

# Soil Properties

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Data relating to soil properties are collected during the course of the soil survey. Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, erosion properties, physical and chemical properties, total soil carbon, and pertinent soil and water features.

## Engineering Properties

**Table 5** gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

*Classification* of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number.

Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

*Rock fragments* larger than 250 millimeters in diameter and 75 to 250 millimeters in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

## Erosion Properties

**Table 6** shows estimates of some erosion factors that affect the potential of a soil for various uses. These estimates are given for the layers of each soil for the K factor and as a single rating for the entire soil for the T factor, wind erodibility group, and wind erodibility index. Values are reported for each soil in the soil survey area. Estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Erosion factors* are shown in the table as the K factor (Kw and Kf) and the T factor. Factor K quantifies soil detachment by runoff and rainfall. It is used to predict the long-term average soil loss from sheet and rill erosion by water in areas where cropping systems and conservation practices are used. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The procedure for determining the Kf factor is given in "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation" (USDA, 1997).

*Erosion factor Kw* indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. If the total content of rock fragment in the layer is 15 percent or more, by volume, the Kw factor is less than the Kf factor.

*Erosion factor Kf* indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size. Layers that do not have rock fragments are assigned the same value for the Kw factor and the Kf factor.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

*Wind erodibility index* is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer,

the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

## Physical Properties

**Table 7** shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

*Sand* as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (*K<sub>sat</sub>*), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $1/3$ - or  $1/10$ -bar (33-kPa or 10-kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Saturated hydraulic conductivity (*K<sub>sat</sub>*)* refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and

management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Linear extensibility* refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at  $1/3$ - or  $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

## Chemical Properties

[Table 8](#) shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Cation-exchange capacity* is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

*Effective cation-exchange capacity* refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

*Soil reaction* is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Calcium carbonate* equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

*Gypsum* is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

*Salinity* is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the

salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

*Sodium adsorption ratio* (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity (Ksat) and aeration, and a general degradation of soil structure.

## Total Soil Carbon

[Table 9](#) gives estimates of soil organic carbon (SOC) and soil inorganic carbon (SIC). Both are reported in kilograms per square meter to a depth of 2 meters or to a representative depth of either hard bedrock or a cemented horizon. Values are on a whole soil basis, corrected for rock fragments.

SOC is carbon (C) in soil that originated from a biological source, such as plants, animals, or micro-organisms. SIC is derived from a non-biological source. Calcium carbonate (CaCO<sub>3</sub>) is the most common form of inorganic carbon in soils. SOC is in both organic and mineral soil layers. The term “soil organic carbon” refers only to the carbon in soil organic matter. Soil organic carbon makes up about one-half the weight of soil organic matter. The rest of soil organic matter is mostly oxygen, nitrogen, and hydrogen.

SOC can be an indicator of overall soil fertility and soil quality that affects ecosystem function. Soil organic matter is the main reservoir for most plant nutrients, such as phosphorus and nitrogen. Managing for SOC by managing for soil organic matter increases the content of these elements and improves soil resiliency.

Soil organic matter, the source of SOC, binds soil particles together and thus increases soil porosity and water infiltration and allows better root penetration and waterflow into the soil. Greater inflow of water reduces the hazard of erosion and the rate of surface water runoff.

Higher SOC levels improve not only the quality of soil but also the quality of air and water. Soil acts as a filter and improves water quality. Fertile soils that support plant life remove CO<sub>2</sub> from the atmosphere and increase oxygen levels through photosynthesis. Maintaining the level of SOC reduces the release of carbon into the atmosphere and thus can minimize the effects of global warming.

## Soil Features

[Table 10](#) gives estimates of various soil features. The estimates are used in land use planning.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

*Subsidence* is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

*Potential for frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

## Water Features

[Table 11](#) gives estimates of various water features. The estimates are used in land use planning.

*Hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which a water table, ponding, or flooding is most likely to be a concern.

*Water table* refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years.

Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

*Ponding* is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

*Flooding* is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

*Duration* and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and "very frequent" that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Data on the extent and level of flooding and the relationship of each soil to historic floods are also considered. Data on the extent of flooding based on soil data are less specific than data provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.



# Use and Management of the Soils

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Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of about 152 to 213 centimeters. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

## Land Management

In tables 12 through 17, interpretive ratings are given for various aspects of land management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of land management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified land management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low*, *moderate*, and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

Rating class terms for soil rutting hazard, hazard of erosion, and hazard of erosion on roads and trails are expressed as *slight*, *moderate*, *severe*, and *very severe*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for erosion is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils.

## Planting

In [table 12](#), the ratings for *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

The ratings for *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of planting equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

## Hazard of Erosion and Suitability for Roads

In [table 13](#), the ratings for *hazard of erosion* are based on slope and on soil erosion factor K. The soil loss is caused by sheet or rill erosion in areas where 50 to 75 percent of the surface has been exposed by various kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

The ratings for *hazard of erosion on roads and trails* are based on the soil erosion factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

The ratings for *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

## Site Preparation

In [table 14](#), the ratings for *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 meter is considered in the ratings.

The ratings for *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 30 centimeters is considered in the ratings.

## Site Restoration

In table 15, the ratings for *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

The ratings for *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

## Source of Reclamation Material, Roadfill, and Topsoil

Table 16 gives information about the soils as potential sources of reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated *good*, *fair*, or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the table. Numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, and roadfill. The ratings are shown as decimal fractions ranging from 0.00 to 0.99. The lower the number, the greater the limitation.

*Reclamation material* is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 1.8 meters high and less exacting in design than higher embankments. The ratings are for the whole soil, from the surface to a depth of about 152 centimeters. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 102 centimeters of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

## Source of Gravel and Sand

Table 17 gives information about the soils as potential sources of gravel and sand. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and sand are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. Only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of gravel or sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains gravel or sand, the soil is considered a likely source regardless of thickness. The assumption is that the gravel or sand layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 183 centimeters.

The soils are rated *good*, *fair*, or *poor* as potential sources of gravel and sand. A rating of good or fair means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel or sand. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

## Recreation

The soils in the survey area are rated in the tables according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

## Camp and Picnic Areas

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings in [table 18](#) are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

## Trail Management

*Foot traffic and equestrian trails* for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings in [table 19](#) are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

*Mountain bike and off-road vehicle trails* require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, depth to a water table, ponding, slope, flooding, and texture of the surface layer.

## Hydric Soils

[Table 20](#) lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or

inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2010) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (USDA, 2010).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
  - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
  - B. are poorly drained or very poorly drained and have either:
    - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
    - 2) a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
    - 3) a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for periods of long or very long duration during the growing season.
4. Soils that are frequently flooded for periods of long or very long duration during the growing season.

# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field, or inferred from those observations, or from laboratory measurements. The categories are defined in the following paragraphs.

**ORDER.** Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Inceptisol.

**SUBORDER.** Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth, or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Cryept (*Cry*, meaning cold, plus *ept*, from Inceptisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Eutrocryepts (*Eutro*, meaning high base saturation, plus *cryept*, the suborder of the Inceptisols that have a cryic temperature regime).

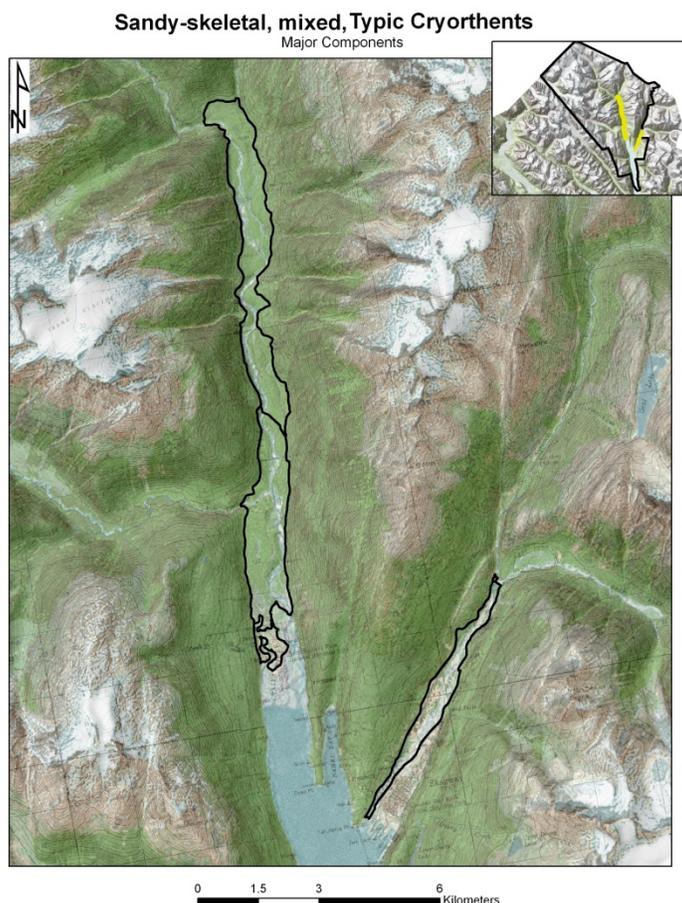
**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Eutrocryepts.

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, cation-exchange activity classes, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, superactive Typic Eutrocryepts.

**SERIES.** The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. Series are not used in this survey.

[Table 21](#) gives the classification of the soils in the survey area.

## 22—Estuarine Graminoid Gravelly Coastal Plain



*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Coastal plains

*Parent material:* Alluvium

*Elevation:* 2 to 20 meters

*Slope:* 0 to 3 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryorthents

### ***Typical Pedon***

22—Estuarine Graminoid Gravelly Coastal Plain on a 1-percent slope with beach ryegrass vegetation. (Colors are for moist soil.)

