planning level form part of the Panel's overall framework for sustainable ecosystem management in Clayoquot Sound.

2.3.1 Culturally Important Areas to protect First Nations' Values

Culturally important areas include sacred sites, historic areas and areas in current use.

The Scientific Panel stresses the importance of maintaining First Nations' cultural values, dedicating an entire report to an account of First Nations' perspectives and recommendations on how to incorporate these perspectives in planning and management of land, water and resources in Clayoquot Sound. Culturally important areas include sacred sites, historic areas, and areas in current use. The Panel recommends that these areas be identified by the Nuu-chah-nulth First Nations and that they must be protected in ways that are consistent with traditional knowledge.

Tla-o-qui-aht First Nations Culturally Significant Areas - Mapping and Inventory

The material in this section, including the text and Map 15, was prepared by the Tla-o-qui-aht First Nations.

[11] *Report 5*, p. 171
[12] *Report 5*, p. 37

Watershed Planning for Tla-o-qui-aht First Nations Cultural Values

The entire area encompassed by the Kennedy Lake Watershed Planning Unit lies within the traditional territories of the Tla-o-qui-aht First Nations (TFN).

The TFN are members of the Clayoquot Sound Technical Planning Committee (TPC) - which is responsible for watershed level planning in Clayoquot Sound. The TFN are solely responsible for Tla-o-qui-aht cultural input with regard to watershed plan areas overlapping with TFN territory. The following Scientific Panel recommendations guide the Tla-o-qui-aht First Nations and the Technical Planning Committee with respect to First Nations cultural input into the watershed plans.

Report 3, Recommendation 10:

> "Before the completion of any ecosystem planning process in Clayoquot Sound, the Nuu-Chah-Nulth of the area within which the planning is undertaken must be given the opportunity to identify, locate, and evaluate culturally important sites and areas."

Report 3, Recommendation 15:

> "Planning inventories undertaken in Clayoquot Sound for ecosystem management must be done in full consultation with and full participation of the Nuu-Chah-Nulth of Clayoquot Sound. Nuu-Chah-Nulth cultural resources and culturally important areas must be incorporated in planning inventories before completion of the planning process."

Report 5, Recommendation 7.16:

> "At the watershed level, map and designate reserves in which no harvesting will occur to protect key hydroriparian ecosystems, unstable slopes and sensitive soils, red- and blue-listed species, late successional forest with forest-interior conditions, important cultural values, and areas with high scenic and recreational resources."

Under direction from Chief and Council, TFN staff initiated a consultative process within their communities to identify, inventory and evaluate areas of cultural importance within their territories. Before beginning, it was necessary for the TFN to develop interview and consultation methodologies and protocol to allow for the collection of cultural information while respecting that some of this information was confidential or sensitive. Once acceptable protocol was endorsed by the TFN Chief and Council, staff proceeded to collect information from community members through a series of interviews, meetings, and workshops.

After TFN staff identified and inventoried areas of cultural importance for each planning unit, it became necessary to determine how to inform the watershed planning process while respecting the sensitivity of cultural values. Chief and Council provided this guidance. They decided the TFN could provide consultation advice to individual watershed plans without releasing sensitive information - by showing areas of cultural importance on watershed maps, accompanied by explanatory text.

Cultural information has been passed on by TFN Elders to the present *Hawiih* (Hereditary Chiefs) and other community members. The Elders share their knowledge and, through their teachings, confirm *Hahouthlee*, the hereditary chief's responsibility for community, land and resources within their territories.

All information compiled during this project is considered to be confidential, and is stored in the TFN community. It is available to Chief and Council and, at their discretion, to TFN members involved in review of resource management proposals. It is anticipated that this information will facilitate TFN response during future consultations and reviews.

The TFN determined it was not necessary to locate areas of cultural importance within no-harvest reserves, as had been envisioned by the Scientific Panel. Instead, the TFN chose to identify areas according to their significance, and then develop consultation protocol according to the cultural values associated with different classifications.

Map 15 shows the TFN culturally sensitive areas in this watershed planning unit. Also, if not otherwise indicated, all creeks and streams shown on this map are considered to have high cultural significance - and require a buffer equivalent to the Scientific Panel hydroriparian reserve width plus an additional 30%. It is extremely important to provide protection for water resources because the TFN recognize water is critical to life.

The TFN note that several roads are important because they provide access to areas of cultural importance.

All activities proposed within Tla-o-qui-aht territory require consultation to ensure that TFN values and interests are not impacted. The level of consultation and the outcome will differ depending on the cultural significance of the area. For activities proposed in areas not shown to be culturally significant, the TFN expect the review period would be shorter and the TFN response would not request many changes or modifications. However, if a proposed activity is located in

a culturally-significant area, depending on the location of the proposed activity, the TFN response would take more time and would likely request modifications or restrictions.

