Ministry of Environment

# SOILS

## OF THE HAZELTON MAP AREA

## (NTS 93M NW, NE, SE)

### MOE TECHNICAL REPORT 7

REPORT NO. 47
BRITISH COLUMBIA
SOIL SURVEY

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# SOILS OF THE HAZELTON MAP AREA (N T S 93M NW, NE, SE)

## Report No. 47
## British Columbia Soil Survey

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SURVEYS AND RESOURCE MAPPING BRANCH

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## PREFACE

Soils and their suitability for various purposes form an integral part of making decisions in land-use planning and management. A reconnaissance soil survey of the Hazelton map area (93M/SE, NE & NW) was thus initiated in 1974 to provide basic soils information for this area as well as generating information required for the production of land capability for forestry maps under the Canada Land Inventory program.

Four products have resulted from this study. They are:

(1) this report which describes the soils and the environments in which they occur;

(2) soil maps, enclosed with this report at a scale of 1:100 000 (also available in manuscript form* at a scale of 1:50 000), which show the distribution of the soils described in this report as well as topographic (slope) classes;

(3) terrain maps, available in manuscript form* at scales of 1:50 000 and 1:100 000 which show the distribution of surficial materials, surface expressions, and modifying processes; and

(4) land capability for forestry maps, available in manuscript form* at a scale of 1:50 000. They indicate the inherent capability of the land to grow merchantible timber according to the Canada Land Inventory (1972) classification methodology.

*Manuscript maps are available from the MAPS-BC, 553 Superior Street, Victoria, British Columbia, V8V 1X5.

## HOW TO USE THE SOIL MAPS AND REPORT

The descriptions of the soils and the environments in which they occur are presented in this report. They are related to the soil maps through the soil map legend. The soil maps are enclosed at the back of this report and are at a scale of 1:100 000. Manuscript soil maps at a scale of 1:50 000 are also available from MAPS-BC, 553 Superior Street, Victoria, British Columbia, V8V 1X5. The information content is the same on both sets of maps. The soil maps should be used in combination with the report at all times.

The soil maps indicate the extent and distribution of the various kinds of soils and identifies them by means of symbols. The map legend describes the symbols and provides the link to the soil descriptions.

The mapping is of a reconnaissance nature and is intended to be used for overview planning purposes and for general management decisions. Detailed application will require further on-site inspection. The definitions of the soil association components are objective and will facilitate more detailed investigations.

General information about the map area is contained in Chapter 1, while field mapping methods and legend development are described in Chapter 2. The individual soil associations are described in Chapter 3. Information relating to the suitability (or limitations) of the soils for specific uses is presented in Chapter 4.

## ACKNOWLEDGEMENTS

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# CHAPTER ONE
# GENERAL DESCRIPTION OF THE MAP AREA

## 1.1 LOCATION

The Hazelton map area is located in west central British Columbia (Figure 1) and occupies approximately 10 800 square kilometers (1.08 million hectares). It is bounded on the south and north by 55° 00' and 56° 00' N latitude respectively and by 126° 00' W and 128° 00' W longitude on the east and west respectively. Map sheet 93M/SW was previously mapped and the soils are described in the following publication: Soil Resources of the Smithers - Hazelton Area by G. G. Runka, Soil Survey Division, BCDA, Kelowna, 1972.

Except for the Indian village of Babine and a few farms in the Kispiox valley, the map area is largely uninhabited. Hazelton is the nearest population centre and lies immediately southwest of the map area.

## 1.2 PHYSIOGRAPHY AND DRAINAGE

Physiographically, the map area consists of the Skeena Mountains in the northwest, the Nass Basin in the far west, and the Nechako Plateau in the eastern half. Extending into the northeast corner are the Omineca Mountains (Holland, 1976), (Figure 2). These physiographic subdivisions are used as a first level of subdivision for a broad stratification of soils due to the topographical and environmental similarities present within physiographic units.

The main drainage in the western two thirds of the map area is via Babine Lake, Babine River, Kispiox River and Skeena River westward to the Pacific Ocean. A small portion in the northeast is drained by the Driftwood River and Takla Lake, by way of the Nechako and Fraser rivers to the Pacific Ocean. The extreme northeast corner within the Omineca Mountains is drained by the Omineca and Peace Rivers to the Arctic Ocean.

### 1.2.1 The Nechako Plateau

The Nechako Plateau occupies the area between the Skeena Mountains in the west and the Omineca Mountains in the northeast. It is an area of low relief with large expanses of relatively flat and gently rolling terrain. The elevation of the Plateau surface generally ranges from about 900 m in the southeast to 1200 m in the northwest. A few, small areas of rounded, hilly terrain in the north extend to about 1600 m elevation.

Except for individual, relatively low lying mountainous peaks which are mainly covered with colluvium, most of the Nechako Plateau is drift covered. Glacial till is by far the most abundant soil parent material. Meltwater channels and eskers are common at lower elevations while organic deposits are most prevalent in depressions at the upper elevations.

### 1.2.2 The Omineca Mountains

The Hogem Ranges of the Omineca Mountains intrude into the extreme north-eastern corner of the map area. The portion of the Hogem Ranges in the map area have somewhat rounded summits and

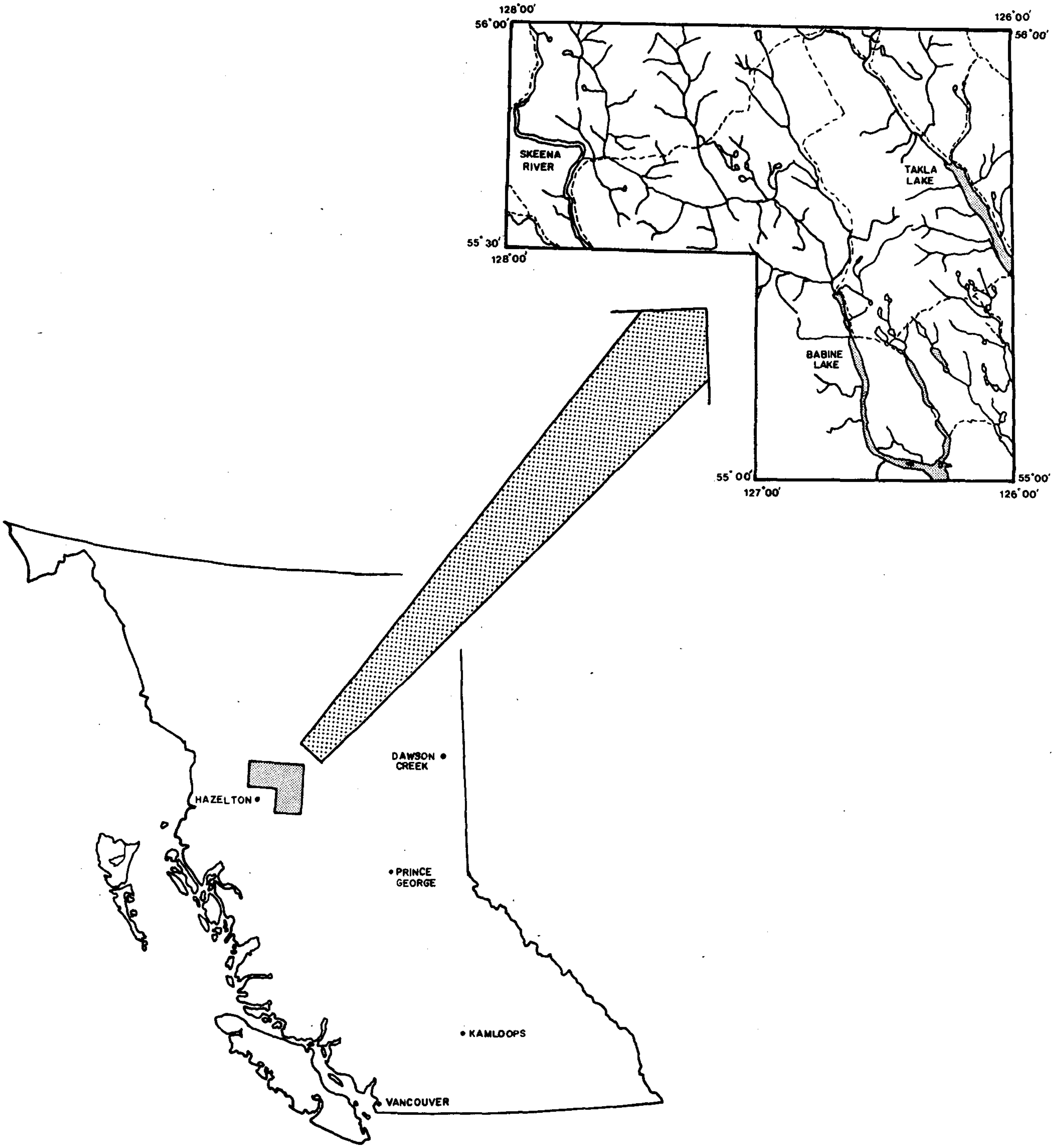
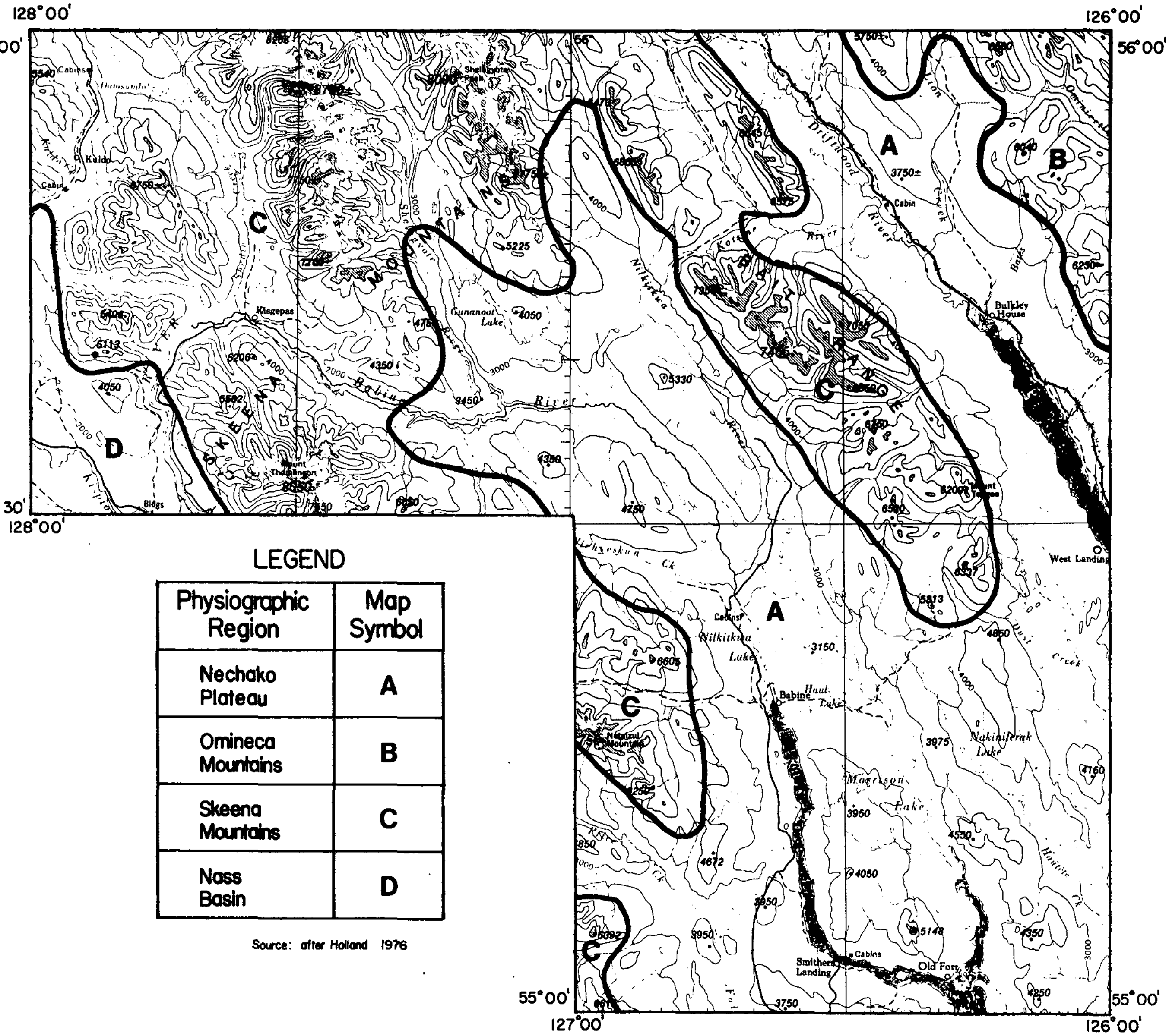



Figure 1 Location of Hazelton Map Area.




LEGEND

| Physiographic Region | Map Symbol |
|---|---|
| Nechako Plateau | A |
| Omineca Mountains | B |
| Skeena Mountains | C |
| Nass Basin | D |

Source: after Holland 1976

**Approx. Scale: 1 cm equals 8 km**

Figure 2 Physiographic Regions of the Hazelton Map Area.

all peaks have cirques on their northern aspects. The individual ranges are northwest - southeast trending and are separated by wide, open valleys. Elevations range to about 1900 m.

### 1.2.3 The Skeena Mountains

The Skeena Mountains occur in the northwest and west portions of the map area. They are bounded on the east by the Nechako Plateau from which they abruptly rise, and on the west by the Nass Basin. They consist of a number of northwest trending ranges that include the Driftwood, Bait, Atna, Sicintine and Babine Ranges.

The Skeena Mountains were almost entirely covered by Pleistocene ice, which rounded the ridges and summits below about 1800 meters elevation. In contrast, the peaks and high ridges above this elevation present a serrate and jagged profile which has been developed by intense alpine glaciation, through the production of cirques on their northern and eastern sides. Remnant glaciers still remain along the higher crests; the greatest amount of ice being in the Atna and Sicintine Ranges. The valley profiles have been modified by valley glaciers. Tarns and hanging valleys abound, and the mountains everywhere show the erosional effects of cirque and valley glaciers (Holland, 1976).

### 1.2.4 The Nass Basin

The Nass Basin is an irregularly shaped area of low relief mostly lying between 600 and 800 meters elevation. Only a small portion occurs in the map area where it is drained primarily by the Kispiox and Skeena Rivers. The whole basin was occupied by glacial ice as evidenced by the widespread presence of glacial till together with poorly organized surface drainage and numerous lakes.

## 1.3 BEDROCK GEOLOGY

The bedrock geology of the area has in part been mapped and described by Armstrong, 1938, and revised by Richards, 1978 and 1980. A complex variety occurs that include rocks of volcanic, intrusive, sedimentary and metamorphic origins. Greywacke, shale, conglomerate, argillite and quartzite as well as others of sedimentary origin dominate the Skeena Mountains portion (93M W1/2) of this map area.

Bedrock groupings have been used in developing broad stratifications of soils since soils developed in materials derived from different rocks often show considerable variation in physical and chemical properties, hydrological features and forest growth. In terms of this report, the various bedrock types have been grouped into three general bedrock groups: feldspathic rocks, ferro-magnesium rocks and siliceous sedimentary rocks (Forbes and Meyer, 1961). The general description of the groups as well as some of the prevailing characteristics of soils derived from these groups are as follows:

### 1.3.1 Feldspathic Igneous and Metamorphic Rocks

Light colored minerals predominate. Granite, granite porphyry, rhyolite, rhyolite porphyry as well as some gneiss and schist are dominant. Soils derived from these rocks tend to be coarse to moderately coarse textured and acidic in reaction and are usually well supplied with potassium and phosphorus but are low in calcium.

### 1.3.2 Ferro-magnesium Igneous and Metamorphic Rocks

Dark-colored minerals predominate. Gabbros, gabbro porphyries, basalt, basalt porphyries and other dark-colored igneous rocks are dominant, as well as some gneisses and schists. Soils derived from these rocks tend to be moderately coarse to medium textured and neutral in reaction although surface horizons in the study area are acidic due to leaching. The soils are usually high in magnesium, iron and phosphorus.

### 1.3.3 Siliceous Sedimentary and Metamorphic Rocks

This group dominantly consists of sandstones, conglomerates, quartzites and other similar sedimentary rocks. Soils derived from these rocks tend to be moderately coarse to medium textured and acidic in reaction. The soils tend to be relatively low in nutrients.