C1—0 to 48 centimeters; light olive brown (2.5Y 5/4) gravelly coarse sandy loam; 60 percent sand, 36 percent silt, and 4 percent clay; single grain; loose, nonsticky and nonplastic; common medium, fine, and very fine roots throughout; 25 percent gravel; neutral (pH 6.9); clear wavy boundary.

2C2—48 to 183 centimeters; variegated very gravelly coarse sand; 90 percent sand, 8 percent silt, and 2 percent clay; single grain; loose, nonsticky and nonplastic; 45 percent gravel; neutral (pH 7.0).



***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°29'49" north and longitude 135°21'21" west.

***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Control section:* Fine sand to coarse sand with 40 to 80 percent rock fragments

*C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6

Texture—gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand, very gravelly loamy sand

Content of clay—3 to 8 percent

Content of rock fragments—20 to 50 percent gravel

Reaction—neutral or slightly alkaline

*2C horizon:*

Color—variegated

Texture—very gravelly sand, extremely gravelly sand

Content of clay—1 to 3 percent

Content of rock fragments—45 to 80 percent gravel, 0 to 2 percent cobbles

Reaction—neutral or slightly alkaline

***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Well drained; saturated hydraulic conductivity high in loamy layers and very high in sandy and gravelly layers; may be subject to rare flooding

***Use***

Recreation, wildlife habitat, source of gravel

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

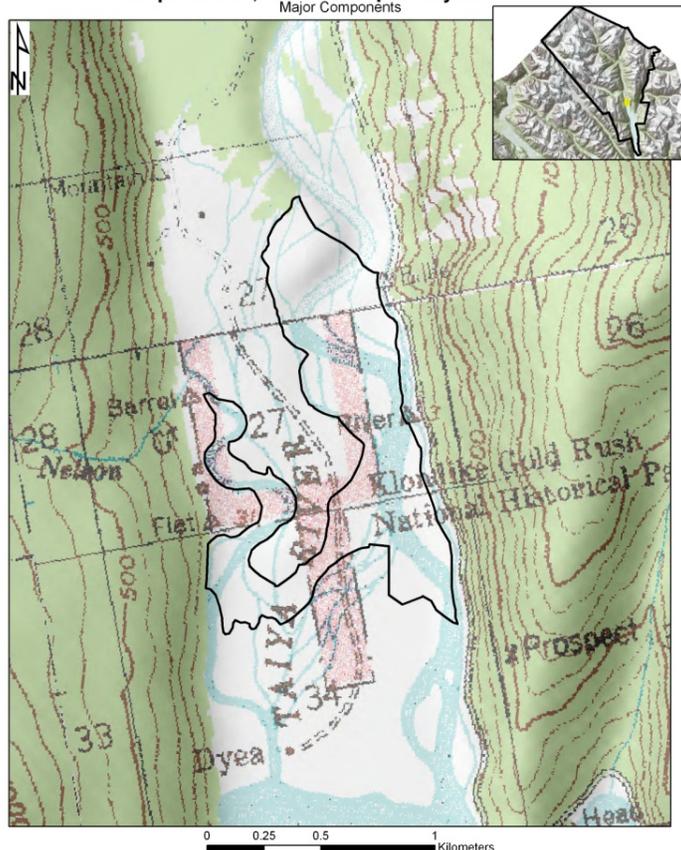
***Remarks***

*Weighted average particle size:* Sandy-skeletal from 25 to 100 centimeters

## 22—Estuarine Graminoid Loamy Floodplains

Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Aquic Cryofluvents

Major Components



*Depth class:* Very deep  
*Drainage class:* Poorly drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 0 to 10 meters  
*Slope:* 0 to 2 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Aquic Cryofluvents

### ***Typical Pedon***

22—Estuarine Graminoid Loamy Floodplains on a 1-percent slope with grass vegetation. (Colors are for moist soil, and textures are apparent field textures.)

A—0 to 2 centimeters; very dark brown (10YR 2/2) silt loam; 25 percent sand, 70 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common coarse and medium and many fine roots throughout; neutral (pH 7.1); abrupt smooth boundary.

- C1—2 to 25 centimeters; light olive brown (2.5Y 5/3) silt loam; 45 percent sand, 50 percent silt, and 5 percent clay; moderate medium angular blocky structure; friable, nonsticky and nonplastic; common fine, medium, and coarse roots throughout; 5 percent medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral (pH 6.7); gradual smooth boundary.
- C2—25 to 66 centimeters; olive brown (2.5Y 4/3), stratified silt loam; 36 percent sand, 58 percent silt, and 6 percent clay; weak medium subangular blocky structure; friable, nonsticky and nonplastic; common medium and fine roots throughout; 5 percent medium faint irregular light olive brown (2.5Y 5/6) redoximorphic concentrations; slightly acid (pH 6.3); clear smooth boundary.
- Cg—66 to 90 centimeters; dark gray (2.5Y 4/1) very fine sandy loam; 38 percent sand, 56 percent silt, and 6 percent clay; massive; friable, nonsticky and nonplastic; common fine roots throughout; slightly acid (pH 6.4); clear smooth boundary.
- 2C3—90 to 183 centimeters; variegated extremely gravelly coarse sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; 70 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.4).



***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°29'47" north and longitude 135°21'12" west.

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Content of organic carbon:* Decreases irregularly with depth

*Depth to sand and gravel:* 60 to 100 centimeters

*Upper part of control section:* More than 15 percent fine sand or coarser and less than 18 percent clay (weighted average)

*Lower part of control section:* Sand that is less than 50 percent very fine sand

*A horizon:*

Color—hue of 10YR or 2.5Y, value of 2 to 3, chroma of 1 to 3

Texture—silt loam, very fine sandy loam

Content of clay—3 to 8 percent

Reaction—neutral or slightly alkaline

*C horizon:*

Color—hue of 2.5Y, value of 4 or 5, chroma of 3 or 4

Texture—silt loam, very fine sandy loam

Content of clay—3 to 10 percent

Reaction—neutral or slightly alkaline

*Cg horizon, where present:*

Color—hue of 2.5Y, value of 4 or 5, chroma of 1 or 2

Texture—silt loam, very fine sandy loam

Content of clay—3 to 8 percent

Reaction—neutral or slightly alkaline

*2C horizon:*

Color—variegated

Texture—coarse sand

Content of clay—0 to 1 percent

Content of rock fragments—65 to 80 percent gravel and 5 to 20 percent cobbles

Reaction—slightly alkaline or moderately alkaline

### ***Geographically Associated Soils***

22—Estuarine Graminoid Loamy Floodplains, Depression

#### ***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Somewhat poorly drained; saturated hydraulic conductivity moderately high or high in the loamy layers and very high in the sandy and gravelly layers; may be subject to frequent flooding and occasional tidal inundation

#### ***Use***

Wildlife habitat

#### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

#### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

#### ***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

*Content of organic carbon:* Assumed irregular decrease with depth based on stratification and colors

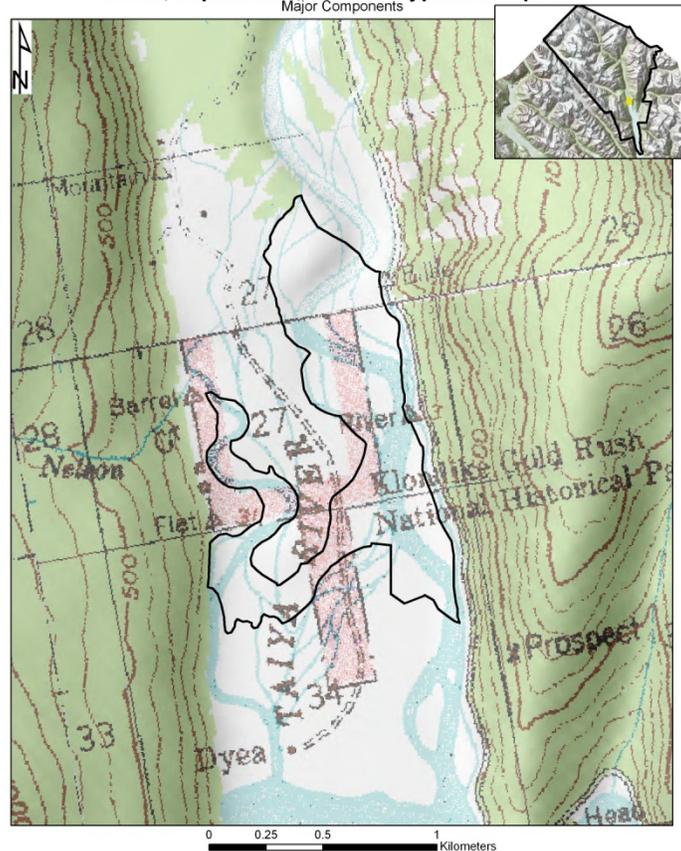
*Reduced matrix:* 66 to 90 centimeters

*Depth to redoximorphic concentrations:* 2 to 66 centimeters

*Particle-size control section:* Coarse-loamy from 25 to 90 centimeters and sandy-skeletal from 90 to 100 centimeters (weighted average)

## 22—Estuarine Graminoid Loamy Floodplains, Depression

Coarse-loamy over sandy or sandy-skeletal,  
mixed, superactive, nonacid Typic Fluvaquents  
Major Components



*Depth class:* Very deep  
*Drainage class:* Very poorly drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 0 to 4 meters  
*Slope:* 0 to 2 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Typic Fluvaquents

### ***Typical Pedon***

22—Estuarine Graminoid Loamy Floodplains, Depression, on a 1-percent slope with grass sedge vegetation. (Colors are for moist soil, and textures are apparent field textures.)