To achieve effective consultation for activities proposed within their territories, the TFN recommend that interested parties or proponents provide Chief and Council with as much information as possible, and as early as possible in the process. Submissions should include descriptions of the activity proposed, maps showing accurate locations of areas involved, and other pertinent details, including but not limited to: timing, access considerations, species affected. The length of time allotted for review must be sufficient to allow the TFN to learn about the proposed activity, consult with Elders and other community members, and consider outstanding information needs. The TFN may request assistance if they anticipate their participation requires extra resources.

The Tla-o-qui-aht First Nations consider all the information provided by the accompanying map and the above text to be part of a dynamic planning process; that is, this information is expected to be adaptive and to change and evolve in response to new knowledge and experiences.

Approximately 11,325 ha, or 38 percent of the planning unit, have been identified by the Tla-o-qui-aht First Nations to be of cultural significance. Sixty-three percent of this area overlaps with the watershed reserve network. Map 15 shows the locations of TFN culturally significant areas.

Ucluelet First Nation: Territory and Consultation

The Ucluelet First Nation's (UFN) traditional territory extends into the southern portion of the Kennedy Lake watershed planning unit (see Map 15 (UFN). The UFN representative on the Planning Committee advises that prospective proponents for any development consult the *Ucluelet First Nation Resource Development Consultation Policy* (March 1, 2005) to ensure adequate consultation occurs within this area.

2.3.2 Protection of scenic values

Landscape appearance is important for aesthetic reasons and as an indicator of the health of the forest.

The Scientific Panel acknowledges that "landscape appearance is important to Nuu-chah-nulth, other residents, and visitors to Clayoquot Sound, both for aesthetic reasons and as a potential indicator of the health of the forest resource."[13] Accordingly, the Panel identified the

[13] *Report 5*, p. 40

protection of scenic values as one component of the ecosystem management theme of maintaining human values.

In the Kennedy Lake planning unit, the scenic class objectives that have been assigned include scenic class 1 (small-scale alteration); scenic class 2 (minimal alteration); and scenic class 3 (natural-appearing). These scenic classes have been applied to ensure that areas of especially high scenic value receive the greatest level of protection. In addition to assigning visually sensitive areas to the above scenic class objectives, many unaltered areas with the highest visual values are located within parks or placed within reserves identified for other resource values, and are thus provided the highest level of protection.

Scenic values are protected by management standards rather than through reserves.

As noted above, while reserves have not been established specifically for scenic values, these have been preserved within existing parks and reserves for other values. Scenic values that are located within the harvestable areas in the Kennedy Lake planning unit are maintained through management criteria designed to achieve scenic class objectives and standards (see Volume 1 for these management criteria).

Table 2.3 presents the breakdown of area within each scenic class in the visible portion of the Kennedy Lake planning unit, both within reserves and within the harvestable area.

Table 2.3 Kennedy Lake - scenic classes by area

Scenic Class	Reserves	Harvestable Area	Total* Ha
Natural - Appearing	2,460	2,105	4,913
Minimal Alteration	2,781	3,044	6,044
Small-Scale Alteration	426	649	1,099
TOTAL	5,667	5,798	12,056

* Total Ha include scenic class areas that are not located in reserves or harvestable areas

Areas comprising 41 percent of the Kennedy Lake unit have been assigned scenic class objectives.

In total, 12,056 ha, or 41 percent of the planning unit, have been assigned scenic class objectives. Of these, 5,667 ha (over 47 percent) are located within parks and reserves.

The portion of scenic area in Kennedy Lake that is located within the harvestable area will be managed in accordance with the assigned scenic class objective. Timber harvesting and road building operations within these scenic areas will be guided by the management criteria presented in Volume 1.

The remaining landscape is not classified because it is largely not visible from communities, recreation sites, and travel corridors. Any future

development in these non-visible areas will take place according to Scientific Panel recommendations. In the case of future timber harvesting, variable retention silvicultural systems will be employed in all areas, visible and non-visible.

Map 16 shows the location of the various scenic class objectives in the Kennedy Lake planning unit.

2.3.3 Reserves to protect recreation and tourism values

Protection of areas with significant recreation and tourism values at the watershed level forms part of the Scientific Panel's strategy to maintain the human values associated with the Clayoquot Sound ecosystem.