## 1.4 LANDFORMS AND SURFICIAL MATERIALS

Except for the highest peaks in the Skeena Mountains, the entire map area was covered by glacial ice during the Pleistocene period. Consequently, the map area contains a variety of glacial landforms and soil parent materials. These include drumlins, rolling morainal deposits, eskers, outwash and shallow lacustrine sediments in the low relief Nechako Plateau. Morainal, colluvial, and various fluvioglacial deposits in valley bottoms are common in the Skeena and Omineca Mountains.

Nivation, solifluction and mass wasting are active above timberline in the alpine environment while erosion and deposition of material by water and gravity have and are continuing to modify the landscape in other areas. They have given rise to widespread colluvial veneers and blankets on steep mountain slopes and hillsides and to fluvial fans and floodplains at and near valley bottoms. Bogs and fens are common in depressions and low-lying areas and are most numerous at higher elevations within the Nechako Plateau.

Surficial geologic materials form the parent materials for all soils. Consequently, soils inherit many of their characteristics (eg. topography, texture, coarse fragment content, perviousness) from these deposits. As such, surficial materials are usually used as a stratification level in soil classification (Table 2).

The surficial geology of the entire area has been mapped at a scale of 1:50 000. The reader is referred to these maps, available in manuscript form from MAPS-BC, 553 Superior Street, Victoria, British Columbia, V8V 1X5.

## 1.5 CLIMATE

A continental climate with long, cold winters and relatively short, mild summers prevails in the eastern part of the map area. The winters are cold and dry and are mainly due to the frequent influxes of continental arctic air and less frequent occurrance of moist Pacific air. This trend is slightly reversed within the Skeena Mountains where the area generally enjoys higher precipitation with short, cool summers. The wettest regions are the west-facing, windward slopes of the Skeena Mountain Ranges.

Table 1
Selected Climatic Data*

| Station | Mean Annual Precipitation (mm) | Mean Annual Snowfall (cm) | Mean Annual Temperature (°C) |
|---|---|---|---|
| Babine Lake | 600 | 270 | 1.1 |
| Germansen Landing | 494 | 269 | 0.3 |
| Smithers | 522 | 222 | 3.5 |
| New Hazelton | 535 | 142 | 4.4 |
| Babine Pinkut Cr. | about 530 | 265 | --- |

* Source of data: Atmospheric Environment Service

The valleys in the northern part of the map area (Driftwood, Nilkitkwa, Shelagyote rivers) are somewhat colder and wetter than the Nechako Plateau area to the south. A large proportion of the precipitation falls as snow. Precipitation increases and temperature decreases with increased elevation in the mountains and leads to a much greater variation in climate within the mountain area as opposed to the plateau. Precipitation is generally well distributed throughout the year and summer moisture deficits are under 100 mm.

## 1.6 VEGETATION (FOREST ZONATION)

Five major vegetation zones based on climax vegetation as defined by van Barneveld (1976) are recognized in four physiographic regions within the study area. These zones are believed to represent substantially different major macro-climatic conditions.

### 1.6.1 <u>Forest Zones Associated with the Nechako Plateau</u>

#### 1.6.1.1 Subboreal White Spruce - Alpine Fir Forest Zone (SBwS-alF)

This zone occurs at lower elevations on the Nechako Plateau (Figure 1) and respectively ranges in elevation to about 1000 m and 1100 m in the western and eastern portions of the plateau.

Climax stands are characterized by white spruce and alpine fir. White spruce is commonly hybridized with Engelmann spruce at higher elevations. Lodgepole pine and trembling aspen are two common trees comprising seral stands in the map area. Black spruce is common in bogs.

#### 1.6.1.2 Subalpine Engelmann Spruce - Alpine Fir Forest Zone (SAes-alF)

This zone occurs on the Nechako Plateau (Figure 3) at elevations greater than 1100 m. The maximum elevation is about 1600 m.

Climax stands are characterized by Engelmann spruce and alpine fir. Minor amounts of lodgepole pine and black spruce also occur.

## 1.6.2 Forest Zones Associated with the Omineca Mountains

### 1.6.2.1 Subalpine Engelmann Spruce - Alpine Fir Forest Zone (SAeS-alF)

This zone occurs in the Omineca Mountains at elevations greater than 1100 m. The maximum elevation is about 1800 m.

Climax stands are characterized by Engelmann Spruce and Alpine Fir. At higher elevations the closed forest canopy grades into tree "islands" or park-lands. Accordingly, the zone is divided into a forested (SAeS-alF:a) and a Krummholz (SAeS-alF:b) subzone based on tree physiognomy (form). The boundary between these two subzones occurs at approximately 1650 m.

### 1.6.2.2 Alpine Tundra (At) Zone

This zone occurs in the Omineca Mountains at elevations greater than 1830 m. Climatic conditions are sufficiently severe that trees are unable to become established. Common plants include white and red heather, mountain-avens, crowberry, willows and lichens.

For the purposes of legend development (see Chapter 2.2), the Krummholz subzone of the Subalpine Engelmann Spruce-Alpine Fir forest zone is grouped with the Alpine Tundra forest zone. The soils are generally similar in this zone and subzone.

## 1.6.3 Forest Zones Associated with the Skeena Mountains

### 1.6.3.1 Coastal Western Hemlock - Pacific Silver Fir Forest Zone (CwH-aF)

This zone occurs in the western part of the map area and occupies the lower lying valleys in the Skeena Mountains. The zone rises from about 350 to 1050 m in elevation.

Climax stands are characterized by western hemlock and Pacific silver fir. Western red cedar is found in pure stands at the lowest elevation of the zone. Less common species include mountain hemlock, lodgepole pine and alpine fir.

### 1.6.3.2 Subalpine Mountain Hemlock - Alpine Fir Forest Zone (SA mH-alF)

This zone occurs in the Skeena Mountains at elevations between approximately 1050 and 1600 m and consists of a lower forested subzone and an upper Krummholz subzone.

Climax stands are characterized by mountain hemlock and alpine fir. At higher elevations the closed forest canopy grades into tree "islands" or parklands. In this Krummholz subzone only stunted forms of alpine fir and minor amounts of mountain hemlock are present. The boundary between these two subzones occurs at about 1450 m.

### 1.6.3.3 Subalpine Engelmann Spruce - Alpine Fir Forest Zone (SA eS-alF)

This zone occurs in the northern part of the Babine Range within the Skeena Mountains at elevations between about 1050 and 1600 m. It consists of a lower forested subzone and an upper Krummholz subzone.

Climax stands of Engelmann spruce (hybridized), and alpine fir occur. Less common species are mountain hemlock, western hemlock and lodgepole pine. At higher elevations the closed forest canopy of dominantly alpine fir grades into tree "islands" or parkland. In this Krummholz subzone only stunted forms of alpine fir and minor Engelmann spruce are present. The boundary between these two subzones occurs at about 1450 m.

**1.6.3.4 Alpine Tundra (At) Zone**

This zone occurs at elevation greater than 1600 m. Climatic conditions are sufficiently severe that trees are unable to become established. Common plants include white and red heather, mountain avens, crowberry, willows and lichens.

**1.6.4 <u>Forest Zones Associated with the Nass Basin</u>**

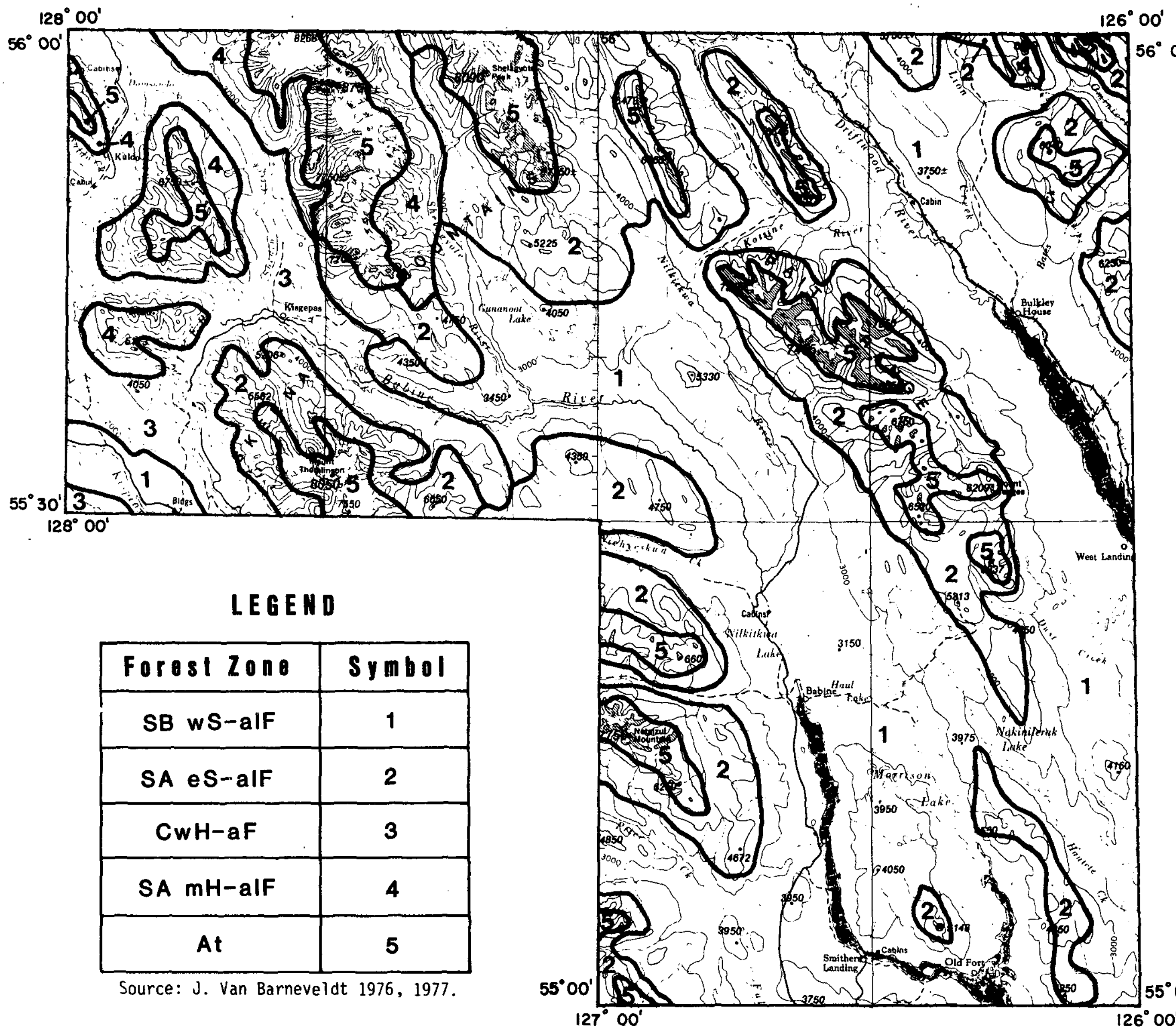
**1.6.4.1 Subboreal White Spruce - Alpine Fir Forest Zone (SBws - aIF)**

This forest zone occurs at the lowest elevations (290 to 400 m) within the Nass Basin physiographic region. This area is influenced in winter by cold air drainage from the north and surrounding mountains which accounts for growth of alpine fir and absence of western red cedar. White and hybrid spruce together with alpine fir are the dominant tree species. Trembling aspen and lodgepole pine also occur.

**1.6.4.2 Coastal Western Hemlock - Pacific Silver Fir Forest Zone (CwH-aF)**

This zone occupies the upper elevations within the Nass Basin physiographic region. The zone rises from about 400 to 700 m in elevation.

Climax stands are characterized by western hemlock with inclusions of pacific silver fir, western red cedar, lodgepole pine and black cottonwood.




## LEGEND

| Forest Zone | Symbol |
|---|---|
| SB wS-alF | 1 |
| SA eS-alF | 2 |
| CwH-aF | 3 |
| SA mH-alF | 4 |
| At | 5 |

Source: J. Van Barneveldt 1976, 1977.

**Approx. Scale: 1 cm equals 8 km**

Figure 3 Forest Zones of the Hazelton Map Area.

Table 2
General Relationship Between Physiographic Regions, Forest Zones,
Soil Parent Material, Bedrock Groups, Soil Textures, Soil Taxonomy and Soil Associations

| PHYSIOGRAPHIC REGION | FOREST ZONE[2] (approx. elevation range in meters) | SOIL PARENT MATERIAL[3] | DOMINANT ASSOCIATED BEDROCK[4] | SOIL TEXTURE[5] (DEGREE OF DECOMPOSITION) | DOMINANT TAXONOMIC CLASSIFICATION[6] | SOIL ASSOCIATION NAME | SOIL ASSOCIATION SYMBOL |
|---|---|---|---|---|---|---|---|
| SKEENA MOUNTAINS | Coastal Western Hemlock-Pacific Silver Fir forest zone (CWH - aF) (350-1050) | Colluvium (Cbv) | Undifferentiated | gravelly medium to moderately coarse | O.HFP | Kisplox | KX |
| | | Fluvial (recent sgF) | Undifferentiated | gravelly moderately coarse | CU.R | Tiitusha | TA |
| | | Fluvial fans (recent Ff) | Undifferentiated | gravelly moderately coarse | O.HFP | Hagwilget | H |
| | | Fluvioglacial ($sgF^G$) | Undifferentiated | gravelly coarse | O.HFP | Shegunia | SH |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | LU.HFP | Skeena | SN |
| | | Organic (Ob) | - | (mesic) | TY.M | Nichyeskwa | NY |
| | Subalpine Mountain Hemlock-Alpine Fir forest zone (SAmH - alF) (1050-1600) | Colluvium (Cbv) | Undifferentiated | gravelly medium to moderately coarse | O.FHP | Janze Lake | JL |
| | | Fluvioglacial ($sgF^G$+F) | Undifferentiated | gravelly coarse | O.HFP | Shedin | SK |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | LU.FHP | Kuldo | KO |
| | | Organic (Ob) | - | (mesic) | TY.M | Shelagyote | SY |
| | Subalpine Engelmann Spruce - Alpine Fir forest zone (SAeS-alF) (1050-1600) | Colluvium (Cbv) | Undifferentiated | gravelly medium to moderately coarse | O.FHP | Cataline | CE |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | LU.FHP | Kisgegas | KG |
| | | Organic (Ob) | - | (mesic) | TY.M | Netalzul | NZ |
| | Alpine Tundra zone (AT) and Krummholz subzone of either SAes - alF or SAmHalF zones (>1600) | Colluvium (Cbv) | siliceous sedimentary | gravelly moderately coarse | SM.HFP | Damsumlo | DO |
| | | Colluvium (Cbv) | ferro-magnesium | gravelly moderately coarse | SM.HFP | Niikitkwa | NW |
| | | Colluvium, talus (rbCbv) | Undifferentiated | rubbly bouldery very gravelly coarse | O.R | Sidina | SA |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately coarse | SM.HFP | Cronin | CN |
| NASS BASIN | Coastal Western Hemlock - Pacific Silver Fir forest zone (CWH - aF) (400-700) | Colluvium (Cbv) | Undifferentiated | gravelly moderately coarse | O.HFP | Cullon | CU |
| | | Fluvioglacial ($sgF^G$+F) | Undifferentiated | gravelly coarse | O.HFP | Rosenthal | RT |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | LU.HFP | Sammon | SM |
| | | Organic (Ob) | - | (mesic) | TY.M | Tenas Hill | TH |
| | Subboreal White Spruce - Alpine Fir forest zone (SBwS - alF) (290-400) | Fluvial (recent sgF) | Undifferentiated | gravelly moderately coarse to coarse | CU.R | Sheglsic | SC |
| | | Fluvioglacial ($sgF^G$+F) | Undifferentiated | gravelly coarse | O.HFP | Iitzul Lake | IZ |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | BR.GL | Thomlinson | TL |
| OMINECA MOUNTAINS | Subalpine Engelmann Spruce - Alpine Fir forest zone (SAeS - alF) (1100-1700) | Colluvium (Cbv) | Feldspatic igneous & metamorphic | gravelly moderately coarse | O.HFP | Dragon | DN |
| | | Colluvium (Cbv) | Ferro-magnesium igneous | gravelly moderately coarse | O.HFP | Oona | ON |
| | | Colluvium (Cbv) | Siliceous-sedimentary | gravelly moderately coarse | O.HFP | Mount Grant | GR |
| | | Fluvioglacial ($sgF^G$+F) | Undifferentiated | gravelly coarse over very gravelly coarse | O.HFP | Mount Bates | MB |
| | | Morainal (Mbv) | Undifferentiated | gravelly medium to moderately fine | LU.HFP | Tinnecha Hill | TI |
| | | Organic (Ob) | - | (mesic) | TY.M | Diver Lake | DI |
| | | Organic (Ob) | - | (fibric) | TY.F | Moosmoos | MO |
| | Alpine Tundra (AT) zone and Krummholz subzone of Subalpine Engelmann Spruce - Alpine Fir forest zone (SAeS - alF ) (>1700) | Colluvium (Cbv) | Feldspatic igneous & metamorphic | gravelly moderately coarse | SM.HFP | Porter Mountain | PM |
| | | Colluvium (Cbv) | Ferro-magnesium igneous | gravelly moderately coarse | SM.HFP | Rubyrock Lake | RU |
| | | Colluvium (Cbv) | Siliceous sedimentary | gravelly moderately coarse | SM.HFP | Axelgold | AG |
| | | Colluvium talus (rb-Cbv) | Undifferentiated | rubbly, bouldery, very gravelly coarse | O.R. | Klowcut | KT |
| NECHAKO PLATEAU | Subboreal White Spruce - Alpine Fir forest zone (SBwS - alF) (720-1100) | Fluvial (recent sgF) | Undifferentiated | medium over moderately coarse | GLCU.R | Stellako | SL |
| | | Fluvial fans (recent Ff) | Undifferentiated | gravelly moderately coarse | O.DYB | Slug | SG |
| | | Fluvioglacial ($sgF^G$) | Undifferentiated | gravelly coarse | O.HFP | Ramsey | R |
| | | Lacustrine (Lvb) | Undifferentiated | moderately fine | O.GL | Babine | BE |
| | | Morainal ablation (gs Mbv) | Undifferentiated | moderately coarse | O.HFP | Cobb | CB |
| | | Morainal (Mm, Mbv) | Undifferentiated | moderately fine | BR.GL | Deserters | D |
| | | Morainal (Mm, Mbv) | Undifferentiated | moderately fine | PZ.GL | Twain | TW |
| | | Morainal & Colluvium (Cbv/Mbv) | Undifferentiated | moderately fine | O.HFP | Tatin | TT |
| | | Organic (Ob) | - | (mesic) | TY.M | Amy Lake | AY |
| | | Organic (Ob) | - | (fibric) | TY.F | Kloch Lake | KL |
| | Subalpine Engelmann Spruce - Alpine Fir forest zone (SAeS - alF) (1100-1600) | Colluvium (Cbv) | Undifferentiated | gravelly moderately coarse | O.HFP | Nankai | NK |
| | | Fluvioglacial ($sgF^G$+F) | Undifferentiated | gravelly coarse | O.HFP | Tetana | TE |
| | | Morainal (Mbv) | Undifferentiated | gravelly moderately fine | LU.HFP | Iktiaki | IK |
| | | Organic (Ob) | - | (mesic) | TY.M | Skutsil | SS |
| | | Organic (Ob) | - | (fibric) | TY.F | Kotsine | KS |

