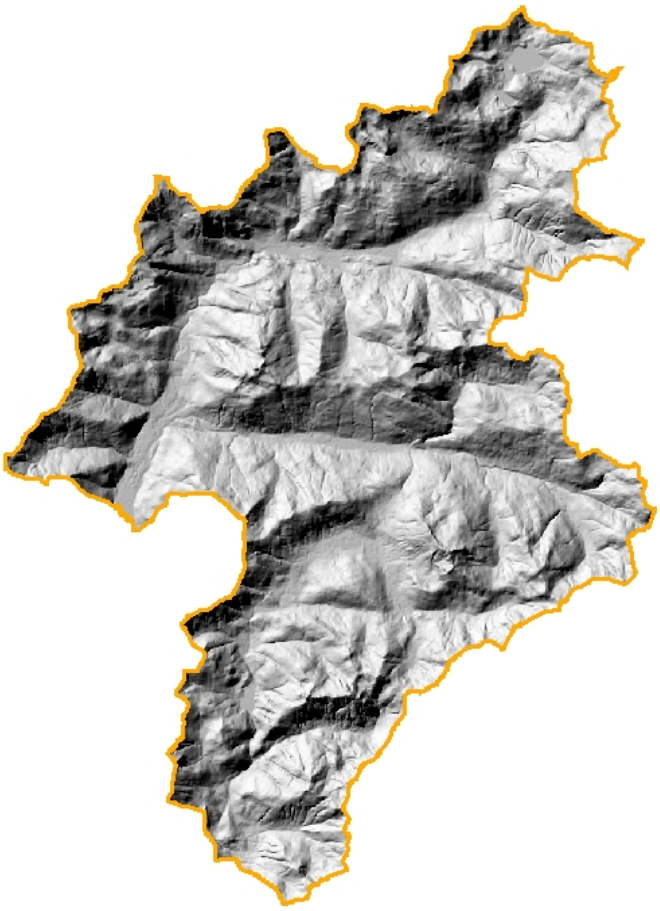
WATERSHED PLANNING IN CLAYOQUOT SOUND

VOLUME 4:

BEDWELL - URSUS - BULSON 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 watershed plan for the Bedwell-Ursus-Bulson 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, included as 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 Bulson, Ursus and Lower Bedwell watersheds, in accordance with the Scientific Panel recommendations for sustainable ecosystem management in Clayoquot Sound.

The effective date of this plan will be 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 encompasses the entire Bedwell-Ursus-Bulson watershed planning unit. This planning unit, 29,402 ha in size, is named after the three main watersheds, which all drain into Clayoquot Sound. The planning unit is bounded to the west by Bedwell Sound and the Moyeha Valley, to the north by the Thelwood, Drinkwater and McBride watersheds and to the east by the Tranquil watershed. At the southern end of the planning unit, the Bedwell-Ursus watersheds drain into Bedwell Sound, and the Bulson into Warn Bay. The northern portion of the planning unit, encompassing the middle and upper reaches of the Bedwell watershed, are part of Strathcona Park. The park area includes 10,476 ha or 35.6 percent of the planning unit.

This watershed plan was developed in accordance with the principles and recommendations set out by the Clayoquot Sound Scientific Panel to guide planning for sustainable ecosystem management in Clayoquot Sound. It 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 which require that certain conditions and limitations be 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 Bedwell-Ursus-Bulson 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 (ILMB) 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 Bedwell-Ursus-Bulson Watershed Reserve Network

The Scientific Panel proposed 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 6,029 ha have been designated as hydroriparian reserves. This represents approximately 20 percent of the total land base of the Bedwell-Ursus-Bulson Watershed planning unit (see Map 7).

Reserves to protect sensitive soils and unstable terrain

Unstable terrain reserves (areas of Class V terrain) cover approximately 4093 ha, or 14 percent of the unit. Reserves for sensitive soils cover 3,360 ha or 11 percent of the land base. These layers overlap each other and other reserves at several locations. Together unstable terrain reserves and sensitive soils reserves make up 6,415 ha or 22 percent of the total land base of the Bedwell-Ursus-Bulson Watershed planning unit (see Maps 8 and 9. Note that inventories for unstable terrain and sensitive soils are not available for the park portion of the planning unit).

Biological Diversity

Reserves to protect red- and blue-listed plant and animal species

Approximately 1,497 ha have been set aside into ten separate Marbled Murrelet reserves within the Bedwell-Ursus-Bulson watershed planning unit. 61 percent of this area (923 ha) was already reserved for other purposes. These ten reserves, in combination with other reserves and protected areas, protect approximately 5,704 ha of class 1 and 2 Marbled Murrelet nesting habitat in this planning unit. This amounts to 56.5 percent of the class 1 and 2 habitat, or 19.4 percent of the land base (see Map 11).

Approximately 663 ha, or 2 percent of the land base of the Bedwell-Ursus-Bulson watershed planning unit, have been designated as reserves for the protection of red- and blue-listed plant communities. (See Map 10; note that inventory information for red- and blue-listed plant communities is not available for the park portion of the planning unit).

Reserves to protect forest-interior conditions in late successional forest

Currently, there are approximately 18,305 ha of old forest within the Bedwell-Ursus-Bulson watershed planning unit. This represents 73 percent of the total forested land base. Of this, the reserve network encompasses approximately 10,611 ha, or 42 percent of the forested land base. This satisfies the Scientific Panel recommendation for minimum old growth retention of 40 percent. Map 12 shows the current old-growth forest and forest in interior conditions.

6825 ha within the reserve network are classed as old growth with forest-interior condition. This fully meets the old-interior forest recommendations of the Science Panel (see Map 13).

Reserves to represent all ecosystems

After the reserve network had been completed, the Committee found that 313 ha had to be added to the reserve network to satisfy ecosystem representation requirements. (See Map 14; note that inventory information for terrestrial ecosystems is not available for the park portion of the planning unit).

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 15,164 ha, or 52 percent of the Bedwell-Ursus-Bulson watershed planning unit, have been identified by the Ahousaht First Nation (AFN) to be 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.

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, 4,635 ha, or 16 percent, of the lands within the Bedwell-Ursus-Bulson watershed planning unit have been assigned scenic class objectives: 251 ha to the natural-appearing scenic class objective, 3747 ha within the minimal alteration class and 637 ha within the small-scale alteration class. The remaining landscape is not classified because it is largely not visible from communities, recreation sites, and travel corridors. Of the scenic class areas, approximately 2348 ha (51 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 220 ha containing features of high to very high recreation and tourism significance have been reserved, primarily around lakes. Areas surrounding recreation/tourism reserves have been identified as special management zones (see Map 17).

