Soils of the Manson River - Fort Fraser Area

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SOILS OF THE MANSON RIVER-FORT FRASER MAP AREA

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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 Manson River-Fort Fraser map area (93N and 93K/N1/2) was thus initiated in 1973 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, available with this report at a scale of 1:100 000 using order form included in the map pocket (also available in manuscript form* at a scale of 1:50 000), which indicate 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 indicate 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 which indicate the inherent capability of the land to grow merchantible timber. This classification is according to the Canada Land Inventory (1972) methodology.

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*Manuscript maps are available from the Map Library, Planning and Resource Management Division, Ministry of Environment, Victoria, British Columbia.

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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 and are related to the soil map through the soil map legend. The soil maps which indicate the location and extent of the various soils are available for this report at a scale of 1:100 000. Manuscript soil maps at a scale of 1:50 000 are also available from the Planning and Resource Management Division Map Library. The information content is the same on both sets of maps. 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 soil and identifies them by means of symbols. The map legend describes the symbols used to identify the different soils found on the map and which are described further in the report.

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 to confirm the exact soil association component present. 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, entitled "General Description of the Map Area". The individual soils are described in Chapter 3, entitled "Soil Association Descriptions". Information relating to the suitability (or limitations) of the soils for specific uses is presented in Chapter 4, "Derivations and interpretations".

Detailed soil profile descriptions and laboratory data are not included in this report but are available, on request, from the British Columbia Soil Information System by contacting the Map Library, Planning and Resource Management Division, Ministry of Environment, Parliament Buildings, Victoria, British Columbia, V8V 1X5.

CHAPTER ONE

GENERAL DESCRIPTION OF THE MAP AREA

1.1 LOCATION

The map area is approximately located in the centre of British Columbia (Figure 1) and occupies approximately 21,400 square kilometres or 2.14 million hectares. It is bounded on the south and north by 54°30' and 56°00' latitude respectively and by 124°00' and 126°00' longitude on the east and west respectively. Fort St. James lies immediately to the south of the map area.

1.2 PHYSIOGRAPHY

The map area is roughly divided between the Interior Plateau in the south and the Omineca Mountains in the north with the Rocky Mountain Trench just extending into the northeast corner of the map area (Holland, 1976). The Interior Plateau area (Plate 1) is further subdivided into the Nechako Plateau and the Fraser Basin while the Omineca Mountains area (Plate 2) is subdivided into the Swannel and Hogem Ranges. Physiographic subdivisions are used as a primary division for a broad stratification of soils due to the topographical and environmental similarities present within physiographic units.

1.2.1 Interior Plateau

Fraser Basin

The Fraser Basin occurs in the southeast corner of the map area as an irregularly shaped area of low relief lying at elevations below the surface of the Nechako Plateau. Its' flat or gently rolling surface lies below 915 m, is covered with glacial drift and has few bedrock exposures. Much of the surface drainage is poorly organized and numerous lakes and poorly drained depressions are present. The area was covered by glacial ice during the Pleistocene and ice movement created drumlins and drumlin-like forms in the drift. Eskers and outwash plains were formed by the meltwater during the waning stages of glaciation. As the ice melted, large, ice-dammed lakes formed at elevations below 790 m and varved clays and silts were deposited in them.

Nechako Plateau

The Nechako Plateau occupies the area between the Fraser Basin in the southeast and the Omineca Mountains in the north. It is an area of low relief with large expanses of relatively level or gently rolling landscapes. Glacial drift is widespread and most bedrock is covered. Glacial ice has shaped the land surface into grooves and drumlin-like ridges. Eskers and melt water channels are common as well.

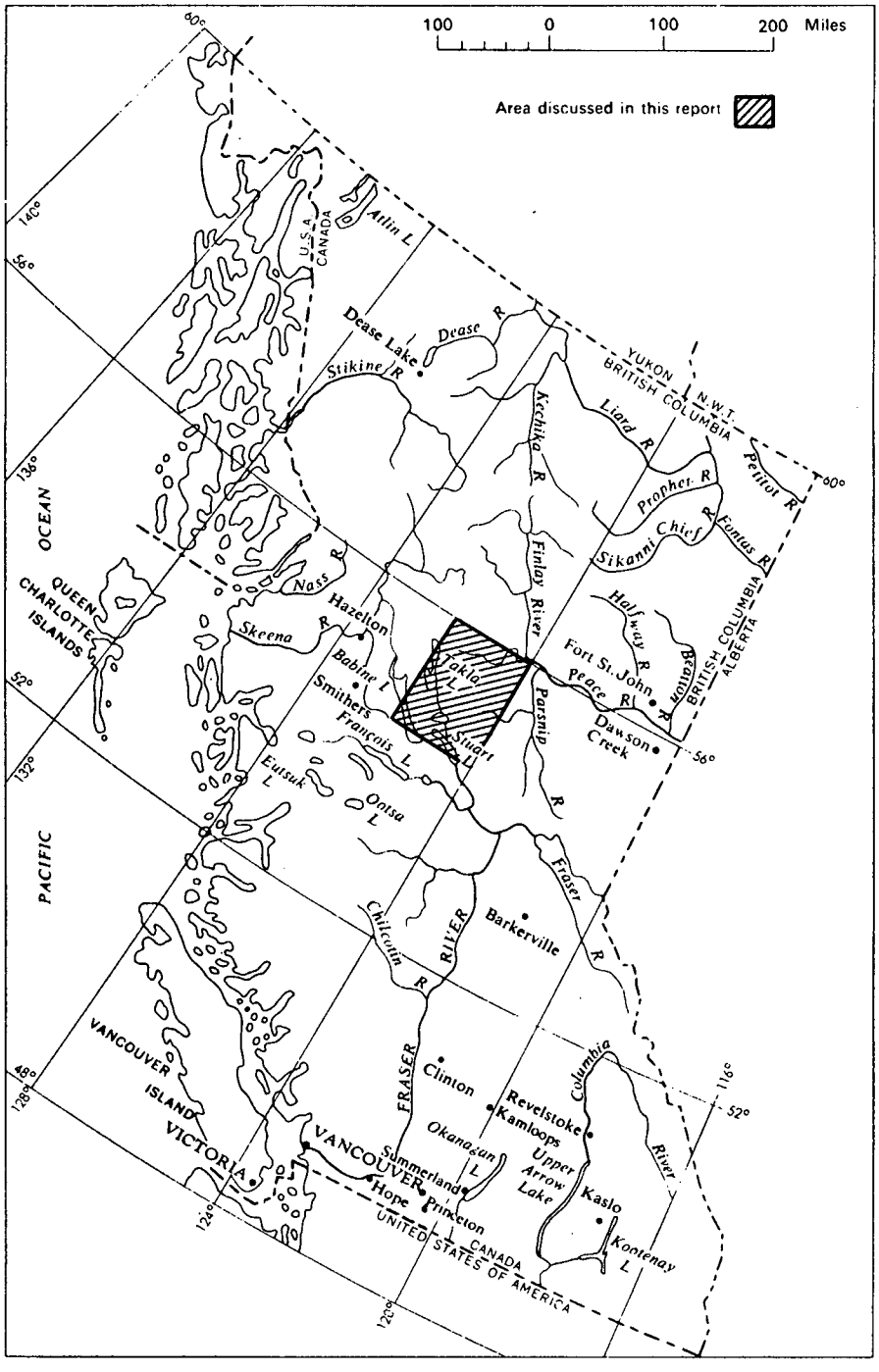

FIGURE 1. OUTLINE MAP OF BRITISH COLUMIBA SHOWING THE LOCATION OF THE MANSON RIVER-FORT FRASER STUDY AREA.

PLATE 1. Typical low relief characteristic of the Fraser Basin and Nechako Plateau subdivisions of the Interior Plateau. The vegetation in the photo falls in the Subboreal white spruce-alpine fir forest zone.

PLATE 2. Steep mountainous topography typical of the Omineca Mountains physiographic subdivision. Lower slopes are characteristic of the forested subzone of the Subalpine Engelmann spruce-alpine fir forest zone. The upper slopes are representative of the krummholz subzone of the Subalpine Engelmann spruce-alpine fir forest zone while the non-treed ridges fall in alpine tundra forest zone.

1.2.2 Omineca Mountains

Swannel Ranges

The Swannel Ranges occupy most of the northeast portion of the map area and exhibit the greatest relief. Elevations range from under 900 m in the valleys to over 2000 m at the peaks. The mountains have a core of granitic rock intruding into those of sedimentary, volcanic and metamorphic origin. The mountains were glaciated, but with an intensity that varied with altitude and location. Lower peaks and ridges are rounded, but at progressively higher elevations the peaks are more serrate and show the effects of cirque glaciation. A mantle of glacial drift is common in the valley bottoms, particularly in the vicinity of the Omineca River where ice erosion was not very pronounced.

Hogem Ranges

The Hogem Ranges occur in the western portions of the map area. They are similar to the Swannel Ranges, differing mainly by having somewhat lower relief and topographic forms less influenced by granitic rock.

1.2.3 Rocky Mountain Trench

The Rocky Mountain Trench occupies a small area in the northeast corner of the map area. It is a broad valley with low relief containing a variety of glacial deposits, including glacial till and glaciolacustrine and fluvioglacial materials.

The Nechako Plateau and Fraser Basin areas are combined for the purposes of legend development (2.2) and are collectively referred to as the Nechako Plateau. Also included in the Nechako Plateau designation are elevations below approximately 1065 m (3500 ft.) in the Omineca Mountains. The Swannel Ranges and Hogem Ranges are collectively referred to as the Omineca Mountains in this report. Also included in the Omineca Mountains designation are scattered areas above 1065 m (3500 ft.) on the Nechako Plateau.

1.3 BEDROCK GEOLOGY

The bedrock geology of the area has been mapped and described by Armstrong (1949). A complex variety occurs including rocks of volcanic, intrusive, sedimentary and metamorphic origins. No one type dominates and all types occur throughout the map area.

Bedrock groupings are frequently primary divisions 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 geological substrata have been divided into four general bedrock groups:

feldspathic rocks, ferro-magnesium rocks, siliceous rocks and calcareous rocks (Forbes and Meyer, 1961). 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 gneiss and schist are dominant. Soils derived from these rocks tend to be coarse to moderately coarse textured and acidic in reaction. They 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. They tend to be relatively low in nutrients.

1.3.4 Calcareous Sedimentary and Metamorphic Rocks

Limestone, dolomite, and calcareous shales dominate in this group. Soils derived from these rocks tend to be moderately coarse to medium textured and alkaline in reaction. They tend to be high in calcium and magnesium but are often low in phosphorus and potassium.

1.4 LANDFORMS AND SURFICIAL MATERIALS

The map area was covered by glacial ice during the Pleistocene and consequently exhibits a variety of glacial landforms and materials. These include deep, bedded lacustrine deposits in the Fraser Basin; drumlins, rolling morainal deposits, eskers and outwash plains in the Fraser Basin and Nechako Plateau areas; flat lying lacustrine deposits, rolling morainal deposits and hummocky fluvioglacial deposits in the Rocky Mountain Trench; and morainal blankets and veneers as well as cirques and U-shaped valleys in the Omineca Mountains.

Processes such as erosion and deposition by water and gravity have and are continuing to modify the landscape. They have given rise to colluvial deposits

on steep mountain slopes and hillsides and to fluvial fans and floodplains at and near valley bottoms. Organic materials are also accumulating in bogs and fens in depressions and low-lying areas.

Surficial geologic materials form the parent materials for soils. Consequently, soils inherit many of their physical characteristics such as topography, texture, coarse fragment content, perviousness, etc. from the surficial materials. As such, surficial materials are usually used as a stratification level in soil classification.

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 the Planning and Resource Management Division Map Library, for further details of the surficial materials.

1.5 CLIMATE

A continental climate with long, cold winters and relatively short, cool summers prevails in the map area (Chilton, 1981). The plateau area in the southern portion of the map area is fairly well represented by climatic data (Table 1) from Fort St. James which lies just south of the map area boundary. The climate of the mountain valleys in the northern portions of the map area is generally similar to that recorded at Germansen Landing.

TABLE 1.

SELECTED CLIMATIC DATA*

Station	Mean Annual Precipitation (mm)	Mean Annual Snowfall (cm)	Mean Annual Temperature (°C)	Annual Range of Temperature (°C)
Fort St. James	470	130	2.3	28
Germansen Landing	525	257	0.4	31

* Source of data: Atmospheric Environment Service

The map area is generally located in the rainshadow of the Coast Mountains. The effects of this are most noticeable on the plateau area where precipitation averages around 500 mm annually, substantially less than for areas west of the Coast Mountains. The precipitation is well distributed thoughout the year and summer moisture deficits are generally around 100 mm. The continental nature of the climate is indicated by the annual range of temperature of 28 °C at Fort St. James. This temperature range is a reflection of cold winters rather than hot summers.

The valleys in the Omineca Mountains are somewhat colder and wetter than the plateau area with a much larger proportion of the precipitation falling 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 well distributed throughout the year and summer moisture deficits are under 100 mm.

1.6 VEGETATION (FOREST ZONATION)

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

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

This zone occurs in the Fraser Basin, on the Nechako Plateau (Plate 1), in the Rocky Mountain Trench and in valleys in the Omineca Mountains. The zone rises to about 1065 m (3500 ft.).

Climax stands are characterized by white spruce and alpine fir. The former 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 the scattered bogs.

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

This zone occurs in the Omineca Mountains (Plate 2) and on the Nechako Plateau at elevations greater than 1065 m (3500 ft.). The maximum elevation is approximately 1830 m (6000 ft.).

Climax stands are characterized by Engelmann spruce and alpine fir. At higher elevations, the closed forest stands grade into tree "islands" or parklands. Accordingly, the zone is divided into forested (SAeS-alF:a) and krummholz (SAeS-alF:b) subzones based on tree physiognomy (form). The boundary between the two subzones occurs at approximately 1675 m (5500 ft.).

1.6.3 Alpine Tundra (At)

This zone occurs in the Omineca Mountains at elevations greater than 1830 m (6000 ft.). 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 (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.

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 and to delineate the landforms. The aerial photo interpretation at this stage involved a deductive and inductive evaluation of the six main elements (drainage, erosion, tone, topography, vegetation and land use) as depicted on the photographs. Existing information on bedrock geology and physiography was also used as an aid in the interpretation. This initial landform mapping formed the basis for organized field checking. Field work was carried out during the summers of 1973 to 1977 inclusive by vehicle where road access permitted and by helicopter in otherwise inaccessible areas. Road cuts and pits dug by hand provided exposures of soils and parent materials.