Footnotes:

[1] Refer to Holland (1976) for definitions of Physiographic Regions. See also section 1.2.
[2] Biophysical forest zones and subzones were determined according to methods described in van Barneveld (1976). They are described generally in section 1.6.
[3] Refer to Resource Analysis Branch (1978) for definitions of surficial material terms.
[4] Also see bedrock in section 1.3 and Appendix A.
[5] Also see texture in Appendix A.
[6] Also see Soil Classification in Appendix A and see CSSC (1978). Dominant taxonomic classification refers to the classification of the soil which represents the central concept of the Association and which is most common. Associated soils have differing classifications.

# CHAPTER TWO
# MAPPING METHODS AND SOIL LEGEND DEVELOPMENT

## 2.1 MAPPING METHODS

Initially, aerial photographs were examined stereoscopically to acquaint the mapper with the map area, to delineate landform boundaries and to note their composition. The aerial photo interpretation at this stage involved a deductive and inductive evaluation of the six main elements (soil drainage, soil erosion, photograph tone, topography, vegetation and land use). Existing information on bedrock geology and physiography was also used as an aid in the photo interpretation of landforms. This initial landform mapping formed the basis for organized field checking. Field work was carried out intermittently during the summers of 1974 to 1977 inclusive by vehicle where road access permitted and by helicopter in inaccessible areas. Road cuts and hand dug pits, provided exposures by which soils and parent materials were examined and documented.

The main soil characteristics of the soil profiles that were recorded were soil color (according to the Munsell notation), horizon sequences and depth, structure, texture, and presence/absence of mottles. Environmental characteristics such as drainage, stoniness, parent material, topography, aspect and vegetation were also recorded. Selected representative soil samples of some soil associations were taken and analyzed in the laboratory for characteristics such as reaction (pH), organic carbon, nitrogen, exchangeable bases, cation exchange capacity, iron, aluminum, phosphorus and particle size. All soils were classified according to The System of Soil Classification for Canada (Canada Department of Agriculture, 1974) and subsequently were updated to the current system (Canada Soil Survey Committee, 1978).

It was within the geomorphic landform framework that known information on soils and land capability was extended and extrapolated to adjacent landscapes. As field checking and mapping proceeded, a preliminary soil legend was developed during the first field season. This legend was updated and revised during the following field seasons as new soils were encountered and mapped. Field checking also resulted in modification and correction of the initial boundaries delineated on the aerial photographs. As well, the surficial material designations were also correlated.

Upon completion of the field work, the polygon boundaries and material designations on the aerial photographs were finalized. The majority of the mapping was carried out on 1:63 360 scale photographs. The information was then transferred to 1:50 000 scale maps and final manuscript terrain (surficial geology) maps were prepared.

Since parent materials are one of the basic criteria for distinguishing soils, terrain maps then served as a base for the production of soil maps. As such, the majority of the polygon boundaries on the soil maps are the same as those on the terrain maps. The manuscript soil maps were also prepared at a scale of 1:50 000 and photographically reduced to 1:100 000 scale for publication and inclusion with this report.

The soil maps in turn served as a base for the production of land capability for forestry maps as the forest capability information was gathered within a soil/landform framework. Hence, the majority of the boundaries on the land capability for forestry maps are the same as those on the soil maps and in turn those of the terrain maps. Manuscript land capability for forestry maps were prepared at a scale of 1:50 000.

Mapping reliability depended on accessibility and to some extent on landscape complexity and density of forest cover. Accessibility and therefore reliability was fair on the plateau area and in some of the mountain valleys. There are however, significant areas where mapping was mainly done by aerial photo interpretation and extrapolation with limited helicopter field checking. The reliability is consistent with that expected in a Survey of Intensity Level 4 .

## 2.2 SOIL LEGEND DEVELOPMENT

The legend for the soils of the Hazelton map area is based on the concept of the Soil Association. A Soil Association is a group of soils of about the same age, occurring under similar climatic conditions and derived from similar parent materials.

The soil groups represented by the Soil Associations were created by progressively stratifying the landscape as illustrated in the Soil Key (Table 2). The first level of stratification is on the basis of physiographic region (Holland, 1976). Four different regions, namely Skeena Mountains, Nass Basin, Nechako Plateau and Omineca Mountains were recognized at this level. The second level of stratification is on the basis of forest zone (and subzone) in conjunction with physiographic region. Five forest zones were recognized in the four physiographic regions at this level. These zones were then stratified further on the basis of soil parent material, then dominant associated bedrock, then soil texture (or degree of decomposition for organic deposits) and finally dominant taxonomic soil classification. This resulted in a total of fifty named soil Associations for the soils of the map area.

Each Soil Association represents a group of soils which have developed in a similar environment and with a number of properties in common. Of these, one soil occurs most often and represents the central or modal concept of that Association. It is this soil that is represented by the dominant taxonomic classification in Table 2. It is also this soil which is generally described for each Association and which represents the "Most Common Soil" in the Soil Association Descriptions in the following section. The other soils within the Association are associated with this most common soil but differ due to factors such as differences in topographic position, elevation, drainage, textural variation and soil depth. Soil Association Components are used to indicate the presence of a significant proportion of an associated soil with one of these differences. Thus a Soil Association Component generally consists of 50% or more of the soil which represents the central concept of that Association together with 20 to 50% of an associated soil with some different properties. Soil Association Components are the units which are used to map the soils of the area.

A standard numbering system is used for designating soil association components. The general meaning of components 1 through 11 is as follows:

1 - Consists dominantly of the soil which represents the central concept of the Association. Inclusions make up less than 20% of the component.

2 - Soil representing the central concept of the Association is dominant. Soil developed in a somewhat drier environment or pedologically younger make up 20 to 50% of the component.

3 - Soil representing the central concept of the Association is dominant. Soil developed in a somewhat wetter environment makes up 20 to 50% of the component.

4 - Soil representing the central concept of the Association is dominant. Soil with a significant textural difference makes up 20 to 50% of the component.

5 - Soil representing the central concept of the Association is dominant. Lithic* or shallow** phases of the soil representing the central concept make up 20 to 50% of the component.

6 - Lithic or shallow phases of the soil representing the central concept of the Association are dominant. Soil representing the central concept of the Association makes up 20 to 50% of the component.

7 - Soil representing the central concept of the Association is dominant. Imperfectly drained soil (gleyed subgroup or seepage phases of the soil) representing the central concept makes up 20 to 50% of the component.

8 - Soil representing the central concept of the Association is dominant. Poorly drained soil (Gleysol) makes up 20 to 50% of the component.

9 - Soil representing the central concept of the Association is dominant. Grassland (Chernozemic) soils developed on south and southwest slope aspects make up 20 to 50% of the component.

10 - Soil representing the central concept of the Association is dominant. Rapid to moderately well drained pedologically young soils with weak horizon development (Regosols) make up 20 to 50% of the component.

11 - Imperfectly drained soils (gleyed subgroups or seepage phases of soils) representing the central concept are dominant. Soil that represents the central concept of the Association makes up 20 to 50% of the component.

It should be noted that a number of Soil Associations which occur in this map area are also present in the map areas (93M S/W, 93L) directly to the south (Runka, 1972). Component numbers are not consistent across the map area boundary. This occurred because the numbering system then used was not consistent with the standardized numbering system now in use. The user is therefore cautioned to consult the respective legends and reports when using maps from both sides of the map area boundary. Some soils as Amy Lake, Cronin, Diver Lake, Kloch Lake, Kotsine, Moosmoos, Netalzul, Skutsil, Shelagyote and Tiltusha do not follow above order. For these refer to the appropriate soil descriptions.

*lithic - less than 100 cm of soil over bedrock

**shallow - differing soil parent material (surficial deposit) occurs within 100 cm of the surface

# CHAPTER THREE
## SOIL ASSOCIATION DESCRIPTIONS

Each soil Association and Association Component classified and mapped in the Hazelton map area is described on the following pages. The Associations are arranged in alphabetical order by Association name.

The forest zone, physiographic region, landform (terrain) characteristics, slope and elevation ranges, underlying bedrock characteristics, general landscape position and other noteworthy soil and landscape features are provided for each Association as a whole.

The most commonly occurring soil which represents the central soil concept of the Association is then described in terms of its perviousness, texture, coarse fragment content, reaction (pH), general horizonation, taxonomic classification and other noteworthy features. This description applies to the "Most Common Soil" in the component descriptions and as such, generally represents at least 50% of each component.

The "Less Common Soil" indicated for each component comprises 20 to 50% of that component and has the general characteristics of the "Most Common Soil" with the exception of taxonomic classification and those differences noted under "Drainage" and "Comments."

Soil classification is according to the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). Drainage classes are described in Describing Ecosystems in the Field (Resource Analysis Branch, 1980).

## AMY LAKE Soil Association - AY

Amy Lake soils are common in depressions and along water courses throughout the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in strongly acid organic deposits derived from mosses, sedges and other types of hydrophytic vegetation and are saturated with water. Slopes are less than 5%. Elevations range from 720 to 1100 m.

Amy Lake organic soils are partially decomposed (mesic) and have a depth of organic matter that generally exceeds 160 cm. Water at or near the soil surface is common. The most common soil is classified as Typic Mesisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| AY 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of mesic organic material to depths exceeding 160 cm. |
| AY 2 | Typic Mesisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil has 15 to 40 cm organic material overlying mineral soil. |

## AXELGOLD Soil Association - AG

Axelgold soils are common on mountain slopes in the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Omineca Mountains physiographic region. They have mainly developed in very gravelly, coarse-textured, acid to neutral colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying siliceous sedimentary and associated metamorphic bedrock. Minor areas of included morainal materials also occur. Slopes usually range between 10 and 45% and elevations are greater than 1700 m. Active solifluction, nivation and other periglacial processes are common.

Axelgold soils are rapidly pervious and are generally very gravelly sandy loam or very gravelly loamy sand in texture. Coarse fragment content ranges from 50 to 80%. The strongly acid solum consists of a thin mor layer, a 10 to 20 cm thick turfy, dark brown surface horizon underlain by a 20 to 30 cm thick reddish brown Bf horizon which grades to relatively unweathered parent material at depths of 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| AG 5 | Sombric Humo-Ferric Podzol | well | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Less common soil is shallower than 1 m to bedrock. |
| AG 6 | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Sombric Humo-Ferric Podzol | well | Most common soil is shallower than 1 m to bedrock. |

## BABINE Soil Association - BE

Babine soils are common in the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in 50 cm to 2 m of moderately fine-textured, glacio-lacustrine sediments which overlie gravelly, medium-textured, neutral, compact basal till. Slopes in the level to rolling landscape vary between 2 to 30%. Elevations range between 720 and 850 m.

Babine soils are generally gravel free silty clay loam, clay loam or clay in texture in the upper part and loam or clay loam in the subsoil. Coarse fragments range from 5% to 30% at depth. Underneath an up to 5 cm thick mor layer occurs a leached soil horizon that is 10 to 30 cm thick, slightly acid, friable and grayish in color. It is underlain by a brownish-gray clay accumulation horizon 20 to 40 cm thick which is slowly permeable. Relatively unweathered parent material occurs at depths less than 75 cm. The usual classification is Orthic Gray Luvisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| BE 2 | Orthic Gray Luvisol | well to mod. well | Dark Gray Luvisol | well to mod. well | Less common soil has an organically enriched surface (Ah) horizon due to occurrence under open deciduous vegetation on low elevations, south and west facing aspects or cultivation. |
| BE 3 | Orthic Gray Luvisol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has a yellowish-brown surface horizon indicating more intense leaching and weathering due to a climatically wetter environment. |
| BE 5 | Orthic Gray Luvisol | well to mod. well | Orthic Gray Luvisol (shallow phase) | well | The lacustrine veneer is shallower than 1 m over glacial till in the less common soil. |
| BE 6 | Orthic Gray Luvisol (shallow phase) | well | Orthic Gray Luvisol | well to mod. well | The lacustrine veneer is shallower than 1 m over glacial till in the most common soil. |
| BE 7 | Orthic Gray Luvisol | well to mod. well | Gleyed Gray Luvisol | imperfect | Less common soil is mottled in the subsoil due to downslope seepage and temporary perched watertables. |

## CATALINE Soil Association - CE

Cataline soils are common on steep mountain slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region. They have mainly developed in gravelly, moderately coarse to medium-textured, acid to neutral colluvial deposits, generally less than 2 m thick. Minor areas of glacial till deposits may also be included. Slopes are usually greater than 30%. Elevations range between 1050 and 1600 m.