Summary

The total reserve network of the Bedwell-Ursus-Bulson watershed planning unit amounts to 19,984 ha, representing 68 percent of the land base. This area includes 10,476 ha within Strathcona Park. Map 18

shows the complete watershed reserve network, while Map 19 shows the integration of the reserve network with scenic management classes.

The Bedwell-Ursus-Bulson Harvestable Area

Once all the watershed reserve areas are mapped, the remaining area outside reserves is designated as the 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 Bedwell-Ursus-Bulson watersheds encompasses 8,983 ha of productive forest, representing 30.5 percent of the planning unit. Special management zones comprise 4,751 ha (53 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 provided 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 Bedwell-Ursus-Bulson Planning Unit

1.1 The Physical Landscape

The Bedwell-Ursus-Bulson watershed planning unit is located north/northeast of Tofino. The planning unit is bounded to the west by Bedwell Sound and the Moyeha Valley, to the north by the Thelwood, Drinkwater and McBride watersheds and to the east by the Tranquil watershed. The northern portion of the planning unit, encompassing the middle and upper reaches of the Bedwell watershed are part of Strathcona Provincial Park. The park area includes 10,476 ha or 35.6 percent of the planning unit.

The climate in the Bedwell-Ursus-Bulson unit - as throughout the west coast of Vancouver Island - is temperate and very wet. Annual precipitation exceeds 3,000 mm, but may be substantially greater at higher elevations further inland. Mean daily temperatures range from 5° C in January to 15° C in August.

Most of Vancouver Island was covered by glaciers during the Pleistocene period, and a number of features and landmarks in the planning unit bear witness to this. The major rivers and creeks flow through U-shaped valleys, a characteristic glacial landform.

The surficial geology of the Bedwell-Ursus-Bulson unit is dominated by steep, rocky slopes with a discontinuous veneer of colluvium on mid and upper slopes, and a mantle of till mostly on the gentler mid and lower slopes. Fluvial sediments are restricted to the valley bottom and occur as floodplains and fluvial fans. Gully erosion, rock falls, debris slides, debris flows and avalanches are among the most common geomorphological processes in the area.

Elevations within the planning unit range from sea level, at the estuaries of Bedwell and Bulson Creek, to 1,612 meters at Velella Peak, located at the headwaters of Thunderbird and Bulson Creeks. The elevation of the Ursus Creek watershed divide averages about 1,200m. Map 3 illustrates the topographic relief of this unit.

1.2 The Ecological Landscape

Approximately 85 percent of the Bedwell-Ursus-Bulson watershed planning unit supports forests dominated by western redcedar, western hemlock and mountain hemlock, yellow-cedar, and amabilis fir.

Biogeoclimatic ecosystem classification is not available for the northern portion of the planning unit (part of Ursus and the upper Bedwell watersheds). Two biogeoclimatic ecosystem classification (BEC) zones occur in the Bedwell-Ursus-Bulson watershed planning unit: the Coastal Western Hemlock (CWH) and the Mountain Hemlock (MH). The CWH zone occupies the majority of the planning unit and is represented by three variants. The CWHvh1 variant (the Southern Very Wet Hypermaritime variant) extends a very short distance into this planning unit at the mouth of Bulson Creek. The area covered is less than 200 ha. The CWHvm1 variant (Submontane Very Wet Maritime) occurs below 600 m elevation, and covers approximately half the planning unit. The CWHvm2 variant (Montane Very Wet Maritime) is located along the upper slopes at elevations between 600 and 800 m.

The MH biogeoclimatic zone is found at higher elevations. The MHmm1 variant (Windward Moist Maritime) and the MHmmp1 variant (Windward Moist Maritime Parkland) occur at elevations of over 900 m and over 1200 m, respectively. The latter variant is not forested. Refer to Map 4 for BEC variant locations.

Over 75 different ecosystems are represented in the Bedwell-Ursus-Bulson watershed planning unit.

Over 75 different vegetated ecosystem types are represented within the Bedwell-Ursus-Bulson watershed planning unit. The most common are Western Hemlock/Amabilis Fir - Blueberry (AB), Mountain Hemlock /Amabilis Fir - Blueberry (MB), and Western Hemlock/Western Redcedar - Salal (HS).

Over 73 percent of the forested land base supports forests that are over 140 years old. Less than 10 percent of the planning unit has been harvested. Most of the harvesting in the lower Bulson watershed occurred over the past 30 years, while the majority of harvesting in the lower Bedwell watershed dates back to the 1950s. Harvested areas now support second growth forests of various ages. Map 5 shows the location and age distribution of forest stands.

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 been slightly reduced in the portions of this planning unit that have been harvested.

The watersheds in the planning unit support Chum, Coho, Chinook, Pink, Sockeye and winter Steelhead. In addition, Cutthroat and Rainbow Trout, as well as two species of resident sculpins have been observed in the systems.

Black Bears are common throughout Clayoquot Sound. In this planning unit, a moderate amount of forest harvesting in the lower reaches of the Bedwell and Bulson may have contributed to an increase in bear numbers, due to the creation of early seral communities which provided an abundant supply of fruit-bearing shrubs, grasses and forbs. Moderately high- and high-ranking bear habitat is most limited during the early spring, but dramatically increases by late spring. By fall, most of the area covered by this plan provides moderate, moderately-high, or high value habitat. Denning opportunities remain fairly good for this planning unit overall.

Although there are areas of high winter habitat ratings, particularly along the south facing slopes of the Ursus valley and in the lower Bedwell, actual level of deer sign in the planning unit are rather low. Forest harvesting in the lower Bedwell and Bulson likely increased the spring and summer forage for Black-tailed Deer. At the stand level, high retention levels, rate-of-cut restrictions, and minimum old growth requirements are expected to ensure critical winter habitat and security cover, and also to contribute to increased forage production.

Studies indicate that Roosevelt Elk frequent the lower Bedwell and Ursus creek watershed areas. These watersheds exhibit high and very high summer and winter habitat suitability in the valley bottom areas, much of which is included in the reserve network. Population levels are likely low due to historic high predation by wolves.

1.3 Human Values

Bedwell-Ursus-Bulson is within the traditional territory of the Ahousaht First Nation. Two First Nations Reserves are located within the planning unit: Quortsowe (I.R. 13) is located at the mouth of Bulson Creek at Warn Bay, and Oinimitis (I.R. 14) is located on the east shore near the head of Bedwell Sound. Refer to Map 6 for their locations.