C—0 to 23 centimeters; light olive brown (2.5Y 5/4) silt loam; 40 percent sand, 53 percent silt, and 7 percent clay; massive; friable, nonsticky and nonplastic; many medium and common fine roots; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations with sharp boundaries along root channels and

common fine faint irregular dark gray (2.5Y 4/1) redoximorphic depletions; 5 percent gravel; electrical conductivity 104 millimhos per centimeter; slightly alkaline (pH 7.4); clear smooth boundary.

Cg—23 to 43 centimeters; dark gray (2.5Y 4/1) silt loam; 42 percent sand, 52 percent silt, and 6 percent clay; massive; friable, nonsticky and nonplastic; common medium and fine roots; common medium strong brown (7.5YR 4/6) redoximorphic concentrations; 10 percent gravel; electrical conductivity 96 millimhos per centimeter; slightly alkaline (pH 7.5); clear smooth boundary.

2C—43 to 183 centimeters; brown (7.5YR 4/4) extremely gravelly coarse sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; 80 percent gravel and 5 percent cobbles; electrical conductivity 227 millimhos per centimeter; slightly alkaline (pH 7.8).



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°29'47" north and longitude 135°21'10" west.

#### ***Range in Characteristics***

*Soil moisture class:* Aquic

*Annual soil temperature:* 1 to 3 degrees C

*Content of organic carbon:* Decreases irregularly with depth

*Depth to sand and gravel:* 30 to 50 centimeters

*Upper part of control section:* More than 15 percent fine sand or coarser and less than 18 percent clay (weighted average)

*Lower part of control section:* Sand that is less than 50 percent very fine sand

*C horizon:*

Color—hue of 2.5Y, value of 4 to 6, chroma of 2 to 4

Texture—silt loam, very fine sandy loam

Content of clay—3 to 10 percent

Content of rock fragments—0 to 7 percent gravel

Reaction—neutral or slightly alkaline

*Cg horizon (where present):*

Color—hue of 2.5Y, value of 4 or 5, chroma of 1 or 2

Texture—silt loam

Content of clay—3 to 8 percent

Content of rock fragments—0 to 10 percent gravel

Reaction—extremely acid to neutral

*2C horizon:*

Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 6

Texture—coarse sand

Content of clay—0 to 1 percent

Content of rock fragments—65 to 80 percent gravel, 5 to 20 percent cobbles

Reaction—pH 5.6 to 7.7

**Geographically Associated Soils**

22—Estuarine Graminoid Loamy Floodplains

**Drainage Class, Saturated Hydraulic Conductivity, and Flooding**

Very poorly drained; saturated hydraulic conductivity moderately high or high in the loamy layers and very high in the sandy and gravelly layers; may be subject to frequent flooding, ponding, and tidal inundation

**Use**

Wildlife habitat

**Distribution and Extent**

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

**MLRA Soil Survey Regional Office (MO) Responsible**

Palmer, Alaska

**Established**

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

*Content of organic carbon:* Assumed irregular decrease with depth based on stratification and color

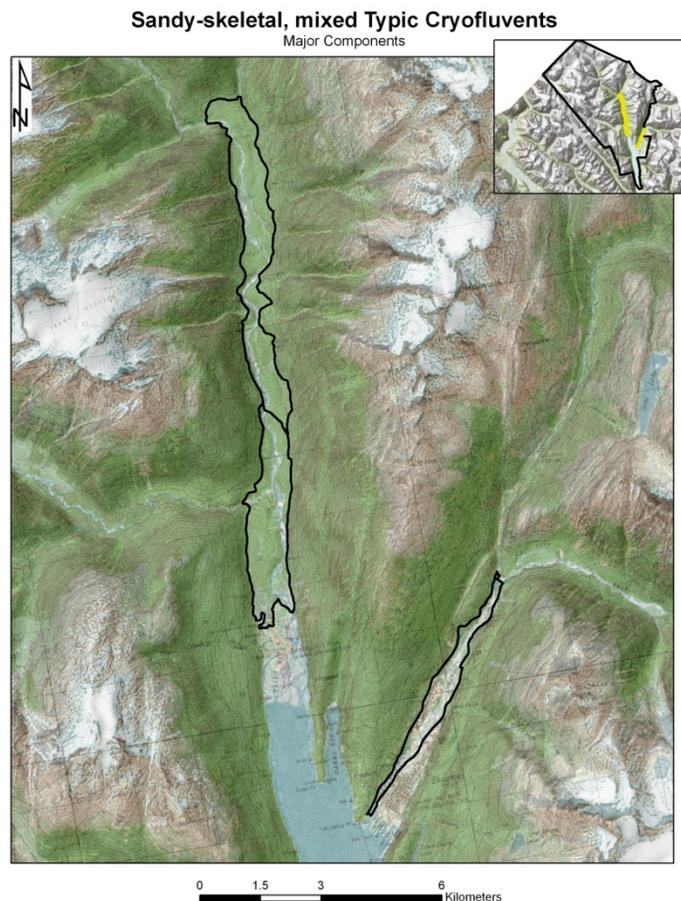
*Aquic conditions:* 0 to 43 centimeters

*Reduced matrix:* 23 to 43 centimeters

*Redoximorphic concentrations:* 0 to 43 centimeters

*Particle-size control section:* Coarse-loamy from 25 to 43 centimeters and sandy-skeletal from 43 to 100 centimeters (weighted average)

## 22—Maritime Forest Gravelly Floodplains, Occasionally Flooded



*Depth class:* Very deep  
*Drainage class:* Well drained or moderately well drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 2 to 130 meters  
*Slope:* 0 to 3 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryofluvents

### ***Typical Pedon***

22—Maritime Forest Gravelly Floodplains, Occasionally Flooded, on a 1-percent slope with cottonwood forest and alder and pyrola understory. (Colors are for moist soil.)

- O—0 to 3 centimeters; dark brown (7.5YR 3/4) slightly decomposed plant material; common very fine and fine roots; moderately acid (pH 5.9); abrupt smooth boundary.
- A—3 to 10 centimeters; dark grayish brown (10YR 4/2), stratified sandy loam; 54 percent sand, 40 percent silt, and 6 percent clay; weak fine subangular blocky structure;

friable, nonsticky and nonplastic; common fine, medium, and coarse roots; 5 percent gravel; neutral (pH 6.9); clear smooth boundary.

C1—10 to 22 centimeters; light yellowish brown (2.5Y 6/3), stratified fine sandy loam; 60 percent sand, 34 percent silt, and 6 percent clay; weak medium angular blocky structure; friable, nonsticky and nonplastic; common fine, medium, and coarse roots; 5 percent gravel; neutral (pH 6.9); abrupt smooth boundary.

2C2—22 to 183 centimeters; light yellowish brown (2.5Y 6/3) gravelly loamy sand; weak medium angular blocky structure; very friable, nonsticky and nonplastic; common medium and coarse roots; 35 percent (many) medium distinct irregular light olive brown (2.5Y 5/6) masses of oxidized iron that are clear in matrix and 30 percent (many) medium prominent irregular gray (2.5Y 5/1) masses of reduced iron that are clear in matrix; 30 percent gravel, 5 percent cobbles, and 1 percent stones; neutral (pH 6.7).



#### **Type Location**

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°32'35" north and longitude 135°20'8" west.

#### **Range in Characteristics**

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 3 to 9 centimeters

*Content of organic carbon:* Decreases irregularly with depth

*Depth to skeletal material:* 3 to 45 centimeters

*Control section:* Sandy-skeletal from 25 to 100 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Content of organic matter—50 to 100 percent

Reaction—extremely acid to moderately acid

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—sandy loam, highly organic sandy loam, highly organic silt loam, silt loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 7 percent gravel and 0 to 7 percent cobbles

Reaction—extremely acid to slightly acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; or variegated

Texture—sandy loam, silt loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 7 percent gravel and 0 to 7 percent cobbles

Reaction—extremely acid to slightly acid

*2C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; or variegated

Texture—very cobbly loamy sand, extremely cobbly sand, cobbly sand, very gravelly sand, very gravelly sand, gravelly loamy sand

Content of clay—0 to 3 percent

Content of rock fragments—10 to 50 percent gravel, 5 to 50 percent cobbles, and 0 to 2 percent stones

Reaction—extremely acid to slightly acid

### ***Geographically Associated Soils***

22—Maritime Forest Gravelly Floodplains, Rarely Flooded; 22—Maritime Riverwash, Gravelly; 22—Maritime Water, Flowing; 22—Maritime Scrub Gravelly Floodplains; 22—Maritime Scrub Gravelly Floodplains, Depression

### ***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high or very high in the organic layer, high in the loamy layer, and very high in the sandy and gravelly layers; may be subject to occasional flooding

### ***Use and Vegetation***

Forestry, recreation, wildlife habitat, and source of gravel; cottonwood forest with alder and pyrola

### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

### ***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

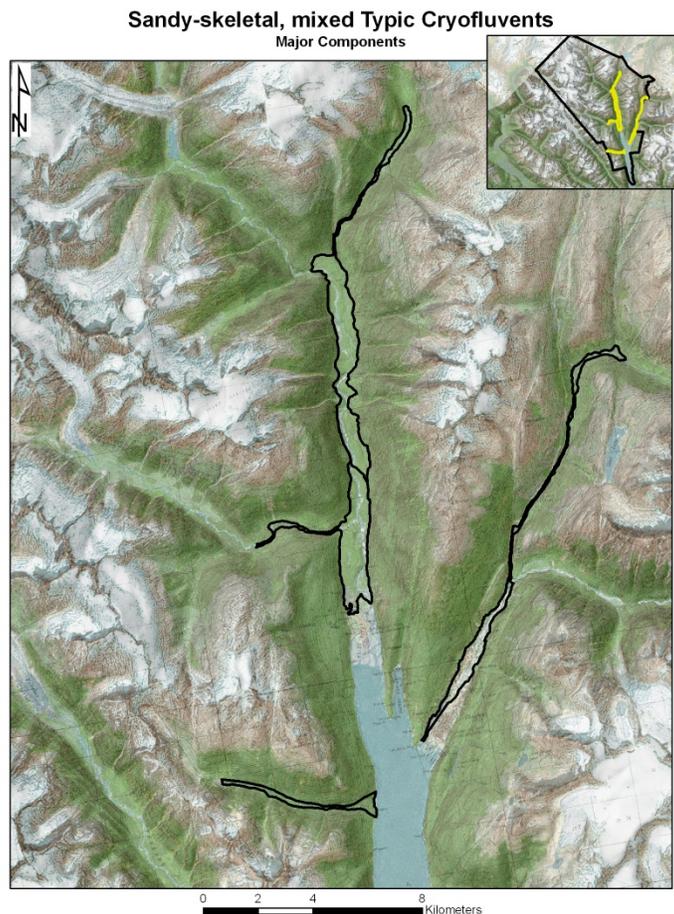
**Remarks**

*Ochric epipedon*: 3 to 10 centimeters

*Content of organic carbon*: Assumed irregular decrease with depth based on stratification and color

*Weighted average particle size*: Sandy-skeletal from 25 to 100 centimeters

## 22—Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded



*Depth class:* Very deep

*Drainage class:* Well drained or moderately well drained

*Landform:* Flood plains

*Parent material:* Alluvium

*Elevation:* 5 to 500 meters

*Slope:* 1 to 5 percent

*Annual precipitation:* 711 to 1,244 millimeters

*Annual temperature:* 2 to 5 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryofluvents

### ***Typical Pedon***

22—Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded, on a 1-percent slope with cottonwood forest and alder and pyrola understory. (All colors are for moist soil.)

Oe—0 to 8 centimeters; black (7.5YR 2.5/1) moderately decomposed plant material; common coarse, medium, and fine and many very fine roots throughout; very strongly acid (pH 5).

AC—8 to 26 centimeters; very dark grayish brown (10YR 3/2) gravelly fine sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; moderate medium subangular blocky structure; friable, nonsticky and nonplastic; common coarse, medium, and fine roots throughout; 20 percent gravel; moderately acid (pH 5.8).

C—23 to 183 centimeters; brown (10YR 5/3) extremely bouldery sand; 92 percent sand, 7 percent silt, and 1 percent clay; massive; very friable, nonsticky and nonplastic; common medium and fine roots throughout; 10 percent gravel, 20 percent cobbles, 5 percent stones, and 50 percent boulders; slightly acid (pH 6.1).



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°39'14" north and longitude 135°25'7" west.

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 3 to 9 centimeters

*Content of organic carbon:* Decreases irregularly with depth

*Depth to skeletal material:* 3 to 45 centimeters

*Control section:* Sandy-skeletal from 25 to 100 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Content of organic matter—50 to 100 percent

Reaction—extremely acid to moderately acid

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—highly organic gravelly sandy loam, highly organic very gravelly sandy loam, very gravelly sandy loam, gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—16 to 40 percent gravel

Reaction—extremely acid to slightly acid

*C horizon*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—extremely bouldery coarse sand, very bouldery coarse sand, extremely stony coarse sand, very stony coarse sand

Content of clay—0 to 3 percent

Content of rock fragments—10 to 20 percent gravel, 20 to 40 percent cobbles, 0 to 5 percent stones, 9 to 50 percent boulders

Reaction—extremely acid to slightly acid

***Geographically Associated Soils***

D22—Maritime Riverwash, Bouldery; D22—Maritime Water, Flowing

***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in the organic layer, high in the loamy layer, and very high in the sandy and gravelly layers; may be subject to occasional flooding

***Use and Vegetation***

Forestry, recreation, wildlife habitat, source of gravel; cottonwood forest with alder and pyrola understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

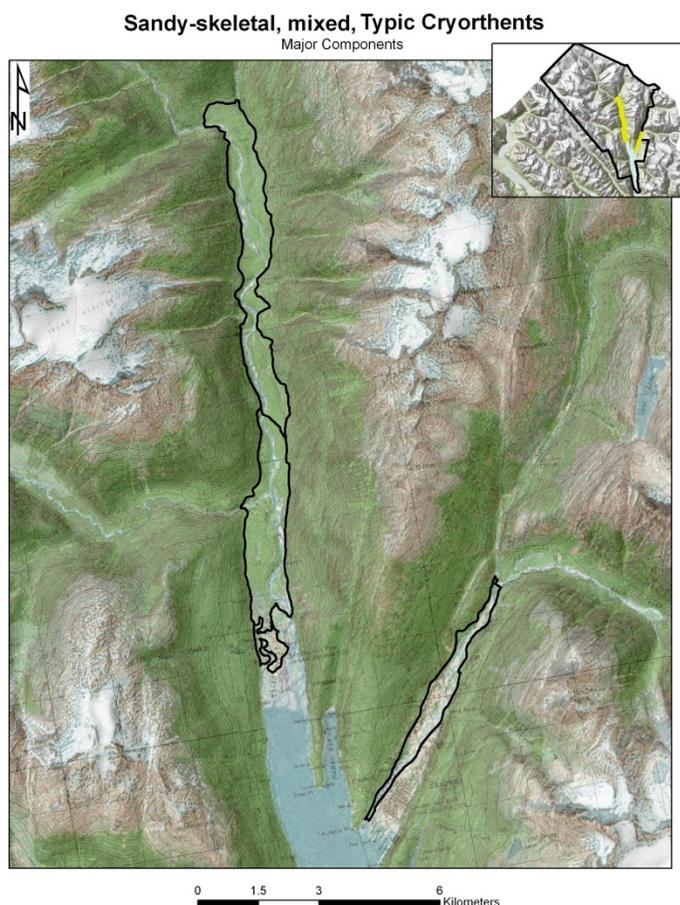
***Remarks***

*Ochric epipedon*: 8 to 26 centimeters

*Content of organic carbon*: Assumed irregular decrease with depth based on stratification and color

Weighted average particle size: Sandy-skeletal from 25 to 100 centimeters

## 22—Maritime Forest Gravelly Floodplains, Rarely Flooded



*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Flood plains

*Parent material:* Alluvium

*Elevation:* 2 to 130 meters

*Slope:* 0 to 3 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryorthents

### ***Typical Pedon***

22—Maritime Forest Gravelly Floodplains, Rarely Flooded, on a 1-percent slope with Sitka spruce and cottonwood forest and viburnum and fern understory. (Colors are for moist soil.)

Oi—0 to 5 centimeters; dark brown (10YR 3/3) slightly decomposed plant material; common medium, fine, and very fine roots throughout; slightly acid (pH 6.3); abrupt smooth boundary.

A—5 to 12 centimeters; black (10YR 2/1) fine sandy loam; 65 percent sand, 29 percent silt, and 6 percent clay; weak fine granular structure; very friable, nonsticky and

nonplastic; common medium, fine, and coarse roots throughout; 5 percent gravel; slightly alkaline (pH 7.0); abrupt smooth boundary.

C1—12 to 29 centimeters; olive brown (2.5Y 4/4), stratified fine sandy loam; 69 percent sand, 27 percent silt, and 4 percent clay; weak fine subangular blocky structure; friable, nonsticky and nonplastic; common fine, many medium, and common coarse roots throughout; 10 percent gravel; neutral (pH 6.6); abrupt smooth boundary.

2C2—29 to 183 centimeters; variegated, stratified very gravelly coarse sand; 92 percent sand, 6 percent silt, and 2 percent clay; single grain; loose, nonsticky and nonplastic; common coarse roots throughout; 40 percent gravel, 5 percent cobbles, and 1 percent stones; neutral (pH 6.8).



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°32'15" north and longitude 135°20'43" west

#### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 0 to 8 centimeters

*Depth to sand and gravel:* 0 to 25 centimeters

*Control section:* Fine sand to coarse sand with 36 to 60 percent rock fragments

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Content of organic matter—50 to 100 percent

Reaction—moderately acid or slightly acid

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 or 2

Texture—highly organic silt loam, highly organic very fine sandy loam, silt loam, very fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—3 to 10 percent gravel

Reaction—moderately acid to neutral

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6

Texture—silt loam, very fine sandy loam, fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 14 percent gravel

Reaction—moderately acid to neutral

*2C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very gravelly coarse sand, very gravelly loamy coarse sand

Content of clay—2 to 5 percent

Content of rock fragments—30 to 40 percent gravel, 5 to 10 percent cobbles, 1 to 5 percent stones

Reaction—moderately acid to neutral

***Geographically Associated Soils***

22—Maritime Scrub Gravelly Floodplains, Frequently Flooded; 22—Maritime Forest Gravelly Floodplains, Occasionally Flooded

***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Well drained; saturated hydraulic conductivity high in the loamy layers and very high in the sandy and gravelly layers; may be subject to rare periods of flooding