Cataline soils are rapidly to moderately pervious and are generally very gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and frequently exceeds 75%. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish-brown horizon. Relatively unweathered parent material occurs within 100 cm of the soil surface. A mor layer between 4 and 8 cm thick is present on the soil surface. The usual classification is Orthic Ferro-Humic Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Drainage | Less Common Soil Classification | Drainage | Comments |
|---|---|---|---|---|---|
| CE 1 | Orthic Ferro-Humic Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| CE 3 | Orthic Ferro-Humic Podzol | well to rapid | Sombric Ferro-Humic Podzol | well to rapid | Less common soil has an organically enriched surface horizon (Ah). |
| CE 5 | Orthic Ferro-Humic Podzol | well to rapid | Orthic Ferro-Humic Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| CE 6 | Orthic Ferro-Humic Podzol (lithic phase) | rapid | Orthic Ferro-Humic Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |
| CE 7 | Orthic Ferro-Humic Podzol | well to rapid | Gleyed Ferro-Humic Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage of water from upper slopes. |
| CE 11 | Gleyed Ferro-Humic Podzol (seepage phase) | imperfect | Orthic Ferro-Humic Podzol | well to rapid | Most common soil is gleyed and mottled in subsoil due to seepage of water from upper slopes. |

## COBB Soil Association - CB

Cobb soils are common on the valley floors and lower valley sides in the Subboreal White Spruce-Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in 1 to 2 m of gravelly, coarse-textured, acid ablation till overlying gravelly, moderately coarse to medium-textured, neutral, compact basal till. Hummocky topography with slopes varying between 10 and 30% is common and elevations range between 720 and 1100 m.

Cobb soils are rapidly pervious and are generally very gravelly sand or very gravelly loamy sand in texture to depths of 1 to 2 m. Below these depths they are slowly permeable with gravelly sandy loam, gravelly loam or gravelly clay loam textures. The coarse fragment content is variable and ranges from 20 to 60% within the ablation till. 20 to 40% coarse fragments are common at depth in the basal till. A mor layer between 3 and 8 cm thick is present on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish-brown subsoil layer. Relatively unweathered parent material usually occurs within 100 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| CB 1 | Orthic Humo-Ferric Podzol | rapid to well | -- | -- | Consists dominantly of the most common soil as described above. |
| CB 2 | Orthic Humo-Ferric Podzol | rapid to well | Eluviated Dystric Brunisol | rapid to well | Less common soil has a yellowish-brown solum indicating weaker weathering due to a climatically drier environment. |
| CB 3 | Orthic Humo-Ferric Podzol | rapid to well | Sombric Humo-Ferric Podzol | rapid to well | Less common soil has an organically enriched surface horizon (Ah). |
| CB 4 | Orthic Humo-Ferric Podzol | rapid to well | Luvisolic Humo-Ferric Podzol | well to mod. well | Less common soil has a clay accumulation horizon beginning at depths greater than 50 cm due to having developed in a somewhat finer textured material. |
| CB 5 | Orthic Humo-Ferric Podzol | rapid to well | Orthic Humo-Ferric Podzol (shallow phase) | rapid to well | Depth to basal till is less than 1 m in the less common soil. |

**COBB Soil Association - CB (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| CB 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid to well | Orthic Humo-Ferric Podzol | rapid to well | Depth to basal till is less than 1 m in the most common soil. |
| CB 7 | Orthic Humo-Ferric Podzol | rapid to well | Gleyed Humo-Ferric Podzol | imperfect | Less common soil is mottled in subsoil due to downslope seepage and temporary perched watertables. |

## CRONIN Soil Association - CN

Cronin soils are common in a variety of landscape positions in the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Skeena Mountains physiographic region. They have developed in gravelly, moderately coarse textured morainal materials which are usually less than 2 m thick. Slopes generally range between 10 and 45% and elevations are greater than 1600 m. Active nivation, solifluction, cryoturbation and other periglacial processes are common.

Cronin soils are moderately pervious and are generally gravelly sandy loam or gravelly loam in texture. The coarse fragment content usually ranges between 30 and 60%. The usual surface horizon of Cronin soils is 10 to 20 cm thick, acid, turfy, dark brown in color and high in organic matter. It is underlain by a 20 to 30 cm thick, acid, reddish-brown to yellowish-brown horizon that grades to relatively unweathered parent material at depths of 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| CN 3 | Sombric Humo-Ferric Podzol | well to mod. well | Orthic Regosol | well to mod. well | Periglacial processes are preventing significant soil horizon development occur, in the less common soil. |
| CN 5 | Sombric Humo-Ferric Podzol | well to mod. well | Sombric Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| CN 6 | Sombric Humo-Ferric Podzol (lithic phase) | well | Sombric Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |

## CULLON Soil Association - CU

Cullon soils are common on rolling terrain in the Coastal Western Hemlock-Pacific Silver Fir forest zone in the Nass Basin physiographic region. They have mainly developed in gravelly, moderately coarse textured, acid to neutral colluvial deposits, generally less than 2 m thick. Minor areas of associated morainal materials may also be included. Slopes are usually greater than 30%. Elevations range between 400 and 700 m.

Cullon soils are rapidly to moderately pervious and are generally very gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 75%. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish-brown horizon. Relatively unweathered parent material occurs at depths of approximately 75 cm. A mor layer between 3 and 8 cm thick is present on the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| CU 1 | Orthic Humo-Ferric Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| CU 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| CU 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |
| CU 7 | Orthic Humo-Ferric Podzol | well to rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| CU 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## DAMSUMLO Soil Association - DO

Damsumlo soils are common on mountain slopes in the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Skeena Mountains physiographic region. They have mainly developed in gravelly, medium to moderately coarse-textured, acid to neutral colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying siliceous sedimentary and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes usually range between 10 and 45% and elevations are usually greater than 1600 m. Active solifluction, nivation and other periglacial processes are common.

Damsumlo soils are moderately pervious and are generally very gravelly sandy loam or gravelly loam in texture. The coarse fragment content is usually at least 50% and frequently exceeds 75%. The acid surface horizon of Damsumlo soils is between 10 and 20 cm thick, turfy, dark brown in color and has a high organic matter content. It is underlain by a 20 to 30 cm thick, reddish brown to yellowish brown, acid, friable horizon which grades to relatively unweathered parent material at depths of 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| DO 1 | Sombric Humo-Ferric Podzol | well | -- | -- | Consists dominantly of the most common soil as described above. |
| DO 2 | Sombric Humo-Ferric Podzol | well | Orthic Humo-Ferric Podzol | well to mod. well | Less common soil has a grayish, leached surface horizon instead of a turfy organic matter enriched horizon. Occurs under forested conditions at lower elevations. |
| DO 5 | Sombric Humo-Ferric Podzol | well | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Less common soil is shallower than 1 m to bedrock. |
| DO 6 | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Sombric Homo-Ferric Podzol | well | Most common soil is shallower than 1 m to bedrock. |

## DESERTERS Soil Association - D

Deserters soils are widespread throughout the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, compact, often druminized, gravelly, moderately fine textured, neutral basal till deposits. Surface layers are sometimes somewhat coarser textured, particularly in the vicinity of ice marginal channels which occur with varying frequency. Slopes in the undulating to rolling landscape usually vary between 2 and 30% and elevations range between 720 and 1100 m.

Deserters soils are generally gravelly loam or clay loam in texture, but surface textures in some areas may vary to gravelly sandy loam. The coarse fragment content is usually between 20 and 40%. Usually, the upper soil horizon is 10 to 20 cm thick, acid, friable and yellowish-brown in color. It is underlain by a grayish, leached horizon, 10 to 20 cm thick, which in turn is underlain by a slowly permeable, brownish-gray clay accumulation horizon that is 20 to 40 cm thick. Relatively unweathered, neutral parent material occurs at depths of about 100 cm. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| D 1 | Brunisolic Gray Luvisol | well to mod. well | -- | -- | Consists dominantly of the most common soil as described above. |
| D 2 | Brunisolic Gray Luvisol | well to mod. well | Orthic Gray Luvisol | well to mod. well | Less common soil lacks the yellowish-brown surface horizon indicating weaker weathering due to a climatically drier environment. |
| D 3 | Brunisolic Gray Luvisol | well to mod. well | Podzolic Gray Luvisol | well to mod. well | Less common soil has a reddish-brown surface horizon indicating more intense weathering due to a climatically wetter environment. |
| D 4 | Brunisolic Gray Luvisol | well to mod. well | Eluviated Dystric Brunisol | well | Less common soil has only a weakly developed subsurface clay accumulation layer due to having developed in coarser textured material near the soil surface. |

**DESERTERS Soil Association - D (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| D 5 | Brunisolic Gray Luvisol | well to mod. well | Brunisolic Gray Luvisol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| D 6 | Brunisolic Gray Luvisol (lithic phase) | well | Brunisolic Gray Luvisol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |
| D 7 | Brunisolic Gray Luvisol | well to mod. well | Gleyed Brunisolic Gray Luvisol | imperfect | Less common soil is gleyed and mottled in subsoil due to restricted drainage. |
| D 9 | Brunisolic Gray Luvisol | well to mod. well | Orthic Dark Gray Orthic Dark Gray Luvisol | mod. well to well | Less common soil has an organically enriched Ah surface horizon. Occurs on some edaphically drier south aspects. |
| D 11 | Gleyed Brunisol Gray Luvisol | imperfect | Brunisolic Gray Luvisol | well to mod. well | Most common soil is gleyed and mottled in subsoil due to restricted drainage. |

## DIVER LAKE Soil Association - Dl

Diver Lake soils are common on the valley floors and in other depressional positions in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have developed in organic deposits derived from mosses, sedges and other hydrophytic vegetation and are saturated with water at most times. Slopes are less than 5% and elevations range between 1100 and 1700 m.

Diver Lake organic soils are partially decomposed (mesic) and have a depth of organic material that usually exceeds 160 cm. The usual classification is Typic Mesisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| Dl 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of the most common soil. |
| Dl 2 | Typic Mesisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 40 cm of organic material overlying mineral soil. |

## DRAGON Soil Association - DN

Dragon soils are common on steep mountain slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse to medium-textured, acid to neutral colluvial deposits, less than 2 m thick, that are derived from and overlying feldspathic igneous and associated metamorphic bedrock. Minor areas of associated till deposits may also occur. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 1100 and 1700 m.

Dragon soils are rapidly to moderately pervious and are generally gravelly sandy loam in texture. The coarse fragment content ranges from 20 to 75%. The strongly acid solum consists of a thin mor layer underlain by a grayish, leached horizon up to 10 cm thick and below that, a reddish-brown horizon (Bf). Unweathered parent material occurs within 75 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| DN 1 | Orthic Humo-Ferric Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil. |
| DN 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| DN 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |

## HAGWILGET Soil Association - H

Hagwilget soils occur in the valleys and on the lower slopes in the Western Hemlock - Pacific Silver Fir forest zone in the Skeena Mountains physiographic region. They have developed in deep, gravelly, coarse-textured, stratified fluvial fan deposits that are susceptiable to shifting channels and new additions of sediment. Somewhat finer textures sometimes overlie the gravelly material on fan aprons. Slopes generally vary between 2 and 15% but may occasionally range up to 30%. Elevations range between 350 and 1050 m.

Hagwilget soils are rapidly pervious and generally have gravel, very gravelly sandy loam or very gravelly loamy sand textures with occasional loamy sand or sandy loam surface veneers. The coarse fragment content generally exceeds 50%. A mor layer between 3 and 8 cm thick is common on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish brown horizon. Relatively unweathered parent material usually occurs within 100 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| H 1 | Orthic Humo-Ferric Podzol | rapid to well | -- | -- | Consists dominantly of the most common soil as described above. |
| H 4 | Orthic Humo-Ferric Podzol | rapid to well | Luvisolic Humo-Ferric Podzol; Podzolic Gray Luvisol | well to mod. well | Less common soil has a clay accumulation horizon beginning at depths near 50 cm due to having developed in a somewhat finer textured deposit . |
| H 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid | Orthic Humo-Ferric Podzol | rapid to well | Most common soil is underlain by glacial till at depth of less than 1 m. |
| H 7 | Orthic Humo-Ferric Podzol | rapid to well | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is mottled and gleyed in subsoil due to seepage from upper slopes. |
| H 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | rapid to well | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## IKTLAKI Soil Association - IK

Iktlaki soils are common on the valley floors and lower valley sides in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) of the Nechako Plateau physiographic region. They have developed in variable depths of gravelly moderately textured, acid to neutral, compact basal till deposits. On steeper slopes, the surface materials have often been modifed by downslope movement. Slopes are dominantly bedrock controlled and vary between 10 to 50%. Elevations range between 1100 and 1700 m.

Iktlaki soils are moderately pervious and are generally gravelly clay loam or gravelly loam in texture. The coarse fragment content is usually between 30 and 50%. The soil profile commonly has a light-coloured, leached (Ae) layer up to 10 cm thick overlain by a mor layer up to 8 cm thick. An acid, reddish-brown subsoil layer underlies the light-coloured layer. A clay enriched subsoil layer at depths greater than 50 cm is finer textured and somewhat retards moisture movement through the soil. Unweathered parent material occurs at depths greater than 100 cm. The soils are dominantly classified as Luvisolic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Drainage | Less Common Soil Classification | Drainage | Comments |
|---|---|---|---|---|---|
| IK 1 | Luvisolic Humo-Ferric Podzol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| IK 2 | Luvisolic Humo-Ferric Podzol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has the clay accumulation horizon beginning within 50 cm depth and a yellowish-brown upper horizon indicating weaker weathering in a drier climate. |
| IK 3 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Ferro-Humic Podzol; Orthic Ferro-Humic Podzol | well to mod. well | Less common soil has organic matter enriched upper horizons (Bhf) due to more intense weathering in a wetter climate. |
| IK 4 | Luvisolic Humo-Ferric Podzol | well to mod. well | Orthic Humo-Ferric Podzol | well to mod. well | Subsoil clay accumulation horizon is not present in less common soil due to coarser textured parent material. |
| IK 5 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |

**IKTLAKI Soil Association - IK (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| IK 6 | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |
| IK 7 | Luvisolic Humo-Ferric Podzol | well to mod. well | Gleyed Luvisolic Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is mottled and gleyed in subsoil due to seepage from upper slopes. |
| IK 8 | Luvisolic Humo-Ferric Podzol | well to mod. well | Orthic Humic Gleysol | poor | Less common soil has permanently high watertables and is strongly gleyed and usually depressional. |
| IK 11 | Gleyed Luvisolic Humo-Ferric Podzol (seepage phase) | imperfect | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## ILTZUL LAKE Soil Association - IZ

Iltzul Lake soils occur on valley bottoms and lower slopes in the Subboreal White Spruce - Alpine Fir forest zone in the Nass Basin physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified recent fluvial and fluvioglacial deposits. Slopes are usually less than 15% but range as high as 70% when ice contact features such as kettle holes and kames are present. Elevations range between 290 and 400 m.

Iltzul Lake soils are rapidly pervious and have gravelly loamy sand or gravelly sand textures. Coarse fragments commonly exceed 60%. The strongly acid solum consists of a thin mor layer, a grayish leached (Ae) horizon up to 10 cm and a dark reddish brown subsoil layer. Relatively unweathered parent material occurs below 50 cm of the soil surface. The usual classification is Orthic Humo Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| IZ 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of most common soil. |
| IZ 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo-Ferric Podzol (shallow phase) | rapid to well | Less common soil is underlain by basal till within 1 m. |
| IZ 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid to well | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by basal till within 1 m. |

## JANZE LAKE Soil Association - JL

Janze Lake soils are common on steep mountain slopes in the Subalpine Mountain Hemlock - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region. They have mainly developed in gravelly, moderately coarse to medium-textured, acid to neutral colluvial deposits, generally less than 2 m thick. Minor areas of associated till deposits may also be included. Slopes are usually greater than 30%, but slopes as low as 15% may also occur. Elevations range between 1050 and 1600 m.

Janze Lake soils are rapidly to moderately pervious and are generally very gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50%. A mor layer between 4 and 8 cm thick is present on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a dark reddish brown, organic matter enriched mineral horizon. Relatively unweathered parent material occurs within 75 cm of the soil surface. The usual classification is Orthic Ferro-Humic Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| JL 1 | Orthic Ferro-Humic Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| JL 2 | Orthic Ferro-Humic Podzol | well to rapid | Orthic Humo-Ferric Podzol | well to rapid | Less common soil has a reddish brown rather than dark reddish brown solum indicating weaker weathering and less organic matter accumulation due to a climatically drier environment. |
| JL 4 | Orthic Ferro-Humic Podzol | well to rapid | Luvisolic Humo-Ferric Podzol; Luvisolic Ferro-Humic Podzol | well | Less common soil has a clay accumulation horizon beginning below 50 cm due to having developed in somewhat finer textured parent material. |
| JL 5 | Orthic Ferro-Humic Podzol | well to rapid | Orthic Ferro-Humic Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| JL 6 | Orthic Ferro-Humic Podzol (lithic phase) | rapid | Orthic Ferro-Humic Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |

**JANZE LAKE Soil Association - JL (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| JL 7 | Orthic Ferro-Humic Podzol | well to rapid | Gleyed Ferro-Humic Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| JL 11 | Gleyed Ferro-Humic Podzol (seepage phase) | imperfect | Orthic Ferro-Humic Podzol | well to rapid | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## KISGEGAS Soil Association - KG

Kisgegas soils are common on valley walls in mountainous terrain in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region.