The natural resources of the Bedwell-Ursus-Bulson Planning Unit provide for the traditional economic, cultural and spiritual activities of the Tla-o-qui-aht First Nations.

Today, as in the past, the harvesting of forest and aquatic resources provides for sustenance, ceremonial and societal needs of the Ahousaht First Nations, and helps provide an economic base for the community. First Nations' values are discussed more fully in the 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.[2]

A few archaeological sites have been recorded along the shoreline near the head of Bedwell Sound and Warn Bay. All of these sites are of First Nations origin. This information, along with other previously recorded data, fills a substantial gap in the archaeological site database for Nuu-chah-nulth traditional territory

The Bedwell-Ursus-Bulson watershed planning unit contains important recreational and tourism features.

The planning unit also contains important recreation and tourism features. Within the Strathcona Park portion, important recreation features and facilities include the Bedwell Trail, as well as designated campsites at Bedwell Lake. Recreation opportunities outside the park include nature study, sport fishing, scenic and wildlife viewing, hunting, and hiking/backpacking.

This planning unit contains scenic areas visible from the ocean at Warn Bay and Bedwell Sound. Other scenic areas include the slopes on either side of Ursus Creek.

The land outside Strathcona Provincial Park, the two First Nations' reserves and some private land at the estuary of the Bedwell River falls within Tree Farm Licence 57. TFL 57 is held by Iisaak Forest Resources, which is owned by the Central Region First Nations. Refer to Map 6 for the location of TFL 57.

There are a number of mineral tenures in the planning unit.

[2] *Report 5*, p.38

2.0 The Bedwell-Ursus-Bulson 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: Principles and Process*.

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 the integrity of forest soils.

2.1.1 Hydroriparian reserves

Hydroriparian zones distribute water through the ecosystem and provide important 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 therefore of fundamentally critical to the protection of watershed integrity.

The planning unit is named for the three main watersheds it encompasses. The Bedwell River flows from its headwaters at Bedwell Lake southwest towards the end of Bedwell Sound, receiving the waters from a large number of tributaries on its way. Ursus Creek merges into Bedwell River approximately three kilometres north of the Bedwell estuary. Ursus Creek flows due west through a large U-shaped valley. The main stem of Bulson Creek flows in southerly direction towards its mouth at Warn Bay, with many tributaries feeding into it.

For a detailed description of the hydroriparian inventory assembled in accordance with the Scientific Panel's classification system, please refer to Volume 1.

Approximately 6,029 ha have been designated as hydroriparian reserves for the Bedwell-Ursus-Bulson planning unit. This represents approximately 20 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."[3] Watershed plans therefore must include reserves to protect sensitive soils and unstable terrain.

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.

Madrone Consultants conducted new terrain inventory mapping for the Bulson and Ursus watersheds in 1998.

The terrain in this planning unit is dominated by steep, rocky slopes, many bedrock ridges and bluffs, and numerous gullies. While the steep upper and mid slopes are covered by a discontinuous veneer of colluvium, a mantle of till is found on the moderately steep mid and gentler lower slopes. Fluvial deposits are found within valley bottoms, including well-developed floodplains of the main creeks, and discontinuous floodplains of their tributaries. Glaciofluvial deposits are found discontinuously near the mouth of Bedwell River and Bulson Creek. Organic sediments are uncommon and confined to small, shallow bogs.

The most common geomorphological processes resulting in transportation and translocation of materials are gully erosion, rock fall and rock slides, debris slides and flows, snow avalanches, and sediment movement within irregularly sinuous stream channels such as Ursus Creek.

With respect to road building, potentially unstable (class IV) and unstable terrain (V) is common and occurs throughout the planning unit. Careful planning of road location in order to avoid sensitive slopes, unstable sections of gullies, and vulnerable stream reaches is therefore essential. The area is also considered to have high potential for stream sedimentation. Table 2.1 shows the distribution of potentially unstable terrain classes within the planning unit.

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

Table 2.1 Percent distribution of potentially unstable terrain classes within the Bedwell-Ursus-Bulson Watershed Planning Unit[4]

Application	Classification	Bulson Study Area Percent of Polygons	Ursus Study Area Percent of Polygons
Cutblocks	III*c	<1%	2%
	IVc	15%	13%
	Vc	9%	16%
Roads	IVr	16%	23%
	Vr	37%	34%

Unstable terrain reserves (areas of Class V terrain) cover approximately 4093 ha. 3357 ha of the land base are also set aside in sensitive soils reserves. These layers overlap at several locations so, together, unstable terrain reserves and sensitive soils reserves cover 6415 ha (22 percent) of the total land base of the unit. The locations of these reserves are shown on Map 8 and 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." [5] 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

Among the plant communities occurring in the Bedwell-Ursus-Bulson planning unit, one community is red-listed, and six are blue-listed. See Appendix 3 for the Conservation Data Centre's list of red and blue-listed plant communities in Clayoquot Sound.

[4] *Terrain Inventory for the Clayoquot Sound Area, Year Two,* Madrone Consultants Ltd. for BC Ministry of Forests, September 1998. Pg. 221.
[5] *Report 5*, p.200

Following advice from the Conservation Data Centre (CDC) the TPC reserves all red-listed plant communities occurring in structural stages 6 and 7 (mature and old forest). The red-listed community in the Bedwell-Ursus-Bulson planning unit is Sitka spruce/salmonberry Very Wet Maritime (CWHvm1/SS). In total 155 ha of red-listed site series are reserved.

The six blue-listed plant communities found in the Bedwell-Ursus-Bulson planning unit are:

- CWHvh1/RC;
- CWHvm1/CD, RC and RS; and
- CWHvm2/AD and RS.

Over 80 percent of blue-listed plant communities have been reserved.

The TPC was advised by the CDC to reserve 50 percent of blue-listed plant communities occurring in structural stages 6 and 7. In total 508 ha of blue-listed plant communities, representing over 80 percent of these communities, are included in the reserve network.

The list of rare natural plant communities provided by the CDC includes two yellow-listed communities:, Mountain Hemlock-Amabilis Fir/Blueberry (MHmm1/MB) and Western Redcedar – Yellow-Cedar/Skunk Cabbage (CWHvm2/RC), which were given an "apparently secure/vulnerable" ranking. In the Bedwell-Ursus-Bulson planning unit, MHmm1/MB is the single most common ecological unit within the Mountain Hemlock subzone, encompassing 1,814 ha, or 37 percent of the MHmm1 variant in the planning unit. 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. Analysis indicates approximately 55 percent of the MHmm1/MB overlaps with other reserves.