***Use***

Urban development, forestry, recreation, wildlife habitat, source of gravel

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

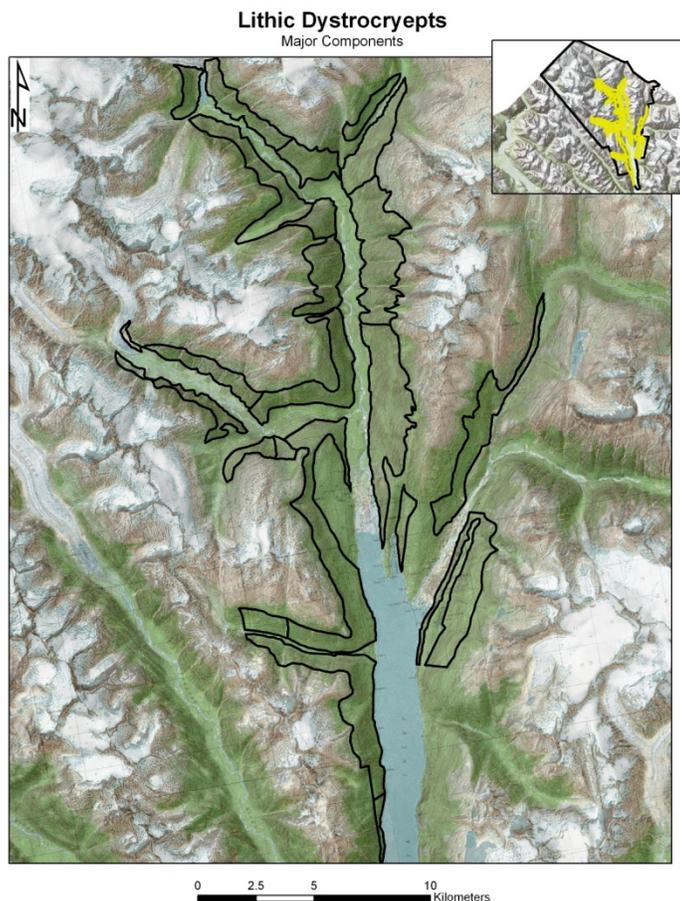
Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

*Ochric epipedon:* 5 to 12 centimeters

*Weighted average particle size:* Sandy-skeletal from 25 to 100 centimeters

## 22—Maritime Forest Gravelly Slopes, Shallow



*Depth class:* Shallow or moderately deep

*Drainage class:* Well drained or moderately well drained

*Landform:* Mountains

*Parent material:* Gravelly colluvium over bedrock

*Elevation:* 0 to 1,080 meters

*Slope:* 50 to 90 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Loamy-skeletal, mixed, superactive Lithic Dystricryepts

### ***Typical Pedon***

D22—Maritime Forest Gravelly Slopes, Shallow, on a 53-percent slope with lodgepole pine and western hemlock forest and moss and lichen understory (Colors are for moist soil.)

Oi—0 to 7 centimeters; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; many medium and fine roots; extremely acid (pH 4.1); abrupt smooth boundary.

A—7 to 10 centimeters; dark brown (10YR 3/3) very gravelly sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; weak fine granular structure; very friable,

nonsticky and nonplastic; common coarse and many medium and fine roots; 30 percent gravel and 10 percent cobbles; very strongly acid (pH 4.5); abrupt irregular boundary.

Bw—10 to 35 centimeters; 70 percent brownish yellow (10YR 6/6) and 30 percent strong brown (7.5YR 4/6) very gravelly sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common coarse, medium, and fine roots; 30 percent gravel, 20 percent cobbles, and 1 percent stones; extremely acid (pH 4.4); abrupt broken boundary.

R—35 to 183 centimeters; diorite.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'6.34" north and longitude 135°18'28.62" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 3 to 12 centimeters

*Thickness of solum:* 29 to 50 centimeters

*Control section:* Loamy-skeletal from 25 to 65 centimeters

*Depth to bedrock:* 30 to 65 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic gravelly sandy loam, highly organic very gravelly sandy loam, highly organic cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 15 percent cobbles, 0 to 2 percent stones

Reaction—ultra acid or extremely acid

*Bw horizon:*

Color—hue of 7.5YR or 10YR, value of 4 to 6, chroma of 3 to 6

Texture—gravelly sandy loam, very gravelly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—30 to 50 percent gravel, 5 to 20 percent cobbles, 1 to 3 percent stones

Reaction—extremely acid or very strongly acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 55 percent gravel, 5 to 14 percent cobbles, 1 to 14 percent stones

Reaction—very strongly acid to moderately acid

### ***Geographically Associated Soils***

22—Maritime Forest Organic Slopes, Dry; 22—Maritime Forest Organic Slopes, Depression

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layer and high or very high in subsurface layers

***Use and Vegetation***

Forestry, urban development, recreation, wildlife habitat; lodgepole pine and western hemlock forest with moss and lichen understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

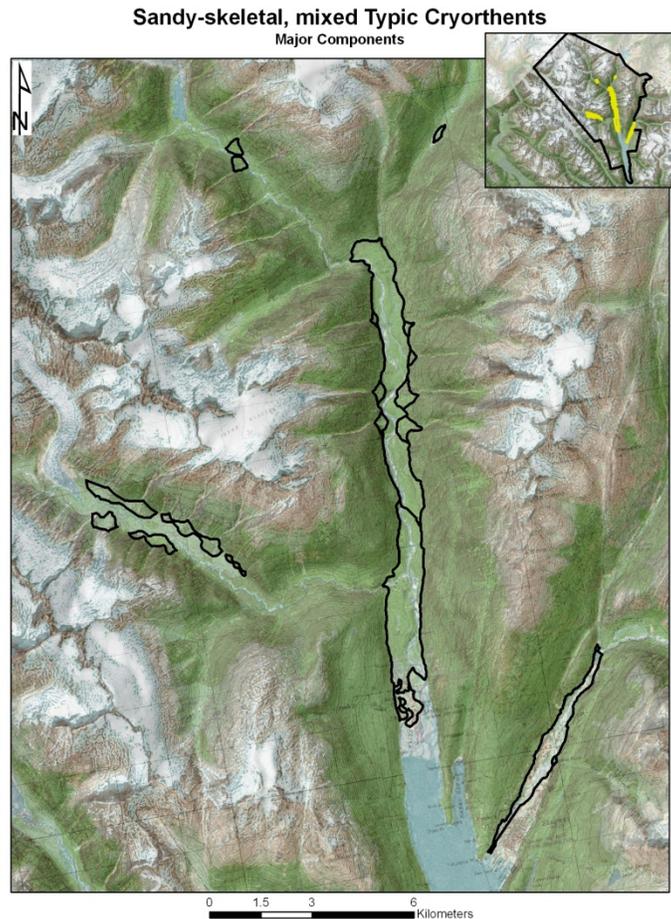
*Ochric epipedon:* 7 to 10 centimeters

*Cambic horizon:* 10 to 35 centimeters

*Depth to bedrock:* 35 centimeters

*Control section:* Loamy-skeletal from 25 to 35 centimeters

## 22—Maritime Forest Gravelly Alluvial Fan, Fan Terrace



*Depth class:* Very deep  
*Drainage class:* Well drained or moderately well drained  
*Landform:* Alluvial fan terraces  
*Parent material:* Alluvium  
*Elevation:* 40 to 355 meters  
*Slope:* 10 to 30 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryorthents

### ***Typical Pedon***

22—Maritime Forest Gravelly Alluvial Fan, Fan Terrace, on a 15-percent slope with Sitka spruce, western hemlock, rusty menziesia, and feather moss. (Colors are for moist soil.)

- Oi—0 to 3 centimeters; dark brown (7.5YR 3/4) slightly decomposed plant material; common very fine, fine, and medium roots; 3 percent gravel and 3 percent cobbles; extremely acid (pH 4.0); abrupt smooth boundary.
- A—3 to 11 centimeters; very dark gray (10YR 3/1) gravelly fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; weak fine subangular blocky structure;

friable, nonsticky and nonplastic; common very fine, many fine and medium, and common coarse and very coarse roots; 16 percent gravel; very strongly acid (pH 4.5); abrupt smooth boundary.

C1—11 to 36 centimeters; olive brown (2.5Y 4/4) very cobbly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak medium subangular blocky structure; friable, nonsticky and nonplastic; common very fine and fine, many medium, and common coarse and very coarse roots; 20 percent gravel, 25 percent cobbles, and 5 percent stones; strongly acid (pH 5.1); clear smooth boundary.

C2—36 to 183 centimeters; olive brown (2.5Y 4/3) very cobbly loamy sand; 70 percent sand, 25 percent silt, and 5 percent clay; single grain; loose, nonsticky and nonplastic; common fine, coarse, and medium roots; 20 percent gravel, 25 percent cobbles, and 5 percent stones; moderately acid, pH 5.6.



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°34'23" north and longitude 135°19'59" west

#### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 2 to 19 centimeters

*Thickness of solum:* 50 to 65 centimeters

*Depth to skeletal material:* 2 to 20 centimeters

*Control section:* Loamy-skeletal sandy loam with 40 to 60 percent rock fragments

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid to slightly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—sandy loam, gravelly sandy loam, highly organic sandy loam, highly gravelly organic sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—16 to 40 percent gravel

Reaction—extremely acid to slightly acid

*C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—extremely cobbly sand, very cobbly sand

Content of clay—1 to 5 percent

Content of rock fragments—10 to 20 percent gravel, 25 to 40 percent cobbles, 1 to 5 percent stones