They have developed in variable depths of gravelly, medium to fine textured, acid to neutral, compact basal till deposits. On steeper slopes the surface material has often been modified by downslope soil creep. Slopes are dominantly bedrock controlled and vary between 30 and 70%. Elevations range from 1050 to 1600 m.

Kisgegas soils are moderately pervious and are gravelly sandy loam or gravelly loam in texture. The coarse fragment content is usually between 30 and 50%. The soil profile has a mor layer up to 8 cm thick underlain by a light coloured horizon (Ae). The subsurface horizons are reddish brown, organic matter enriched and have gravelly loam or gravelly clay loam texture. Unweathered parent material usually occurs near 100 cm of the surface. The typical soil classification is Luvisolic Ferro-Humic Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| KG 1 | Luvisolic Ferro-Humic Podzol | well to mod. well | ----- | ----- | Consists dominantly of the most common soil. |
| KG 5 | Luvisolic Ferro-Humic Podzol | well to mod. well | Luvisolic Ferro-Humic Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |

**KISPIOX Soil Association - KX**

Kispiox soils are common on steep mountain slopes in the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Skeena Mountains physiographic region. They have mainly developed in gravelly, moderately coarse to medium textured, neutral to basic colluvial deposits, generally less than 2 m thick which overlie bedrock or sometimes basal till. Minor areas of associated morainal materials may also be included. Slopes are usually greater than 45%. Elevations range between 350 and 1050 m.

Kispiox soils are moderately to rapidly pervious and are generally gravelly sandy loam (minor gravelly loam or gravelly clay loam) in texture. The coarse fragment content usually varies from 20 to 50% but sometimes exceeds 70%. A mor layer between 5 and 10 cm thick is present on the soil surface. The usually strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish brown horizon (Bf). Relatively unweathered parent material occurs within 75 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| KX 1 | Orthic Humo-Ferric Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| KX 3 | Orthic Humo-Ferric Podzol | well to rapid | Sombric Humo-Ferric Podzol | well | Less common soil has an organically enriched surface horizon (Ah). |
| KX 4 | Orthic Humo-Ferric Podzol | well to rapid | Luvisolic Humo-Ferric Podzol; Podzolic Gray Luvisol | well | Less common soils have a clay accumulation horizon near 50 cm depth due to having developed in a somewhat fine textured parent material. |
| KX 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| KX 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |
| KX 7 | Orthic Humo-Ferric Podzol | well to rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is mottled and gleyed in subsoil due to seepage from upper slopes. |

**KISPIOX Soil Association - KX (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| KX 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is mottled and gleyed in subsoil due to seepage from upper slopes. |

## KLOCH LAKE Soil Association - KL

Kloch Lake soils are common in depressional areas throughout the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in organic deposits derived from mosses, sedges and other hydrophytic vegetation and are saturated with stagnant water for most of the time. Slopes are less than 5% and elevations range between 720 and 1100 m.

Kloch Lake organic soils are relatively undecomposed (fibric) and have a depth of organic matter that usually exceeds 160 cm. Water at or near the soil surface is common. The usual classification is Typic Fibrisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| KL 1 | Typic Fibrisol | very poor | -- | -- | Consists dominantly of Typic Fibrisol. |
| KL 2 | Typic Fibrisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 60 cm of organic material overlying mineral soil. |

## KLOWKUT Soil Association - KT

Klowkut soils are common on very steep mountain slopes throughout the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Omineca Mountains physiographic region. They have developed in a variable depth of rubbly or blocky, very coarse textured talus (colluvium) which is derived from undifferentiated bedrock. Slopes are usually greater than 45% and elevations greater than 1700 m. Rockfalls, avalanching and other colluvial processes are active and result in non-vegetated landscapes.

Klowkut soils are rapidly pervious and are gravelly to stony with little fine earth. The coarse fragment content is generally in excess of 80%. Klowkut soils do not have significant horizon development due to frequent disturbances by colluvial processes, solifluction and limited fine soil content. The usual colour is grayish brown which becomes grayer with depth. A thin, dark brown, turfy horizon may be present at the surface. The usual soil classification is Orthic Regosol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| KT 1 | Orthic Regosol | rapid | - | - | Consists dominantly of the most common soil as described above. |
| KT 5 | Orthic Regosol | rapid | Orthic Regosol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| KT 6 | Orthic Regosol (lithic phase) | rapid | Orthic Regosol | rapid | Most common soil is shallower than 1 m to bedrock. |

## KOTSINE Soil Association - KS

Kotsine soils are common in depressional areas throughout the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Nechako Plateau physiographic region. They have developed in organic deposits derived from mosses, sedges and other hydrophytic vegetation and are saturated with water for most of the time. Slopes are 2 to 5% and elevations range between 1100 to 1600 m.

Kotsine organic soils are relatively undecomposed (fibric) and have a depth of organic matter that usually exceeds 160 cm. The usual classification is Typic Fibrisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| KS 1 | Typic Fibrisol | very poor | -- | -- | Consists dominantly of the most common soil. |
| KS 2 | Typic Fibrisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 60 cm of organic material overlying mineral soil. |

## KULDO Soil Association - KO

Kuldo soils are common on valley walls in mountainous terrain in the Subalpine Mountain Hemlock-Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena mountains physiographic region. They have developed in variable depths of gravelly, medium to moderately fine-textured, neutral, compact basal till deposits. On steeper slopes the surface materials have often been modified by downslope soil creep. Slopes are dominantly bedrock controlled and vary between 30 and 70%. Elevations range from 1050 to 1600 m.

Kuldo soils are moderately pervious and are generally gravelly loam to gravelly clay loam in texture. The coarse fragment content is usually between 30 and 50%. The soil profile has a thick mor layer underlain by a light coloured leached horizon (Ae), a reddish brown, organic matter enriched horizon (Bhf) and a clay enriched horizon (Bt) at depth greater than 50 cm. The usual classification is Luvisolic Ferro-Humic Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| KO 1 | Luvisolic Ferro-Humic Podzol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| KO 2 | Luvisolic Ferro-Humic Podzol | well to mod. well | Luvisolic Humo-Ferric Podzol | well to mod. well | Less common soil lacks the organic matter enriched upper horizon. |
| KO 3 | Luvisolic Ferro-Humic Podzol | well to mod. well | Sombric Ferro-Humic Podzol | well to mod. well | Less common soil has an organically enriched surface horizon (Ah) and occurs in meadowlike openings at higher elevations. It also lacks the clay enriched subsoil horizon. |
| KO 4 | Luvisolic Ferro-Humic Podzol | well to mod. well | Orthic Ferro-Humic Podzol | well to mod. well | Less common soil lacks a clay enriched subsoil horizon due to development in coarser textured parent material. |
| KO 5 | Luvisolic Ferro-Humic Podzol | well to mod. well | Luvisolic Ferro-Humic Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| KO 6 | Luvisolic Ferro-Humic Podzol (lithic phase) | well | Luvisolic Ferro-Humic Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |

**KULDO Soil Association - KO (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| KO 7 | Luvisolic Ferro-Humic Podzol | well to mod. well | Gleyed Luvisolic Ferro-Humic Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| KO 11 | Gleyed Luvisolic Ferro-Humic Podzol (seepage phase) | imperfect | Luvisolic Ferro-Humic Podzol | well to mod. well | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## MOOSMOOS Soil Association - MO

Moosmoos soils are common on the valley floors and in other depressional positions in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have developed in organic deposits derived from mosses, sedges and other hydrophytic vegetation and are saturated with water for most of the time. Slopes range from 2 to 5% and elevations range from 1100 to 1700 m.

Moosmoos organic soils are relatively undecomposed (fibric) and have a depth of organic matter that usually exceeds 160 cm. Water at or near the organic soil surface is common. The usual classification is Typic Fibrisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| MO 1 | Typic Fibrisol | very poor | -- | -- | Consists dominantly of the most common soil. |
| MO 2 | Typic Fibrisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 60 cm of organic material overlying mineral soil. |

## MOUNT BATES Soil Association - MB

Mount Bates soils are common on the valley bottoms and lower slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified recent fluvial and fluvioglacial deposits. Slopes are usually less than 15% but range as high as 60% when ice-contact features such as kettle holes and kames are present. Elevations range between 1100 and 1700 m.

Mount Bates soils are rapidly pervious and generally have very gravelly sand textures although a thin surface veneer of finer gravelly sand or gravelly loamy sand is commonly present. The coarse fragment content frequently exceeds 60%. A mor layer between 2 and 8 cm thick is present on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish brown horizon (Bf). Relatively unweathered parent material commonly occurs at depths of 100 cm or less. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| MB 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| MB 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo-Ferric Podzol (shallow phase) | rapid | Less common soil is underlain by basal till at depths of less than 1 m. |
| MB 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by basal till at depths of less than 1 m. |

## MOUNT GRANT Soil Association - GR

Mount Grant soils are common on steep mountain slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse textured, acid to neutral colluvial deposits less than 2 m thick which are derived from and overlying non-calcareous siliceous sedimentary and associated metamorphic bedrock. Minor areas of morainal materials may be included. Slopes are usually greater than 45%. Elevations range between 1100 and 1700 m.

Mount Grant soils are rapidly to moderately pervious and are generally very gravelly sandy loam (minor amounts of gravelly loam) in texture. The coarse fragment content ranges from 50 to 75%. A mor layer between 3 and 8 cm thick is present on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish brown horizon. Unweathered parent material occurs at depths of 75 cm or less. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| GR 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| GR 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |
| GR 7 | Orthic Humo-Ferric Podzol | well to rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## NANKAI Soil Association - NK

Nankai soils are common on rolling uplands and steep valley sides in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Nechako Plateau physiographic region. They have mainly developed on gravelly, moderately coarse to medium textured, acid to neutral colluvial deposits generally less than 2 m thick that overlie bedrock or sometimes basal till. Minor associated till deposits may also occur. Slopes are usually greater than 45% but may be as low as 15%. Elevations range between 1100 and 1600 m.

Nankai soils are rapidly to moderately pervious and generally gravelly sandy loam in texture. They have a mor layer at the surface from 3 to 8 cm thick underlain by a light coloured, leached horizon (Ae) up to 10 cm thick below which is a reddish brown horizon (Bf). Coarse fragment content is generally greater than 30%. Unweathered parent material occurs within 75 cm of the surface. The most common soils are classified as Orthic Humo - Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| NK 1 | Orthic Humo-Ferric Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil. |
| NK 3 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Ferro-Humic Podzol | well to rapid | Less common soil contains a organic matter enriched Bhf horizon and occurs at the higher elevations. |
| NK 4 | Orthic Humo-Ferric Podzol | well to rapid | Luvisolic Humo-Ferric Podzol; Podzolic Gray Luvisol | well | Less common soil contains a clay enriched subsoil horizon due to having developed in a finer textured material. |
| NK 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| NK 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |
| NK 7 | Orthic Humo-Ferric Podzol | well to rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| NK 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## NETALZUL Soil Association - NZ

Netalzul soils are common in depressions and along water courses throughout the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region. They have developed in strongly acid organic deposits derived from mosses, sedges and other types of hydrophytic vegetation and are saturated with moving water at most times. Slopes are less than 5% and elevations range between 1050 and 1600 m.

Netalzul organic soils are partially decomposed (mesic) and have a depth of organic material that usually exceeds 160 cm. Water at or near the soil surface is common. The usual classification is Typic Mesisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| NZ 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of the most common soil as described above. |
| NZ 2 | Typic Mesisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 40 cm of organic material overlying mineral soil. |

## NICHYESKWA Soil Association - NY

Nichyeskwa soils are common on the valley floors and in other depressional positions in the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Skeena Mountains physiographic region. They have developed in organic deposits derived from mosses, sedges and other types of hydrophytic vegetation and are saturated with moving water at most times. Slopes are less than 5% and elevations range between 350 and 1050 m.

Nichyeskwa organic soils are partially decomposed (mesic) and have a depth of organic material that exceeds 160 cm. Water at or near the soil surface is common. The usual classification is Typic Mesisol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| NY 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of the most common soil as described above. |

## NILKITKWA Soil Association - NW

Nilkitkwa soils occur on steep mountain slopes in the Alpine Tundra zone and in the Krummholz subzone of the Engelmann Spruce - Alpine Fir forest zone in the Skeena Mountains physiographic region. They have mainly developed in gravelly, moderately coarse textured, neutral to basic colluvial deposits, often less than 1 m thick, which are dominantly derived from and overlying ferro-magnesium igneous and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes usually vary between 15 and 70% and elevations are greater than 1600 m. Solifluction, nivation and other periglacial processes are active.

Nilkitkwa soils are rapidly pervious and are generally very gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 60%. The usual surface horizon is 10 to 20 cm thick, turfy, dark brown and high in organic matter. It is underlain by a 20 to 30 cm thick, strongly acid, reddish brown horizon which grades to relatively unweathered parent material at depths of approximately 75 cm. The usual classification is Sombric Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| NW 1 | Sombric Humo-Ferric Podzol | well | -- | -- | Consists dominantly of most common soil. |
| NW 2 | Sombric Humo-Ferric Podzol | well | Orthic Humo-Ferric Podzol | well to rapid | Less common soil has a grayish, leached horizon in place of the brown, turfy horizon due to occurrence under forest cover at lower elevations. |
| NW 3 | Sombric Humo-Ferric Podzol | well | Cumulic Regosol (cryoturbic phase) | well | Less common soil is undergoing severe cryoturbation preventing significant soil development. |
| NW 5 | Sombric Humo-Ferric Podzol | well | Sombric Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| NW 6 | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Sombric Humo-Ferric Podzol | well | Most common soil is shallower than 1 m to bedrock. |

## OONA Soil Association - ON

Oona soils are common on steep mountain slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse textured, neutral to basic colluvial deposits less than 2 m thick derived from and overlying ferro - magnesium igneous and associated metamorphic bedrock. Minor areas of morainal materials may also occur. Slopes are usually greater than 30% but slopes as low as 15% also occur. Elevations range from 1100 to 1700 m.

Oona soils are rapidly pervious and have gravelly sandy loam (minor gravelly clay loam) texture. Coarse fragment content ranges from 30 to 75%. The strongly acid solum is usually less than 50 cm thick, and contains a mor layer up to 10 cm thick and a light coloured, leached horizon about 8 cm thick overlying a reddish brown horizon. Relatively unweathered parent material occurs within 75 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| ON 1 | Orthic Humo-Ferric Podzol | well to rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| ON 5 | Orthic Humo-Ferric Podzol | well to rapid | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| ON 6 | Orthic Humo-Ferric Podzol (lithic phase) | rapid | Orthic Humo-Ferric Podzol | well to rapid | Most common soil is shallower than 1 m to bedrock. |

## PORTER MOUNTAIN Soil Association - PM

Porter Mountain soils are common on mountain slopes in the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse-textured, acid to neutral colluvial deposits, less than 2 m thick which are derived from and overlying feldspathic igneous and associated metamorphic bedrock. Minor areas of glacial till also occur. Slopes range from 10 to 70% and elevations are greater than 1700 m. Solifluction, nivation and other periglacial processes are common.

Porter Mountain soils ar rapidly pervious and are gravelly sandy loam or gravelly loamy sand in texture. Coarse fragments range from 30 to 60%. The strongly acid solum consists of a turfy, dark brown surface horizon 10 to 20 cm thick overlying a reddish brown (Bf) horizon 20 to 30 cm thick which grades into unweathered parent material at depths of 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| PM 5 | Sombric Humo-Ferric Podzol | well to mod. well | Sombric Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| PM 6 | Sombric Humo-Ferric Podzol (lithic phase) | well | Sombric Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |

## RAMSEY Soil Association - R

Ramsey soils are common at the lower elevations throughout the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, gravelly, coarse textured, acid to neutral, stratified fluvioglacial deposits. Slopes are usually less than 15% but range as high as 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 720 and 1100 m.