In total, approximately 663 ha (two percent of the land base of the Bedwell-Ursus-Bulson planning unit) of site series which support red- or blue-listed plant communities have been identified within the reserve network. The locations of the various protected plant communities are shown on Map 10.

Individual rare plants will be reserved at the site level when they are discovered.

Animal Species

The Bedwell-Ursus-Bulson planning unit contains known nesting habitat for the Marbled Murrelet, a provincially red-listed bird. Maximum dawn murrelet counts recorded at the mouths of the

Bedwell-Ursus and Bulson range from 382 to 538, and 374 to 459, respectively.

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

In this planning unit, ten murrelet reserves were identified, totalling 1,497 ha or 5 percent of the Bedwell-Ursus-Bulson watershed planning unit. The location of these reserves is shown on Map 11. Additional important habitat is included in reserves for other purposes and in protected areas. In total, approximately 57 percent of all class 1 and 2 Marbled Murrelet nesting habitat has been protected in murrelet reserves, other reserves and protected areas.

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 captures large valley bottom areas which offer high value winter habitat. This provides sufficient protection for a small population of over-wintering animals. Suitable habitat for Black Bear and Black-tailed Deer is represented in other reserves and protected areas within the Bedwell-Ursus-Bulson planning unit, and therefore specific reserves for these species have not been identified as part of this watershed plan.

2.2.2 Reserves to protect forest-interior conditions in mature forests

The Scientific Panel recognizes the importance of maintaining sections of older forests, and of ensuring that these are large enough to maintain conditions similar to those in the interior of historic forests.

Currently, approximately 18,305 ha or 73 percent of the forested land base of the Bedwell-Ursus-Bulson planning unit is covered by old growth forests. 13,557 ha or 54 percent of the old growth forest in Bedwell-Ursus-Bulson 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 amount recommended by the Scientific Panel. Please refer to Map 12 showing the current locations of old growth and interior old growth forests in the Bedwell-Ursus-Bulson planning unit.

10,611 ha of old forest (42 percent of the total forested area) are located within provincial parks and within reserves proposed for other values (e.g. hydroriparian, terrain, soils, murrelets, etc.). This exceeds the Scientific Panel recommendation for retention of 40 percent of the forested area as old growth.

Approximately 27 percent of the forested land base is encompassed in reserves in forest-interior old growth condition.

Recommendation 7.16 of the Scientific Panel Report 5 states that a minimum of 20 percent of the retained old forest should be reserved in forest-interior condition. At this time 6,825 ha of old forest in forest-

interior condition is encompassed within the reserve network. This represents 27 percent of the total forested land base of the planning unit, or 64 percent of the total old growth retained in the reserve network. Map 13 shows the location of the old and old-interior forest within the reserve network in the Bedwell-Ursus-Bulson 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." [6] Representation of all ecosystems is an essential component of biological diversity.

As shown in Table 2.2, there are three biogeoclimatic zones represented within the Bedwell-Ursus-Bulson planning unit: the Coastal Western Hemlock zone (CWH), the Mountain Hemlock zone (MH) and the Alpine Tundra zone (AT). The CWH is represented by two subzones, which include three variants: the CWHvh1 - Southern Very Wet Hypermaritime; the CWHv1m - Submontane Very Wet Maritime; and, the CWHvm2 - Montane Very Wet Maritime. These variants occur below 800 metres. The Mountain Hemlock zone includes two variants: MHmm1 - Moist Maritime Subzone, Windward Variant and MHmmp1, Moist Maritime Parkland. These occur above 800 metres. The Alpine Tundra zone occurs above 1,500 meters. Note that inventories are not available for the Strathcona Park portion of the planning unit. Refer to map 4 for the biogeoclimatic classification of this planning unit.

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

Table 2.2 Biogeoclimatic zones, subzones and variants occurring in the Bedwell-Ursus-Bulson planning unit

Biogeoclimatic Zone	Subzone	Variant	Location	Total Area
Coastal Western Hemlock (CWH)	Very Wet Hypermaritime (CWHvh)	Southern (CWHvh1)	Coastal	198 ha
	Very Wet Maritime (CWHvm)	Submontane (CWHvm1)	Below 600 metres.	6808 ha
		Montane (CWHvm2)	Between 600 metres & 800 metres.	4785 ha
Mountain Hemlock (MH)	Moist Maritime (MHmm)	Windward (MHmm1)	Above 800 metres near the outer coast	4845 ha
	Moist Maritime Parkland (MHmmp)	Windward (MHmmp1)		508 ha
Alpine Tundra (AT)				182 ha
Not inventoried[7]				12,077 ha
Total				29,402 ha

Over 75 different ecosystem types (site series) are found in the Bedwell-Ursus-Bulson unit.

Over 75 different naturally-vegetated ecosystem types (site series) occur in the inventoried portion of the Bedwell-Ursus-Bulson planning unit: 10 different site series in the CWHvh1, 26 different site series in the CWHvm1; 23 in the CHWvm2; 16 in MHmm1; and 8 in the MHmmp1. The most common are Western Hemlock/Amabilis Fir - Blueberry (AB), Mountain Hemlock /Amabilis Fir - Blueberry (MB), and Western Hemlock/Western Redcedar - Salal (HS).

Many of the site series occurring in the Bedwell-Ursus-Bulson planning unit are defined as rare; that is, they cover less than 2 percent of the planning unit or exhibit less than 6 occurrences. In total, rare site series cover approximately 5,094 ha, or 29 percent of the inventoried area of planning unit.

Once the reserves for all other values were mapped, the TPC determined the degree to which the existing reserve network achieved the recommended ecosystem representation targets (Note: targets were derived from the area covered by existing inventories). In the Bedwell-Ursus-Bulson planning unit, 10 ecosystems were found to be underrepresented in the existing reserve network:

- CWHvh1/HS, RS, SD and SF;
- CWHvm1/HS and YG;
- CWHvm2/AB, AF, HD, RS and YG; and

[7] Uninventoried area is mostly comprised of the area within Strathcona Park.

- MHmm1/MO.

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

- CWHvm1/HS/YC/201-400; and
- CWHvm2/HS/CW/401-600.

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

Approximately 313 ha were added to the reserve network to ensure complete ecosystem representation. Map 14 shows the location of the ecosystem units that were added to the reserve network to ensure full ecosystem representation.

