

**Mid Coast Forest District's  
Draft Landscape Units' Rationale  
October 29, 1996**

## **1.1 Introduction**

In accordance with Section 4 of the *Forest Practices Code of British Columbia Act* (FPC) and Section 4 of the *Strategic Planning Regulation*, an area of land within the forest district may be established by the district manager as a landscape unit to ensure that Crown land in a provincial forest and private land in a tree farm licence (TFL) or woodlot licence are managed and used in accordance with Section 2 of the FPC and regulations.

Landscape units are defined as planning areas whose boundaries are based on topographic or other landscape geographic features. As a general guideline, they range in size from 5 000 to 100 000 ha and encompass a single entire watershed or a series of small entire watersheds. They are strategic planning areas used to co-ordinate and integrate resource development and conservation activities.

Landscape units are ecological units. Just as forest sites are useful for describing stand level ecological processes and for planning forest stand management, landscape units are important for describing landscape ecological processes and planning landscape management. Landscape processes include disturbance patterns, the abundance and spatial arrangement of different kinds of wildlife habitat, hydrologic processes, animal movements, seed dispersal, and air and water movement.

Landscape units are essential for implementing a number of provincial and regional strategies, especially the biodiversity strategy. The FPC; the chief forester's *Higher Level Plans: Policy and Procedures*; and the Provincial and Regional Biodiversity Committee's *Landscape Unit Delineation* papers, all provide guidelines for determining landscape units and setting landscape unit objectives.

The objective of the FPC, to set biodiversity objectives, can be achieved through the establishment of landscape units. Planning areas larger than landscape units (Timber Supply Areas, Resource Management Zones) are too large to be sensitive to the unique attributes of specific landscapes, or for ensuring that a minimum level of biodiversity is maintained across the district. Although these larger planning areas are essential for setting broad objectives, landscape units are required to effectively integrate conservation activities with resource development activities in a manner most appropriate to specific areas. Landscape units also allow effective integration of visual resource, tourism, recreation, and aesthetic values with those of biodiversity conservation and resource development.

Landscape unit boundaries are determined prior to, and independently of, setting landscape unit objectives. Boundaries should provide the basis for examining ecological characteristics and resource development values within the bounds of a relatively stable, value-neutral management planning area. Landscape units should not be based on resource development or conservation values, past or present human use patterns, or administrative boundaries.

All landscape unit boundaries in a forest district should be delineated simultaneously to avoid gaps or overlaps among adjacent units. This process should take into consideration landscape units already established in adjacent forest districts. The boundaries of existing Local Resource Use Plans and Total Resource Use Plans should also be considered.

In some districts there may be landscape units with areas that are outside of the provincial forests or are not private land in a TFL or woodlot license. These areas should be clearly identified and are not covered by landscape unit objectives. These types of units help to place private land and resource conservation and community conservation concerns (e.g. water quality; runoff peak flows; fish and wildlife habitat protection measures; green space zoning; visual and recreation management) within a broader ecological context. Landscape units, as defined above, may prove to be a unit of relevance for analysis and management by regional districts and other government departments to address much more than just biodiversity objectives, as defined by the FPC.

## **1.2 Procedure**

Landscape units have three important criteria: size, topography, and ecology, as described below. These criteria were used to define the 58 draft landscape units within the Mid Coast Forest District.

### **1.2.i Size of Landscape Units should be between 5 000 and 100 000 ha**

The size range described by the Provincial and Regional Biodiversity Committee's *Landscape Unit Delineation* papers is selected to correspond to the scale of predominant natural disturbances and to the scale at which the different types of habitat present in an area, are adequately represented. This scale also encompasses the range of movement of many wildlife species and conforms to the scale of many hydrologic (water) and riparian processes. At both larger and smaller scales, landscape planning for biodiversity objectives becomes less effective.

As a general guideline, landscape units should be smaller in areas of complex terrain and larger in areas of relatively uniform terrain. This guideline is based on natural disturbance regimes and types. These disturbance types characterize areas with different natural disturbance regimes. Stand initiating disturbances are those processes that largely terminate the existing forest stand and initiate secondary succession in order to produce a new stand. The disturbance agents are mostly wildfires, windstorms, and, to a lesser extent, insects and landslides. For more technical descriptions of disturbance regimes and types, the *Biodiversity Guidebook* should be consulted.

In complex mountainous terrain, the scale of landscape processes, such as natural disturbance regimes and ecosystem representation, is generally smaller, whereas in more uniform terrain, landscape processes and ecosystem representation occur at larger scales. Landscape units should amalgamate smaller subdrainages to larger sizes, within the acceptable target range for desirable size, if there are no functional distinctions between subdrainages.