Ramsey soils are rapidly pervious and generally very gravelly sand in texture. A surface veneer of finer gravelly sand or gravelly loamy sand is common. The coarse fragment content frequently exceeds 60%. A mor layer between 2 and 5 cm thick occurs on the soil surface. The strongly acid solum is generally less than 75 cm thick and consists of grayish, leached horizon (Ae) up to 8 cm thick overlying a reddish brown horizon (Bf). Relatively unweathered parent material occurs at depths of 100 cm or less. The most common soil is classified as an Orthic Humo - Ferric Podzol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| R 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of the most common soil. |
| R 2 | Orthic Humo-Ferric Podzol | rapid | Eluviated Dystric Brunisol | rapid | Less common soil has a yellowish brown solum due to less intense weathering in a drier climate. |
| R 3 | Orthic Humo-Ferric Podzol | rapid | Sombric Humo-Ferric Podzol | rapid | Less common soil has an organic enriched surface (Ah) horizon and occurs in meadow-like openings in the forest cover. |
| R 4 | Orthic Humo-Ferric Podzol | rapid | Luvisolic Humo-Ferric Podzol | rapid to well | Less common soil has a clay enriched (Bt) horizon beginning at depths below 50 cm due to having developed in a finer textured than usual parent material. |
| R 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo-Ferric Podzol (shallow phase) | rapid | Less common soil is underlain by glacial till at depths of less than 1 m. |
| R 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by glacial till at depths of less than 1 m. |

**RAMSEY Soil Association - R (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| R 7 | Orthic Humo-Ferric Podzol | rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| R 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | rapid | Most common soils is gleyed and mottled in subsoil due to seepage from upper slopes. |

## ROSENTHAL Soil Association - RT

Rosenthal soils are common throughout the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Nass Basin physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified fluvial and fluvioglacial deposits. Slopes are usually less than 15%, but range as high as 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 400 and 700 m.

Rosenthal soils are rapidly pervious and are generally gravelly or very gravelly sand in texture. A thin surface veneer of finer gravelly sand or gravelly loamy sand is common. The coarse fragment content frequently exceeds 60%. A mor layer between 5 and 10 cm thick is present on the soil surface. The strongly acid solum is generally less than 75 cm thick and consists of a grayish, leached horizon up to 8 cm thick overlying a reddish brown horizon. Relatively unweathered parent material commonly occurs at depths of approximately 100 cm. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Drainage | Less Common Soil Classification | Drainage | Comments |
|---|---|---|---|---|---|
| RT 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| RT 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo-Ferric Podzol (shallow phase, | well to rapid | Less common soil is underlain by glacial till at depths of less than 1 m. |
| RT 6 | Orthic Humo-Ferric Podzol (shallow phase) | well to rapid | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by glacial till at depths of less than 1 m. |
| RT 7 | Orthic Humo-Ferric Podzol | rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## RUBYROCK LAKE Soil Association - RU

Rubyrock Lake soils occur on steep mountain slopes in the Alpine Tundra zone and in the Krummholz subzone of the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Omineca mountains physiographic region. They have mainly developed in gravelly, moderately coarse-textured, neutral to basic colluvial deposits, often less than 1 m thick derived from and overlying ferro - magnesium igneous and associated metamorphic bedrock. Minor areas of glacial till may also occur. Slopes vary from 15 to 70% and elevations are greater than 1700 m.

Rubyrock Lake soils are rapidly pervious and are gravelly sandy loam in texture. Coarse fragment content is from 30 to 65%. The strongly acid solum consists of a turfy, dark brown surface horizon which is 10 to 20 cm thick, and a reddish-brown subsurface 20 to 30 cm thick that grades into unweathered parent material at about 75 cm from the surface. The usual classification is Sombric Humo - Ferric Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | Comments |
| RU 1 | Sombric Humo-Ferric Podzol | well | -- | -- | Consists dominantly of the most common soil. |
| RU 5 | Sombric Humo-Ferric Podzol | well | Sombric Humo-Ferric Podzol (lithic phase ) | well to rapid | Less common soil is shallower than 1 m to bedrock. |
| RU 6 | Sombric Humo-Ferric Podzol (lithic phase) | well to rapid | Sombric Humo-Ferric Podzol | well | Most common soil is less than 1 m to bedrock. |

## SAMMON Soil Association - SM

Sammon soils are common in the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Nass Basin physiographic region. They have developed in variable depths of gravelly, medium to moderately coarse textured, acid to neutral, compact basal till deposits on rolling terrain and on valley walls. Slopes are dominantly bedrock controlled and usually vary between 30 and 70%. Elevations range between 400 and 700 m.

Sammon soils are moderately pervious and are generally gravelly sandy loam or gravelly loam in texture. The coarse fragment content is usually between 30 and 50%. A mor layer between 3 and 8 cm thick is present on the soil surface. The soil profile has a grayish, leached horizon up to 10 cm thick at the surface. This is underlain by an acid, reddish-brown horizon up to 50 cm thick. A second grayish, leached horizon underlain by a brownish-gray clay accumulation horizon begins at depths greater than 50 cm. Relatively unweathered parent material occurs at depths of approximately 100 cm. The usual classification is Luvisolic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| SM 1 | Luvisolic Humo-Ferric Podzol | well to mod. well | -- | -- | Consists dominantly of the most common soil as described above. |
| SM 2 | Luvisolic Humo-Ferric Podzol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has the clay accumulation horizon beginning within 50 cm of the soil surface and a yellowish-brown solum indicating less intense weathering. |
| SM 3 | Luvisolic Humo-Ferric Podzol | well to mod. well | Sombric Humo-Ferric Podzol | well to mod. well | Less common soil has an organically enriched surface horizon (Ah) due to occurrence in high elevation, meadow-like openings in the forest. |
| SM 5 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| SM 6 | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |

**SAMMON Soil Association - SM (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SM 7 | Luvisolic Humo-Ferric Podzol | well to mod. well | Gleyed Luvisolic Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to restricted drainage and/or seepage from upper slopes. |

## SHEDIN Soil Association - SK

Shedin soils occur near valley bottoms in the Subalpine Mountain Hemlock - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region. They have developed in deep, coarse to moderately coarse-textured, stratified fluvial and fluvioglacial deposits. Slopes are usually less than 15%, but may range as high as 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 1050 and 1600 m.

Shedin soils are rapidly pervious and are generally gravelly sand, gravelly loamy sand or gravelly sandy loam in texture. The coarse fragment content usually ranges from 20 to 60% and consists mainly of fine gravels. A mor layer between 3 and 8 cm thick is common on the soil surface. The strongly acid solum is generally less than 70 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish-brown horizon. Relatively unweathered parent material usually occurs at depths of approximately 100 cm. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| SK 1 | Orthic Humo-Ferric Podzol | rapid to well | -- | -- | Consists dominantly of the most common soil as described above. |
| SK 5 | Orthic Humo-Ferric Podzol | rapid to well | Orthic Humo-Ferric Podzol (shallow phase) | well | Less common soil is underlain by glacial till at depths of less than 1 m. |
| SK 6 | Orthic Humo-Ferric Podzol (shallow phase) | well | Orthic Humo-Ferric Podzol | rapid to well | Most common soil is underlain by glacial till at depths of less than 1 m. |
| SK 7 | Orthic Humo-Ferric Podzol | rapid to well | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled due to seepage from upper slopes or fluctuating ground watertable. |
| SK 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | rapid to well | Most common soil is gleyed and mottled due to seepage from upper slopes or fluctuating ground watertable. |

## SHEGISIC Soil Association - SC

Shegisic soils occur on valley bottoms in the Subboreal White Spruce - Alpine Fir forest zone in the Nass Basin physiographic region. They have developed in coarse to moderately coarse textured, stratified recent fluvial floodplain deposits which are subject to frequent inundation and periodic additions of fresh sediment. Slopes are usually less than 5% and elevations range between 290 and 400 m.

Shegisic soils are rapidly to moderately pervious and have surface textures of sandy loam or loam with stratified sand or gravels occurring at depths. The coarse fragment content is extremely variable at depth, but is commonly less than 20% in the upper portion. Significant soil development has not occurred. Layers of varying textures and variation of grayish brown colors are common. The usual classification is Cumulic Regosol. Imperfectly drained areas occur in close association with the well drained soil.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| SC 1 | Cumulic Regosol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| SC 7 | Cumulic Regosol | well to mod. well | Gleyed Cumulic Regosol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes or fluctuating watertables. |

## SHEGUNIA Soil Association - SH

Shegunia soils are common in valley bottoms and on lower slopes in the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Skeena mountains physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified fluvioglacial deposits. Slopes are usually less than 15% but may range as high as 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 350 and 1050 m.

Shegunia soils are rapidly pervious and are generally gravelly or very gravelly sand, gravelly loamy sand or sometimes gravelly sandy loam in texture. The coarse fragment content often exceeds 50%. A mor layer between 5 and 8 cm thick is common on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 10 cm thick overlying a reddish brown horizon. Relatively unweathered parent material occurs approximately 75 cm of the soil surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SH 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| SH 4 | Orthic Humo-Ferric Podzol | rapid | Luvisolic Humo-Ferric Podzol | well to mod. well | Less common soil has a clay accumulation layer beginning at depths greater than 50 cm due to having developed in a somewhat finer textured parent material. |
| SH 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo-Ferric Podzol (shallow phase) | well | Less common soil is underlain by glacial till at depths of less than 1 m. |
| SH 6 | Orthic Humo-Ferric Podzol (shallow phase) | well | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by glacial till at depths of less than 1 m. |
| SH 7 | Orthic Humo-Ferric Podzol | rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil and contains excess moisture due to seepage from upper slopes. |

## SHELAGYOTE Soil Association - SY

Shelagyote soils are common in depressions and along water courses in the Subalpine Mountain Hemlock - Alpine Fir forest zone (excluding the Krummholz subzone) in the Skeena Mountains physiographic region. They have developed in organic deposits derived from mosses, sedges and other types of hydrophytic vegetation which are saturated with moving water at most times. Slopes are less than 5% and elevations range between 1050 and 1600 m.

Shelagyote organic soils are partially decomposed (mesic) and have a depth of organic material that usually exceeds 160 cm. Water at or near the soil surface is common. The usual classification is Typic Mesisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SY 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of the most common soil as described above. |
| SY 2 | Typic Mesisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil consists of 15 to 40 cm of organic material overlying mineral soil. |

## SIDINA Soil Association - SA

Sidina soils are common on very steep mountain slopes throughout the Alpine Tundra zone and in the Krummholz subzone of the Engelmann Spruce Alpine Fir forest zone in the Skeena Mountains physiographic region. They have developed in a variable depth of rubbly and blocky talus colluvium which is derived from undifferentiated bedrock. Slopes are usually greater than 45% and elevations are greater than 1600 m. Rockfalls, avalanching and other colluvial processes are commonly active and result in generally non-vegetated landscapes. Nivation, solifluction and other periglacial processes are also active.

Sidina soils are rapidly pervious and have generally very gravelly and stony textures with little fine earth. The coarse fragment content is generally in excess of 80%. Sidina soils usually do not have significant horizon development due to the frequent disturbances by the colluvial and periglacial processes. The usual color is a grayish brown which becomes grayer with depth. A thin (<10 cm thick) turfy, dark brown horizon, high in organic matter is sometimes present at the soil surface. The usual soil classification is Orthic Regosol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SA 1 | Orthic Regosol | rapid | -- | -- | Consists dominantly of the most common soil as described above. |
| SA 5 | Orthic Regosol | rapid | Orthic Regosol (lithic phase) | rapid | Less common soil is shallower than 1 m to bedrock. |
| SA 6 | Orthic Regosol (lithic phase) | rapid | Orthic Regosol | rapid | Most common soil is shallower than 1 m to bedrock. |

## SKEENA Soil Association - SN

Skeena soils are common in the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Skeena Mountains physiographic region. They have developed in variable depths of gravelly, medium to moderately fine-textured, acid to neutral, compact basal till deposits on valley walls. On steeper slopes, the surface materials have often been modified by gravitational downward movement. Slopes are dominantly bedrock controlled and vary between 30 and 70%. Elevations range from 350 to 1050 m.

Skeena soils are moderately pervious and are gravelly loam or gravelly clay loam in texture. The coarse fragment content is usually between 30 to 50%. The soil profile has a thin mor layer underlain by a light coloured, leached horizon, a reddish-brown (Bf) horizon, a second leached (Ae) horizon and a brownish gray clay accumulation (Bt) horizon at depths greater than 60 cm. The unweathered glacial till parent material is usually found at 100 cm depth. The typical classification is Luvisolic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SN 1 | Luvisolic Humo-Ferric Podzol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| SN 2 | Luvisolic Humo-Ferric Podzol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has a clay accumulation (Bt) horizon within 50 cm of the surface indicating weaker leaching in a drier climate. |
| SN 3 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Ferro-Humic Podzol, or Orthic Ferro-Humic Podzol | well to mod. well | Less common soil has an organic matter enriched (Bhf) horizon indicating stronger weathering in a wetter climate. |
| SN 4 | Luvisolic Humo-Ferric Podzol | well to mod. well | Orthic Humo-Ferric Podzol | well to mod. well | Less common soil lacks a Bt horizon due to development in a coarser textured parent material. |
| SN 5 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| SN 6 | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |

**SKEENA Soil Association - SN (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SN 7 | Luvisolic Humo-Ferric Podzol | well to mod. well | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| SN 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## SKUTSIL Soil Association - SS

Skutsil soils are common in depressions and along water courses throughout the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Nechako Plateau physiographic region. They have developed in strongly acid organic deposits derived from mosses, sedges and other types of hydrophytic vegetation and are saturated with water at most times. Slopes are less than 5% and elevations range between 1100 and 1600 m.

Skutsil organic soils are partially decomposed (mesic) and have a depth of organic matter that usually exceeds 160 cm. The usual classification is Typic Mesisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SS 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of the most common soil. |
| SS 2 | Typic Mesisol | very poor | Rego Humic Gleysol (peaty phase) | poor to very poor | Less common soil has between 15 and 40 cm organic material overlying mineral soil. |

## SLUG Soil Association - SG

Slug soils are common on valley bottoms and on lower slopes throughout the Subboreal White Spruce - Alpine fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, gravelly, coarse textured, acid to neutral fluvial fan deposits. The slopes usually vary between 2 and 15% but may range as high as 30%. Elevations range between 720 and 1100 m.

Slug soils are rapidly pervious and usually have gravelly loamy sand or gravelly sandy loam surface textures with gravel or sand occurring at depth. The coarse fragment content is variable but frequently exceeds 50% on steeper slopes. A mor layer between 3 and 8 cm thick is common on the soil surface. The solum is usually strongly acid, yellowish brown and less than 50 cm thick. Unweathered parent material occurs within 75 cm of the soil surface. The usual classification is Orthic Dystric Brunisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SG 1 | Orthic Dystric Brunisol | well to rapid | -- | -- | Consists dominantly of the most common soil. |
| SG 4 | Orthic Dystric Brunisol | well to rapid | Brunisol Gray Luvisol | well to mod. well | Less common soil has a subsoil clay accumulation (Bt) horizon due to having developed in a somewhat finer textured parent material. |
| SG 10 | Orthic Dystric Brunisol | well to rapid | Orthic Regosol | rapid to mod. well | Less common soil has no significant horizon development due to periodic disturbances by shifting stream channels and/or flooding. |
| SG 11 | Gleyed Dystric Brunisol (seepage phase) | imperfect | Orthic Dystric Brunisol | well to rapid | Most common soil is gleyed and mottled due to location in landscape positions affected by seepage from upper slopes or fluctuating watertables. |

## STELLAKO Soil Association - SL

Stellako soils are common on valley floors in the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have developed on medium over moderately coarse textured, acid to neutral, stratified recent fluvial floodplain deposits which are subject to frequent inundation and periodic additions of fresh sediment. Slopes are usually less than 5% and elevations range between 720 and 1100 m.