2.2.4 Reserves to ensure linkages between watershed planning areas

The Scientific Panel recommends that watershed planning areas be linked in order "to allow migrations of animals, to provide connectivity among plant and animal populations, or to accommodate recreational opportunities." [8] 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 needed 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." [9] 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.

[8] *Report 5*, p. 171
[9] *Report 5*, p. 37

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 be protected in ways that are consistent with traditional knowledge.

Culturally Significant Areas of Ahousaht - Mapping and Inventory

Note: The material in this section, including the text and consultation flow chart, is supplied by the Ahousaht First Nation and has not been modified by the TPC.

The Scientific Panel for Sustainable Forest Practices in Clayoquot Sound determined, as of September 30, 1994 that:

> First Nations' perspectives are inconsistently and incompletely addressed in existing forestry documents and standards pertaining to forest management in Clayoquot Sound. New standards and procedures are required to adequately represent First Nations' interests and involve indigenous people in forest management and associated activities within their traditional territories.[10]

New approaches for addressing these two findings were presented in Report 3: First Nations' Perspectives of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound (the Scientific Panel) and included:

- Recognize more clearly the close interrelationships that exist among the forests, waters, and marine ecosystems in Clayoquot Sound;
- Recognize the importance of Nuu-chah-nulth perspectives and traditional knowledge;
- Include Nuu-chah-nulth people and perspectives in decision-making;
- Provide educational opportunities for non-Nuu-chah-nulth forestry workers to learn about and gain an understanding of Nuu-chah-nulth history, traditional knowledge, and perspectives; and
- Provide training and employment opportunities for Nuu-chah-nulth people in forestry activities.

[10] Report 3, page 47 First Nations' Perspectives, The Scientific Panel

The Scientific Panel's Report 5 (page 166 & 167, 1995b) recommended several watershed-level planning objectives specific to First Nations:

- to identify and describe the environmental resources; natural processes; and cultural, scenic and recreational values in the planning unit;
- to map and designate as "reserves" specific areas within the watershed that: are of special significance for First Nations peoples;
- to map and designate specific areas (termed "harvestable areas") within the watershed where forest harvesting or other resource uses will not compromise the long-term integrity of the forest ecosystem, its use by First Nations people, or its recreational or high scenic value.
- identify reserves and harvestable areas within the watershed. Harvesting is permitted only outside reserve areas which are intended to maintain long-term ecosystem integrity in the watershed, to protect First Nations' cultural important areas, and to protect recreational and scenic values.

The Scientific Panel's *Report 5* (page 169) recommendation 7.16, describes how "reserve" status would be applied at the watershed level: map and designate reserves in which no harvesting will occur to protect key hydro riparian 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 value scenic and recreational resources; and integrate reserve establishment with the refinement and detailed mapping of various land-use zones (e.g. Protected Areas). Reserve status would be applied to protect cultural values as described on page 170 of the Scientific Panel's Report 5 (1995b): ….a variety of culturally important areas, including sacred areas, historic areas and current use areas. These areas must be determined by the Nuu-chah-nulth Nations and protected in ways consistent with traditional knowledge.

The Ahousaht Culturally Significant Areas Mapping Project is one initiative resulting from the Scientific Panel's (Report 3 and 5) recommendations for new approaches to sustainable forest practices in Clayoquot Sound and the determined work of Ahousaht ***Hawiih*** (Hereditary Chiefs), Elders, leadership, membership, staff and those involved in negotiations related to the Interim Measures Extension Agreement (IMEA). Prior to this mapping project beginning in 1999, a network of reserves that protects a broad range of values, many which protect more than one, was established. This project mapped information on lands not-owned privately by the Ahousaht members. This project included a series of interviews, meetings, workshops and

group discussions that produced several outcomes that compliment the existing network of reserves:

- The identification and mapping of areas of significance to Ahousaht in the context of cultural use: sacredness, sensitiveness, historical relevance, for current and/or future use; in three watershed planning units in Clayoquot Sound: Flores Island, Bedingfield and Cypre; all of which lie within the ***Hahuulhi*** (traditional territory) of the Ahousaht ***Hawiih.***
- For watershed planning, a generalized map of areas of cultural significance to Ahousaht, coded one colour.
- A categorization system and consultation process that is framed by ***hishuk ish ts'awalk***, ***Hahuulhi*** and interests in timely decisions for development proposals.
- Further recognition of two important concepts in the history of Ahousaht's resource use in Clayoquot Sound: ***hishuk ish ts'awalk*** and ***Hahuulhi***. ***Hishuk ish ts' awalk*** or "everything is one" embodies the sacredness and respect for all life forms and their approach to resource stewardship.[11] ***Hahuulhi***, the Nuu-chah-nulth system for hereditary ownership and control of traditional territories, represents a long history of resource use and management in Clayoquot Sound, and provides for a basis for Nuu-chah-nulth participation in co-managing the area and its resources.[12]
- The outcomes were achieved by a project team, hired by the Ahousaht Council that included five community researchers, resource personnel from the Central Region Board and the Ahousaht GIS department, a field supervisor and a project coordinator from the Central Region Chiefs/Ma-Mook Development Corporation. This team developed an interviewing and information management protocol after consultation with Dr. Richard "Umeek" Atleo, a member of the Scientific Panel and a Professor at the Malaspina University College in Nanaimo, BC.

Confidentiality was, and continues to be at the forefront of information gathering and management. All personnel involved in this project have signed letters of confidentiality that were presented to each of the interviewees prior to the commencement of the interview. Interviewees were required to sign an acknowledgement and agreement form so that information may be recorded on acetate(s) and audio tape(s). All information is maintained by a secure management protocol and will be protected in ways consistent with traditional knowledge.

[11] Report 3, page vii, First Nations' Perspectives, The Scientific Panel
[12] ibid.

A series of maps for Ahousaht use contain detailed, confidential information provided by the interviewees. The map produced for watershed planning locates, in general, the areas of significance to the Ahousaht. The maps are dynamic in nature and the process adaptable to the presentation of new information. The areas may have cultural significance in the context of cultural use: sacredness, sensitiveness, historical relevance, for current and/or future use. The Scientific Panel, page 51 and 52 of Report 3 sets out several recommendations to be considered when establishing the significance of these sites:

R10 Before the completion of any ecosystem planning process in Clayoquot Sound, the Nuu-chah-nulth of the area (Ahousaht) within the planning is undertaken must be given the opportunity to identify, locate, and evaluate culturally important sites and areas.

R11 The Heritage Conservation Branch typology (section 4.2.2) for classification of culturally important sites ("traditional use sites") should be used with the categories of "Traditional Land Management Sites" and "Education and Training Sites" to be added to the categories delineated in this typology.