The main soil characteristics of the soil profiles, such as color (according to the Munsell notation), horizon sequences and depth, structure, texture, and presence/absence of mottles were recorded. Characteristics of the total environment such as drainage, stoniness, parent material, topography, aspect and vegetation were also recorded. Representative soil samples of most 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 over adjacent landscapes. To this end, a preliminary soil legend was developed during the first field season. This legend was updated and revised during the following field seasons as new information was accumulated. Field checking also resulted in modification and correction of the initial boundaries on the aerial photographs and the surficial material designations.

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 with about 15% being on 1:31 680 scale photographs. The information was then transferred to 1:50 000 scale maps and final manuscript terrain (surficial geology) maps were prepared.

These terrain maps then served as a base for the production of soil maps since the soil information and legend had been developed within a landform framework. 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 but a photographic reduction to 1:100 000 scale was made 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 since 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 depends partially on accessibility and to some extent on landscape complexity and density of forest cover. Accessibility was fair to good on the plateau area and in some of the mountain valleys. There are however, significant areas where mapping was mainly by aerial photo interpretation and extrapolation with limited field checking by helicopter. The reliability is consistent with that expected in a Survey Intensity Level 4 survey (Mapping Systems Working Group, 1981).

2.2 LEGEND DEVELOPMENT

The legend for the soils of the Manson River-Fort Fraser 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 Table 2 (located in the map pocket at back). The first level of stratification is on the basis of forest zone and subzone (see 1.6) in conjunction with physiography (see 1.2). Five groups, including one which is transitional, were recognized at this level. These groups were then stratified further on the basis of soil parent material, then dominant associated bedrock (see 1.3), then texture (or degree of decomposition for organic materials) and finally dominant taxonomic soil classification. This resulted in a total of 56 named Soil Associations in 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 components such that components 1 through 8 (with few exceptions) occur due to similar reasons in each Association. Components 9 to 11 are not standardized. The general meaning of components 1 through 8 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 developing in a somewhat drier environment or a pedologically younger soil makes up 20 to 50% of the component.

3 - Soil representing the central concept of the Association is dominant. Soil developing 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 phases of the soil representing the modal concept make up 20 to 50% of the component.

6 - Lithic 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 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, 10, 11 - These components are not standardized and are used to describe any other associated soils which occur.

It should be noted that a number of Soil Associations which occur in this map area are also present in the map area (93K/S 1/2) directly to the south (Cotic et al, 1974). Component numbers are not consistent between the two map

areas. This occurred because the numbering system used there 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.

CHAPTER THREE

SOIL ASSOCIATION DESCRIPTIONS

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

The forest zone, physiographic area, 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, represents at least 50% of each component with a few minor exceptions.

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).

ALBERT LAKE Soil Association - AL

Albert Lake soils occur in the valleys and on the lower slopes in the Subalpine Engelmann spruce-alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in deep, gravelly, coarse-textured, basic, stratified fluvial fan deposits which are derived mainly from calcareous sedimentary and metamorphic bedrock. Slopes vary between 2 and 15% and the elevations range between 1020 and 1250 m asl.

Albert Lake soils are rapidly pervious and generally have loamy sand or sandy loam surface textures which overlie loose gravels and sands. The coarse fragment content is usually greater than 50%. The usual solum is slightly acid to neutral, less than 50 cm thick, and consists of a grayish leached horizon up to 5 cm thick overlying a yellowish-brown horizon. Free carbonates are common within 75 cm of the soil surface. A mor layer between 3 and 8 cm thick is present on the soil surface. The usual classification is Eluviated Eutric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
AL 3	Eluviated Eutric Brunisol	rapid	Orthic Humo-Ferric Podzol	rapid	Less common soil is acidic and has a reddish-brown solum indicating more intense leaching and weathering in a climatically wetter environment.
AL 7	Eluviated Eutric Brunisol	rapid	Gleyed Eutric Brunisol	imperfect	Less common soil periodically contains excess moisture due to its location in a moisture receiving landscape position, seepage and/or a periodically high, fluctuating water table. It is mottled in the subsoil.

ALIX Soil Association - AX

Alix soils are common in a variety of landscape positions throughout the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, gravelly, acid, stratified fluvial deposits (outwash plain, valley train or high alluvial terraces) which are frequently overlain by sandy surface materials. Slopes usually vary between 0 and 15% and elevations range betwen 670 and 1065 m asl.

Alix soils are rapidly pervious and generally have gravelly sand or loamy sand surface textures which overlie loose gravels and sands. The coarse fragment content in the subsoil is frequently greater than 75%. The usual solum is yellowish-brown, acid and is generally less than 50 cm thick. Relatively unweathered parent material generally occurs at depths of 75 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
AX 1	Orthic Dystric Brunisol	rapid	--	--	Consists dominantly of the most common soil as described above.
AX 2	Orthic Dystric Brunisol	rapid	Orthic Eutric Brunisol	rapid	Solum of the less common soil is less acid (pH>5.5) indicating weaker leaching due to a climatically drier environment.
AX 3	Orthic Dystric Brunisol	rapid	Orthic Humo-Ferric Podzol	rapid	Less common soil has a reddish-brown solum indicating more intense leaching and weathering in a climatically wetter environment.
AX 4	Orthic Dystric Brunisol	rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a somewhat finer (sandy loam or fine sandy loam) surface texture and a grayish, leached horizon at the surface.
AX 5	Orthic Dystric Brunisol	rapid	Orthic Dystric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
AX 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol		Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
AX 7	Orthic Dystric Brunisol	rapid	Gleyed Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to its location in a moisture receiving landscape position, seepage and/or a periodically high, fluctuating water table. It is mottled in the subsoil.
AX 8	Orthic Dystric Brunisol	rapid	Orthic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional in relation to the most common soil.

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 moving water at most times. Slopes are less than 5% and elevations range between 670 and 1065 m asl.

Amy Lake soils usually have a mesic (intermediate) degree of decomposition and 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.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
AY 1	Typic Mesisol	very poor	--	--	Consists dominantly of the most common soil as described above.
AY 2	Typic Mesisol	very poor	Orthic Humic Gleysol (peaty phase)	poor to very poor	Less common soil consists of between 15 and 40 cm of organic material overlying mineral soil.
AY 4	Typic Mesisol	very poor	Mesic Fibrisol	very poor	Less common soil is only slightly decomposed. Organic materials are readily identifiable as to botanical origin.
AY 5	Typic Mesisol	very poor	Terric Mesisol	very poor	Less common soil consists of between 40 and 160 cm of organic material over mineral soil.
AY 6	Terric Mesisol	very poor	Typic Mesisol	very poor	Soil with 40 to 160 cm of organic material over mineral soil is more common than the deeper organic soil.

AXELGOLD Soil Association - AG

Axelgold soils are common on mountain slopes in the Alpine tundra forest 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, 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 1675 m asl. Active solifluction, nivation and other periglacial processes are common.

Axelgold soils are rapidly pervious and are generally gravelly sandy loam or gravelly loamy sand in texture. The coarse fragment content is usually at least 50% and frequently exceeds 75%. The usual surface horizon of Axelgold soils is between 10 and 20 cm thick, turfy, dark brown in color and has a high organic matter content. This 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		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
AG 1	Sombric Humo-Ferric Podzol	well	--	--	Consists dominantly of the most common soil as described above.
AG 6	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	Sombric Humo-Ferric Podzol	well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
AG 9	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
AG 10	Sombric Humo-Ferric Podzol (lithic phase)	rapid	Orthic Regosol (lithic and cryoturbic phases)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is undergoing severe cryoturbation preventing significant soil horizon development.

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 0.5 to 1 m of moderately fine textured lacustrine material which overlies gravelly, moderately fine textured, neutral, compact basal till. Slopes in the relatively level to rolling landscape vary between 2 and 30% and elevations range between 715 and 825 m asl.

Babine soils are generally silty clay loam, clay loam or clay in texture in the upper 0.5 to 1 m depth. The texture then changes abruptly to gravelly loam or gravelly clay loam. The coarse fragment content is less than 5% in the upper horizons and 20 to 30% at depth. The upper soil horizon is usually 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 pervious. Relatively unweathered, neutral parent material occurs at depths of 75 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classificiation is Orthic Gray Luvisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
BE 1	Orthic Gray Luvisol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
BE 2	Orthic Gray Luvisol	well to mod. well	Dark Gray Luvisol	well to mod. well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence under relatively open deciduous vegetation on low elevation, south and west facing aspects or due to 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 4	Orthic Gray Luvisol	well to mod. well	Orthic Dystric Brunisol	well to rapid	Less common soil has no or only a weakly developed clay accumulation horizon due to having developed in associated sandy lacustrine (deltaic) deposits.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
BE 5	Orthic Gray Luvisol	well to mod. well	Orthic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
BE 6	Orthic Gray Luvisol (lithic phase)	well	Orthic Gray Luvisol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
BE 7	Orthic Gray Luvisol	well to mod. well	Gleyed Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to a temporary, perched water table or location in a moisture receiving landscape position. It is mottled in the subsoil.
BE 8	Orthic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

BARRETT Soil Association - BA

Barrett 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 drumlinized, gravelly, moderately fine textured, neutral basal till deposits (Plate 3). 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 730 and 1065 m asl.

Barrett soils are generally gravelly loam or gravelly clay loam in texture, but surface textures in a few areas are gravelly sandy loam due to disintegration of stagnant ice. The coarse fragment content is usually between 20 and 30%. Usually, the upper soil horizon is 20 to 50 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 moderately to slowly pervious. Relatively unweathered, commonly neutral parent material occurs at depths of 100 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Gray Luvisol (Plate 4).

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
BA 1	Orthic Gray Luvisol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
BA 2	Orthic Gray Luvisol	well to mod. well	Dark Gray Luvisol	well to mod. well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence under relatively open deciduous vegetation on low elevation, south and west facing aspects.
BA 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.
BA 4	Orthic Gray Luvisol	well to mod. well	Eluviated Dystric Brunisol	well to rapid	Less common soil has no or only a weakly developed clay accumulation horizon due to having developed in a somewhat coarser textured material at and near the soil surface.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
BA 5	Orthic Gray Luvisol	well to mod. well	Orthic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
BA 6	Orthic Gray Luvisol (lithic phase)	well	Orthic Gray Luvisol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
BA 7	Orthic Gray Luvisol	well to mod. well	Gleyed Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to a temporary, perched watertable and/or location in a moisture receiving landscape position. It is mottled in the subsoil.
BA 8	Orthic Gray Luvisol	well to mod. well	Humic Luvic Gleysol	poor to very poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional in relation to the most common soil.
BA 9	Gleyed Gray Luvisol	imperfect	Orthic Gray Luvisol	well to mod. well	Mottled soil with periodic excess moisture due to a temporary, perched water table and/or location in a moisture receiving landscape position is more common than the usual soil.

PLATE 3. Barrett and Deserters are common soil associations developed on deep, compact glacial till deposits.

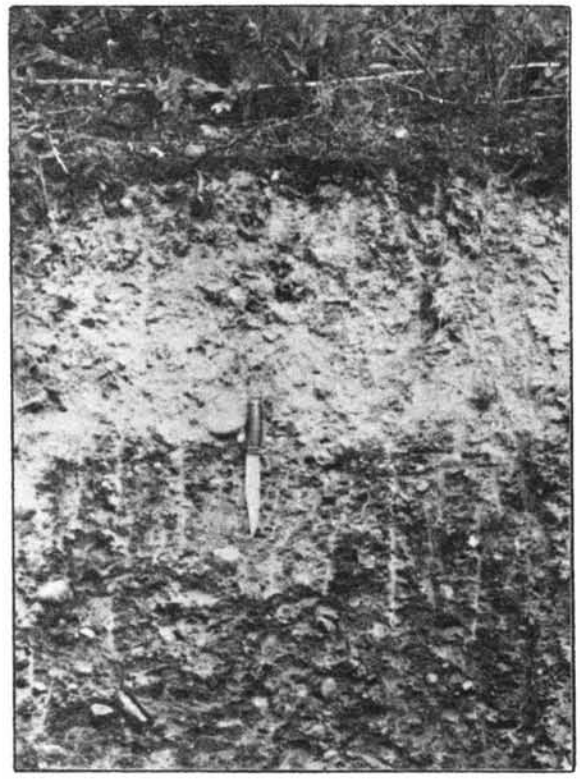

PLATE 4. Typical Orthic Gray Luvisol profile of the Barrett Soil Association

BERMAN Soil Association - BN

Berman soils are common in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau (dominantly Fraser Basin) physiographic region. They have developed in deep, moderately fine textured, neutral to alkaline, bedded lacustrine deposits. Slopes in the relatively level to gently rolling landscape generally vary between 0 and 15% and elevations range between 670 and 790 m asl.

Berman soils are slowly to moderately pervious and generally are silty clay loam or silty clay in texture. Coarse fragments are usually not present. The upper soil horizon is usually 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. Relatively unweathered, neutral to alkaline parent material occurs at depths of less than 75 cm. A mor layer between 1 and 3 cm thick is present on the soil surface. The usual classification is Orthic Gray Luvisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
BN 1	Orthic Gray Luvisol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
BN 2	Orthic Gray Luvisol	well to mod. well	Dark Gray Luvisol	well to mod. well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence under relatively open deciduous vegetation on low elevation, south and west facing aspects or due to cultivation.
BN 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.
BN 7	Orthic Gray Luvisol	well to mod. well	Gleyed Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to a temporary, perched water table or location in a moisture receiving landscape position. It is prominently mottled in the subsoil.

Soil Assoc. Component	Most Common Soil Classification	Most Common Soil Drainage	Less Common Soil Classification	Less Common Soil Drainage	Comments
BN 8	Orthic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

BLACK CANYON Soil Association - BL

Black Canyon soils occur on a few erosional escarpments in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have mainly developed in gravelly, moderately coarse textured colluvial deposits, generally less than 2 m thick, which are derived from undifferentiated bedrock. Slopes vary between 70 and 100% and elevations range between 850 and 950 m asl.

Black Canyon soils are rapidly pervious and are generally gravelly sandy loam or gravelly loamy sand in texture. The coarse fragment content is usually at least 50% and often exceeds 75%. The solum is usually yellowish-brown, acid, and generally less than 75 cm thick. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
BL 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.

CAUSQUA Soil Association - CA

Causqua soils are common on slopes 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 variable depths of gravelly, medium-textured, neutral, compact basal till 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% and elevations range between 760 and 1150 m.