Stellako soils are rapidly to moderately pervious. Surface and subsurface soil textures are sandy loam, loam, or silt loam with stratifed sand, silt and/or gravel occurring at depth. The coarse fragment content is variable but is commonly less than 20% in the upper portion of the profile. A mor or moder layer between 5 and 15 cm thick is common on the soil surface. Mineral soil horizons other than buried old surfaces have not developed on Stellako soils due to flooding and surface additions of new materials. Layers of varying textures with variations of grayish brown colours are common. Mottles occur in the subsoil due to a periodically high water table. The most common soil is classified as Gleyed Cumulic Regosol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| SL 1 | Gleyed Cumulic Regosol | imperfect | -- | -- | Consists dominantly of the most common soil. |
| SL 2 | Gleyed Cumulic Regosol | imperfect | Orthic Regosol | mod. well to rapid | Less common soil is not mottled due to better drainage but is still subject to flooding and surface additions. |
| SL 3 | Gleyed Cumulic Regosol | imperfect | Orthic Dystric Brunisol | well to rapid | Less common soil occupies slightly higher positions and has a yellowish-brown color indicating flooding as rare. |
| SL 4 | Gleyed Cumulic Regosol | imperfect | Humic Luvic Gleysol | poor | Less common soil is depressional and has a subsoil clay accumulation horizon due to having developed in a somewhat finer textured parent material. Usually contains excess moisture due to permanently high watertable. |
| SL 8 | Gleyed Cumulic Regosol | imperfect | Rego Humic Gleysol | poor | Less common soil is depressional and is prominently gleyed due to a permanent high watertable. |

## TATIN Soil Association - TT

Tatin soils are common on the valley floors and near valley sides in the transitional area between the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region and the Subalpine Engelmann Spruce - Alpine Fir forest zone in the Omineca Mountains physiographic region. They have developed in gravelly, moderately coarse to medium-textured, moderately acid colluvium overlying or mixed with deep, compact, moderately fine-textured, moderately acid basal till deposits. Surface layers are coarser textured than subsurface layers. Slopes vary between 30 and 70% and elevations range between 720 and 1100 m.

Tatin soils are moderately pervious and are generally gravelly sandy loam to gravelly loam in texture. The angular coarse fragment content ranges from 30 to 70%. A mor layer between 1 and 5 cm thick occurs on the soil surface. The strongly acid solum is generally less than 50 cm thick and consists of a grayish leached horizon up to 10 cm thick overlying a reddish brown horizon. Unweathered parent material occurs at depths from 75 to 100 cm. The most common soil is classified as an Orthic Humo-Ferric Podzol.

| Component | Classification | Drainage | Classification | Drainage | Comments |
|---|---|---|---|---|---|
| TT 1 | Orthic Humo-Ferric Podzol | well | -- | -- | Consists dominantly of the most common soil. |
| TT 2 | Orthic Humo-Ferric Podzol | well | Orthic Dystric Brunisol | well | Less common soil has a yellowish brown solum indicating less intense weathering in a drier climate. |
| TT3 | Orthic Humo-Ferric Podzol | well | Orthic Ferro-Humic Podzol | well | Less common soil has a organic matter enriched (Bhf) horizon indicating stronger weathering in a wetter climate. |
| TT 4 | Orthic Humo-Ferric Podzol | well | Luvisolic Humo-Ferric Podzol; Podzolic Gray Luvisol | well | Less common soils have clay enriched (Bt) horizons due to development in finer textured parent material. |
| TT 5 | Orthic Humo-Ferric Podzol | well | Orthic Humo-Ferric Podzol (lithic phase) | rapid to well | Less common soil is shallower than 1 m to bedrock. |
| TT 6 | Orthic Humo-Ferric Podzol (lithic) | rapid to well | Orthic Humo-Ferric Podzol | well | Most common soil is shallower than 1 m to bedrock. |

**TATIN Soil Association - TT (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TT 7 | Orthic Humo-Ferric Podzol | well | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled due to seepage from upper slopes. |
| TT 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | well | Most common soil is gleyed and mottled due to seepage from upper slopes. |

## TENAS HILL Soil Association - TH

Tenas Hill soils are common in depressions and along watercourses throughout the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Nass Basin physiographic region. They have developed in strongly acid organic deposits derived from mosses, sedges and other types of hydrophytic vegetation and are saturated with moving water at most times. Slopes are less than 5% and elevations range between 400 and 700 m.

Tenas Hill organic soils are partially decomposed (mesic) and have a depth of organic material that usually exceeds 160 cm. The usual classification is Typic Mesisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TH 1 | Typic Mesisol | very poor | -- | -- | Consists dominantly of most common soil. |

## TETANA Soil Association - TE

Tetena soils occur in valley bottoms and on lower slopes in the Subalpine Engelmann Spruce - Alpine Fir forest zone (excluding the Krummholz subzone) in the Nechako Plateau physiographic region. They have developed in deep, gravelly, coarse-textured, neutral to acid, fluvial and fluvioglacial deposits. Slopes vary from 2 to 15% but may range as high as 30%. Elevations range between 1100 to 1600 m.

Tetana soils are rapidly pervious and generally have very gravelly loamy sand or very gravelly sand surface textures with similar textures in the parent material. Coarse fragment content is variable but usually exceeds 50%. A mor layer 5 to 8 cm thick occurs on the surface underlain by a strongly acid, grayish, leached horizon (Ae) and a reddish brown (Bf) horizon about 75 cm thick. Unweathered parent material occurs within 100 cm of the surface. The usual classification is Orthic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TE 1 | Orthic Humo-Ferric Podzol | rapid | -- | -- | Consists dominantly of the most common soil. |
| TE 5 | Orthic Humo-Ferric Podzol | rapid | Orthic Humo Ferric Podzol (shallow phase) | rapid to well | Less common soil is underlain by glacial till within 1 m. |
| TE 6 | Orthic Humo-Ferric Podzol (shallow phase) | rapid to well | Orthic Humo-Ferric Podzol | rapid | Most common soil is underlain by glacial till within 1 m. |
| TE 7 | Orthic Humo-Ferric Podzol | rapid | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |
| TE 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Orthic Humo-Ferric Podzol | rapid | Most common soil is gleyed and mottled in subsoil due to seepage from upper slopes. |

## THOMLINSON Soil Association - TL

Thomlinson soils occur on rolling, sometimes drumlinized terrain at the lower elevations in the Subboreal White Spruce - Alpine Fir forest zone in the Nass Basin physiographic region. They have developed in deep, compact, gravelly, medium-textured till deposits. Slopes range between 2 and 30% and elevations range from 290 to 400 m.

Thomlinson soils are moderately pervious and gravelly loam in texture. The coarse fragment content is between 20 and 40%. A mor horizon 5 to 8 cm thick is usually on the surface. The acid solum consists of a yellowish brown (Bm) horizon 10 to 20 cm thick, a grayish, leached (Ae) horizon 10 to 20 cm thick and a slowly pervious, brownish gray clay accumulation (Bt) horizon 20 to 40 cm thick. Unweathered parent material occurs at depths of 100 cm or less. The usual classification is Brunisolic Gray Luvisol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TL 3 | Brunisolic Gray Luvisol | well to mod. well | Podzolic Gray Luvisol; Luvisolic Humo-Ferric Podzol | well to mod. well | Less common soils have a reddish brown surface horizon (Bf) indicating more intense weathering due to wetter climate. |

## TILTUSHA Soil Association - TA

Tiltusha soils are common in the valley bottoms of the Coastal Western Hemlock - Pacific Silver Fir forest zone in the Skeena Mountains physiographic region. They have developed in coarse to medium-textured, stratified, recent fluvial floodplain deposits which are subject to frequent inundation and periodic additions of fresh sediment. Slopes are ususally less than 5% and elevations range between 350 and 1050 m.

Tiltusha soils are rapidly to moderately pervious and have surface textures of sandy loam, loam or silt loam with stratified sand, silt and/or gravels occurring at depth. The coarse fragment content is variable at depth, but is commonly less than 20% in the upper portion of the soil. Significant soil development (other than old, buried surfaces) has not occurred in Tiltusha soils due to periodic flooding and surface additions of fresh sediments. Layers of varying textures with variations of grayish brown colors are common. A mor horizon between 5 and 15 cm thick is present on the soil surface. The usual classification is Cumulic Regosol.

| Soil Assoc. Component | Most Common Soil | | Less Common Soil | | Comments |
|---|---|---|---|---|---|
| | Classification | Drainage | Classification | Drainage | |
| TA 2 | Cumulic Regosol | well to mod. well | Dystric Brunisol | well to rapid | Less common soil occupies slightly higher landscape positions and has a yellowish brown solum indicating that flooding is rare. |

## TINNECHA HILL Soil Association - TI

Tinnecha Hill soils are common in the Subalpine Engelmann Spruce - Alpine Fir Forest zone (excluding the Krummholz subzone) in the Omineca Mountains physiographic region. They have developed in variable depths of gravelly, medium to moderately fine-textured, acid to neutral, compact basal till deposits on rolling topography and valley walls. On steeper slopes, the surface materials have often been modified by downward movement by gravity. Slopes are dominantly bedrock controlled and vary between 30 to 70%. Elevations range from 1100 to 1700 m.

Tinnecha Hill soils are moderately pervious and are generally gravelly sandy loam or gravelly loam in texture. The coarse fragment content is usually between 30 and 50%. The soil profile commonly has a mor layer 3 to 8 cm thick and is underlain by a grayish leached horizon (Ae) up to 10 cm thick. This is underlain by an acid, reddish brown horizon (Bf) up to 50 cm thick. A second grayish leached horizon is underlain by a brownish gray clay accumulation horizon (Bt) which begins at depths greater than 50 cm. Unweathered parent material is usually found at between 80 and 120 cm depth. The usual classification is Luvisolic Humo-Ferric Podzol.

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TI 1 | Luvisolic Humo-Ferric Podzol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| TI 2 | Luvisolic Humo-Ferric Podzol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has the Bt horizon within 50 cm of soil surface indicating less intense weathering in a drier environment. |
| TI 5 | Luvisolic Humo-Ferric Podzol | well to mod. well | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |
| TI 6 | Luvisolic Humo-Ferric Podzol (lithic phase) | well | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |
| TI 7 | Luvisolic Humo-Ferric Podzol | well to mod. well | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Less common soil is gleyed and mottled in subsoil due to seepage from upslope. |
| TI 11 | Gleyed Humo-Ferric Podzol (seepage phase) | imperfect | Luvisolic Humo-Ferric Podzol | well to mod. well | Most common soil is gleyed and mottled in subsoil due to seepage from upslope. |

## TWAIN Soil Association - TW

Twain soils are common in the Subboreal White Spruce - Alpine Fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in a variable depth of gravelly, moderately fine to medium-textured, acid to neutral, compact basal till deposits on valley walls. On steeper slopes, the surface materials have often been somewhat modified due to downslope movement by gravity. Slopes are dominantly bedrock controlled and usually vary between 30 and 70%. Elevations range between 720 and 1100 m.

Twain soils are moderately to slowly pervious and are generally gravelly loam or gravelly clay loam in texture. The coarse fragment content is usually between 20 and 40%. A mor layer between 5 and 15 cm thick is common on the soil surface. The soil profile commonly has a grayish leached (Ae) horizon up to 10 cm thick. This is underlain by a strongly acid, friable reddish-brown (Bf) horizon 20 to 40 cm thick which in turn is underlain by a second grayish leached horizon up to 20 cm thick. A brownish gray clay accumulation (Bt) horizon 20 to 40 cm thick generally begins within 50 cm of the soil surface. The unweathered parent material occurs at depths of about 100 cm. The usual classification is Podzolic Gray Luvisol.

| Soil Assoc. | Most Common Soil | | Less Common Soil | | |
|---|---|---|---|---|---|
| Component | Classification | Drainage | Classification | Drainage | Comments |
| TW 1 | Podzolic Gray Luvisol | well to mod. well | -- | -- | Consists dominantly of the most common soil. |
| TW 2 | Podzolic Gray Luvisol | well to mod. well | Brunisolic Gray Luvisol | well to mod. well | Less common soil has a yellowish brown Bm horizon rather than Bf horizon indicating less intense weathering in a drier climate. |
| TW 3 | Podzolic Gray Luvisol | well to mod. well | Sombric Humo-Ferric Podzol | well to mod. well | Less common soil lacks a Bt horizon but has an organic matter enriched Ah horizon due to a cooler and wetter climate. Occurs in meadow-like openings in a usually closed forest cover. |
| TW 4 | Podzolic Gray Luvisol | well to mod. well | Luvisolic Humo-Ferric Podzol | well to mod. well | Bt horizon in less common soil occurs below 50 cm due to coarser textures in upper soil. |
| TW 5 | Pozolic Gray Luvisol | well to mod. well | Podzolic Gray Luvisol (lithic phase) | well | Less common soil is shallower than 1 m to bedrock. |

**TWAIN Soil Association - TW (Continued)**

| Soil Assoc. Component | Most Common Soil Classification | Most Common Soil Drainage | Less Common Soil Classification | Less Common Soil Drainage | Comments |
|---|---|---|---|---|---|
| TW 6 | Podzolic Gray Luvisol (lithic phase) | well | Podzolic Gray Luvisol | well to mod. well | Most common soil is shallower than 1 m to bedrock. |
| TW 7 | Podzolic Gray Luvisol | well to mod. well | Gleyed Podzolic Gray Luvisol (seepage phase) | imperfect | Less common soil is mottled in subsoil due to seepage from upper slopes. |
| TW 11 | Gleyed Podzolic Gray Luvisol (seepage phase) | imperfect | Podzolic Gray Luvisol | well to mod. well | Most common soil is mottled in subsoil due to seepage from upper slopes. |

# CHAPTER FOUR
## DERIVATIONS AND INTERPRETATIONS

The main purpose of mapping and describing soils is to present information which can be used to evaluate both the suitability and the limitations or constraints of land for various purposes. One of the uses of the information is to make simple derivations. This involves extracting a single characteristic or parameter (eg. depth to bedrock) from the soil descriptions. Soil interpretations are more complex. In these, a number of soil characteristics are considered and evaluated together to arrive at suitabilities, capabilities and/or limitations or constraints for specified land uses.

It should be noted that reconnaissance (Survey Intensity Level 4) soil maps are not totally precise and accurate (one square cm of map area represents 25 ha of actual ground area). Up to 15 or 20% inclusions of unmapped soils may be encountered within map polygons due to scale limitations. Inaccuracies may also be present because of limited ground access and field checking, particularly in areas where dense forest cover makes air photo interpretation difficult. The user is therefore cautioned that while derivations and interpretations based on the maps and soil descriptions are an excellent source of information for preliminary and overview plans, they do not negate the requirement for on-site investigation before detailed final plans are put into effect. An excellent use of the information is to stratify the overall area so that the detailed studies are carried out only in areas where significant potential for the proposed use is indicated.

### 4.1 METHODS FOR PRODUCING SOIL DERIVATIONS

A number of common derivations are presented and discussed below. The list is not comprehensive, but rather is intended to show examples of the types of information which can quickly and easily be extracted from the soil descriptions and maps. Individual users can make additional derivations to suit their particular needs.

#### 4.1.1 Sources of Sand and/or Gravel

Soils which are potential sources of sand and gravel are those which have developed in fluvial, fluvioglacial and ablation morainal surficial materials. A listing of these soils is contained in Table 2. Some of the soils, however, may be better suited than others for the intended use. For example, Ramsey soils were mapped as containing both sand and gravel. Some map units containing Ramsey soils may contain more gravel while others may contain more sand. Stellako soils, for example, are also potentially suited as a gravel source but contain significant quantities of silt, while Slug soils have some potential but shallow sources. These types of differences are noted in the soil descriptions. Some of the soil associations (and/or particular soil association components) which may be potentially suited for sand and/or gravel sources may also be subject to high water tables and/or flooding. Attention also should be paid to these and other concerns when potential sand and/or gravel sources are considered.

#### 4.1.2 Sources of Coarse Aggregate

In addition to the sources of sand and gravel discussed in 4.1.1, soils which may be potential sources of coarse aggregate can also be derived from the soil descriptions and these in turn can be pinpointed on the map. Most commonly these are soils which have developed in colluvial surficial materials. These are listed in Table 2 and the appropriate soil association descriptions indicate the percentage of the soil composed of coarse fragments. The coarse fragments are usually angular in shape and vary in size. The depth of coarse aggregate sources is important and particular attention should be paid to this derivation, as many colluvial deposits are usually less than 1 m thick.