Reaction—strongly acid to neutral

#### ***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity high or very high

#### ***Use***

Recreation, wildlife habitat

#### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

#### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

#### ***Established***

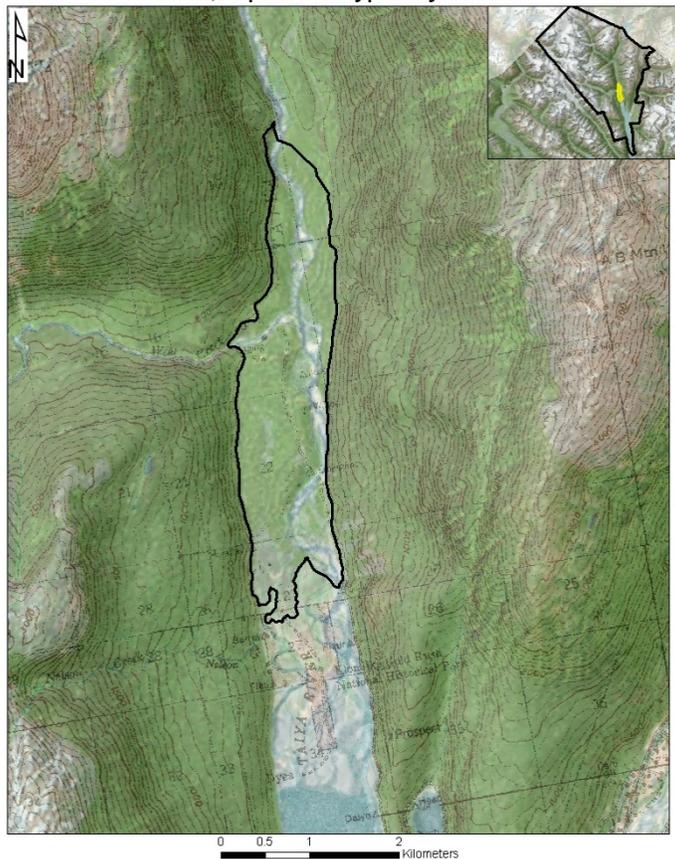
Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

#### ***Remarks***

*Weighted average particle size:* Loamy-skeletal from 25 to 100 centimeters

## 22—Maritime Forest Loamy Floodplains, Rarely Flooded

Coarse-loamy over sandy or sandy-skeletal,  
mixed, superactive Typic Cryorthents



*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 2 to 130 meters  
*Slope:* 0 to 3 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryorthents

### ***Typical Pedon***

22—Maritime Forest Loamy Floodplains, Rarely Flooded, on a 1-percent slope with Sitka spruce and cottonwood forest and viburnum and fern understory. (Colors are for moist soil.)

Oi—0 to 5 centimeters; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; many fine and common medium and coarse roots; moderately acid (pH 6.0); abrupt smooth boundary.

- C1—5 to 24 centimeters; dark grayish brown (2.5Y 4/2) silt loam; 17 percent sand, 80 percent silt, and 3 percent clay; massive; very friable, nonsticky and nonplastic; common fine roots; 3 percent gravel; slightly acid (pH 6.5); abrupt smooth boundary.
- C2—24 to 46 centimeters; brown (10YR 4/3) sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak medium subangular blocky structure; very friable, nonsticky and nonplastic; 5 percent (common) fine distinct irregular noncemented gray (7.5YR 5/1) iron depletions that are clear in matrix; 5 percent gravel; neutral (pH 6.7); clear smooth boundary.
- 2C3—46 to 183 centimeters; variegated very gravelly loamy sand; 80 percent sand, 18 percent silt, and 2 percent clay; single grain; loose, nonsticky and nonplastic; 40 percent gravel and 10 percent cobbles; 1 percent stones; slightly acid (pH 6.3).



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°32'15" north and longitude 135°20'43" west

#### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 0 to 8 centimeters

*Depth to sand and gravel:* 0 to 25 centimeters

*Control section:* Fine sand to coarse sand with 36 to 60 percent rock fragments

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Content of organic matter—50 to 100 percent

Reaction—moderately acid or slightly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 or 2

Texture—highly organic silt loam, highly organic very fine sandy loam, silt loam, very fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—3 to 10 percent gravel

Reaction—moderately acid to neutral

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6

Texture—silt loam, very fine sandy loam, fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—3 to 10 percent gravel

Reaction—moderately acid to neutral

*2C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very gravelly coarse sand, very gravelly loamy coarse sand

Content of clay—2 to 5 percent

Content of rock fragments—30 to 40 percent gravel, 5 to 10 percent cobbles, 1 to 5 percent stones

Reaction—moderately acid to neutral

**Geographically Associated Soils**

22—Maritime Scrub Gravelly Floodplains, Frequently Flooded; 22—Maritime Forest Gravelly Floodplains, Occasionally Flooded; 22—Maritime Forest Gravelly Floodplains, Rarely Flooded

**Drainage Class, Saturated Hydraulic Conductivity, and Flooding**

Well drained; saturated hydraulic conductivity moderate to high in the loamy layers and very high in the sandy and gravelly layers; may be subject to rare flooding

**Use**

Urban development, forestry, recreation, wildlife habitat, source of gravel

**Distribution and Extent**

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

**MLRA Soil Survey Regional Office (MO) Responsible**

Palmer, Alaska

**Established**

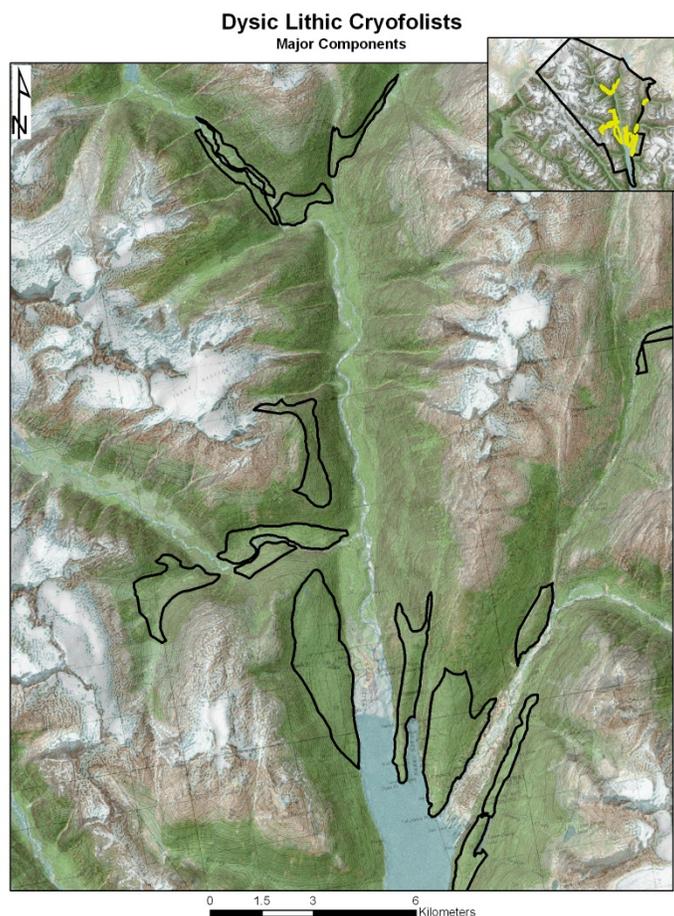
Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

*Ochric epipedon:* 5 to 12 centimeters

*Weighted average particle size:* Coarse-loamy from 25 to 46 centimeters, sandy-skeletal from 46 to 100 centimeters

## 22—Maritime Forest Organic Slopes, Dry



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Landform:* Mountains

*Parent material:* Organic material

*Elevation:* 0 to 1,080 meters

*Slope:* 50 to 100 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Subgroup***

- Dysic Lithic Cryofolists

### ***Typical Pedon***

22—Maritime Forest Organic Slopes, Dry, on a 50-percent slope with western hemlock and Sitka spruce forest and feather moss understory. (Colors are for moist soil.)

Oi—0 to 7 centimeters; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; common medium and fine roots throughout; extremely acid (pH 4.1); abrupt wavy boundary.

Oe—7 to 22 centimeters; black (7.5YR 2.5/1) moderately decomposed plant material; many fine and medium and common very fine and coarse roots throughout; extremely acid (pH 4.1); gradual wavy boundary.

OC—22 to 36 centimeters; black (7.5YR 2.5/1) extremely stony moderately decomposed plant material; common medium and fine roots; 5 percent gravel, 10 percent cobbles, and 50 percent stones; extremely acid (pH 4.1).  
R—36 to 183 centimeters; diorite.



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°39'14" north and longitude 135°24'35" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic layer:* 14 to 36 centimeters

*O horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 or 2

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*C horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—very stony sandy loam, extremely stony sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 1 to 10 percent cobbles, 10 to 50 percent stones

Reaction—extremely acid or very strongly acid

***Geographically Associated Soils***

22—Maritime Forest Gravelly Slopes, Shallow

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in the organic layers and high or very high in the loamy layer

***Use and Vegetation***

Recreation, wildlife habitat; western hemlock and Sitka spruce forest with feather moss understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; extensive throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

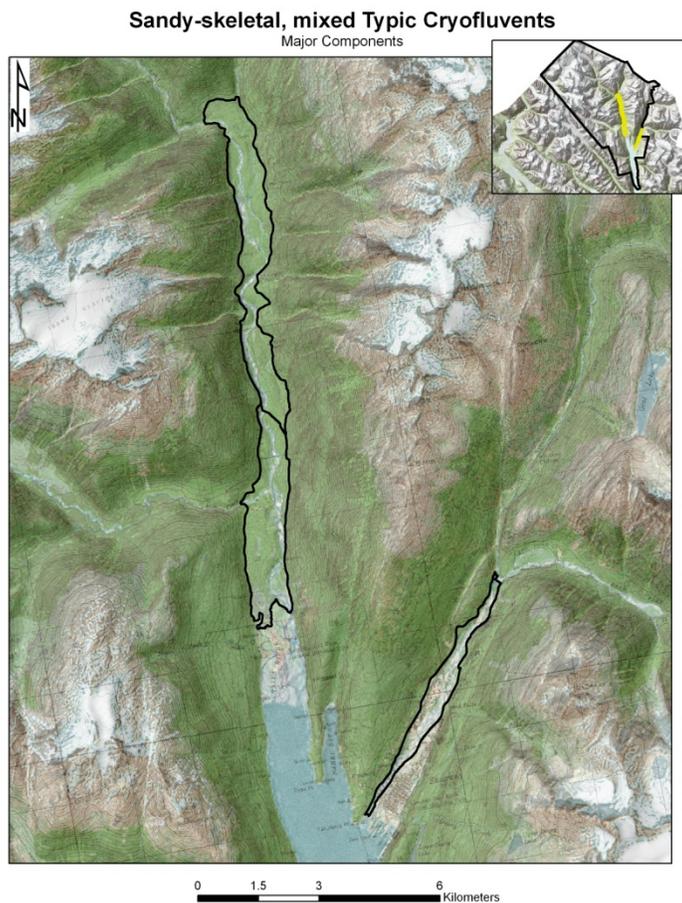
***Remarks***

*Organic material:* 0 to 36 centimeters

*Depth to lithic contact:* 36 centimeters

*pH of organic layers:* Less than 4.5 (0.01M CaCl)

## 22—Maritime Scrub Gravelly Floodplains, Depression



*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Landform:* Depressions of flood plains  
*Parent material:* Alluvium  
*Elevation:* 0 to 130 meters  
*Slope:* 0 to 2 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryofluvents

### ***Typical Pedon***

22—Maritime Scrub Gravelly Floodplains, Depression, on a 1-percent slope with alder vegetation. (Colors are for moist soil.)