Causqua soils are slowly to moderately pervious and are generally gravelly loam or gravelly silty clay loam in texture. The coarse fragment content is usually between 20 and 40%. The upper soil horizon is 10 to 20 cm thick, acid, friable and yellowish-brown in color. It is underlain by a grayish horizon, 10 to 20 cm thick, which in turn is underlain by a brownish-gray clay accumulation horizon that is 20 to 40 cm thick. Relatively unweathered, neutral parent material occurs at depths of 100 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
CA 1	Brunisolic Gray Luvisol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
CA 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 leaching and weathering due to a climatically drier environment.
CA 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 leaching and weathering due to a climatically wetter environment.
CA 4	Brunisolic Gray Luvisol	well to mod. well	Luvisolic Humo-Ferric Podzol	well to rapid	Clay accumulation horizon in the less common soil occurs below 50 cm due to relatively coarse textures in the upper soil. Surface horizon is reddish-brown.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
CA 5	Brunisolic Gray Luvisol	well to mod. well	Brunisolic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
CA 6	Brunisolic Gray Luvisol (lithic phase)	well	Brunisolic Gray Luvisol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
CA 7	Brunisolic Gray Luvisol	well to mod. well	Gleyed Brunisolic Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is commonly mottled in the subsoil.
CA 8	Brunisolic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional in relation to the most common soil.

COBB Soil Association - CB

Cobb 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 1 to 2 m of gravelly, coarse-textured, acid fluvioglacial materials overlying gravelly, moderately coarse to medium-textured, neutral, compact basal till. Hummocky topography with slopes varying between 10 and 70% is common and elevations range between 910 and 1675 m asl.

Cobb soils are rapidly pervious and are generally gravelly sand or gravelly loamy sand in texture to depths of 1 to 2 m. Below these depths they are slowly pervious with gravelly sandy loam, gravelly loam or gravelly clay loam textures. The coarse fragment content is variable near the surface, but 20 to 40% is common at depth in the till. 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. 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
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 leaching and 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) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
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 parent material.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
CB 7	Orthic Humo-Ferric Podzol	rapid to well	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a temporary, perched water table. It is mottled in the subsoil.
CB 8	Orthic Humo-Ferric Podzol	rapid to well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional in relation to the most common soil.

CRYSTAL Soil Association - CR

Crystal soils are common on the plateau near major entrenched valleys 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 fluvioglacial materials overlying gravelly, moderately coarse to medium-textured, neutral, compact basal till. Hummocky topography with slopes varying between 10 and 70% is common and elevations range between 670 and 1065 m asl.

Crystal soils are rapidly previous and are generally gravelly sand or gravelly loamy sand in texture to depths of 1 to 2 m. Below these depths they are slowly pervious with gravelly sandy loam, gravelly loam or gravelly clay loam textures. The coarse fragment content is variable near the surface, but 20 to 40% is common at depth in the till. The yellowish-brown, strongly acid solum is generally less than 50 cm thick and relatively unweathered parent material occurs within 75 cm of the soil surface. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
CR 1	Orthic Dystric Brunisol	rapid to well	--	--	Consists dominantly of the most common soil as described above.
CR 3	Orthic Dystric Brunisol	rapid to well	Eluviated Dystric Brunisol	rapid to well	Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.
CR 4	Orthic Dystric Brunisol	rapid to well	Brunisolic Gray Luvisol	well	Less common soil has a clay accumulation horizon due to being developed in a somewhat finer textured parent material.
CR 7	Orthic Dystric Brunisol	rapid to well	Gleyed Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a temporary, perched water table. It is mottled in the subsoil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
CR 8	Orthic Dystric Brunisol	rapid to well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.
CR 9	Orthic Dystric Brunisol	rapid to well	Orthic Humo-Ferric Podzol	rapid to well	Less common soil has a grayish, leached surface horizon and a reddish-brown solum indicating much more intense leaching and weathering due to a climatically wetter environment.

DECKER Soil Association - DR

Decker soils are common on steep, hilly topography in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in gravelly, moderately coarse textured, acid to neutral colluvial deposits, generally less than 2 m thick which are dominantly derived from and overlying feldspathic igneous and associated metamorphic bedrock. Minor areas of associated till deposits may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 790 and 1065 m asl.

Decker soils are rapidly to moderately pervious and are generally gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and frequently exceeds 75%. The usual, yellowish-brown, strongly acid solum is generally less than 50 cm thick. Relatively unweathered parent material occurs at depths of 75 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
DR 1	Orthic Dystric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
DR 3	Orthic Dystric Brunisol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.
DR 5	Orthic Dystric Brunisol	well to rapid	Orthic Dystric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
DR 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
DR 9	Orthic Dystric Brunisol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
DR 10	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dark Gray (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence under grassland or open deciduous forested vegetation on steep, south facing aspects.
DR 11	Orthic Dystric Brunisol (lithic phase)	rapid	Eluviated Dystric Brunisol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.

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 drumlinized, gravelly, moderately fine textured, neutral basal till deposits (Plate 3). 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 730 and 1155 m asl.

Deserters soils are generally gravelly loam or gravelly clay loam in texture, but surface textures in some areas are gravelly sandy loam due to disintegration of stagnant ice. 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 horizon, 10 to 20 cm thick, which in turn is underlain by a slowly pervious, brownish-gray clay accumulation horizon that is 20 to 40 cm thick. Relatively unweathered, neutral parent material occurs at depths of 100 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	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 leaching and 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 leaching and weathering due to a climatically wetter environment.
D 4	Brunisolic Gray Luvisol	well to mod. well	Eluviated Dystric Brunisol	well	Less common soil has no or only a weakly developed clay accumulation horizon due to having developed in somewhat coarser textured material at and near the soil surface.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	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	Soil shallower than 1 m to bedrock is more common than the deeper soil.
D 7	Brunisolic Gray Luvisol	well to mod. well	Gleyed Brunisolic Gray Luvisol	imperfect	Less common soil periodically has excess moisture due to a temporary, perched water table or location in a moisture receiving landscape position. It is mottled in the subsoil.
D 8	Brunisolic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

DIVER LAKE Soil Association - DI

Diver Lake soils are common on the valley floors and in other depressional positions in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca 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 910 and 1675 m asl.

Diver Lake soils usually have a mesic (intermediate) degree of decomposition and 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.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
DI 1	Typic Mesisol	very poor	--	--	Consists dominantly of the most common soil as described above.
DI 2	Typic Mesisol	very poor	Orthic Humic Gleysol (peaty phase)	poor to very poor	Less common soil consists of between 15 and 40 cm of organic material overlying mineral soil.
DI 4	Typic Mesisol	very poor	Mesic Fibrisol	very poor	Less common soil is only slightly decomposed. Organic materials are readily identifiable as to botanical origin.
DI 5	Typic Mesisol	very poor	Terric Mesisol	very poor	Less common soil consists of between 40 and 160 cm of organic material over mineral soil.
DI 6	Terric Mesisol	very poor	Typic Mesisol	very poor	Soil with 40 to 160 cm of organic material over mineral soil is more common than the deeper organic soil.

DRAGON Soil Association - DN

Dragon soils are common on steep mountain slopes in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca 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, which are dominantly derived from and overlying feldspathic igneous and associated metamorphic bedrock. Minor areas of associated till deposits may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 910 and 1675 m asl.

Dragon soils are rapidly to moderately pervious and are generally 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 75 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 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 as described above.
DN 2	Orthic Humo-Ferric Podzol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
DN 3	Orthic Humo-Ferric Podzol	well to rapid	Sombric Humo-Ferric Podzol	well to rapid	Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
DN 4	Orthic Humo-Ferric Podzol	well to rapid	Luvisolic Humo-Ferric Podzol	well	Less common soil has a clay accumulation horizon beginning below 50 cm due to having developed in a somewhat finer parent material.
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.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
DN 6	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Orthic Humo-Ferric Podzol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
DN 9	Orthic Humo-Ferric Podzol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
DN 10	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Sombric Humo-Ferric Podzol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatially wetter and colder environment at higher elevations.

EKLUND CREEK Soil Association - EK

Eklund Creek soils are common on the valley bottoms and the lower slopes in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed in coarse to medium-textured, stratified 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 670 and 1065 m asl.

Eklund Creek 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 extremely variable at depth, but is commonly less than 20% in the upper portion of the soil. Significant soil development has not occurred in Eklund Creek soils due to the periodic flooding and surface additions of new materials. Layers of varying textures with variations of grayish-brown colors are common however. Mottles are usual in the subsoil due to a periodically high water table. A mor or moder layer between 5 and 15 cm thick is present on the soil surface. The usual classification is Gleyed Cumulic Regosol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
EK 1	Gleyed Cumulic Regosol	Imperfect	--	--	Consists dominantly of the most common soil as described above.
EK 3	Gleyed Cumulic Regosol	Imperfect	Orthic Dystric Brunisol	well to rapid	Less common soil occupies slightly higher landscape positions and has a yellowish-brown solum indicating that flooding is rare.
EK 8	Gleyed Cumulic Regosol	Imperfect	Rego Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and occupies lower and depressional landscape positions relative to the most common soil.
EK 9	Orthic Dystric Brunisol	well to rapid	Gleyed Cumulic Regosol	Imperfect	Rarely flooded soil with yellowish-brown solum due to occupying higher landscape positions is more common than the usual soil.

FINLAY RIVER Soil Association - FI

Finlay River soils are common in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed in 1 to 2 m of gravelly, coarse-textured, acid fluvioglacial deposits overlying gravelly, moderately coarse textured, neutral, compact basal till. Hummocky topography with slopes varying between 10 and 45% is common and elevations range between 670 and 1065 m asl.

Finlay River soils are rapidly pervious and generally gravelly sand or gravelly loamy sand in texture to depths of 1 to 2 m. Below these depths they are moderately to slowly pervious with gravelly sandy loam or gravelly loam textures. The coarse fragment content is variable but usually ranges between 40 and 60% within the soil profile. 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 yellowish-brown horizon. Relatively unweathered parent material occurs within 75 cm of the soil surface. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Eluviated Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
FI 1	Eluviated Dystric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
FI 3	Eluviated Dystric Brunisol	well to rapid	Orthic Humo-Ferric Podzol	well to rapid	Less common soil has a reddish-brown solum indicating more intense leaching and weathering due to a climatically wetter environment.
FI 7	Eluviated Dystric Brunisol	well to rapid	Gleyed Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a temporary, perched water table. It is mottled in the subsoil.
FI 8	Eluviated Dystric Brunisol	well to rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

FLEMMING CREEK Soil Association - FM

Flemming Creek soils are common in the valleys and on the lower slopes in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in deep, gravelly, coarse-textured, stratified fluvial fan deposits that are susceptible to shifting stream channels and new additions of sediment. Somewhat finer textures sometimes overlie the gravelly materials. Slopes generally vary between 2 and 15% but occasionally range up to 30%. Elevations range between 670 and 1065 m asl.

Flemming Creek soils are rapidly pervious and are generally gravel or gravelly sand in texture with occasional loamy sand or sandy loam surface veneers. The coarse fragment content frequently exceeds 50%. Significant soil horizon development has not occurred on Flemming Creek soils due to periodic surface additions of new sediment. Relatively uniform grayish-brown or brownish-gray colors are common near the surface. Mottles are present at depth indicating periodic excess moisture due to temporarily high water tables. The usual classification is Gleyed Regosol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
FM 3	Gleyed Regosol	imperfect	Orthic Dystric Brunisol	rapid to well	Less common soil has a yellowish-brown solum indicating that it is rarely subject to shifting stream channels and material additions. Occurs on stable rarely flooded portions of fans.
FM 4	Gleyed Regosol	imperfect	Gleyed Cumulic Regosol	imperfect	Less common soil has a layered appearance due to additions of materials with contrasting textures and colors.
FM 7	Gleyed Regosol	imperfect	Gleyed Humic Regosol	imperfect	Less common soil has an organically enriched surface horizon (Ah).
FM 8	Gleyed Regosol	imperfect	Rego Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually occurs at the lower margins of the fans.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
FM 9	Rego Humic Gleysol	poor	Gleyed Humic Regosol	Imperfect	Soil with excess moisture due to a permanently high water table is the most common soil. Less common soil has an organically enriched surface horizon (Ah).

FORT SAINT JAMES Soil Association - FJ

Fort Saint James soils are common in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau (dominantly Fraser Basin) physiographic region. They have developed in deep fine-textured, neutral to alkaline, bedded lacustrine deposits (Plate 5). Slopes in the relatively level to undulating landscape are usually less than 5% and elevations range between 670 and 790 m asl.

Fort Saint James soils are slowly pervious and are generally silty clay, clay or heavy clay in texture. Coarse fragments are usually not present. The usual upper soil horizon is 10 to 30 cm thick, slightly acid and grayish in color. It is underlain by a strongly developed brownish-gray clay accumulation horizon, 20 to 40 cm thick, which is nearly impervious. Relatively unweathered, neutral parent material occurs at depths of 75 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Gray Luvisol (Plate 6).

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
FJ 1	Orthic Gray Luvisol	mod. well	--	--	Consists dominantly of the most common soil as described above.
FJ 2	Orthic Gray Luvisol	mod. well	Dark Gray Luvisol	mod. well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence under relatively open deciduous vegetation on low elevation, south and west facing aspects or due to cultivation.
FJ 5	Orthic Gray Luvisol	mod. well	Orthic Gray Luvisol (lithic phase)	mod. well	Less common soil is shallower than 1 m to bedrock.
FJ 3	Orthic Gray Luvisol	mod. well	Brunisolic Gray Luvisol	mod. well	Less common soil has a yellowish-brown surface horizon indicating more intense leaching and weathering due to a climatically wetter environment.
FJ 6	Orthic Gray Luvisol (lithic phase)	mod. well to well	Orthic Gray Luvisol	mod. well	Soil shallower than 1 m to bedrock is more common than the usual deeper soil.

Soil Assoc. Component	Most Common Soil Classification	Most Common Soil Drainage	Less Common Soil Classification	Less Common Soil Drainage	Comments
FJ 7	Orthic Gray Luvisol	mod. well	Gleyed Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to a temporary, perched water table or location in a moisture receiving landscape position. It is mottled in the subsoil.
FJ 8	Orthic Gray Luvisol	mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

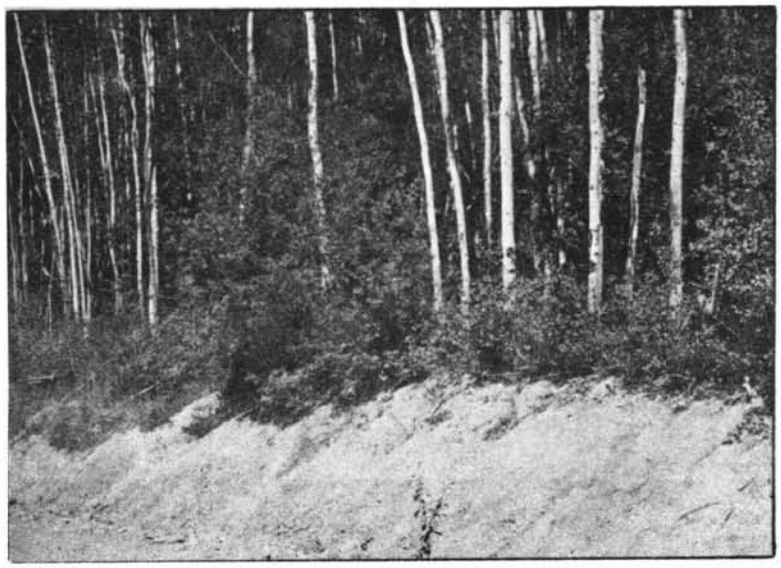

PLATE 5. Deep, bedded lacustrine deposits and aspen forest typical of Fort Saint James, Berman, Manson Creek and Strandberg Bay Soil Associations.