### 4.1.3 Shallow Soils

A knowledge of soil depth over bedrock is important for a number of land use purposes. Shallow soils are indicated on the soil map by means of soil association components. Soil association component 5 is always (except in the case of organic soils) composed of a significant percentage (20 to 50%) of soils that are either shallower than 1 m to bedrock or to another parent material. Component 6 dominantly (50-80%) consists of soils that are shallower than 1 m to bedrock or to another parent material.

### 4.1.4 Slope

A total of 10 slope classes are shown on the soil maps with each one indicating a specific range of slopes. These can often be combined into two or three groups when slopes critical to a use are known. For example, if a use requires a slope of 10% or less, then all map polygons with slopes less than 10% can be grouped.

### 4.1.5 Wetness

Soils which are subject to high water tables, temporary perched water tables or those which occur in moisture receiving landscape positions (seepage) are also easily identifiable. Soils with a periodic or seasonal moisture surplus are indicated as "Gleyed" subgroups in the "Dominant Taxonomic Classification" column in Table 2. As well, Soil Association Components 7 and 11 indicate that a significant or major portion respectively of a soil is affected by periodic excess moisture. Gleysols and Organic soils (again, refer to Table 2) have permanent, or nearly so, high water tables and an almost continuous moisture excess. Soil Association Component 8 likewise indicates that a significant (20 to 50%) portion of the soil is affected by a continuous moisture excess.

### 4.1.6 Flooding

Areas which have been subject to flooding in the past and therefore can be assumed to have significant potential for a flooding recurrence are those soils which have developed on recent fluvial or fluvial fan deposits and which have Regosolic soil development (see Table 2). The Regosolic soil development in this case is generally the result of periodic soil disturbances by surface water flow and recent sediment deposition. In contrast, Soil Association Components 3 and 4 on these soils exhibit a significant amount of soil development suggesting relative stability and therefore less likelihood of flooding.

### 4.1.7 Soil Instability

Colluvial processes such as avalanching, rock falls, and rapid soil creep inhibit soil development and result in Regosolic soil classification. Areas of significant soil instability due to colluvial (gravitational) processes can therefore be identified from the combination of colluvial surficial materials and Regosolic soil classification (Table 2). As with flooding, the presence of Soil Components 2, 3 and 4 indicates less active disturbance.

#### 4.1.8 Other Derivations

Other derivations as required can similarly be made by extracting relevant soil characteristics from the soil descriptions and soil map.

### 4.2 SOIL INTERPRETATIONS - GENERAL DISCUSSION AND REFERENCES

Interpretations are more complex than derivations because they usually require the simultaneous evaluation of a number of soil properties. There is a wide variety of interpretations that can be made on the basis of soils information for a number of different uses. The methods of making these interpretations are not described here, but rather a listing of potential interpretations is given below, together with references as to where these methods have been published.

#### 4.2.1 Engineering Uses - Urban Development

Septic Tank Absorption Fields (Maynard, 1979 a and b; USDA, 1971)
Foundations for Low-Rise Buildings (Maynard, 1979 a and b; USDA, 1971)
Subgrade for Roads and Streets (Maynard, 1979 a and b; USDA, 1971)
Ease of Excavation (Maynard, 1979 a and b; USDA, 1971)
Solid Waste Disposal Sites (Maynard, 1979 a and b; USDA, 1971)
Source of Topsoil (Maynard, 1979 a and b; USDA, 1971)
Sewage Lagoons (USDA, 1971)
Potential Frost Action (USDA, 1971)
Flood Hazard (Maynard, 1979 a and b)

#### 4.2.2 Forestry

Land Capability for Forestry maps are available for 93M NE, SE, NW and can be obtained from the Librarian, Surveys and Resource Mapping Branch Ministry of Environment, Victoria, British Columbia.

Forest Capability (McCormack, 1972; Kowall, 1971)
Erosion Hazard (Kenk, 1979; Void and Kowall, 1982)
Geomorphic Hazard (Kenk, 1979; Void and Kowall, 1982)
Frost Action (Void and Kowall, 1982)
Windthrow Hazard (Void and Kowall, 1982)
Logging Road Limitations (Void and Kowall, 1982)
Forest Harvesting Limitations (Kenk, 1979; Void and Kowall, 1982)
Slash Disposal (Void and Kowall, 1982)
Limits to Regeneration (Void and Kowall, 1982)
Tree Species Selection (Void and Kowall, 1982)
Suitability for Sand and Gravel (Void and Kowall, 1982)

### 4.2.3 Recreation

Suitability for Playgrounds (Montgomery and Edminster, 1966)
Suitability for Camp Areas (Montgomery and Edminster, 1966)
Suitability for Picnic Areas (Montgomery and Edminster, 1966)
Suitability for Paths and Trails (Montgomery and Edminster, 1966)
Recreation Carrying Capacity (Block and Hignett, 1982)

### 4.2.4 Agriculture

Agriculture Capability (CLI, 1972; Runka, 1973; Kenk *et al.*, 1983)

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# APPENDIX A
# BEDROCK GROUPINGS, TEXTURAL GROUPINGS, AND TAXONOMIC CLASSIFICATION ABBREVIATIONS USED IN TABLE 2

## BEDROCK GROUPS

A number of different bedrock units, each containing several types of rock, are shown on the bedrock map (Armstrong *et al*, 1938) for part of the study area. The various bedrock units have been placed into four groups with roughly similar mineralogical characteristics as a stratification level in the definition of the soils present (Forbes *et al*, 1961) . The major components of these groups are as follows:

| Feldspathic Igneous and associated Metamorphics | Ferro-magnesium Igneous and associated Metamorphics | Non-Calcareous Siliceous Sedimentary and associated Metamorphics | Calcareous Sedimentary and associated Metamorphics |
|---|---|---|---|
| andesite | basalt | argillite | limestone |
| dacite | dunite | arkose | |
| diorite | gabbro | chert | |
| granite | greenstone | greywacke | |
| granitic gneiss | hornblende schist | sandstone | |
| granodiorite | peridotite | shale | |
| muscovite schist | pyroxenite | | |
| pegmatite | | | |
| quartz diorite | | | |
| rhyolite | | | |
| syenite | | | |
| trachite | | | |

## TEXTURAL GROUPS

The textures given in the soil texture column of Table 2 are based on a grouping of textures for mineral soils. These groupings are as follows:

Coarse-textured: sands (s) and loamy sands (ls)
Moderately coarse textured: sandy loams (ls)
Medium-textured: loam (l), silt loam (sil), and silt (si)
Moderately fine textured: sandy clay loam (scl), clay loam (cl), and silty clay loam (sicl)
Fine-textured: sandy clay (sc), clay (c), and silty clay (sic)

These groupings are illustrated below on the standard texture triangle.

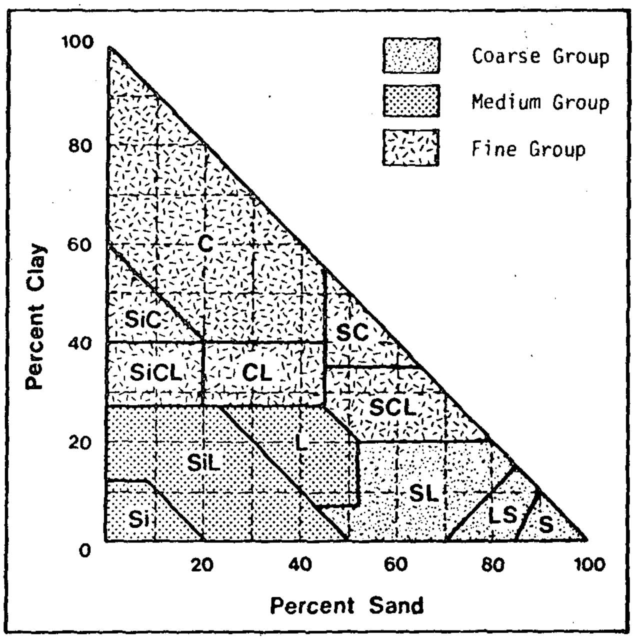


Figure 4 Soil Texture Triangle showing generalized textural groups.

## TAXONOMIC CLASSIFICATION ABBREVIATIONS

Due to space limitation in Table 2, Taxonomic Classification* is abbreviated. The full names are as follows:

| | |
|---|---|
| O.DYB | Orthic Dystric Brunisol |
| O.GL | Orthic Gray Luvisol |
| BR.GL | Brunisolic Gray Luvisol |
| PZ.GL | Podzolic Gray Luvisol |
| TY.F | Typic Fibrisol |
| TY.M | Typic Mesisol |
| O.HFP | Orthic Humo-Ferric Podzol |
| LU.HFP | Luvisolic Humo-Ferric Podzol |
| SM.HFP | Sombric Humo-Ferric Podzol |
| O.R | Orthic Regosol |
| GL.R | Gleyed Regosol |
| GLCU.R | Gleyed Cumulic Regosol |
| CM.R | Cumulic Regosol |
| LU.FHP | Luvisolic Ferro-Humic Podzol |
| O.FHP | Orthic Ferro-Humic Podzol |

*Canada Soil Survey Committee, 1978.

# APPENDIX B
## BASIC FORESTRY CAPABILITY RATINGS (and their ranges)
## WITH TREE SPECIES INDICATORS*

| Soil | Soil Abbreviation | Forestry Rating | Tree Species Indicators |
|---|---|---|---|
| Axelgold | AG | $7^{C}_{R}$, $7^{E}_{R}$, $7^{H}$ | |
| Amy Lake | AY | $7^{W}$ | bS |
| Babine | BE | $4^{M}_{D}$ ($3^{S}$) | lP, wS |
| Cobb | CB | $4^{M}$ ($5^{M}$), ($3^{S}$) | lP |
| Cataline | CE | $3^{H}$-$4^{H}$, ($5^{R}_{H}$), ($4^{H}_{R}$), ($5^{H}_{R}$) | eS, alF |
| Cronin | CN | $7^{H}$, $7^{H}_{R}$, $7^{R}_{H}$ | |
| Cullon | CU | $3^{M}$, ($4^{M}_{R}$), ($5^{R}_{M}$), ($2^{M}$) | hS, wH, |
| Deserters | D | $3^{S}$, ($4^{M}_{D}$), ($4^{M}$), ($5^{M}_{R}$), ($6^{R}_{M}$), ($2^{S}$) | wS, lP |
| Diver Lake | DI | $7^{W}_{C}$ | bS |
| Dragon | DN | $4^{H}_{M}$, $5^{H}$, ($5^{H}_{R}$), ($5^{R}_{H}$), ($6^{R}_{H}$) | eS,alF |
| Damsumlo | DO | $7^{H}$, ($7^{H}_{R}$), ($7^{R}_{H}$), | |
| Mount Grant | GR | $5^{H}_{R}$, ($6^{R}_{H}$), ($4^{H}$), ($5^{H}$) | es, alF |
| Hagwilget | H | $3^{M}$, ($2^{S}$) | hS, wH |
| Iktlaki | IK | $3^{H}$, $4^{H}$, ($4^{H}_{R}$), ($5^{R}_{H}$), ($3^{S}$) | eS, alF |
| Iltzul Lake | IZ | $3^{M}$ | hS |
| Janze Lake | JL | $4^{H}$-$3^{H}$ ($4^{H}_{R}$), ($5^{H}_{R}$), ($5^{H}$), ($6^{H}$) | alF |
| Kisgegas | KG | $3^{H}$, ($3^{S}$), ($4^{H}_{R}$), | eS, alF |
| Kloch Lake | KL | $7^{W}$ | bS |
| Kuldo | KO | $3^{H}$, ($3^{S}$), ($4^{H}_{R}$), ($2^{S}$), ($5^{H}$), | eS, alF |
| Kotsine | KS | $7^{W}_{C}$ | bS |
| Klowcut | KT | $7^{E}$, $7^{E}_{R}$ | |

*R. J. McCormack, 1972.

**APPENDIX B (CONTINUED)**

| Soil | Soil Abbreviation | Forestry Rating | Tree Species Indicators |
|---|---|---|---|
| Kispiox | KX | $3^S$, $2^S$, (1), $(4^R_M)$, $(3^M_R)$ | hS, wH |
| Mount Bates | MB | $4^H_M$, $(3^S)$, $(5^H)$ | eS, alF |
| Moosmoos | MO | $7^W_C$ | bS |
| Nankai | NK | $4^H$, $5^H$, $(4^H_R)$ $(5^H_R)$, $(3^S)$ | eS, alF |
| Nichyeskwa | NY | $7^W$ | |
| Nilkitkwa | NW | $7^H$ | bS |
| Netalzul | NZ | $7^W_C$ | bS |
| Oona | ON | $4^H_M$, $(5^H_R)$, $(6^H_R)$ | eS, alF |
| Porter Mountain | PM | $7^H_R$ | |
| Ramsey | R | $4^M$, $(3^S)$ | wS, 1P |
| Rosenthal | RT | $3^M$, $(2^S)$ | hS, wH |
| Rubyrock Lake | RU | $7^H$, $7^H_R$ | |
| Sidina | SA | $7^E_C$, $7^E_R$, $7^R_E$ | |
| Shegisic | SC | $2^S$, (1) | hS |
| Slug | SG | $4^M$, $(3^S)$ | wS |
| Shegunia | SH | $3^M$, $(2^S)$, (1) | hS, wH |
| Shedin | SK | $4^H_M$, $(3^H)$, $(5^H_M)$ | eS, alF |
| Stellako | SL | $3^W_I$, $(4^W_I)$, $(5^W)$ | wS |
| Sammon | SM | $2^S$, (1), $(3^M_R)$, $(4^R_M)$ | hS, wH |
| Skeena | SN | $2^S$, 1, $(3^M_R)$, $(4^R_M)$ | hs, wH |
| Skutsil | SS | $7^W_C$ | bS |
| Shelagyte | SY | $7^W_C$ | bS |
| Tiltusha | TA | $2^S$, (1) | hS, wH |

## APPENDIX B (CONTINUED)

| Soil | Soil Abbreviation | Forestry Rating | Tree Species Indicators |
|---|---|---|---|
| Tetana | TE | $4^{M}_{H}$, $(5^{M}_{H})$, $(4^{H})$, $(5^{H}_{W})$ | eS, alF |
| Tenas Hill | TH | $7^{W}$ | hS |
| Tinnecha Hill | TI | $3^{H}$, $4^{H}$, $(5^{H}_{R})$, $(4^{H}_{R})$ | eS, alF |
| Thomlinson | TL | $2^{S}$ | hS |
| Tatin | TT | $3^{S}$, $4^{M}$, $(5^{M}_{R})$, $(4^{M}_{R})$ | lP, wS |
| Twain | TW | $3^{S}$, $(4^{M}_{R})$ | wS, lP |

**TREE SPECIES INDICATORS**

wC - Western Red Cedar
alF - Alpine Fir
wH - Western Hemlock
lP - Lodgepole Pine
eS - Engelmann Spruce
hS - Hybrid Spruce
bS - Black Spruce
wS - White Spruce

**FOREST CAPABILITY CLASSES**

Class 1 - Lands having no significant limitations for the growth of trees. Productivity is greater than 7.8 cubic metres of wood per hectare per year.

Class 2 - Lands having slight limitations for the growth of trees. Productivity is between 6.4 to 7.7 cubic metres of wood per hectare per year.

Class 3 - Lands having moderate limitations for the growth of trees. Productivity is between 5.0 and 6.3 cubic metres per hectare per year.

Class 4 - Lands having moderately severe limitations for the growth of trees. Productivity is between 3.6 to 4.9 cubic metres per hectare per year.

Class 5 - Lands having severe limitations for the growth of trees. Productivity is between 2.2 to to 3.5 cubic metres per hectare per year.

Class 6 - Lands having very severe limitations for the growth of trees. Productivity is between 0.8 to 2.1 cubic metres per hectare per year.

Class 7 - Lands extremely limited for the growth of trees. Productivity is between 0.0 to 0.7 cubic metres per hectare per year.

**FOREST CAPABILITY SUBCLASSES**

C - adverse climate - usually high alpine areas
D - rooting depth restricted by dense or compacted soil layer
E - actively eroding
H - low air and soil temperatures, short growing season
I - periodic inundation (flooding)
M - soil moisture deficiency
R - rooting depth restricted by bedrock
S - combination of soil factors, none of which by themselves are significantly limiting
W - soil moisture excess