Clayoquot Arm Provincial Park was established to protect "natural values associated with the temperate rainforest" and "salmon habitat and production values [which are] considered among the highest found anywhere in Clayoquot Sound."[14] In addition, the park was established to protect First Nations culture features, and to provide wilderness recreation opportunities. The park's Purpose Statement notes this park offers "outstanding opportunities to observe wildlife," that "wilderness camping is popular along the [lake] shore," and that the park supports a diversity of activities: "fishing, canoeing, kayaking, swimming, boating, hiking, hunting, and nature appreciation." The total park area is 3,491 ha - with sixty-three percent located within the Kennedy Lake planning unit and the remainder in the Clayoquot River planning unit. The park accounts for 7.5 percent of the Kennedy Lake planning unit.

Kennedy Lake Provincial Park was established to protect "provincially significant" "sensitive salmon spawning habitat" and "to provide day use recreational opportunities in a lakeside setting[15]. The park's Purpose Statement notes the park "is popular for lake and beach-based recreation activities such as swimming, canoeing, fishing, windsurfing, waterskiing and picnicking." This park, which is divided into two separate sections, covers 258 ha, or less than one percent of the Kennedy Lake plan area.

Kennedy River Bog Provincial Park was established to protect "a biologically significant low-elevation acid bog" and, "to provide

[14] Ministry of Water, Land and Air Protection (2003), *Clayoquot Arm Provincial Park Purpose Statement and Zoning Plan*. The Environmental Stewardship Division, Victoria BC. August 2003
[15] Ministry of Water, Land and Air Protection (2003), *Kennedy Lake Provincial Park Purpose Statement and Zoning Plan*. The Environmental Stewardship Division, Victoria BC. August 2003

recreational opportunities in the way of nature appreciation."[16] This park covers 11 ha.

All three of these provincial parks were identified for protection by the 1993 Clayoquot Sound Land Use Decision and were established in July 1995.

There are three sections of the Long Beach Unit of Pacific Rim National Park Reserve (PRNPR) located in the Kennedy Lake planning unit. A small parcel is located on the south shore of Kennedy Lake. This parcel, locally known as Swim Beach, links the two separated Kennedy Lake Provincial Park sections, thus forming a continuous stretch of protected lakeshore. The Long Beach Pacific Coast section of PRNPR is largely located within the adjacent Beach Watershed Planning Unit, but extends into the Kennedy Lake Watershed Planning Unit at two locations: the lower portion of Kootowis Creek and the headwaters of Trestle Creek. These two locations, together with Swim Beach, cover 767 ha, accounting for 2.6 percent of the Kennedy Lake planning unit. Any recreation or human use in PRNPR must occur within the context of maintaining a healthy ecosystem.

Together, the above three provincial parks and three sections of PRNPR cover 11 percent of the Kennedy Lake planning unit.

Important recreation and tourism features outside the park system include several informal rest stops accessible from Highway 4 and some logging roads. These provide scenic mountain and lake views, can provide access to picnic sites or swimming areas, and occasionally offer opportunities for camping in undeveloped settings.

Logging roads also offer access to other tourism and recreation features in this planning unit, such as the Norm Godfrey Nature Trail and the MOFR Clayoquot Arm Beach Recreation Site, both at the outlet of Kennedy Lake; and, the Fisheries Restoration Interpretive Trail and Drive, a self-guided tour with a series of information stops co-ordinated by the Central Westcoast Forest Society.

In addition to the areas that fall within the scenic classes and within reserves for other purposes, such as hydroriparian reserves, approximately 1,334 ha containing features of high to very high recreation significance have been reserved. These areas are located primarily around lakes. This represents 4.6 percent of the total land

[16] Ministry of Water, Land and Air Protection (2003), *Kennedy River Bog Provincial Park Purpose Statement and Zoning Plan*. The Environmental Stewardship Division, Victoria BC. August 2003

base of the Kennedy Lake planning unit, much of it overlapping with the hydroriparian reserve layer.

2.4 Summary: The Kennedy Lake Watershed Reserve Network

The watershed reserves identified for the Kennedy Lake unit are a cornerstone of the Scientific Panel's framework for sustainable ecosystem management. They are designed to maintain watershed integrity, key components of biological diversity, First Nations' cultural values, and scenic and recreational values and opportunities.

As described in Volume 1, six of the nine different reserve types identified for the Kennedy Lake planning unit are reserves in a strict sense; that is, forest harvesting is prohibited under normal circumstances (exceptions to this prohibition are described in Section 2.5 of Volume 1).

These strict reserves include those established to protect watershed integrity and biological diversity:

- hydroriparian reserves
- reserves for unstable terrain and sensitive soils
- reserves for red and blue-listed species
- reserves to protect forest-interior conditions in late successional forest
- reserves to represent all ecosystems
- reserves to ensure linkages among watershed-level planning areas.

Reserves to protect human values are better characterized as special management zones.

In contrast, many of the areas identified to protect human values – culturally important areas, scenic areas and recreational or tourism values – are included within reserves or special management zones. Most areas associated with these values are not excluded from harvesting; however, certain conditions and requirements must be met before harvesting may proceed. Volume 1, Section 3 describes management criteria for special management zones.