R12 The determination of culturally important areas will include sites whose significance and existence are communicated by oral traditions as well as those established by physical and written evidence.

R13 Culturally important areas identified as significant by Nuu-chah-nulth must be protected using methods appropriate to the area and to the use. For example, a buffer zone may be used to protect a culturally modified tree.

The Ahousaht, after consultation with Ahousaht ***Hawiih*** (Hereditary Chiefs), Elders, leadership, membership and staff, developed a categorization system and consultation process designed to protect areas of cultural significance to the Ahousaht, located within the Ahousaht ***Hahuulhi*** (traditional territory) that does not designate an area as a "reserve" - the Ahousaht 2001 Annual General Assembly ratified the term: "culturally significant to Ahousaht", to identify areas of cultural significance to the Ahousaht, instead of the government's "reserve" designation. The categorization system and consultation process are framed by the two concepts: ***Hahuulhi*** and ***hishuk ish ts'awalk*.**

Hishuk ish ts'awalk, or "everything is one," embodies the sacredness and respect for all life forms and their approach to resource stewardship.13

Hahuulhi, the Nuu-chah-nulth system for hereditary ownership and control of traditional territories, represents a long history of resource use and management in Clayoquot Sound, and provides for a basis for Nuu-chah-nulth participation in co-managing the area and its resources.14 Prior to the arrival of Europeans in Clayoquot Sound, the Nuu-chah-nulth exercised plenary authority over their own territories.

All the lands, waterways, shorelines, and offshore islands and waters, even relatively remote areas far inland (e.g. The Ursus Valley, Port Alberni Valley, and Gold River area), fell under this system of ownership, control and resource use called Hahuulhi ("private ownership").[15] The boundaries of the various resource use sites owned by individual chiefs were known to all, and were formally recounted and reinforced many times through Nuu-chah-nulth oral traditions during feasts and other cultural gatherings.

> Also, we know our boundary lines….These boundary lines we can show on a chart, with the old and the new boundary lines, which can tell you that these boundary lines are very important in the same way that the government is with their boundary lines with the U.S.A. and Canada….All along the Nuu-Chah-Nulth, the whole west of Vancouver Island, had their own territories. [16]

The Ahousaht's 2001 Annual General Assembly determined that designating areas of cultural significance to Ahousaht as "reserves", would not be consistent with traditional knowledge: Hahuulhi or hishuk ish ts'awalk. Areas of cultural significance to Ahousaht are to be identified as "culturally significant to Ahousaht". The designation "culturally significant to Ahousaht" would indicate to the Ahousaht, the government and other interested parties that the Ahousaht consultation process must be engaged, in order to initiate any development proposal. A designation of "culturally significant to Ahousaht" identifies the area to be of cultural significance to the Ahousaht in the context of cultural use: sacredness, sensitiveness, historical relevance, for current and/or future use.

The categorization system and consultation process provides for a secure management protocol that protects sensitive details of each area

[13] Report 3, page vii, First Nations' Perspectives, The Scientific Panel
[14] ibid.
[15] Drucker 1951; Ellis and Swan 1981; Haiyupis 1988c, 1992; Bouchard and Kennedy 1990; Sam 1993b
[16] Sam 1993b:6

of cultural significance. Detailed Ahousaht maps and associated files include confidential information on: ownership; historical, current and future use; sacredness of an area; and other significant cultural values. Nine categories have been utilized to ensure clarity and certainty of the confidential information chronicled.

The Ahousaht consultation process is consistent with the spirit of the recommendations as set out in the Scientific Panel's Report 3 and 5 - specific to First Nations interests, the recommendations ratified by the Ahousaht 2001 Annual General Assembly, and interests in timely development.

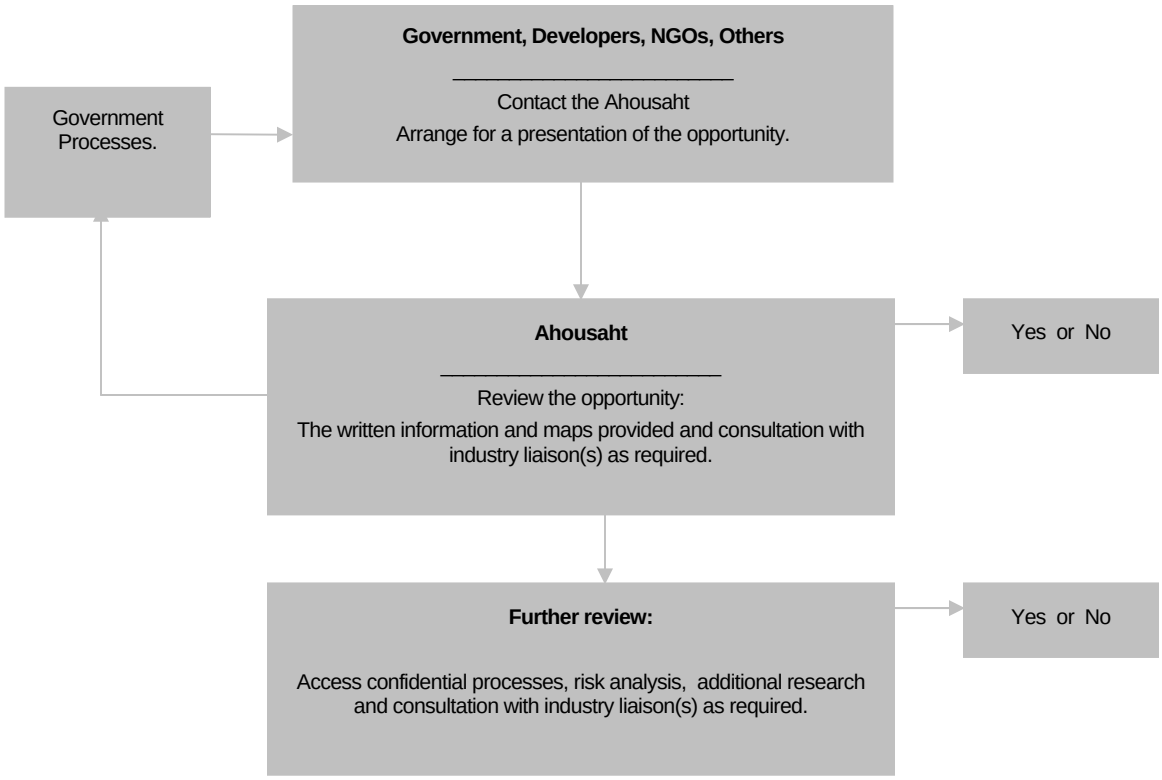
- During sub regional planning, Nuu-chah-nulth Hahuulhi areas should be mapped (by the Nuu-Chah-Nulth) and the role of Hahuulhi in planning identified. At this planning level, make decisions regarding appropriate levels of protection for culturally important areas that extend across watershed boundaries. Identify such areas and initiate preliminary planning to outline watershed-level management actions to sustain values in these areas. Include participation of Nuu-chah-nulth Nations in all planning activities. (Page 165, Scientific Panel's Report 5)
- Harvesting is permitted only outside reserve areas which are intended to maintain long-term ecosystem integrity in the watershed, to protect First Nations' cultural important areas, and to protect recreational and scenic values. (Page 166, Scientific Panel's Report 5).
- R7 - In consultation with the co-chairs of the Nuu-chah-nulth Tribal Council, ***hahuulhi***, the traditional system for ecosystem management, must be recognized in ecosystem co-management process of Clayoquot Sound. ***Hahuulhi*** will be used in determining ecosystem management within the traditional boundary lines. (page 51, Scientific Panel Report 3, 1995)