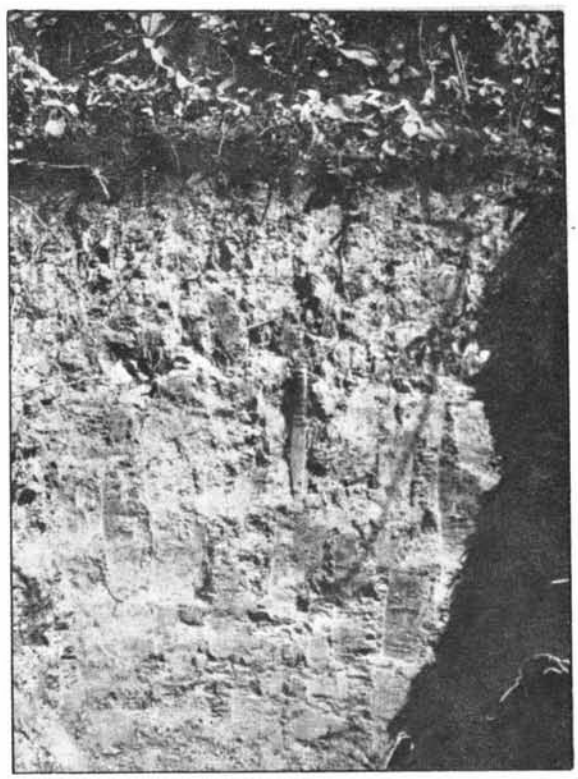

PLATE 6. Typical Orthic Gray Luvisol profile of the Fort Saint James Soil Association.

FROGGY LAKE Soil Association - FG

Froggy Lake soils occur on mountain slopes in the Alpine tundra forest 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, basic colluvial deposits, often less than 1 m thick, which are dominantly derived from and overlying basic ferro-magnesium igneous (including ultrabasics) and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes usually vary between 15 and 45% and elevations are greater than 1675 m asl. Active nivation, solifluction and other periglacial processes are common.

Froggy Lake soils are rapidly pervious and are generally gravelly sandy loam in texture. The coarse fragment content usually exceeds 60%. The usual surface horizon of Froggy Lake soils is 10 to 20 cm thick, turfy, dark brown in color, slightly acid to neutral and high in organic matter. This is underlain by a 20 to 30 cm thick, yellowish-brown, slightly acid to neutral horizon. Relatively unweathered parent material generally occurs at depths of 75 cm or less and bedrock is often encountered within 1 m of the soil surface. The usual classification is Orthic Melanic Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
FG 6	Orthic Melanic Brunisol (lithic phase)	well to rapid	Orthic Melanic Brunisol	well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
FG 9	Orthic Melanic Brunisol (lithic phase)	well to rapid	--	--	Soil is dominantly less than 1 m to bedrock.
FG 10	Orthic Melanic Brunisol (lithic phase)	well to rapid	Orthic Regosol (lithic and cryoturbic phases)	well to rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is undergoing severe cryoturbation preventing significant soil horizon development.

GERMANSEN Soil Association - GE

Germansen soils are common in a variety of landscape positions in the Alpine tundra and in the krummholz subzone of the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca 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 1675 m asl. Active nivation, solifluction and other periglacial processes are common.

Germansen 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 Germansen 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.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
GE 1	Sombric Humo-Ferric Podzol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
GE 2	Sombric Humo-Ferric Podzol	well to mod. well	Orthic Humo-Ferric Podzol	well to mod. well	Less common soil has a grayish, leached horizon in place of the brown, turfy, organically enriched horizon due to occurrence under more forest cover at lower elevations.
GE 3	Sombric Humo-Ferric Podzol	well to mod. well	Orthic Regosol (cryoturbic phase)	well to mod. well	Less common soil is undergoing severe cryoturbation preventing significant soil horizon development.
GE 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.
GE 6	Sombric Humo-Ferric Podzol (lithic phase)	well	Sombric Humo-Ferric Podzol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the usual soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
GE 7	Sombric Humo-Ferric Podzol	well to mod. well	Gleyed Sombric Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is mottled in the subsoil.
GE 8	Sombric Humo-Ferric Podzol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.
GE 9	Sombric Humo-Ferric Podzol (lithic phase)	well	--	--	Soil is dominantly shallower than 1 m to bedrock.
GE 10	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	Orthic Humo-Ferric Podzol (lithic phase)	well to rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a grayish, leached horizon in place of the organically enriched horizon due to occurrence under more forest cover at lower elevations.
GE 11	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	Orthic Regosol (lithic and cryoturbic phases)	well to rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is undergoing severe cryoturbation preventing significant soil horizon formation.

INDATA LAKE Soil Association - IN

Indata Lake soils occur infrequently on mountain slopes in the Alpine tundra forest 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, basic colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying calcareous sedimentary and associated metamorphic bedrock. Slopes usually vary between 10 and 45% and elevations are greater than 1675 m. Active nivation, solifluction and other periglacial processes are common.

Indata Lake soils are rapidly to moderately pervious and are generally gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and frequently exceeds 75%. The usual surface horizon of Indata Lake soils is between 10 and 20 cm thick, turfy, dark brown in color, slightly acid and high in organic matter. It is underlain by a 20 to 30 cm thick, yellowish-brown slightly acid to neutral horizon. Relatively unweathered, calcareous parent material occurs at depths of 75 cm or less. The usual classification is Orthic Melanic Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
IN 9	Orthic Melanic Brunisol (lithic phase)	well to mod. well	--	--	Soil is dominantly shallower than 1 m to bedrock.
IN 10	Orthic Humo-Ferric Podzol (lithic phase)	well to mod. well	Orthic Melanic Brunisol (lithic phase)	well to mod. well	Both soils are shallower than 1 m to bedrock. Soil lacking the organically enriched surface horizon and with a reddish-brown solum is more common than the usual soil. It occurs under forest cover at lower elevations.

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 670 and 1065 m asl.

Kloch Lake soils usually have a fibric (relatively undecomposed) degree of decomposition and a depth of organic material that 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 the most common soil as described above.
KL 2	Typic Fibrisol	very poor	Orthic Humic Gleysol (peaty phase)	poor to very poor	Less common soil consists of between 15 and 60 cm of organic material overlying mineral soil.
KL 3	Typic Fibrisol	very poor	Mesic Fibrisol	very poor	Less common soil has a significant layer of organic materials which exhibit an intermediate (mesic) degree of decomposition and which are not readily identifiable as to botanical origin.
KL 4	Typic Fibrisol	very poor	Fibric Mesisol	very poor	Less common soil dominantly has an intermediate (mesic) degree of decomposition. Organic materials are not readily identifiable as to botanical origin.
KL 5	Typic Fibrisol	very poor	Terric Fibrisol	very poor	Less common soil consists of between 60 and 160 cm of organic material overlying mineral soil.
KL 6	Terric Fibrisol	very poor	Typic Fibrisol	very poor	Soil with 60 to 160 cm of organic material over mineral soil is more common than the deeper organic soil.

KLOXUT Soil Association - KT

Klowkut soils are common on very steep mountain slopes throughout the Alpine tundra forest 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 colluvium which is derived from undifferentiated bedrock. Slopes are usually greater than 45% and elevations are greater than 1675 m asl. 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 where there is enough fine earth for them to occur.

Klowkut soils are rapidly pervious and are generally gravelly to stony with little fine earth. The coarse fragment content is generally in excess of 80%. Klowkut soils usually do not have significant horizon development due to the frequent disturbances by the colluvial processes and the coarse textures. 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.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
KT 1	Orthic Regosol	rapid	--	--	Consists dominantly of the most common soil as described above.
KT 3	Orthic Regosol	rapid	Orthic Humo-Ferric Podzol/ Orthic Dystric Brunisol	rapid	Less common soil has a reddish-brown or yellowish-brown solum and occurs in relatively stable portions of the landscape under krummholz or alpine vegetation.
KT 4	Orthic Regosol	rapid	Orthic Regosol (cryoturbic phase)	rapid	Less common soil is undergoing active cryoturbation.
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	Soil shallower than 1 m to bedrock is more common than the deeper soil.
KT 9	Orthic Regosol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.

Soil Assoc. Component	Most Common Soil Classification	Most Common Soil Drainage	Less Common Soil Classification	Less Common Soil Drainage	Comments
KT 10	Orthic Regosol (lithic phase)	rapid	Orthic Humo-Ferric Podzol (lithic phase)/ Orthic Dystric Brunisol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a reddish-brown or yellowish-brown solum and occurs in relatively stable portions of the landscape under krummholz or alpine vegetation.

KWANIKA CREEK Soil Association - KW

Kwanika Creek soils occur in the valleys and on the lower slopes in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca 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. Slopes generally vary between 2 and 15% but may occasionally range up to 30%. Elevations range between 910 and 1675 m asl.

Kwanika Creek soils are rapidly pervious and are generally gravel or gravelly sand in texture with occasional loamy sand or sandy loam surface veneers. The coarse fragment content frequently exceeds 50%. Significant soil development has not occurred on Kwanika Creek soils due to periodic additions of new sediment. Relatively uniform grayish-brown or brownish-gray colors are common near the surface. Mottles are common at depth indicating periodic excess moisture due to temporarily high water tables. The usual development is Gleyed Regosol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
KW 3	Gleyed Regosol	imperfect	Orthic Humo-Ferric Podzol	rapid to well	Less common soil has a reddish-brown solum indicating that it is rarely subject to shifting stream channels and material additions. Occurs on stable, rarely flooded portions of fans.
KW 7	Gleyed Regosol	imperfect	Gleyed Humic Regosol	imperfect	Less common soil has an organically enriched surface horizon (Ah).
KW 8	Gleyed Regosol	imperfect	Rego Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually occurs at the lower margins of the fans.
KW 9	Rego Humic Gleysol	poor	Gleyed Humic Regosol	imperfect	Soil with excess moisture due to a permanently high water table is the most common soil. Less common soil has a periodically high, fluctuating water table. Both soils have organically enriched surface horizons (Ah).

MANSON CREEK Soil Association - MA

Manson Creek soils occur in the valley bottoms and on lower valley sides in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in deep, moderately fine textured, neutral, bedded lacustrine deposits. Slopes are usually less than 15%, but may range as high as 70% where ice-contact features such as kettle holes are present. Elevations vary between 910 and 1675 m asl.

Manson Creek soils are moderately to slowly pervious and are generally silty clay loam or silty clay in texture. Coarse fragments are usually not present. The usual upper, grayish, leached soil horizon is 2 to 10 cm thick. It is underlain by an acid, friable, yellowish-brown horizon that is 10 to 20 cm thick, which in turn is underlain by a brownish-gray clay accumulation horizon that is 20 to 40 cm thick. A grayish, leached horizon, 10 to 20 cm thick, sometimes separates the latter two. Relatively unweathered, neutral parent material occurs at depths of 100 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
MA 2	Brunisolic Gray Luvisol	well to mod. well	Orthic Gray Luvisol	well to mod. well	Less common soil lacks the yellowish-brown near surface horizon indicating weaker leaching and weathering due to a climatically drier environment.
MA 7	Brunisolic Gray Luvisol	well to mod. well	Gleyed Brunisolic Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is commonly mottled in the subsoil.
MA 8	Brunisolic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

MAPES Soil Association - MS

Mapes soils occur on terraces and near valley bottoms in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau (mainly Fraser Basin) physiographic region. They have developed in deep, coarse to moderately coarse textured, neutral, stratified fluvial deposits (outwash plain, valley train or higher alluvial terraces). These have often been modified by wind action such that stabilized dunes are commonly present. Slopes usually vary between 2 and 15% but may range as high as 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 670 and 855 m asl.

Mapes soils are rapidly pervious and are generally sand, loamy sand or sandy loam in texture. Coarse fragments are usually not present. The solum is usually yellowish-brown, acid and generally less than 50 cm thick. Relatively unweathered parent material usually occurs at depths of 75 cm or less. A mor layer less than 3 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
MS 3	Orthic Dystric Brunisol	rapid to well	Eluviated Dystric Brunisol	rapid to well	Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.
MS 4	Orthic Dystric Brunisol	rapid to well	Brunisolic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
MS 9	Orthic Dystric Brunisol	rapid to well	Orthic Regosol	rapid to well	Less common soil has no significant soil horizon development due to on-going disturbance by wind action.

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 in the Omineca Mountains 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 910 and 1675 m asl.

Moosmoos soils usually have a fibric (relatively undecomposed) degree of decomposition and a depth of organic material that 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
MO 1	Typic Fibrisol	very poor	--	--	Consists dominantly of the most common soil as described above.
MO 2	Typic Fibrisol	very poor	Orthic Humic Gleysol (peaty phase)	poor to very poor	Less common soil consists of 15 to 60 cm of organic material overlying mineral soil.
MO 4	Typic Fibrisol	very poor	Fibric Mesisol	very poor	Less common soil has a dominantly intermediate (mesic) degree of decomposition. Organic materials are not readily identifiable as to botanical origin.
MO 5	Typic Fibrisol	very poor	Terric Fibrisol	very poor	Less common soil consists of between 60 and 160 cm of organic material overlying mineral soil.
MO 6	Terric Fibrisol	very poor	Typic Fibrisol	very poor	Soil with 60 to 160 cm of organic material over mineral soil is more common than the deeper organic 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 in the Omineca Mountains physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified fluvial deposits (outwash plain, valley train or high alluvial terraces (Plate 7)). 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 910 and 1675 m asl.

Mount Bates soils are rapidly pervious and generally have gravel or gravelly sand textures. A surface veneer of finer gravelly sand or gravelly loamy sand is commonly present. The coarse fragment content frequently exceeds 60%. 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 commonly occurs at depths of 100 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Orthic Humo-Ferric Podzol (Plate 8).

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
MB 1	Orthic Humo-Ferric Podzol	rapid	---	---	Consists dominantly of the most common soil as described above.
MB 2	Orthic Humo-Ferric Podzol	rapid	Eluviated Dystric Brunisol	rapid	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
MB 3	Orthic Humo-Ferric Podzol	rapid	Sombric Humo-Ferric Podzol	rapid to well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
MB 4	Orthic Humo-Ferric Podzol	rapid	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 parent material.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
MB 5	Orthic Humo-Ferric Podzol	rapid	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
MB 7	Orthic Humo-Ferric Podzol	rapid	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage and/or a high, fluctuating water table. It is mottled in the subsoil.
MB 8	Orthic Humo-Ferric Podzol	rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

PLATE 7. Lodgepole pine stand typical of the xeric moisture conditions of Alix, Mapes, Peta, Ramsey, Mount Bates, Wudtsi Lake and Muscovite Lakes Soil Associations developed on level fluvioglacial materials.