A total of 33 percent of the Kennedy Lake planning unit has been reserved.

Map 18 shows all the reserves in the Kennedy Lake planning unit. A total of 9,720 ha, or 33 percent of the planning unit, have been reserved. Many of the different reserves overlap and reserve totals and percentages are therefore not cumulative. In other words, a given reserve location may be designated for a number of different reasons, and may serve a multitude of conservation objectives.

3.0 Sustainable Ecosystem Management in the Kennedy Lake Watershed Planning Unit

3.1 Management Criteria for Special Management Zones

The areas in the Kennedy Lake planning unit that are identified to protect human values -- that is, First Nations' culturally important areas and areas identified for their scenic, recreational and tourism values -- are better characterized as special management zones, rather than strict reserves. These special management zones are generally accessible for forest harvesting, subject to certain limits and conditions designed to preserve the areas' sensitivities. Only areas of highest significance within these special management zones are excluded from harvesting.

The Scientific Panel also refers to special management zones in the context of hydroriparian reserves, specifically in R7.30 and 7.31 relating to lakes.

This section describes the special conditions, considerations and procedures that apply in each special management zone type.

Culturally Important Areas

Approximately 38 percent of the Kennedy Lake planning unit has been identified by the Tla-o-qui-aht First Nations as being culturally significant. Consistent with traditional knowledge, culturally important areas are not designated as "reserves". Rather, the designation "culturally significant" indicates that a more stringent Tla-o-qui-aht consultation process must be engaged in order to initiate development proposals (please refer to section 2.3.1 of this volume). Based on the cultural significance and sensitivity of the area in question, consultation will determine the compatibility of the development proposal with First Nations rights and interests. The process will also identify whether special conditions, considerations and procedures need to be met and followed should the development proceed.

The Ucluelet First Nation has not designated any areas in this planning unit to be 'culturally significant' – however,, any development proposed within their traditional territory will require adequate consultation be undertaken.

Scenic Areas

Lands representing approximately 41 percent of the planning unit have been classed as scenic areas. Forty-seven percent of these areas are

located within parks or reserves for other values, and are therefore excluded from timber harvesting operations. Most of the balance is located within the harvestable area. While this area is available for timber harvesting, management activities will be guided by standards and criteria designed to ensure that the applicable scenic class objectives are achieved.

Volume 1 describes the management standards that apply for each scenic class objective in this watershed planning unit. As proposed by the Scientific Panel, standards are descriptive and qualitative in nature, avoiding quantification of levels of alteration and green-up.

To ensure that the applicable scenic class objectives are achieved, visual landscape design principles will be applied in the development of harvesting proposals. In accordance with Scientific Panel recommendation R6.6, visual impact assessments will be conducted prior to commencement of harvesting operations on all of the most important scenic areas (this includes, at a minimum, all areas within the 'natural appearing' scenic class objective).

For a breakdown of scenic class objectives by area for this planning unit, please refer to section 2.3.2. Map 19 shows the location of scenic areas in relation to the reserve network and the harvestable area.

Recreation and Tourism

Marine and lake shores, as well as special features such as significant trails and waterfalls, are protected by reserve buffers of varying widths. Management zones adjacent to these reserves serve to maintain the integrity of the buffers. In the Kennedy Lake planning unit, management zones for recreation and tourism amount to about 2,217 hectares. Of this, 914 ha (41 percent) overlaps with the reserve layer and 1,252 ha (57 percent) occurs within the harvestable areas. About 2 percent of these management zones lie outside reserve and harvestable areas. Please refer to Volume 1 for a description of reserve and management zones.

Forest practices and the application of the retention system in the management zones need to be designed to ensure the integrity of recreation and tourism values encompassed in the reserves. Many (if not most) recreation and tourism features, settings and opportunities are valued for the visual enjoyment and experience they provide. For this reason, the visual impact of any forest practices must be managed and should remain minor within recreation and tourism management zones. This may be achieved by following the management standards described in Volume 1.

Lakes

The Panel recommends that a special management zone be designated around all lakes, adjacent to the hydroriparian reserve zone. This special management zone is to extend 20 m beyond the reserve zone, or up to the edge of the hydroriparian influence, whichever is greater.

The Panel states that the special management zone around lakes may be subject to retention systems of harvest provided it is outside the hydroriparian reserve proper. The management zone will function as a buffer to protect the integrity of the reserve zone next to the lakeshore.