A—0 to 16 centimeters; black (7.5YR 2.5/1) highly organic very cobbly fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; 20 percent gravel, 40 percent cobbles, and 1 percent stones; neutral (pH 7); clear smooth boundary.

C1—16 to 30 centimeters; 70 percent strong brown (7.5YR 4/6) and 30 percent dark brown (7.5YR 3/4) extremely cobbly coarse sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; common medium and fine roots; 20 percent gravel, 60 percent cobbles, and 1 percent stones; neutral (pH 7.2); clear smooth boundary.

C2—30 to 183 centimeters; variegated extremely cobbly coarse sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; 20 percent gravel, 60 percent cobbles, and 7 percent stones; slightly alkaline (pH 7.5).

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'58.39" north and longitude 135°18'36.14" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Content of organic carbon:* Decreases irregularly with depth

*Control section:* Fine sand to coarse sand with 36 to 90 percent rock fragments

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 or 2

Texture—very cobbly fine sandy loam, extremely cobbly fine sandy loam, extremely gravelly fine sandy loam, highly organic very cobbly fine sandy loam, highly organic extremely cobbly fine sandy loam, highly organic extremely gravelly fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 30 percent gravel, 25 to 50 percent cobbles, 0 to 2 percent stones

Reaction—neutral or slightly alkaline

*C horizon:*

Color—hue of 7.5YR or 10YR, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very cobbly coarse sand, extremely cobbly coarse sand

Content of clay—2 to 5 percent

Content of rock fragments—15 to 30 percent gravel, 20 to 70 percent cobbles, 1 to 7 percent stones

Reaction—neutral to moderately alkaline

### ***Geographically Associated Soils***

22—Maritime Scrub Gravelly Floodplains, Frequently Flooded; 22—Maritime Forest Gravelly Floodplains, Occasionally Flooded; 22—Maritime Forest Gravelly Floodplains, Rarely Flooded

### ***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Moderately well drained; saturated hydraulic conductivity high in loamy layers and very high in sandy and gravelly layers; may be subject to occasional flooding and ponding

### ***Use***

Wildlife habitat, recreation, source of gravel, depressions commonly filled for urban development

### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

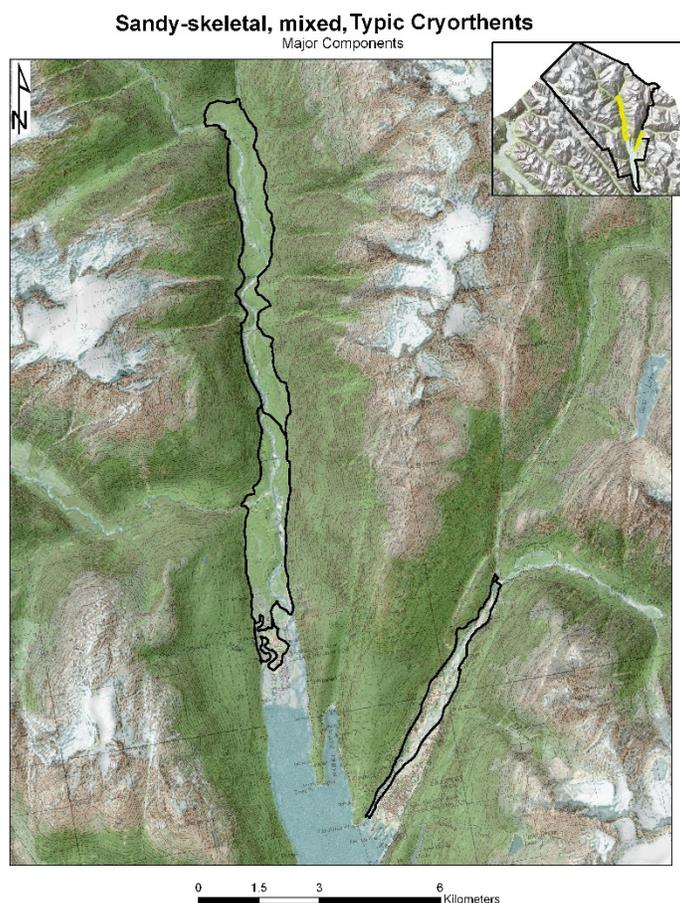
Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

*Ochric epipedon: 0 to 16 centimeters*

*Assumed irregular decrease in organic carbon based on stratification and color: 16 to 30 centimeters*

## 22—Maritime Scrub Gravelly Floodplains, Frequently Flooded



*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 2 to 130 meters  
*Slope:* 0 to 3 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Family***

- Sandy-skeletal, mixed Typic Cryorthents

### ***Typical Pedon***

22—Maritime Scrub Gravelly Floodplains, Frequently Flooded, on a 1-percent slope with willow and alder vegetation. (Colors are for moist soil.)

C1—0 to 12 centimeters; variegated extremely cobbly sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; common medium and fine roots; 7 percent gravel, 50 percent cobbles, and 3 percent stones; slightly acid (pH 6.1); gradual smooth boundary.

C2—12 to 183 centimeters; variegated extremely cobbly sand; 90 percent sand, 7 percent silt, and 3 percent clay; single grain; loose, nonsticky and nonplastic; 10 percent gravel, 50 percent cobbles, and 5 percent stones; slightly acid (pH 6.1).

***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'51.7" north and longitude 135°18'46.8" west

***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Depth to sand and gravel:* 0 to 4 centimeters

*Control section:* Sand to coarse sand with 36 to 61 percent rock fragments

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 3, chroma of 2 or 3

Texture—fine sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—1 to 10 percent gravel

Reaction—moderately acid to neutral

*C horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very gravelly sand, very cobbly sand

Content of clay—2 to 5 percent

Content of rock fragments—5 to 10 percent gravel, 30 to 50 percent cobbles, 1 to 5 percent stones

Reaction—moderately acid to neutral

***Geographically Associated Soils***

22—Maritime Scrub Gravelly Floodplains, Depression, 22—Maritime Forest Gravelly Floodplains, Occasionally Flooded, 22—Maritime Forest Gravelly Floodplains, Rarely Flooded

***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Moderately well drained; saturated hydraulic conductivity high in loamy layer and very high in sandy and gravelly layers; may be subject to frequent flooding

***Use***

Wildlife habitat, source of gravel

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

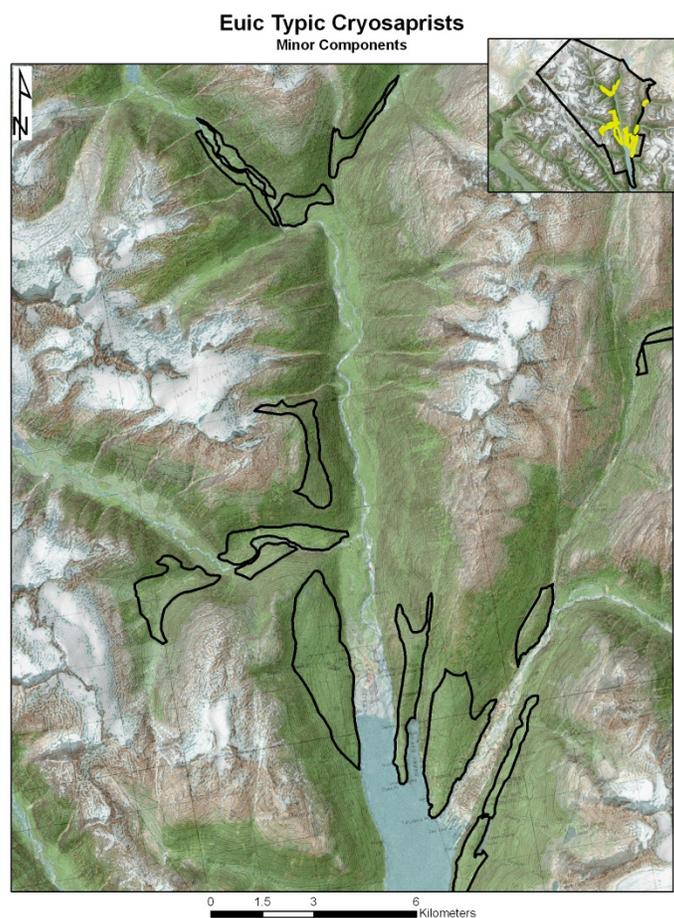
***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

*Weighted average particle size:* Sandy-skeletal from 25 to 100 centimeters

## 22—Maritime Forest Organic Slopes, Depression



*Depth class:* Very deep  
*Drainage class:* Very poorly drained  
*Landform:* Depressions of mountains  
*Parent material:* Organic material  
*Elevation:* 0 to 1,080 meters  
*Slope:* 0 to 7 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Subgroup***

- Euic Typic Cryosaprists

### ***Typical Pedon***

D22—Maritime Forest Organic Slopes, Depression, on a 1-percent slope with sphagnum moss and lodgepole pine vegetation. (Colors are for moist soil.)