The Ahousaht consultation process impacts:

- Areas within the Hahuulhi of the Ahousaht Hawiih that have been designated as "culturally significant to Ahousaht" and those that have yet to be identified;
- Territory located outside of the areas designated as "culturally significant to Ahousaht", and within the ***Hahuulhi*** of the Ahousaht ***Hawiih***.

Developers who are interested in accessing, for development purposes, the ***Hahuulhi*** of the Ahousaht ***Hawiih*** would engage the Ahousaht consultation protocol[17]:

Figure 2.1: Ahousaht Consultation Protocol



The Ahousaht Culturally Significant Areas Mapping Project produced the required outcomes for the watershed planning units in Clayoquot Sound which lie within the ***Hahuulhi*** (traditional territory) of the Ahousaht ***Hawiih.*** One outcome, that was not required, but is worthy of mention is that the participating youth recognize that traditional knowledge: ***Hahuulhi,*** is still very much alive and apart of every day life. It has also been noted that information pertaining to the significance of an area continues to emerge. Therefore, the consultation, mapping and inventory processes must be flexible, adaptive to change and to new information disclosed over time.

[17] Note: The Ahousaht consultation process does not at this time, impact trap lines or lands owned privately by members of the Ahousaht.

The Ahousaht's 2001 Annual General Assembly ratified a motion to not use the term "reserve" to protect areas of "cultural significance to Ahousaht". The classification, "cultural significance to Ahousaht" is consistent with traditional knowledge and the spirit of the recommendations as set out in the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound, Report 3 and 5.

To realize the full spirit of the recommendations presented in the Scientific Panel's Report 3 and 5, and those provided by ***Hawiih*** (Hereditary Chiefs), Elders, leadership, membership and staff the Ahousaht are proposing that the remaining watershed planning units located within the Ahousaht ***Hahuulhi*** be documented utilizing a similar methodology. Time is of the essence in the completion of this work as many of the Elders who are holders of this significant information may not be able to pass it on as time catches up.

Approximately 15,164 ha, or 52 percent of the planning unit, has been identified by the Ahousaht First Nation to be of cultural significance. 71 percent of this area overlaps with the watershed reserve network. Map 15 shows the locations of AFN culturally significant areas.

2.3.2 Protection of scenic values

Landscape appearance is important both 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."[18] Accordingly, the Panel identified the protection of scenic values as one component of the ecosystem management theme of maintaining human values.

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

In the Bedwell-Ursus-Bulson 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 provincial parks or placed within reserves identified for other resource values, and are thus provided the highest level of protection.

As noted above, while reserves have not been established specifically for scenic values, many areas with identified scenic values have been preserved within existing parks and reserves for other values. Scenic

[18] *Report 5*, p. 40

values that are located within the harvestable areas in the Bedwell-Ursus-Bulson 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 Bedwell-Ursus-Bulson planning unit, both within reserves and within the harvestable area.

Table 2.3 Bedwell-Ursus-Bulson - scenic classes by area

Scenic Class	Reserves	Harvestable Area	Total Ha*
Natural – Appearing	116	134	251
Minimal Alteration	1971	1753	3747
Small-Scale Alteration	261	375	637
TOTAL	2348	2262	4635

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

Areas comprising 16 percent of the Bedwell-Ursus-Bulson unit have been assigned scenic class objectives.

In total 4,635 ha or 16 percent of the planning unit have been assigned scenic class objectives. Of these, 2,348 ha (almost 51 percent) are located within parks and reserves.

The portion of scenic area in Bedwell-Ursus-Bulson 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 Bedwell-Ursus-Bulson 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.

Strathcona Provincial Park occupies 10,476 ha of the planning unit, including the entire middle and upper reaches of the Bedwell River watershed, including the Bedwell Trail and Bedwell Lake.

Outside the provincial park, important recreation and tourism features in this planning unit include smaller lakes in the Bulson watershed, as well as opportunities for backcountry tourism and wildlife viewing. For several years a small operation has offered accommodation and wilderness themed recreational opportunities from private land adjacent to the mouth of the Bedwell River.

In addition to the areas that fall within the scenic classes and within reserves for other purposes, such as hydroriparian reserves, approximately 220 ha containing features of high to very high recreation significance have been reserved primarily around lakes. This represents 0.1 percent of the total land base of the Bedwell-Ursus-Bulson planning unit. This reserve layer overlaps almost entirely with the hydroriparian reserve layer (see Map 17) .

2.4 Summary: The Bedwell-Ursus-Bulson Watershed Reserve Network

The watershed reserves identified for the Bedwell-Ursus-Bulson 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 Bedwell-Ursus-Bulson 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 include:

- 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.

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, Chapter 3 describes management criteria for special management zones.

A total of 68 percent of the Bedwell-Ursus-Bulson planning unit has been reserved.

Map 18 shows all the reserves in the Bedwell-Ursus-Bulson planning unit. A total of 19,984 ha or 68 percent of the planning unit has been reserved in park and Science Panel reserves. Many of the different reserves overlap and reserve totals and percentages are thus not cumulative. In other words, a given reserve location may be designated for a number of different reasons, and serve a multitude of conservation objectives.

3.0 Sustainable Ecosystem Management in the Bedwell-Ursus-Bulson Watershed Planning Unit

3.1 Management Criteria for Special Management Zones

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

The areas in the Bedwell-Ursus-Bulson 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

Special conditions, considerations and procedures apply in special management zones to ensure that sensitive values are maintained.