3.2 Management Criteria for Sensitive Sites

Over the years, the TPC consulted a number of specialists for assistance with watershed level planning. These experts recognized the limitations inherent in the scale and intensity of watershed-level mapping. Accordingly, some provided recommendations regarding site-level measures that should be undertaken to ensure that sensitive sites are afforded adequate protection prior to and during operational management activities. Site level recommendations address a variety of sensitive sites and features, including terrain, soils and wildlife habitat.

Terrain and Soils

A team of soils and terrain specialists provided advice to the TPC on unstable terrain and sensitive soil reserves. This team described instances where terrain or ecosystem mapping does not provide sufficiently detailed information to determine whether a terrain or sensitive soils reserve is needed, or where specifically the reserve should be. The team recommends that, in such instances, the resource management decisions be based on site level assessments. See Table 3.2 in Volume 1 for the terrain types or features that should be field assessed, including any site-level management recommendations referenced in the consultation report.

Plants and Wildlife

The Scientific Panel provided recommendations for the protection of sensitive plant and animal species through the designation of reserves at the watershed level, and this watershed plan describes the area and locations of reserves. The Scientific Panel was mindful, however, that for many species, protection could often be better implemented at the site level. Consequently, the Panel recommended that more refined information be collected at the site level about plant and animal species considered to be at risk by human activity. The Panel described the biodiversity objective at the site level as confirming the presence or

absence of species or habitats that will affect operational management of the site.

In addition to the Scientific Panel recommendations pertaining to site-level information and management requirements for species at risk, further information on accommodating such species at both the watershed and site level can be found in the 2003 TPC report entitled *Clayoquot Sound Watershed Level Planning - Wildlife Habitat Overview*.

3.3 Silviculture, Harvesting and Transportation Systems

The Scientific Panel sets out guidelines for a new silviculture system known as the Variable Retention Silviculture System (VRSS). This system is used in all forestry activities in Clayoquot Sound. The Scientific Panel recommendations also provide guidance to forestry operators with respect to harvesting and transportation systems. For details of these recommendations and their application to ecosystem management in this watershed planning unit, please see Volume 1, Sections 3.2, 3.3 and 3.4.

3.4 Rate-of-cut

Rate-of-cut limits protect hydrological integrity. The calculation of rate-of-cut will occur at the site level of planning.

For the purposes of this watershed plan, the Panel's recommendations with respect to rate-of-cut are interpreted as limits imposed on forest development operations in order to protect the hydrological integrity of watersheds. Limits to the rate-of-cut apply to individual watersheds within the Kennedy Lake planning unit. Table 3.1 identifies the individual watersheds within this planning unit and sets out the rate-of-cut limits assigned in accordance with the Scientific Panel recommendation R3.1.

Volume 1 describes the methodology used to assign rate-of-cut limits in Clayoquot Sound. Map 21 shows the individual watersheds for this planning unit.

Table 3.1: Rate-of-Cut Limits for Kennedy Lake Planning Unit

Watershed or Map Unit	WS ID	Type	Watershed Planning Unit	Area (ha)*	Does rate-of-cut Rule Apply?	5 Year Cut (ha)	10 Year Cut (ha)
3 Total (Kootowis) **		Primary Watershed, >500 ha	Kennedy Lake	2,920	Yes	146.0	-
3	1404	Primary - residual area	Kennedy Lake	1,584	No	-	-
3.1	1431	Secondary Watershed, <=500 ha	Kennedy Lake	493	No	-	-
3.2	1383	Secondary Watershed, >500 ha	Kennedy Lake	844	Yes	42.2	-
4 Total (Kennedy River)		Primary Watershed, >500 ha		47,540	Yes	2,377.0	-
4		Primary - residual area	Kennedy Lake	6,761	No	-	-
4.1	1324	Secondary Watershed, >500 ha	Kennedy Lake	1,276	Yes	63.8	-
4.2 Total		Secondary Watershed, >500 ha		2,073	Yes	103.7	-
4.2	1415	Secondary - residual area	Kennedy Lake	661	No	-	-
4.2.1	1433	Tertiary Watershed, >500 ha	Kennedy Lake	736	Yes	36.8	-
4.2.2	1437	Tertiary Watershed, >500 ha	Kennedy Lake	677	Yes	33.8	-
4.3 Total		Secondary Watershed, >500 ha		11,714	Yes	585.7	-
4.3		Secondary - residual area	Kennedy Lake	2,478	No	-	-
4.3.1	1386	Tertiary Watershed, <=500 ha	Kennedy Lake	308	No	-	-
4.3.2	1360	Tertiary Watershed, <=500 ha	Kennedy Lake	196	No	-	-
4.3.3	1317	Tertiary Watershed, <=500 ha	Kennedy Lake	358	No	-	-
4.3.4	1279	Tertiary Watershed, <=500 ha	Kennedy Lake	165	No	-	-
4.3.5	1280	Tertiary Watershed, >500 ha	Kennedy Lake	571	Yes	28.6	-
► *4.3.6*		*Tertiary Watershed, >500 ha*	*Clayoquot River*	*7,638*	*Yes*	*381.9*	-
4.4	1446	Secondary Watershed, <=500 ha	Kennedy Lake	482	No	-	-
4.5	1447	Secondary Watershed, >500 ha	Kennedy Lake	1,099	Yes	55.0	-
4.6	1444	Secondary Watershed, <=500 ha	Kennedy Lake	249	No	-	-
4.7	1440	Secondary Watershed, <=500 ha	Kennedy Lake	243	No	-	-
4.8	1403	Secondary Watershed, <=500 ha	Kennedy Lake	347	No	-	-
4.9	1316	Secondary Watershed, >500 ha	Kennedy Lake	1,666	Yes	83.3	-
4.10	1394	Secondary Watershed, <=500 ha	Kennedy Lake	413	No	-	-
4.11	1309	Secondary Watershed, >500 ha	Kennedy Lake	866	Yes	43.3	-