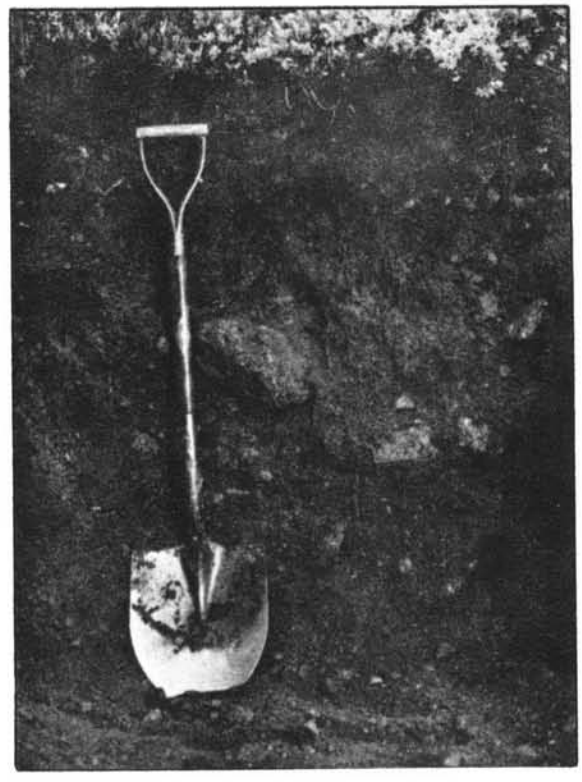

PLATE 8. Typical Orthic Humo-Ferric Podzol profile of the Mount Bates Soil Association.

MOUNT GRANT Soil Association - GR

Mount Grant soils are common on steep mountain slopes in 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 (Plate 9), generally less than 2 m thick, which are derived from and overlying non-calcareous siliceous sedimentary and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 910 and 1675 m asl.

Mount Grant soils are rapidly to moderately pervious and are generally gravelly sandy loam (minor gravelly loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 75%. The usual 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 75 cm or less. A mor layer between 3 and 8 cm thick is present on the soil surface. The usual classification is Orthic Humo-Ferric Podzol (Plate 10).

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
GR 1	Orthic Humo-Ferric Podzol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
GR 3	Orthic Humo-Ferric Podzol	well to rapid	Sombric Humo-Ferric Podzol	well to rapid	Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
GR 4	Orthic Humo-Ferric Podzol	well to rapid	Luvisolic Humo-Ferric Podzol	well to mod. well	Less common soil has a clay accumulation layer beginning below 50 cm due to having developed in a somewhat finer textured parent material.
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	Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
GR 7	Orthic Humo-Ferric Podzol	well to rapid	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or seepage. It is mottled in subsoil.
GR 8	Orthic Humo-Ferric Podzol	well to rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually on lower slopes or depressional relative to most common soil.
GR 9	Orthic Humo-Ferric Podzol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
GR 10	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Sombric Humo-Ferric Podzol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically wetter and colder environment at higher elevations.

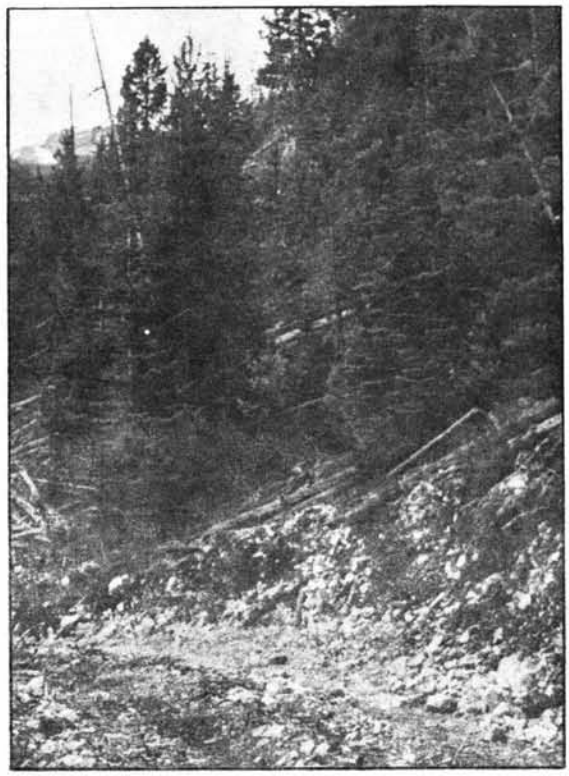

PLATE 9. Steep colluvial slope on which Mt. Ogen, Dragon, Oona and Mount Grant Soil Associations are typically developed.

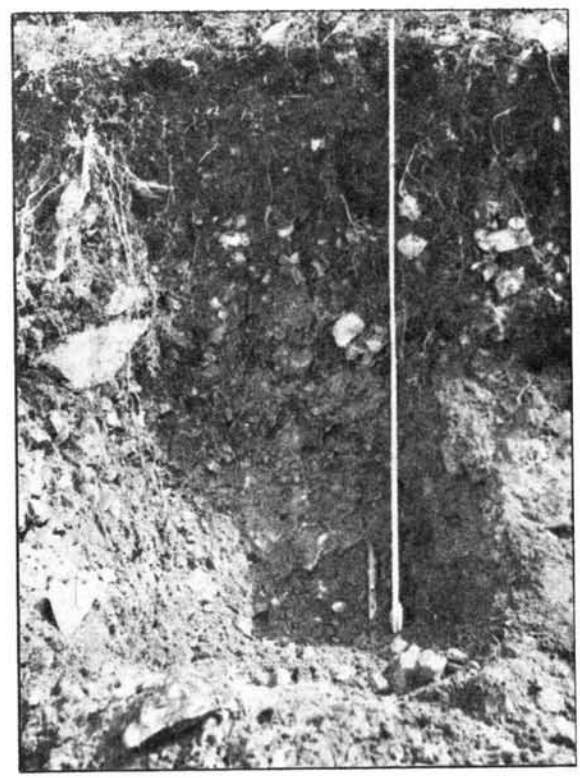

PLATE 10. Typical Orthic Humo-Ferric Podzol profile of the Mount Grant Soil Association.

MOUNT OGDEN Soil Association - OG

Mount Ogden soils are common on steep mountain slopes in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse textured, basic colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying calcareous sedimentary and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 910 and 1675 m asl.

Mount Ogden soils are rapidly pervious and are generally gravelly sandy loam (minor gravelly loam or gravelly clay loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 60%. The slightly acid to neutral solum is generally less than 40 cm thick and consists of a grayish, leached horizon up to 5 cm thick overlying a yellowish-brown horizon. Relatively unweathered, calcareous parent material occurs within 60 cm of the soil surface. A mor layer between 5 and 15 cm thick is present on the soil surface. The usual classification is Eluviated Eutric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
OG 1	Eluviated Eutric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
OG 2	Eluviated Eutric Brunisol	well to rapid	Orthic Eutric Brunisol	well to rapid	Less common soil lacks the grayish, leached horizon indicating weaker leaching and weathering due to a climatically drier environment.
OG 3	Eluviated Eutric Brunisol	well to rapid	Orthic Humo-Ferric Podzol	well to rapid	Less common soil is more acid and has a reddish-brown solum indicating more intense leaching and weathering due to a climatically wetter environment.
OG 4	Eluviated Eutric Brunisol	well to rapid	Brunisolic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
OG 5	Eluviated Eutric Brunisol	well to rapid	Eluviated Eutric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
OG 6	Eluviated Eutric Brunisol (lithic phase)	rapid	Eluviated Eutric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
OG 7	Eluviated Eutric Brunisol	well to rapid	Gleyed Eluviated Eutric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or seepage. It is mottled in the subsoil.
OG 9	Eluviated Eutric Brunisol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
OG 10	Eluviated Eutric Brunisol (lithic phase)	rapid	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is more acid and has a reddish-brown solum indicating more intense leaching and weathering due to a climatically wetter environment.
OG 11	Eluviated Eutric Brunisol (lithic phase)	rapid	Orthic Melanic Brunisol and Sombric Humo-Ferric Podzol (lithic phases)	rapid	All three soils are dominantly shallower than 1 m to bedrock. Less common soils have organically enriched surface horizons (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.

MOUNT SYLVESTER Soil Association - SY

Mount Sylvester soils are common on very steep mountain slopes throughout the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in a variable depth of rubbly and blocky colluvium which is derived from undifferentiated bedrock. Slopes are usually greater than 45% and elevations range between 910 and 1675 m asl. Rockfalls, avalanching (Plate 11), mass movement and other colluvial processes are commonly active and result in generally non-forested landscapes.

Mount Sylvester soils are rapidly pervious and are generally gravelly or stony with little fine earth. The coarse fragment content is usually in excess of 80%. Mount Sylvester soils usually do not have significant horizon development due to the frequent disturbances by colluvial processes and the coarse textures. The usual color is a grayish-brown which gets grayer with depth. The usual classification is Orthic Regosol (Plate 12).

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
SY 1	Orthic Regosol	rapid	--	--	Consists dominantly of the most common soil as described above.
SY 2	Orthic Regosol	rapid	Orthic Eutric Brunisol	rapid	Less common soil has a yellowish-brown solum and slightly acid to alkaline reaction due to more soil stability and parent material which is derived from basic bedrock. It occurs in forested areas.
SY 3	Orthic Regosol	rapid	Orthic Dystric Brunisol	rapid	Less common soil has a yellowish-brown solum and strongly acid reaction due to more soil stability and parent material which is derived from acidic bedrock. Occurs in forested areas.
SY 5	Orthic Regosol	rapid	Orthic Regosol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
SY 6	Orthic Regosol (lithic phase)	rapid	Orthic Regosol	rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
SY 8	Orthic Regosol	rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually on lower slopes or depressional relative to the most common soil.
SY 9	Orthic Regosol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
SY 10	Orthic Regosol (lithic phase)	rapid	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a reddish-brown solum due soil development in rarely disturbed portions of the landscape.

PLATE 11. Shrubby vegetation dominated by alder which is typical of avalanched areas on the Mt. Sylvester Soil Association.

PLATE 12. Typical Orthic Regosol profile of the Mt. Sylvester Soil Association.

MUSCOVITE LAKES Soil Association - MU

Muscovite Lakes soils are common near valley bottoms and on the lower slopes in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed in deep, gravelly, coarse-textured, acid to neutral, stratified fluvial deposits (outwash plain, valley train, or high alluvial terraces). 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 670 and 1065 m asl.

Muscovite Lakes soils are rapidly pervious and are generally gravelly sand, gravelly loamy sand or gravelly sandy loam in texture. The coarse fragment content often exceeds 50%. The usual strongly acid solum is generally less than 50 cm thick, and consists of a grayish, leached horizon up to 5 cm thick overlying a yellowish-brown horizon. Relatively unweathered parent material occurs within 75 cm of the soil surface. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Eluviated Dystric Brunisol.

Soil Assoc. Component	Most Common Soil Classification	Drainage	Less Common Soil Classification	Drainage	Comments
MU 1	Eluviated Dystric Brunisol	rapid	--	--	Consists dominantly of the most common soil as described above.
MU 3	Eluviated Dystric Brunisol	rapid	Orthic Humo-Ferric Podzol	rapid	Less common soil has a reddish-brown solum indicating more intense leaching and weathering due to a climatically wetter environment.
MU 7	Eluviated Dystric Brunisol	rapid	Gleyed Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a high, fluctuating water table. It is mottled in the subsoil.
MU 8	Eluviated Dystric Brunisol	rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

NECHAKO Soil Association - N

Nechako soils occur on terraces near valley bottoms in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau (dominantly Fraser Basin) physiographic region. They have developed in deep, medium to coarse-textured, neutral, stratified fluvial materials. Slopes are usually less than 10% and elevations range between 670 and 855 m asl.

Nechako soils are moderately pervious and are generally silt loam or very fine sandy loam in texture grading to fine or medium sand below depths of 0.5 to 2 m. Coarse fragments are usually not present. The upper soil horizon is usually 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. Unweathered, neutral parent material occurs at depths of less than 75 cm. A mor layer less than 5 cm thick is present on the soil surface. The usual classification is Orthic Gray Luvisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
N 7	Orthic Gray Luvisol	well to mod. well	Gleyed Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a high, fluctuating water table. It is mottled in the subsoil.

NINA LAKE Soil Association - NN

Nina Lake soils occur on valley walls in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in variable depths of gravelly, moderately fine textured, calcareous, compact basal till derived from and overlying calcareous sedimentary and associated metamorphic bedrock. On steeper slopes, the surface materials have often been somewhat modified due to downslope movement by gravity. Slopes are dominantly bedrock controlled and vary between 10 and 70%. Elevations range between 910 and 1675 m asl.

Nina Lake soils are slowly to moderately pervious and are generally gravelly loam or gravelly clay loam in texture. The coarse fragment content is usually between 20 and 40%. The upper soil horizon is usually 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 is in turn underlain by a brownish-gray clay accumulation horizon that is 10 to 30 cm thick. Relatively unweathered, calcareous (free lime) parent material occurs at depths of less than 100 cm. A mor layer between 1 and 8 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
NN 3	Brunisolic Gray Luvisol	well to mod. well	Podzolic Gray Luvisol	well to mod. well	Less common soil has a reddish-brown upper soil horizon indicating more intense leaching and weathering due to a climatically wetter environment.
NN 5	Brunisolic Gray Luvisol	well to mod. well	Brunisolic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
NN 6	Brunisolic Gray Luvisol (lithic phase)	well	Brunisolic Gray Luvisol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
NN 8	Brunisolic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most commmon soil.
NN 9	Brunisolic Gray Luvisol (lithic phase)	well	---	---	Soil is dominantly shallower than 1 m to bedrock.

NITHI Soil Association - NT

Nithi soils occur near valley bottoms in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau (dominantly Fraser Basin) physiographic region. They have developed in deep, medium to coarse-textured, neutral, stratified fluvial (higher post glacial terraces or outwash) materials. Slopes are usually less than 15%, but may range up to 70% when ice-contact features such as kettle holes and kames are present. Elevations range between 670 and 855 m asl.