For the Vancouver Forest Region, four administrative planning areas (Queen Charlotte Islands, Mid Coast, Sunshine Coast-Squamish-Chilliwack, and Vancouver Island) are proposed to expedite planning efficiency with regard to the establishment of draft landscape unit boundaries. The Mid Coast Forest District is further broken into two groups, complex mountains and island groups. In addition, some generalized size ranges of landscape units and averages are presented below as a preliminary guide:

Mid Coast:

Complex Mountains	30 000-80 000 ha range	50-60 000 ha average size
Island Groups	20 000-60 000 ha range	30-40 000 ha average size

**1.2.ii Topographic features should be boundaries of landscape units**

Landscape unit boundaries are drawn on topographic features, such as canyons or ridgelines (height of land). Primarily watershed boundaries (height of land) encompass entire watersheds, groups of entire watersheds or infrequently, hydrologically consistent subunits of watersheds.

**1.2.iii Ecological attributes should be the basis for significant deviations from target sizes (30 000 and 80 000 ha)**

Before delineating landscape units near the targets of the recommended size, the ecological integrity of the unit must be considered. Biogeoclimatic units were used, which

describe the combination of climatic and ecological processes within the Vancouver Forest Region. If a unit is so small that it includes only a small part of a watershed, not individually distinct from other parts of the watershed, or is so large that it contains several watersheds with little ecological inter-relations, the appropriateness of the unit may be questionable.

#### **1.2.iv Hydrologic features may sometimes be used as landscape unit boundaries**

Large rivers, lakes, and inlets (large water bodies) may be used as landscape unit boundaries when inclusion of the river or lake watershed would result in exceeding the recommended upper size target (80 000 ha), for landscape units. Inlets or lakes that are larger than 5 000 ha and comprise a complete boundary between adjacent units are not considered as contributing to either unit. Where the watershed is larger than the suggested maximum size, or where a number of watersheds drain into a large lake or an inlet, the water body can be used as a landscape unit boundary.

#### **1.2.v Administrative boundaries may be used to refine landscape unit boundaries where watershed boundaries are indistinct**

Man-made features and administrative boundaries should not be used as the primary basis for landscape unit boundaries. However, where topographic features are indistinct, and the broad area within which a watershed boundary may be drawn includes man-made or administrative boundaries, these may be used to specifically locate the boundary. In this situation, a man-made boundary such as a main road may be used to approximate the height of land. Similarly, biogeoclimatic units, natural disturbance types, and resource management zone boundaries may be used for this purpose. Community watersheds less than 10 000 ha may warrant designation as individual landscape units, particularly if they are not tributary to primary watersheds. In all cases, preference should be given to the boundary that encompasses an ecologically functional landscape area.

### **1.3 Anomalies**

Anomalies are deviations from the common procedure. Landscape unit numbers 1 through 10, 34, and 44 are anomalies. Landscape units 34 and 44 are adjacent to landscape units 1 through 10, all of which were developed by the "Bella Coola Local Resource Use Plan" (BCLRUP) Committee.

In the BCLRUP plan, the 10 landscape units were delineated based on the best information at the time. The delineation of landscape units was restricted only to the area within the BCLRUP boundary, and was done a year and a half before any provincial or regional guidance for setting landscape unit boundaries was received.

For

each landscape unit, the plan outlines emphasis options for biodiversity, fish production, estuary/foreshore, timber production, tourism/recreation/aesthetics, and human settlement. Landscape unit objectives, based on all of the emphasis options, for all of the different resources found, were recommended for each landscape unit. The BCLRUP committee recommended, to the district manager, that their draft landscape units be incorporated into the Land and Resource Management Plan (LRMP) process.

In his approval letter of August 28, 1996, regarding the BCLRUP, the district manager states: "I will be providing the LRUP plan to the (LRMP) table and recommend that it be considered as a building block within the context of the larger sub-regional planning process." He also states: "Those (resource emphasis options and landscape unit objectives) identified within the Bella Coola LRUP will certainly provide the basis for discussion at the broader level planning process capitalizing on the work that you have done."