Watershed or Map Unit	WS ID	Type	Watershed Planning Unit	Area (ha)*	Does rate-of-cut Rule Apply?	5 Year Cut (ha)	10 Year Cut (ha)
► *4.12*		*Secondary Watershed, >500 ha*	*Upper Kennedy River*	*20,350*	*Yes*	*1,017.5*	-

NOTES on Table 3.1:
* Area (ha) provides the area of individual watersheds exclusive of waterbodies, rivers and large creeks.
** The Kootowis Creek watershed is the only drainage basin in the Kennedy Lake Planning Unit that is not part of the Kennedy River watershed.
► Neither the Clayoquot River nor the Upper Kennedy River watersheds are located in the Kennedy Lake Watershed Planning Unit. They are included in this table because both watersheds contribute flow to the lower Kennedy River drainage basin.

The Ministry of Forests and Range will verify that forest development plans are consistent with rate-of-cut limits.

It is the forest tenure holder's responsibility to ensure that the amount of development proposed within a given watershed is consistent with the rate-of-cut that applies for that particular watershed. The Ministry of Forests and Range will verify that forest development proposed by licence holders is consistent with applicable rate-of-cut limits.

As described above, rate-of-cut will be determined at the site level in accordance with watershed-level objectives. Rate-of-cut will also be calculated at the management unit level; that is, rate-of-cut limits will be considered along with other factors in the Chief Forester's determination of the AAC for a given tree farm licence or other management unit (or portion thereof) within Clayoquot Sound.

3.5 Restoration

While most Scientific Panel recommendations focus on the implementation of new planning approaches and new forest practices to maintain ecosystem integrity, the Panel also recognizes that past practices have led to some environmental damage and degradation. Recommendation R3.12 calls for the development of restoration plans where forest values have been degraded, with an initial focus on hydroriparian areas and large clearcuts.

Since the mid-1990s, International Forest Products (Interfor), in partnership with Parks Canada and the Central West Coast Forestry Society, has coordinated an extensive stream restoration program on several watersheds in the Kennedy Flats: Kootowis, Staghorn, Sandhill, Lost Shoe, and Salmon. This effort included instream restoration on 67 km of fisheries habitat, the construction of 720m of side channel habitat, and riparian restoration work on 58 ha of streamside forest.[17] In addition, Interfor completed landslide rehabilitation on approximately 11 ha, and deactivation on approximately 118 km of logging roads.

[17] Warttig, Warren, 2004. Pers. Comm. (Dec 9, 2004 E-mail. Subject: RE: Restoration summary).

Weyerhaeuser Limited reports that it has completed deactivation for 167 kilometres of logging roads in the Kennedy Lake planning unit: 146.5 km were permanently deactivated, and 20.4 km were semi-permanently deactivated.[18] Johannes reports that partnerships coordinated by the Northwest Ecosystem Institute and the Tla-o-qui-aht First Nations completed the following: 4.0 kms of permanent logging road deactivation, 12 kms of instream fisheries habitat work, 2.0 kms of side-channel construction, and 4.0 ha of riparian silviculture treatment[19].

For the above restoration work, proponents worked with First Nation communities, private companies, various stakeholder groups and the resource Ministries to identify priorities, and then coordinated subsequent treatment efforts according to effectiveness, need, or risk. Further restoration is contemplated, subject to funding.

3.6 Summary: Harvestable Area in the Kennedy Lake Planning Unit

The harvestable area is the area that lies outside designated reserves. Forest harvesting can take place within the harvestable area as long as it is undertaken in a manner consistent with the Scientific Panel recommendations relating to operations, the *Forest Practices Code of British Columbia Act*, the *Forest and Range Practices Act* and the special management considerations described in Volume 1.