Nithi soils are moderately pervious and are generally silt loam, very fine sandy loam or very fine sand in texture, grading to fine or medium sand below depths of 0.5 to 1.5 m. Coarse fragments are usually not present. The strongly acid solum is generally less than 50 cm thick and consists of a grayish, leached horizon up to 5 cm thick overlying a yellowish-brown horizon. Relatively unweathered parent material occurs within 75 cm of the soil surface. A mor layer up to 5 cm thick is present on the soil surface. The usual classification is Eluviated Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
NT 4	Eluviated Dystric Brunisol	well	Orthic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
NT 8	Eluviated Dystric Brunisol	well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

OMINECA RIVER Soil Association - OM

Omineca River soils are widespread in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed in deep, gravelly, medium to moderately coarse textured, neutral, compact basal till deposits. Slopes usually vary between 5 and 45% and elevations range between 670 and 1065 m asl.

Omineca River soils are moderately to slowly pervious and are generally gravelly loam or gravelly sandy loam in texture. The coarse fragment content is usually between 30 and 50%. The upper soil horizon is usually 10 to 20 cm thick, acid, friable and yellowish-brown in color. It is usually underlain by a grayish, leached horizon, 10 to 20 cm thick, which is in turn underlain by a brownish-gray clay accumulation horizon that is 20 to 40 cm thick. Relatively unweathered, neutral parent material occurs at depths of 100 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
OM 1	Brunisolic Gray Luvisol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
OM 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 leaching and weathering due to a climatically wetter environment.
OM 5	Brunisolic Gray Luvisol	well to mod. well	Brunisolic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
OM 7	Brunisolic Gray Luvisol	well to mod. well	Gleyed Brunisolic Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is commonly mottled in the subsoil.

OONA Soil Association - ON

Oona soils are common on steep mountain slopes in 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, generally less than 2 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 are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 910 and 1675 m asl.

Oona soils are rapidly pervious and are generally gravelly sandy loam (minor gravelly loam or gravelly clay loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 70%. The usual 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 75 cm of the soil surface. A mor layer between 5 and 10 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
ON 1	Orthic Humo-Ferric Podzol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
ON 2	Orthic Humo-Ferric Podzol	well to rapid	Eluviated Eutric Brunisol	well to rapid	Less common soil has a yellowish-brown and only slightly acid solum indicating less leaching and weathering due to a climatically drier environment.
ON 3	Orthic Humo-Ferric Podzol	well to rapid	Sombric Humo-Ferric Podzol	well	Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
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	Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
ON 7	Orthic Humo-Ferric Podzol	well to rapid	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or seepage. It is mottled in the subsoil.
ON 9	Orthic Humo-Ferric Podzol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
ON 10	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Sombric Humo-Ferric Podzol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched near surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically wetter and colder environment at higher elevations.

ORMOND Soil Association - OD

Ormond soils are common on steep hilly topography in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in gravelly, moderately coarse textured, neutral to basic colluvial deposits, generally less than 2 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 are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 790 and 1065 m asl.

Ormond soils are rapidly to moderately pervious and are generally gravelly sandy loam (minor gravelly loam or gravelly clay loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 75%. The usual yellowish-brown, strongly acid solum is generally less than 50 cm thick. Relatively unweathered parent material occurs within 75 cm of the soil surface. A mor layer less than 5 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
OD 2	Orthic Dystric Brunisol	well to rapid	Orthic Eutric Brunisol	well to rapid	Solum of the less common soil is less acid (pH >5.5) indicating weaker leaching due to a climatically drier environment.
OD 3	Orthic Dystric Brunisol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.
OD 4	Orthic Dystric Brunisol	well to rapid	Orthic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
OD 5	Orthic Dystric Brunisol	well to rapid	Orthic Dystric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
OD 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
OD 9	Orthic Dystric Brunisol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
OD 10	Orthic Dystric Brunisol	well to rapid	Orthic Dark Gray (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence under grassland or open deciduous forested vegetation on steep south facing aspects.
OD 11	Orthic Dystric Brunisol (lithic phase)	well to rapid	Eluviated Dystric Brunisol (lithic phase)	well to rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.

PETA Soil Association - PA

Peta soils are common on the valley bottoms and on the lower slopes in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, coarse to moderately coarse textured, neutral, stratified fluvial deposits (outwash plain, valley train or high alluvial terraces). Slopes usually are 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 670 and 1065 m asl.

Peta soils are rapidly pervious and are generally sand, loamy sand or sandy loam in texture. The coarse fragment content is usually less than 20%. The solum is usually yellowish-brown, strongly acid and generally less than 50 cm thick. Relatively unweathered parent material generally occurs at depths of 75 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
PA 1	Orthic Dystric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
PA 3	Orthic Dystric Brunisol	well to rapid	Orthic Humo-Ferric Podzol	well to rapid	Less common soil has reddish-brown solum indicating more intense leaching and weathering due to a climatically wetter environment.
PA 4	Orthic Dystric Brunisol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a grayish, leached surface horizon due to having developed in a somewhat coarser textured parent material.
PA 5	Orthic Dystric Brunisol	well to rapid	Orthic Dystric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
PA 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
PA 7	Orthic Dystric Brunisol	well to rapid	Gleyed Eluviated Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage and/or a high, fluctuating water table. It is mottled in the subsoil.
PA 8	Orthic Dystric Brunisol	well to rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.
PA 9	Orthic Dystric Brunisol	well to rapid	Brunisolic Gray Luvisol	well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.

POPE Soil Association - PP

Pope soils occur on steep, hilly topography in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in gravelly, moderately coarse textured, basic colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying calcareous sedimentary and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 670 and 1065 m asl.

Pope soils are rapidly pervious and are generally gravelly sandy loam (minor gravelly loam or gravelly clay loam) in texture. The coarse fragment content is usually at least 50% and often exceeds 75%. The solum is usually slightly acid to neutral, yellowish-brown and generally less than 40 cm thick. Relatively unweathered, calcareous (free lime) parent material occurs within 60 cm of the soil surface. A mor layer less than 5 cm thick is present on the soil surface. The usual classification is Orthic Eutric Brunisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
PP 4	Orthic Eutric Brunisol	well to rapid	Orthic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
PP 5	Orthic Eutric Brunisol	well to rapid	Orthic Eutric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
PP 6	Orthic Eutric Brunisol (lithic phase)	rapid	Orthic Eutric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
PP 9	Orthic Eutric Brunisol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.

PORTER MOUNTAIN Soil Association - PM

Porter Mountain soils are common on mountain slopes in the Alpine tundra forest zone and in the krummholz subzone (Plate 13) of the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have mainly developed in gravelly, moderately coarse to coarse-textured, acid to neutral colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying feldspathic igneous and associated metamorphic bedrock. Minor areas of associated morainal materials may also be included. Slopes usually vary between 10 and 70% and elevations are greater than 1675 m asl. Solifluction, nivation and other periglacial processes are common.

Porter Mountain soils are rapidly pervious and are generally sandy loam or gravelly loamy sand in texture. The coarse fragment content is usually at least 50% and commonly exceeds 75%. The usual surface horizon of Porter Mountain soils is 10 to 20 cm thick, turfy, dark brown and high in organic matter. This is underlain by a 20 to 30 cm thick, strongly acid, reddish-brown horizon which grades to relatively unweathered parent material at depths of 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol (Plate 14).

Soil Assoc. Component	Most Common Soil Classification	Most Common Soil Drainage	Less Common Soil Classification	Less Common Soil Drainage	Comments
PM 2	Sombric Humo-Ferric Podzol	well to mod. well	Orthic Humo-Ferric Podzol	well to mod. well	Less common soil has a grayish, leached horizon in place of the brown, turfy horizon due to occurrence under forest cover at lower elevations.
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	Soil shallower than 1 m to bedrock is more common than the deeper soil.
PM 9	Sombric Humo-Ferric Podzol (lithic phase)	well	--	--	Soil is dominantly shallower than 1 m to bedrock.
PM 10	Sombric Humo-Ferric Podzol (lithic phase)	well	Orthic Regosol (lithic and cryoturbic phase)	well	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is undergoing severe cryoturbation preventing significant soil horizon formation.

PLATE 13. Krummholz environment typical of high elevation soil associations such as Porter Mountain, Rubyrock Lake, Axelgold, Indata Lake and Froggy Lake.

PLATE 14. Typical Sombric Humo-Ferric Podzol profile of the Porter Mountain Soil Association.

RAMSEY Soil Association - R

Ramsey soils are common on a variety of lower landscape positions 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 fluvial deposits (outwash plain, valley train or high alluvial terraces). 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 670 and 1065 m asl.

Ramsey soils are rapidly pervious and are generally gravel or gravelly sand in texture. A surface veneer of finer gravelly sand or gravelly loamy sand is common. The coarse fragment content frequently exceeds 60%. 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 100 cm or less. A mor layer between 2 and 5 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
R 1	Orthic Humo-Ferric Podzol	rapid	--	--	Consists dominantly of the most common soil as described above.
R 2	Orthic Humo-Ferric podzol	rapid	Eluviated Dystric Brunisol	rapid	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
R 5	Orthic Humo-Ferric Podzol	rapid	Orthic Humo-Ferric Podzol (lithic phases)	rapid	Less common soil is shallower than 1 m to bedrock.
R 6	Orthic Humo-Ferric Podzol (lithic phase)	rapid	Orthic Humo-Ferric Podzol	rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
R 7	Orthic Humo-Ferric Podzol	rapid	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a high, fluctuating water table. It is mottled in the subsoil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
R 8	Orthic Humo-Ferric Podzol	rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

RUBYROCK LAKE Soil Association - RU

Rubyrock Lake soils occur on steep mountain slopes in the Alpine tundra forest zone and in the krummholz subzone of the 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, which are dominantly derived from and overlying ferro-magnesium igneous and associated metamorphic bedrock. Minor areas of associated moraines materials may also be included. Slopes usually vary between 15 and 70% and elevations are greater than 1675 m asl. Solifluction, nivation and other periglacial processes are common.

Rubyrock Lake soils are rapidly pervious and are generally 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 75 cm or less. The usual classification is Sombric Humo-Ferric Podzol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
RU 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.
RU 6	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	Sombric Humo-Ferric Podzol	well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
RU 9	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.
RU 10	Sombric Humo-Ferric Podzol (lithic phase)	well to rapid	Orthic Regosol (lithic and cryoturbic phase)	well to rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil is undergoing severe cryoturbation preventing significant soil horizon formation.

SHOAL LAKES Soil Association - SO

Shoal Lakes soils are common in depressions and along water courses in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench 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 670 and 1065 m asl.

Shoal Lakes soils usually have a mesic (intermediate) degree of decomposition and 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.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
SO 1	Typic Mesisol	very poor	--	--	Consists dominantly of the most common soil as described above.
SO 2	Typic Mesisol	very poor	Orthic Humic Gleysol (peaty phase)	poor to very poor	Less common soil consists of 15 to 40 cm of organic material overlying mineral soil.
SO 5	Typic Mesisol	very poor	Terric Mesisol	very poor	Less common soil consists of between 40 and 160 cm of organic material over mineral soil.
SO 6	Terric Mesisol	very poor	Typic Mesisol	very poor	Soil with 40 to 160 cm of organic material over mineral soil is more common than the deeper organic soil.

SLUG Soil Association - SG

Slug soils are common on the 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 which are mainly derived from feldspathic igneous and associated metamorphic or siliceous sedimentary and associated metamorphic bedrock. The slopes usually vary between 2 and 15% but may range as high as 30%. Elevations range between 670 and 1065 m asl.

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

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
SG 1	Orthic Dystric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
SG 3	Orthic Dystric Brunisol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a grayish, leached horizon indicating more leaching and weathering due to a climatically wetter environment.
SG 4	Orthic Dystric Brunisol	well to rapid	Brunisolic Gray Luvisol	well to mod. well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
SG 7	Orthic Dystric Brunisol	well to rapid	Gleyed Dystric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage, and/or a high, fluctuating water table. It is mottled in the subsoil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
SG 8	Orthic Dystric Brunisol	well to rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually occupies lower and depressional positions relative to the most common soil.
SG 9	Orthic Dystric Brunisol	well to rapid	Orthic Humo-Ferric Podzol	well to rapid	Less common soil has a reddish-brown solum indicating much more intense leaching and weathering due to a climatically wetter environment.
SG 10	Orthic Dystric Brunisol	well to rapid	Orthic Regosol	rapid to mod. well	Less common soil has no significant soil horizon development due to periodic disturbances such as shifting stream channels and/or flooding.

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 coarse to medium-textured, acid to neutral, stratified, 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 670 and 1065 m asl.

Stellako soils are rapidly to moderately pervious and are sandy loam, loam or silt loam in texture with stratified sand, silt, and/or gravel occurring at depth. The coarse fragment content is extremely variable but is commonly less than 20% in the upper portion of the soil. Significant soil horizon development has not occurred on Stellako soils due to the flooding and surface additions of new materials. Layers of varying textures with variations of grayish-brown colors are common. Mottles are usual in the subsoil due to a periodically high water table. A mor or moder layer between 5 and 15 cm thick is present on the soil surface. The usual classification is Gleyed Cumulic Regosol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
SL 1	Gleyed Cumulic Regosol	Imperfect	--	--	Consists dominantly of the most common soil as described above.
SL 2	Gleyed Cumulic Regosol	Imperfect	Orthic Regosol	mod. well to rapid	Less common soil does not show layering and is better drained (less mottling) than most common soil but is still subject to flooding which inhibits soil horizon development.
SL 3	Gleyed Cumulic Regosol	Imperfect	Orthic Dystric Brunisol	well to rapid	Less common soil occupies a slightly higher landscape position and has a yellowish-brown solum indicating that flooding is rare.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
SL 4	Gleyed Cumulic Regosol	Imperfect	Humic Luvic Gleysol	poor	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material and usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to most common soil.
SL 8	Gleyed Cumulic Regosol	Imperfect	Rego Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to most common soil.

STRANDBERG BAY Soil Association - ST

Strandberg Bay soils are common in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed on deep, moderately fine textured, bedded lacustrine deposits. Slopes on the relatively level to gently rolling landscape are generally less than 15% and elevations range between 670 and 1065 m asl.

Strandberg Bay soils are slowly pervious and are generally silty clay loam or silty clay in texture. Coarse fragments are usually not present. The usual upper soil horizon is 10 to 20 cm thick, acid, friable and yellowish-brown in color. It is underlain by a brownish-gray clay accumulation horizon that is usually between 20 and 40 cm thick. A grayish leached horizon, 10 to 20 cm thick, may separate the two. Unweathered, neutral parent material occurs at depths of 75 cm or less. A mor layer between 2 and 8 cm thick is present on the soil surface. The usual classification is Brunisolic Gray Luvisol.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
ST 7	Brunisolic Gray Luvisol	mod. well	Gleyed Brunisolic Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to a temporary, perched watertable or location in a moisture receiving landscape position. It is mottled in the subsoil.
ST 8	Brunisolic Gray Luvisol	mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

TARNEZELL LAKE Soil Association - TZ

Tarnezell Lake soils are common on steep, hilly topography in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have mainly developed in gravelly, moderately coarse textured, neutral to acid colluvial deposits, generally less than 2 m thick, which are dominantly derived from and overlying non-calcareous siliceous sedimentary and associated metamorphic bedrock. Minor areas of associated till deposits may also be included. Slopes are usually greater than 45%, but slopes as low as 15% also occur. Elevations range between 790 and 1065 m asl.