In order to be consistent with the BCLRUP plan and the district manager's commitments to the BCLRUP committee members, the Mid Coast Forest District Biodiversity Committee are submitting landscape units 1 through 10, as they are, for consideration by the LRMP table. To accommodate the Geographic Information System (GIS), the numbering of landscape units 2, 3, and 6 was slightly changed, as follows: The portion of landscape unit 2 that borders landscape unit 44 (Nusash) has become 2a. The portion of landscape unit 2 that borders landscape unit 34 (Twin) has become 2b. The portion of landscape unit 2 that borders landscape unit 8 (Smitley/Noeick) has become 2c. The portion of landscape unit 3 that borders landscape unit 4 (Sallompt/Noosgulch) has become 3a. The portion of landscape unit 3 that borders landscape unit 7 (Nusatsum) has become 3b. The portion of landscape unit 6 that borders landscape unit 55 (Kwatna) has become 6a. The portion of landscape unit 6 that borders landscape unit 8 (Smitley/Noeick) has become 6b.

The Mid Coast Forest District Biodiversity Committee acknowledges the technical problems with landscape units 2, 3, 6, 34, and 44. They recommend that the LRMP table be made aware of these technical problems. They have developed, for the LRMP table's consideration, additional solutions to deal with the technical problems and anomalies. Section 1.5 Options outlines these solutions. Adoption of these options may provide a sound technical product, which meets provincial and regional policy; however, other social issues must be considered as the BCLRUP was a public process.

## 1.4 Results

In total, 58 landscape units were drawn for the Mid Coast Forest District. Of these 58 landscape units, 49 are within complex mountains and nine are within island groups. The average size of landscape units across the region is very near target levels: 52 404 ha for mountainous units and 35 839 ha for island units.

Landscape units in the Mid Coast Forest District are described on the attached table and shown on the attached map. The entire area within the landscape unit, including area in parks and private land, is based on size and ecological criteria and will result in some units having a mix of park, crown, and private land. In many units, more than one natural disturbance type occurs since natural disturbance type boundaries and watershed boundaries rarely match. The boundary criteria recognize natural features over administrative boundaries hence landscape units cross forest districts. Where landscape units crossed forest district boundaries the unit was assigned to the district containing the greatest portion of the landscape unit area.

## 1.5 Options

Options for solving the technical problems with landscape units 2, 3, 6, 34, and 44 are outlined below:

1. The ecological/biological processes within landscape unit 2 (2a, 2b, 2c) are broken by large water bodies. On the basis of these ecological criteria, landscape unit 2 could be separated as outlined below:

- Landscape unit 2a could be joined in its entirety to landscape unit 44 (Nusash). This recommendation is based mainly on the size and ecological criteria. Landscape unit 2a should not be joined to landscape unit 3a because of the CWHvm3 and MHmm1 presence in landscape unit 2a.
- Landscape unit 2b could be joined in its entirety to landscape unit 34 (Twin). This recommendation is based on the ecological and size criteria. The inclusion of 2b as part of landscape unit 34 will bring together all of the CWHvm3 along the north aspect of the Burke Channel.
- Landscape unit 2c boundary should remain unchanged, numbered as landscape unit 2, and renamed Clayton. The rationale for this is ecological and relates to the presence of the CWHvm3 and the MHmm1 occurring solely within this landscape unit's boundary along the north aspect of the South Bentinck Arm.

2. Landscape unit 3a and 3b could remain as they are but would require different numbers. Landscape unit 3b should not be joined to landscape unit 7 because of the presence of community watersheds. Landscape unit 3a should not be joined to landscape unit 2a because of the CWHvm3 and MHmm1 presence in landscape unit 2a.

3. The ecological/biological processes within landscape unit 6 (6a, 6b) are broken by large water bodies. On the basis of these ecological criteria, landscape unit 6 could be separated as outlined below:

- Landscape unit 6a could be left alone, numbered as landscape unit 6, and retain its name of South Bentinck. The rationale for this is that its size is within the range for complex mountains and that it includes all of the CWHws2 and MHmm2 that occurs on the north aspect of the South Bentinck Channel. Landscape unit 2b should not be included as part of this landscape unit 6 because of the CWHvm3 and MHmm1 presence in landscape unit 2b.

- Landscape unit 6b should be joined in its entirety to landscape unit 8 (Smitley/Noeick), based on size and ecological criteria. Landscape unit 6b should not be joined to landscape unit 2c because of the CWHvm3 and MHmm1 presence in landscape unit 2c.

## 1.6 Conclusion

The Mid Coast Forest District Biodiversity Committee has delineated 58 draft landscape units within the target size ranges for complex mountains and island groups. Size, topography, ecology, and hydrology were used for defining boundaries. The draft landscape units from the Bella Coola Local Resource Use Plan were used; and as such, some are anomalies. Options, on how to rectify these anomalies, were provided for consideration by the LRMP table.