Approximately 52 percent of the area of the Bedwell-Ursus-Bulson planning unit has been identified by the Ahousaht First Nation to be of cultural significance. Consistent with traditional knowledge, culturally important areas are not designated as "reserves". Instead, the designation "culturally significant" indicates that the Ahousaht consultation process must be engaged in order to initiate any development proposals (please refer to section 2.3.1 of this volume). Based on the cultural significance and sensitivity of the area in question, the consultation process will determine the compatibility of the development proposal with First Nations rights and interests. The process will also identify the special conditions, considerations and procedures to be met and followed should the development proceed.

Scenic Areas

Lands representing approximately 16 percent of the planning unit have been classed as scenic areas. Over 50 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, the 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 Bedwell-Ursus-Bulson planning unit, the management zones for recreation and tourism amount to 731 ha. Of this, 626 ha (86 percent) overlaps with the reserve layer and the remainder occurs within the 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 Scientific 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 Scientific 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 experts 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. Volume 1 provides a table listing 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 protection for many species 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 Bedwell-Ursus-Bulson 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 Watersheds in the Bedwell-Ursus-Bulson Planning Unit

Watershed or Map Unit	WS ID	Type	Area (ha)	Does Rate-Of-Cut Rule Apply?	5 Year Cut (ha)	10 Year Cut (ha)
19	1097	Primary Watershed, <200 ha	155	No	No limit	No limit
20	1036	Primary Watershed, >500 ha	838	Yes	41.9	-
21 Total		**Primary Watershed, >500 ha**	**7,146**	**Yes**	**357.3**	-
21	799	Primary - residual area	3,542	No	-	-
21.1	960	Secondary Watershed, <=500 ha	384	No	-	-
21.2	934	Secondary Watershed, >500 ha	1,211	Yes	60.5	-
21.3	897	Secondary Watershed, <=500 ha	429	No	-	-
21.4	876	Secondary Watershed, <=500 ha	480	No	-	-
21.5	886	Secondary Watershed, <=500 ha	410	No	-	-
21.6	858	Secondary Watershed, >500 ha	692	Yes	34.6	-
32 Total		**Primary Watershed, >500 ha**	**21,570**	**Yes**	**1,078.5**	-
32	436	Primary - residual area	4,040	No	-	-
32	699	Primary - residual area	1,060	No	-	-
32.1	734	Secondary Watershed, >500 ha	691	Yes	34.5	-
32.10	473	Secondary Watershed, >500 ha	732	Yes	36.6	-
32.11	340	Secondary Watershed, >500 ha	641	Yes	32.0	-
32.12	182	Secondary Watershed, >500 ha	2,110	Yes	105.5	-
32.2 Total		**Secondary Watershed, >500 ha**	**7,348**	**Yes**	**367.4**	-
32.2	701	Secondary - residual area	3,659	No	-	-
32.2.1	750	Tertiary Watershed, <=500 ha	378	No	-	-
32.2.2	680	Tertiary Watershed, >500 ha	1,314	Yes	65.7	-
32.2.3	782	Tertiary Watershed, >500 ha	629	Yes	31.5	-
32.2.4	800	Tertiary Watershed, >500 ha	812	Yes	40.6	-
32.2.5	760	Tertiary Watershed, >500 ha	556	Yes	27.8	-
32.3	644	Secondary Watershed, >500 ha	502	Yes	25.1	-
32.4	454	Secondary Watershed, <=500 ha	487	No	-	-
32.5	372	Secondary Watershed, >500 ha	632	Yes	31.6	-
32.6	576	Secondary Watershed, >500 ha	561	Yes	28.1	-
32.7	584	Secondary Watershed, >500 ha	755	Yes	37.7	-
32.8	577	Secondary Watershed, >500 ha	1,061	Yes	53.0	-
32.9	365	Secondary Watershed, <=500 ha	326	No	-	-

The Ministry of Forests and Range will verify that forest development is 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.

Reported restoration activities in this planning unit include 11.3 kilometres of permanent and 0.2 kilometres of semi-permanent road deactivation.

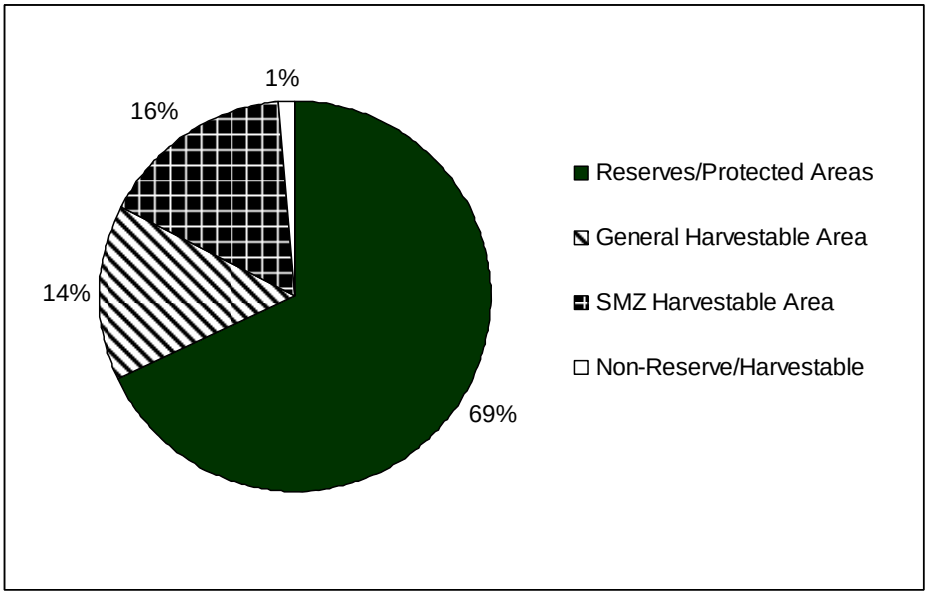
3.6 Summary: Harvestable Area in the Bedwell-Ursus-Bulson Watershed Planning Unit

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 8,983 ha, or 31 percent of the Bedwell-Ursus-Bulson watershed planning unit has been designated as harvestable area. The remainder is in reserves.

Special Management Zones comprise approximately 4,751 ha or 53 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 Bedwell-Ursus-Bulson planning unit.

Figure 3.1 Reserves and Harvestable Area in the Bedwell-Ursus-Bulson Planning Unit



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, 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 Bedwell-Ursus-Bulson 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.

List of Maps