Tarnezell Lake soils are rapidly pervious and are generally gravelly sandy loam or gravelly loam in texture. The coarse fragment content is usually at least 50% and frequently exceeds 70%. The solum is usually yellowish-brown, strongly acid and generally less than 50 cm thick. Relatively unweathered parent material usually occurs at depths of 75 cm or less. A mor layer between 3 and 8 cm thick is present on the soil surface. The usual classification is Orthic Dystric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
TZ 1	Orthic Dystric Brunisol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
TZ 3	Orthic Dystric Brunisol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.
TZ 4	Orthic Dystric Brunisol	well to rapid	Brunisolic Gray Luvisol	well	Less common soil has a clay accumulation horizon due to having developed in a somewhat finer textured parent material.
TZ 5	Orthic Dystric Brunisol	well to rapid	Orthic Dystric Brunisol (lithic phase)	rapid	Less common soil is shallower than 1 m to bedrock.
TZ 6	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dystric Brunisol	well to rapid	Soil shallower than 1 m to bedrock is more common than the deeper soil.
TZ 9	Orthic Dystric Brunisol (lithic phase)	rapid	--	--	Soil is dominantly shallower than 1 m to bedrock.

Soil Assoc. Component	Most Common Soil Classification	Drainage	Less Common Soil Classification	Drainage	Comments
TZ 10	Orthic Dystric Brunisol (lithic phase)	rapid	Orthic Dark Gray (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence under grassland or open deciduous forested vegetation on steep south facing aspects.
TZ 11	Orthic Dystric Brunisol (lithic phase)	rapid	Eluviated Dystric Brunisol (lithic phase)	rapid	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has a grayish, leached horizon at the soil surface indicating more intense leaching and weathering due to a climatically wetter environment.

TINNECHA HILL Soil Association - TI

Tinnecha Hill soils are common in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in variable depths of gravelly, moderately coarse textured, acid to neutral, compact basal till deposits on valley walls (Plate 15). 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 910 and 1675 m asl.

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 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 which begins at depths greater than 50 cm is commonly but not always present. Relatively unweathered parent material occurs at depths of approximately 100 cm. A mor layer between 3 and 8 cm thick is present on the soil surface. The classification varies from Luvisolic Humo-Ferric Podzol to Orthic Humo-Ferric Podzol, depending on the presence of the subsoil clay accumulation horizon (Plate 16).

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
TI 1	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	--	--	Consists dominantly of the most common soil as described above.
TI 2	Luvisolic or Orthic 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 weaker leaching and weathering due to a climatically drier environment.
TI 3	Luvisolic or Orthic 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 meadow-like openings in the forest in a climatically wetter and colder environment at higher elevations.
TI 5	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Luvisolic or Orthic Humo-Ferric Podzol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
TI 6	Luvisolic or Orthic Humo-Ferric Podzol (lithic phase)	well	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
TI 7	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is mottled in the subsoil.
TI 8	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to most common soil.
TI 9	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Podzolic Gray Luvisol	well to mod. well	Less common soil has the clay accumulation horizon beginning within 50 cm of the soil surface due to having developed in a somewhat finer textured parent material.
TI 10	Luvisolic or Orthic Humo-Ferric Podzol (lithic phase)	well	Sombric Humo-Ferric Podzol (lithic phase)	well	Both soils are dominantly shallower than 1 m to bedrock. Less common soil has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest in a climatically colder and wetter environment at higher elevations.
TI 11	Luvisolic or Orthic Humo-Ferric Podzol	well to mod. well	Duric Humo-Ferric Podzol	well to mod. well	Less common soil has a strongly cemented layer in the subsoil.

PLATE 15. Subalpine forest and compact, gravelly till deposit typical of soil associations such as Tinnecha Hill and Twain.

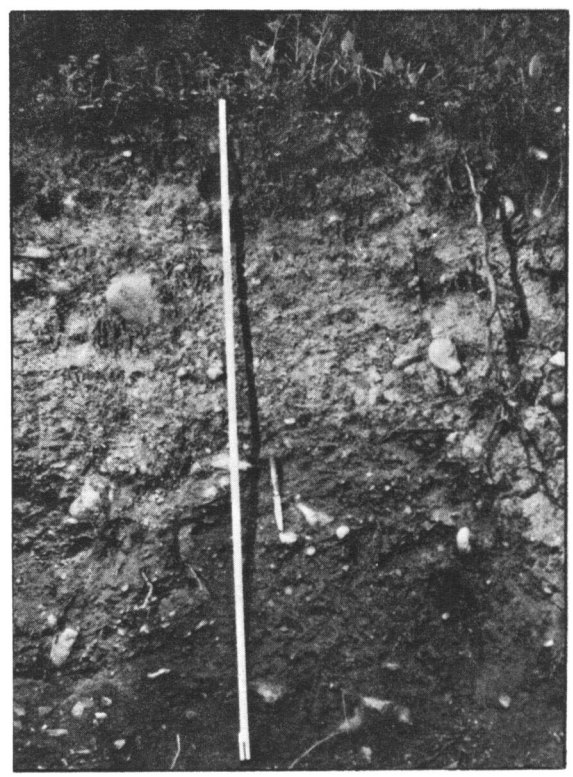

PLATE 16. Typical Luvisolic Humo-Ferric Podzol profile of the Tinnecha Hill Soil Association.

TSILCOH RIVER Soil Association - TH

Tsilcoh River soils occur on valley bottoms and on the lower slopes in the Subboreal white spruce - alpine fir forest zone in the Nechako Plateau physiographic region. They have developed in deep, gravelly, coarse-textured, basic, stratified fluvial fan deposits which are derived mainly from ferro-magnesium igneous and associated metamorphic bedrock or calcareous sedimentary and associated metamorphic bedrock. Slopes usually vary between 2 and 15% but may range as high as 30%. Elevations range between 670 and 1065 m asl.

Tsilcoh River soils are rapidly pervious and are generally loamy sand or sandy loam in surface texture with loose gravel or sand occurring at depth. The coarse fragment content is frequently greater than 50% at depth and on the steeper portions of the fans. The solum is usually slightly acid to neutral, yellowish-brown and generally less than 50 cm thick. Free carbonates are common within 75 cm of the soil surface if the material is derived from calcareous bedrock. A mor layer between 3 and 8 cm thick is present on the soil surface. The usual classification is Orthic Eutric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
TH 3	Orthic Eutric Brunisol	well to rapid	Eluviated Eutric Brunisol	well to rapid	Less common soil has a grayish, leached horizon near the surface indicating more intense leaching and weathering due to a climatically wetter environment.
TH 7	Orthic Eutric Brunisol	well to rapid	Gleyed Eutric Brunisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage and/or a periodically high, fluctuating water table. It is mottled in the subsoil.
TH 8	Orthic Eutric Brunisol	well to rapid	Orthic Humic Gleysol and Rego Humic Gleysol	poor	Both less common soils usually contain excess moisture due to a permanently high water table. They are gleyed and usually in lower or depressional positions relative to the most common soil.

TWAIN Soil Association - TW

Twain soils are common in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains 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 modified somewhat due to downslope movement by gravity. Slopes are dominantly bedrock controlled and usually vary between 30 and 70%. Elevations range between 910 and 1675 m asl.

Twain soils are slowly pervious and are generally gravelly loam or gravelly clay loam in texture. The coarse fragment content is usually between 20 and 40%. The soil profile commonly has a grayish, leached horizon up to 10 cm thick at the soil surface. This is underlain by a strongly acid, friable, reddish-brown horizon that is 20 to 40 cm thick, which in turn may be underlain by a grayish, leached horizon up to 20 cm thick. A brownish-gray clay accumulation horizon, 20 to 40 cm thick, begins within 50 cm of the soil surface. Relatively unweathered parent material occurs at depths of 100 cm or less. A mor layer between 5 and 15 cm thick is present on the soil surface. 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 as described above.
TW 2	Podzolic Gray Luvisol	well to mod. well	Brunisolic Gray Luvisol	well to mod. well	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
TW 3	Podzolic Gray Luvisol	well to mod. well	Sombric Humo-Ferric Podzol	well to mod. well	Less common soil lacks the clay accumulation horizon but has an organically enriched surface horizon (Ah) due to occurrence in meadow-like openings in the forest cover in a colder and wetter environment at higher elevations.
TW 4	Podzolic Gray Luvisol	well to mod. well	Luvisolic Humo-Ferric Podzol	well to mod. well	Clay accumulation horizon in the less common soil occurs below 50 cm due to relatively coarse textures in the upper soil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
TW 5	Podzolic Gray Luvisol	well to mod. well	Podzolic Gray Luvisol (lithic phase)	well	Less common soil is shallower than 1 m to bedrock.
TW 6	Podzolic Gray Luvisol (lithic phase)	well	Podzolic Gray Luvisol	well to mod. well	Soil shallower than 1 m to bedrock is more common than the deeper soil.
TW 7	Podzolic Gray Luvisol	well to mod. well	Gleyed Podzolic Gray Luvisol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position or a temporary, perched water table. It is mottled in the subsoil.
TW 8	Podzolic Gray Luvisol	well to mod. well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.
TW 9	Podzolic Gray Luvisol	well to mod. well	Orthic Humo-Ferric Podzol	well	Less common soil lacks the clay accumulation horizon due to having developed in a much coarser parent material.

VALLEAU CREEK Soil Association - VA

Valleau Creek soils occur on valley bottoms and on the lower slopes in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in deep, gravelly, coarse-textured, neutral to acid fluvial fan deposits which are mainly derived from feldspathic igneous and associated metamorphic or siliceous sedimentary and associated metamorphic bedrock. The slopes usually vary between 2 and 15%, but may range as high as 30%. Elevations range between 670 and 1065 m asl.

Valleau Creek soils are rapidly pervious and are generally loamy sand or sandy loam in surface texture with gravel or sand occurring at depth. The coarse fragment content is variable, but frequently exceeds 50% at depth and on steeper slopes. The usual 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 is common within 75 cm of the soil surface. A mor layer between 5 and 15 cm thick is present on 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	
VA 1	Orthic Humo-Ferric Podzol	well to rapid	--	--	Consists dominantly of the most common soil as described above.
VA 2	Orthic Humo-Ferric Podzol	well to rapid	Eluviated Dystric Brunisol	well to rapid	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
VA 7	Orthic Humo-Ferric Podzol	well to rapid	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage and/or a high, fluctuating water table. It is mottled in the subsoil.
VA 8	Orthic Humo-Ferric Podzol	well to rapid	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually in a lower or depressional position relative to the most common soil.

VITAL CREEK Soil Association - VT

Vital Creek soils are common on valley bottoms and on the lower slopes in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in coarse to medium-textured, acid to neutral, stratified fluvial floodplain deposits which are subject to frequent inundation and periodic additions of fresh sediment (Plate 17). Slopes are usually less than 5% and elevations range between 1065 and 1675 m asl.

Vital Creek soils are rapidly to moderately pervious and are sandy loam, loam or silt loam in surface texture with stratified sand, silt and/or gravel occurring at depth. The coarse fragment content is extremely variable at depth, but is commonly less than 20% in the upper portion of the soil. Significant soil development has not occurred in Vital Creek soils due to periodic flooding and surface additions of new materials. Layers of varying textures with variations of grayish-brown colors are common. Mottles are usual in the subsoil due to the periodically high water table. A mor or moder layer between 5 and 15 cm thick is present on the soil surface. The usual classification is Gleyed Cumulic Regosol (Plate 18).

Soil Assoc. Component	Most Common Soil		Less Common Soil		
	Classification	Drainage	Classification	Drainage	Comments
VT 1	Gleyed Cumulic Regosol	imperfect	--	--	Consists dominantly of the most common soil as described above.
VT 2	Gleyed Cumulic Regosol	imperfect	Orthic Regosol	mod. well to rapid	Less common soil does not show layering and is better drained (less mottling) than most common soil but is still subject to flooding which inhibits soil development.
VT 3	Gleyed Cumulic Regosol	imperfect	Orthic Humo-Ferric Podzol	well to rapid	Less common soil occupies slightly higher landscape positions and has a reddish-brown solum indicating that flooding is rare.
VT 8	Gleyed Cumulic Regosol	imperfect	Rego Humic Gleysol	imperfect	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to most common soil.

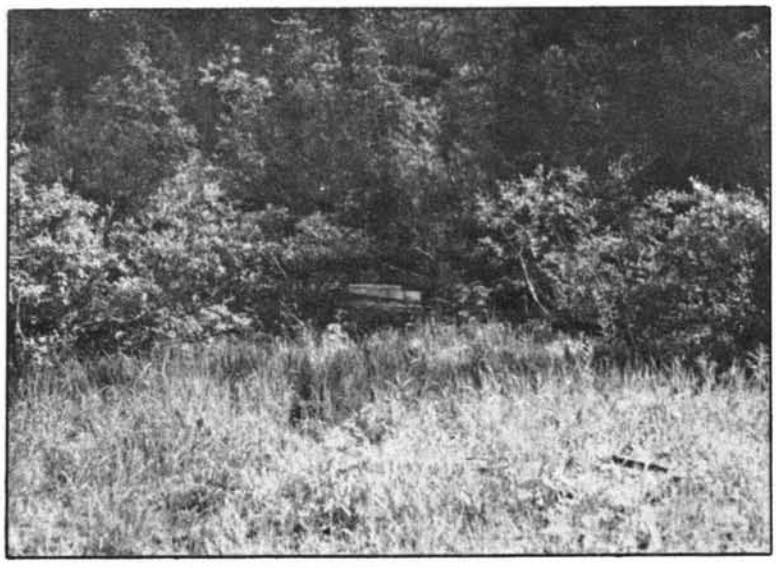

PLATE 17. Deciduous and herbaceous vegetation and nearly level topography typical of Vital Creek, Stellako, and Eklund Creek soil associations which have developed on recent fluvial materials.

PLATE 18. Typical Gleyed Cumulic Regosol profile of the Vital Creek Soil Association. Note the characteristic layered appearance.

WILLISTON LAKE Soil Association - WI

Williston Lake soils occur near valley bottoms in the Subboreal white spruce - alpine fir forest zone in the Rocky Mountain Trench physiographic region. They have developed in 1 to 2 m of moderately coarse textured, slightly acid to neutral eolian materials (often duned) overlying gravelly, coarse-textured fluvioglacial deposits. Slopes are generally less than 5% and elevations range between 670 and 750 m asl.