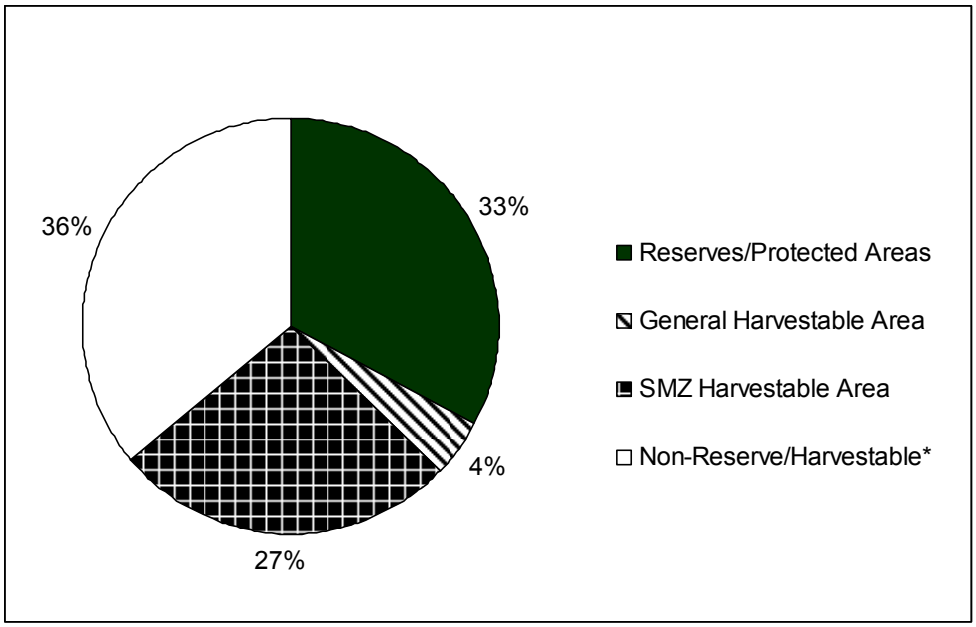
Approximately 43 percent of the forested land base in the Kennedy Lake watershed planning unit is designated harvestable area.

Approximately 9,163 ha, or 43 percent, of the forested land base in the Kennedy Lake watershed planning unit has been designated as harvestable area. The remainder is in reserves.

Special Management Zones overlap with approximately 7,890 ha or 86 percent of the harvestable area. Map 20 shows the location of the harvestable area, including Special Management Zones, as well as the reserve network. Figure 3.1 shows the proportion of designated reserves, Special Management Zones and general harvestable area (i.e., without special management zone designation) in the Kennedy Lake planning unit.

[18] McLennan Shawn. 2005. Pers. Comm. (Jan 10/2005 E-mail. Subject: RE: Restoration summary) ; and, MacDonald, Rick. 2005. Pers. Comm.(Jan 10/2005 E-mail. Subject: RE: Restoration summary)
[19] Johannes, Mark. 2004. Pers. Comm.(Dec 13, 2004 E-mail: Subject: Re: Restoration summary).

Figure 3.1 Reserves and Harvestable Area in the Kennedy Lake Planning Unit



* Note: Kennedy Lake accounts for 22% of the planning unit area

Appendix 1: Clayoquot Sound Technical Planning Committee

Membership on the Technical Planning Committee changed during the period it took to complete *Watershed Planning in Clayoquot Sound, Volumes 1 to 9*. The following list includes membership throughout this period:

Nelson Keitlah, First Nations Co-chair, Nuu-Chah-Nulth Tribal Council Central Region Chiefs

Rudi Mayser, Provincial Co-chair, Integrated Land Management Bureau, Ministry of Agriculture and Lands

Jackie Godfrey, First Nations Co-chair Alternate, Central Region Chiefs Executive

Matthew Lucas, former Representative for Hesquiaht First Nation

Guy Louie, Representative for Ahousaht First Nation

Thomas Martin, Representative for Tla-o-qui-aht First Nations

Simon Tom, former Representative for Tla-o-qui-aht First Nations

Brian Retzer, Provincial Co-chair Alternate, ILMB, MAL

Mike Amrhein, former Clayoquot Sound Central Region Board Liaison

Dean Fenn, Ministry of Forests Liaison

Peter Verschoor, former Central Region Chiefs Strategic Planning Forester

Marylin Touchie, Representative for Ucluelet First Nation

Colleen Charleson, Representative for Hesquiaht First Nation

Patricia McKim, Clayoquot Sound Central Region Board Liaison

Associates:

Dan Sirk, Land Information Coordinator, ILMB, MAL

Doug Fetherston, GIS Analyst, ILMB, MAL

Anette Thingsted, Planning Officer, ILMB, MAL

Lindsay Jones, Manager Representative, ILMB, MAL

Appendix 2: Red- and Blue-listed Plant Communities in Clayoquot Sound*

Rare Plant Communities	Rank	Associated Ecosystem Units		
		BEC unit	Site Series	
Red-Listed			Number	Symbol
Picea sitchensis / *Maianthemum dilatatum* (Sitka spruce / false lily-of-the valley)	S2	CWHvh1	08	SL
Picea sitchensis / *Rubus spectabilis* (Sitka spruce / salmonberry)	S2	CWHvm1	09	SS
[*Anaphalis margaritacea – Aster foliaceus* (pearly everlasting - leafy aster)	S2	MHmm1	00	n/a]
[*Carex macrocephala* (large headed sedge) herbaceous community	S1S2	CWHvh1	00	n/a]
[*Phlox diffusa - Selaginella wallacei* (spreading phlox - Wallace's selaginella club moss)	S2	MHmm1	00	n/a]
[*Picea sitchensis* / *Trisetum canescens* (Sitka spruce / tall trisetum grass)	S2	CWHvh1	09	ST]
Blue-Listed				
Alnus rubra / *Maianthemum dilatatum* (red alder / false lily-of-the valley)	S3	CWHvh1	10	AL
Picea sitchensis / *Eurhynchium oreganum (formerly Kindbergia oregana)* (Sitka spruce / Oregon beaked-moss)	S3	CWHvh1	15	SK
Picea sitchensis / *Polystichum munitum* (Sitka spruce / sword fern)	S3	CWHvh1	17	SW
Thuja plicata / *Picea sitchensis - Lysichiton americanus* (western redcedar - Sitka spruce / skunk cabbage)	S3	CWHvh1	13	RC
Thuja plicata / *Picea sitchensis - Lysichiton americanus* (western redcedar - Sitka spruce / skunk cabbage)	S3	CWHvm1	14	RC
Thuja plicata - Picea sitchensis / *Polystichum munitum* (western redcedar - Sitka spruce / sword fern)	S2S3	CWHvh1	05	RF
Thuja plicata - Tsuga heterophylla / *Polystichum munitum* (western redcedar - western hemlock / sword fern)	S3?	CWHvm1	04	RS
Thuja plicata - Tsuga heterophylla / *Polystichum munitum* (western redcedar - western hemlock / sword fern)	S3?	CWHvm2	04	RS
[*Abies amabilis - Picea sitchensis* / *Oplopanax horridus* (amabilis (silver) fir - Sitka spruce / devil's club)	S3	CWHvm1	08	AD]
[*Abies amabilis - Picea sitchensis* / *Oplopanax horridus* (amabilis (silver) fir - Sitka spruce / devil's club)	S3	CWHvm2	08	AD]
[*Picea sitchensis* / *Calamagrostis nutkaensis* (Sitka spruce / Nootka reedgrass)	S3	CWHvh1	16	SR]
[*Picea sitchensis* / *Carex obnupta* (Sitka spruce / slough sedge)	S3	CWHvh1	18	SE]
[*Picea sitchensis* / *Malus fusca* (Sitka spruce / Pacific crab apple)	S3	CWHvh1	19	SC?]
[*Populus balsamifera* ssp. *trichocarpa* / *Cornus stolonifera* (black cottonwood / red-osier dogwood)	S3	CWHvm1	10	CD]
[*Tsuga heterophylla – Picea sitchensis* / *Rhytidiadelphus loreus* (western hemlock - Sitka spruce / lanky moss)	S3	CWHvh1	04	HM]
Yellow-Listed				
Abies amabilis - Thuja plicata / *Tiarella trifoliata* (amabilis (silver) fir - western redcedar / foamflower)	S3S4	CWHvm2	05	AF
Thuja plicata – Chamaecyparis nootkatensis / *Lysichiton americanus* (western redcedar - yellow-cedar / skunk cabbage)	S3S4	CWHvm2	11	RC
Tsuga mertensiana – Abies amabilis / *Vaccinium alaskaense* (mountain hemlock - amabilis (silver) fir / Alaskan blueberry)	S3S4	MHmm1	01	MB

*Source: BC Conservation Data Centre (CDC), November, 2004

Note: Communities found in the Kennedy Lake watershed planning unit are shown above in grey shading.

Notes on ranking system:
S1 - Critically Imperiled because of extreme rarity in the province, or because of some factor(s) making it especially vulnerable to extirpation from the province. Typically, there will be 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.
S2S3 is used to indicate uncertainty about the exact status of a taxon; may fall within S2 or S3 rankings.
S3 - Vulnerable provincially 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 is 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

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