Williston Lake soils are rapidly pervious and are fine sandy loam or sandy loam in surface texture with sand or gravelly sand occurring at depth. Coarse fragments are usually not present in the upper soil. The solum is usually slightly acid, yellowish-brown and generally less than 30 cm thick. Relatively unweathered parent material usually occurs at depths of 50 cm or less. A mor layer between 2 and 5 cm thick is present on the soil surface. The usual classification is Orthic Eutric Brunisol.

Soil Assoc.	Most Common Soil		Less Common Soil		
Component	Classification	Drainage	Classification	Drainage	Comments
WI 3	Orthic Eutric Brunisol	well to rapid	Eluviated Eutric Brunisol	well to rapid	Less common soil has a thin, grayish, leached horizon at the surface indicating more intense leaching and weathering due to a climatically wetter environment.

WUDTSI LAKE Soil Association - WU

Wudtsi Lake soils occur near valley bottoms in the Subalpine Engelmann spruce - alpine fir forest zone in the Omineca Mountains physiographic region. They have developed in deep, coarse to moderately coarse textured, stratified fluvial deposits (outwash plain, valley train or high alluvial terraces). 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 910 and 1675 m asl.

Wudtsi Lake soils are rapidly pervious and are generally sand, loamy sand or sandy loam in texture. The coarse fragment content is usually less than 20% and consists mainly of fine gravels. The usual 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 100 cm or less. 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
WU 1	Orthic Humo-Ferric Podzol	rapid to well	--	--	Consists dominantly of the most common soil as described above.
WU 2	Orthic Humo-Ferric Podzol	rapid to well	Eluviated Dystric Brunisol	rapid to well	Less common soil has a yellowish-brown solum indicating weaker leaching and weathering due to a climatically drier environment.
WU 4	Orthic Humo-Ferric Podzol	rapid to well	Luvisolic Humo-Ferric Podzol	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 parent material.
WU 7	Orthic Humo-Ferric Podzol	rapid to well	Gleyed Humo-Ferric Podzol	imperfect	Less common soil periodically contains excess moisture due to location in a moisture receiving landscape position, seepage and/or a high, fluctuating water table. It is mottled in the subsoil.

Soil Assoc. Component	Most Common Soil		Less Common Soil		Comments
	Classification	Drainage	Classification	Drainage	
WU 8	Orthic Humo-Ferric Podzol	rapid to well	Orthic Humic Gleysol	poor	Less common soil usually contains excess moisture due to a permanently high water table. It is gleyed and usually depressional relative to the most common soil.

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 simpler uses of the information is to make 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. 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 and fluvioglacial surficial materials. A listing of these soils is contained in the stratification in Table 2. Some of the soils however, may be better suited than others for the intended use. For example, Peta soils are mainly sand with little gravel while Allx soils are dominantly gravel with little sand. Stellako soils are also potentially suited but contain significant quantities of silt, while Crystal soils are potential but very 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 derivations 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 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 also, as many colluvial deposits are 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 shallower than 1 m to bedrock. Component 6 dominantly (50-80%) consists of soils that are shallower than 1 m to bedrock. Components 9, 10 and 11 also sometimes consist of or contain soils that are shallower than 1 m to bedrock. The individual soil association descriptions should be consulted to determine the specific meaning of these components in the context of each association.

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 which occur in moisture receiving landscape positions (seepage) are also easily identifiable. Soils with periodic or seasonal moisture surpluses are indicated as "Gleyed" subgroups in the "Dominant Taxonomic Classification" column in Table 2. As well, soil association component 7 indicates that a significant (20 to 50%) portion 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. 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

Forest Capability (McCormack, 1972; Kowall, 1971)
Erosion Hazard (Kenk, 1980; Vold and Kowall, 1982)
Geomorphic Hazard (Kenk, 1980; Vold and Kowall, 1982)
Frost Action (Vold and Kowall, 1982)
Windthrow Hazard (Vold and Kowall, 1982)
Logging Road Limitations (Vold and Kowall, 1982)
Forest Harvesting Limitations (Kenk, 1980; Vold and Kowall, 1982)
Slash Disposal (Vold and Kowall, 1982)
Limits to Regeneration (Vold and Kowall, 1982)
Tree Species Selection (Vold and Kowall, 1982)
Suitability for Sand and Gravel (Vold 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)

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

BEDROCK GROUPINGS

A number of different bedrock units, each containing several types of rock, are shown on the bedrock map (Armstrong, 1949) 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. 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 GROUPINGS

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

Coarse-textured: sands and loamy sands
Moderately coarse textured: sandy loams
Medium-textured: loam, silt loam, and silt
Moderately fine textured: sandy clay loam, clay loam, and silty clay loam
Fine-textured: sandy clay, clay, and silty clay
Very fine textured: heavy clay

These groupings are illustrated below on the standard textural triangle.

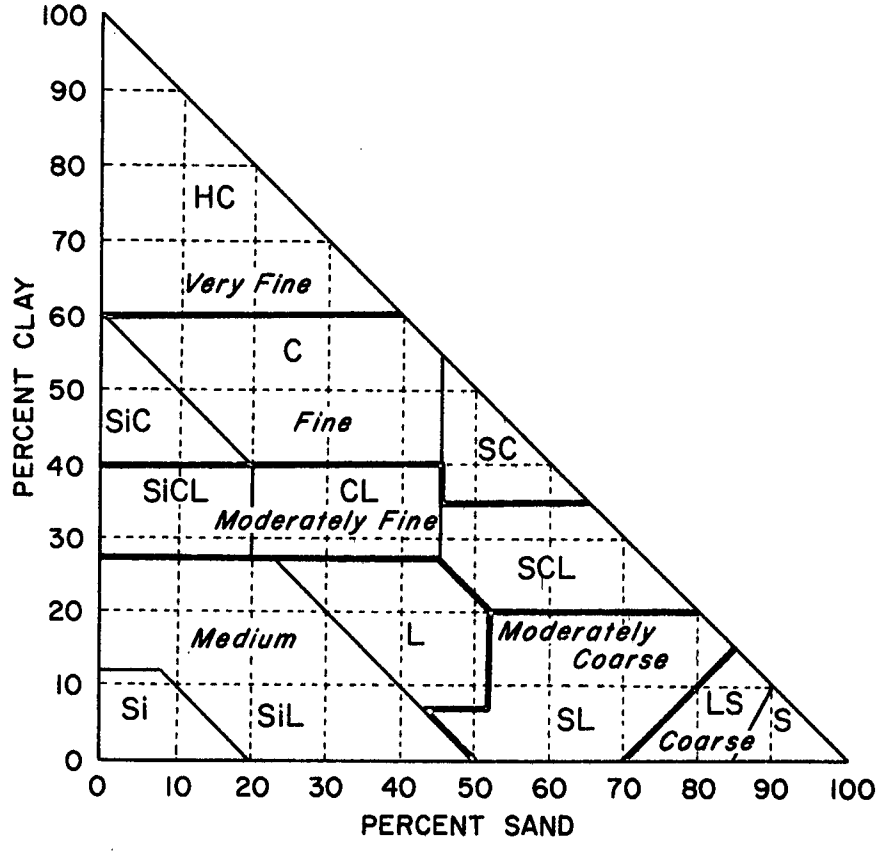

FIGURE 2. SOIL TEXTURAL TRIANGLE SHOWING GENERALIZED TEXTURAL GROUPINGS.

TAXONOMIC CLASSIFICATION ABBREVIATIONS

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

O.MB	Orthic Melanic Brunisol
O.EB	Orthic Eutric Brunisol
E.EB	Eluviated Eutric Brunisol
O.DYB	Orthic Dystric Brunisol
E.DYB	Eluviated 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

TABLE 2. SOILS OF MANSON RIVER - FORT FRASER AREA

FOREST ZONE AND SUBZONE[1]; PHYSIOGRAPHIC REGION[2]	SOIL PARENT MATERIAL (SURFICIAL MATERIALS)[3]	DOMINANT ASSOCIATED BEDROCK[4]	TEXTURE[5] OR (DEGREE OF DECOMPOSITION)	DOMINANT TAXONOMIC CLASSIFICATION[6]	SOIL ASSOCIATION	
					NAME	SYMBOL
Subboreal White Spruce – Alpine Fir (SBwS-alF) forest zone; Nechako Plateau	Colluvium	Feldspathic Igneous & Metamorphic	gravelly moderately coarse	O.DYB	Decker	DR
		Ferro-magnesium Igneous & Metamorphic	gravelly moderately coarse	O.DYB	Ormond	OD
		Siliceous Sedimentary & Metamorphic	gravelly moderately coarse	O.DYB	Tarnezeti Lake	TZ
		Calcareous Sedimentary & Metamorphic	gravelly moderately coarse	O.EB	Pope	PP
	Fluvial (recent)	Undifferentiated	medium over coarse	O.GL	Nechako	N
		Undifferentiated	medium over moderately coarse	GLCU.R	Stellako	SL
	Fluvial (recent fans)	Feldspathic Igneous or Siliceous Sedimentary	coarse over gravelly moderately coarse	O.DYB	Slag	SG
		Ferro-magnesium Igneous or Calcareous Sedimentary	coarse over gravelly coarse	O.EB	Tsilcoh River	TH
		Undifferentiated	coarse over gravelly coarse	GL.R	Fleming Creek	FM
	Fluvioglacial	Undifferentiated	gravelly coarse over very gravelly coarse	O.DYB	Alix	AX
		Undifferentiated	coarse	O.DYB	Mapes	MS
		Undifferentiated	medium over coarse	E.DYB	Nithi	NT
		Undifferentiated	coarse	O.DYB	Pete	PA
		Undifferentiated	gravelly coarse over very gravelly coarse	O.HFP	Ramsey	R
	Fluvioglacial over Morainal	Undifferentiated	gravelly coarse over gravelly medium	O.DYB	Crystal	CR
	Lacustrine	Undifferentiated	moderately fine	O.GL	Barman	BN
		Undifferentiated	fine	O.GL	Fort Saint James	FJ
	Lacustrine over Morainal	Undifferentiated	moderately fine	O.GL	Babine	BE
	Morainal	Undifferentiated	moderately fine	O.GL	Barrett	BA
		Undifferentiated	moderately fine	BR.GL	Deserters	D
	Organic	Undifferentiated	(mesic)	TY.M	Amy Lake	AY
		Undifferentiated	(fibric)	TY.F	Kloch Lake	KL
Transition between Subboreal White Spruce – Alpine Fir (SBwS-alF); Nechako Plateau and Subalpine Engelmann Spruce – Alpine Fir (SAeS-alF:a); Omineca Mountains	Fluvioglacial over Morainal	Undifferentiated	gravelly coarse over gravelly medium	O.HFP	Cobb	CB
	Morainal	Undifferentiated	gravelly medium	BR.GL	Cesasse	CA
Subalpine Engelmann Spruce – Alpine Fir (SAeS-alF:a) forest zone; Omineca Mountains	Colluvium	Feldspathic Igneous & Metamorphic	gravelly moderately coarse	O.HFP	Dragon	DN
		Ferro-magnesium Igneous & Metamorphic	gravelly moderately coarse	O.HFP	Ocne	ON
		Siliceous Sedimentary & Metamorphic	gravelly moderately coarse	O.HFP	Mount Grant	GR
		Calcareous Sedimentary & Metamorphic	gravelly moderately coarse	E.EB	Mount Ogden	OG
		Undifferentiated	very gravelly coarse	O.R	Mount Sylvester	SY
	Fluvial (recent)	Undifferentiated	medium over moderately coarse	GLCU.R	Vital Creek	VT
	Fluvial (recent fans)	Feldspathic Igneous & Siliceous Sedimentary	coarse over gravelly coarse	O.HFP	Valleau Creek	VA
		Calcareous Sedimentary & Metamorphic	coarse over gravelly coarse	E.EB	Albert Lake	AL
		Undifferentiated	coarse over gravelly coarse	GL.R	Kwanika Creek	KW
	Fluvioglacial	Undifferentiated	gravelly coarse over very gravelly coarse	O.HFP	Mount Bates	MB
		Undifferentiated	coarse	O.HFP	Wudtsi Lake	WU
	Lacustrine	Undifferentiated	moderately fine	BR.GL	Manson Creek	MA
	Morainal	Undifferentiated	gravelly moderately coarse	LU.HFP/O.HFP	TTmache Hill	TT
		Undifferentiated	gravelly moderately fine	PZ.GL	Twain	TW
		Calcareous Sedimentary & Metamorphic	gravelly moderately fine	BR.GL	Nina Lake	NN
	Organic	Undifferentiated	(mesic)	TY.M	Diver Lake	DI
		Undifferentiated	(fibric)	TY.F	Moosmoos	MO
Alpine Tundra (At) forest zone and krummholz subzone of Subalpine Engelmann Spruce – Alpine Fir (SAeS-alF:b) forest zone; Omineca Mountains	Colluvium	Feldspathic Igneous & Metamorphic	gravelly moderately coarse	SM.HFP	Porter Mountain	PM
		Ferro-magnesium Igneous & Metamorphic	gravelly moderately coarse	SM.HFP	Rubyrock Lake	RU
		Siliceous Sedimentary & Metamorphic	gravelly moderately coarse	SM.HFP	Axelgold	AG
		Calcareous Sedimentary & Metamorphic	gravelly moderately coarse	O.MB	Indata Lake	IN
		Ferro-Magnesium Igneous & Metamorphic	gravelly moderately coarse	O.MB	Froggy Lake	FG
		Undifferentiated	very gravelly coarse	O.R	Klawkut	KT
	Morainal	Undifferentiated	gravelly moderately coarse	SM.HFP	Germansen	GE
Subboreal White Spruce – Alpine Fir (SBwS-alF) forest zone; Rocky Mountain Trench	Colluvium	Undifferentiated	gravelly moderately coarse	O.DYB	Black Canyon	BL
	Eolian over Fluvioglacial	Undifferentiated	moderately coarse over gravelly moderately coarse	O.EB	Williston Lake	WI
	Fluvial (recent)	Undifferentiated	medium over moderately coarse	GLCU.R	Ekland Creek	EK
	Fluvioglacial	Undifferentiated	gravelly coarse	E.DYB	Muscovite Lakes	MU
	Fluvioglacial over Morainal	Undifferentiated	gravelly coarse over gravelly mod. coarse	E.DYB	Finlay River	FI
	Lacustrine	Undifferentiated	moderately fine	BR.GL	Strandberg Bay	ST
	Morainal	Undifferentiated	gravelly medium to gravelly moderately coarse	BR.GL	Omineca River	OM
	Organic	Undifferentiated	(mesic)	TY.M	Shoal Lakes	SO

Footnotes:

1. Biophysical forest zones and subzones were determined according to methods described in van Barneveld (1976). They are described generally in section 1.6. Descriptions of similar forest zones and subzones are found in Cotic et al (1974) and Harcombe (1978).
2. Refer to Holland (1976) for definitions of Physiographic Regions. See also section 1.2.
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.