Oi—0 to 10 centimeters; very dark brown (10YR 2/2) peat; common medium and fine roots; strongly acid (pH 5.4); clear smooth boundary.

Oe—10 to 30 centimeters; (7.5YR 2/2) mucky peat; common medium and fine roots; strongly acid (pH 5.5); clear smooth boundary.

Oa—30 to 183 centimeters; black (10YR 2/1) muck; common medium and fine roots; moderately acid (pH 5.6).



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'7.6" north and longitude 135°18'18.86" west

### ***Range in Characteristics***

*Soil moisture class:* Aquic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic material:* More than 183 centimeters

*Surface tier:* Dominantly hemic material, but typically fibric material in the upper part

*Subsurface tier:* Sapric material with hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4

*Reaction:* Extremely acid to moderately acid in surface tier, very strongly acid to slightly acid in subsurface tier

### ***Geographically Associated Soils***

22—Maritime Forest Gravelly Slopes, Shallow; 22—Maritime Forest Organic Slopes, Dry

### ***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in organic layer

***Use and Vegetation***

Recreation, wildlife habitat; Sphagnum moss and lodgepole pine

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

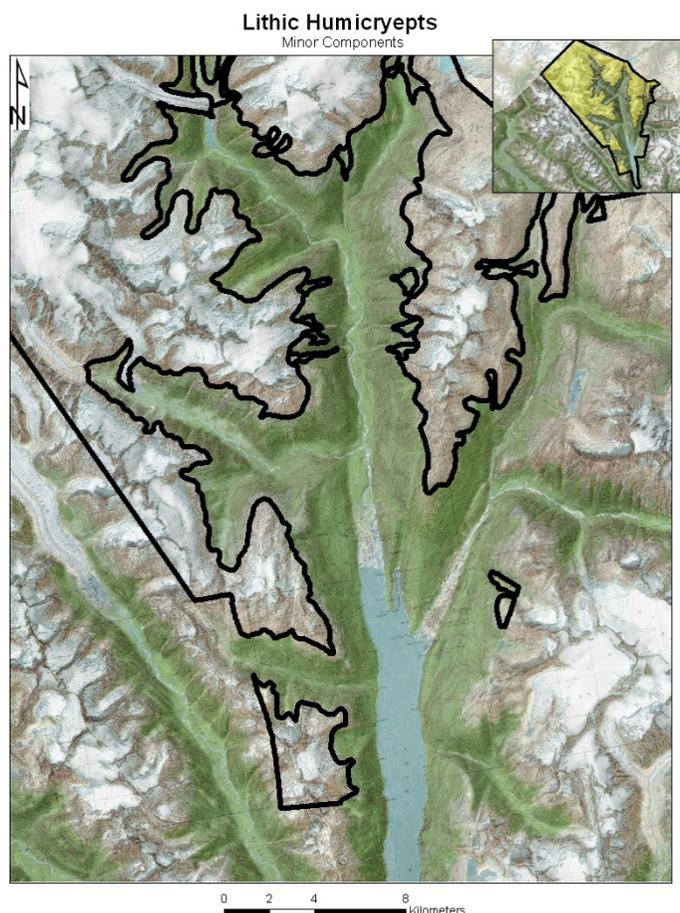
*Organic material:* 0 to 20 centimeters

*Content of organic matter:* More than 20 percent, by weight

*Depth to lithic contact:* 20 centimeters

*pH:* More than 4.5 (0.01M CaCl) in one organic layer or more

## D22—Alpine Herbaceous Gravelly Diorite Slopes



*Depth class:* Shallow  
*Drainage class:* Well drained  
*Landform:* Mountains  
*Parent material:* Gravelly colluvium over residuum  
*Elevation:* 757 to 2,477 meters  
*Slope:* 30 to 60 percent  
*Annual precipitation:* 1,500 to 2,880 millimeters  
*Annual temperature:* 1 to 3 degrees C  
*Frost-free period:* 25 to 50 days

### ***Taxonomic Family***

- Loamy-skeletal, mixed, superactive Lithic Humicryepts

### ***Typical Pedon***

D22—Alpine Herbaceous Gravelly Diorite Slopes on a 1-percent slope with crowberry, moss, and lichen vegetation. (Colors are for moist soil.)

Oe—0 to 3 centimeters; dark reddish brown (5YR 2.5/2) moderately decomposed organic matter; common medium and fine and many very fine roots throughout; very strongly acid (pH 4.7); abrupt smooth boundary.

A—3 to 13 centimeters; very dark brown (7.5YR 2.5/2) highly organic very cobbly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; moderate fine granular structure; very friable, nonsticky and nonplastic; common medium and fine and many

very fine roots throughout; 20 percent gravel, 25 percent cobbles, and 1 percent stones; strongly acid (pH 5.1); abrupt smooth boundary.

C—13 to 24 centimeters; very dark brown (7.5YR 2.5/3) extremely cobbly sandy loam; 70 percent sand, 25 percent silt, and 5 percent clay; moderate medium subangular blocky structure; friable, nonsticky and nonplastic; common fine and very fine roots throughout; 20 percent gravel, 30 percent cobbles, and 25 percent stones strongly acid (pH 5.2); abrupt smooth boundary.

R—24 to 183 centimeters; diorite.



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°25'20" north and longitude 135°25'7" west

#### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 0 to 3 centimeters

*Umbric epipedon:* 10 to 25 centimeters

*Depth to bedrock:* 23 to 50 centimeters

*O horizon (where present):*

Color—hue of 5YR, 7.5YR, or 10YR; value of 2 to 3; chroma of 1 to 3

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid to strongly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 3

Texture—highly organic very cobbly sandy loam, highly organic extremely cobbly sandy loam, highly organic very stony sandy loam, highly organic extremely stony sandy loam

Content of organic matter—12 to 28 percent

Content of clay—3 to 8 percent

Content of rock fragments—10 to 30 percent gravel, 20 to 40 percent cobbles, 1 to 40 percent stones

Reaction—very strongly acid to moderately acid

*C horizon (where present):*

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 2.5 to 5; chroma of 3 to 6

Texture—very cobbly sandy loam, extremely cobbly sandy loam, very stony sandy loam, extremely stony sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 30 percent gravel, 25 to 40 percent cobbles, 25 to 40 percent stones

Reaction—strongly acid or moderately acid

*R horizon:*

Kind of bedrock—diorite

**Geographically Associated Soils**

D22—Subalpine and Alpine Rubble Land, D22—Subalpine and Alpine Rock Outcrop,

D22—Subalpine and Alpine Permanent Ice and Snow

**Drainage Class and Saturated Hydraulic Conductivity**

Well drained; saturated hydraulic conductivity high in loamy part and very low in bedrock

**Use and Vegetation**

Recreation, wildlife habitat; crowberry, moss, lichen

**Distribution and Extent**

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

**MLRA Soil Survey Regional Office (MO) Responsible**

Palmer, Alaska

**Established**

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

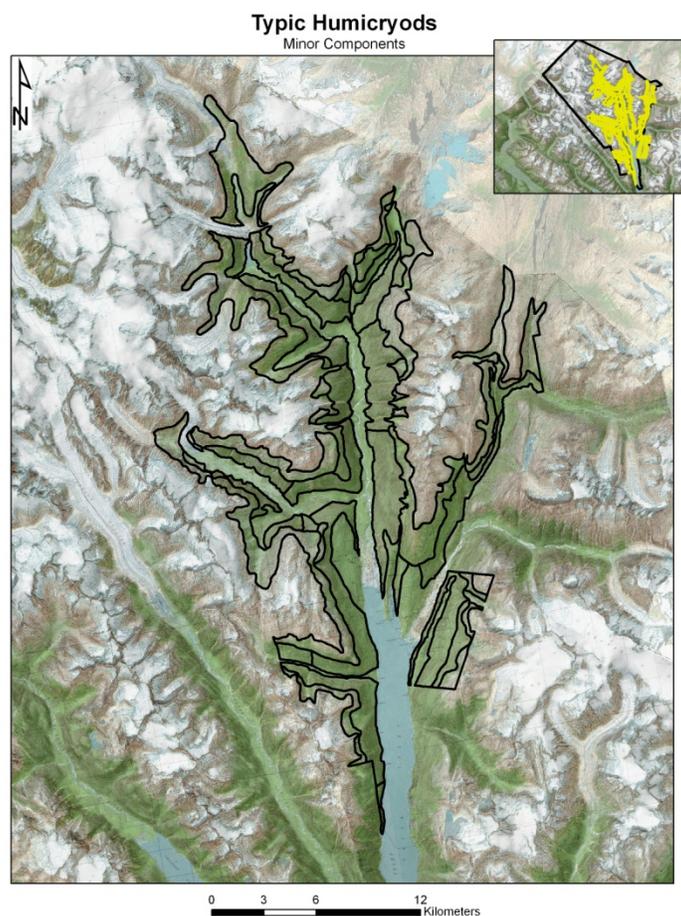
**Remarks**

*Umbric epipedon:* 3 to 24 centimeters

*Weighted average particle size:* Loamy-skeletal from 25 to 100 centimeters

*Depth to bedrock:* 23 to 50 centimeters

## D22—Maritime Forest Gravelly Slopes, High Elevation



*Depth class:* Shallow to very deep  
*Drainage class:* Well drained or moderately well drained  
*Landform:* Mountains  
*Parent material:* Gravelly colluvium over bedrock  
*Elevation:* 210 to 1,505 meters  
*Slope:* 20 to 90 percent  
*Annual precipitation:* 711 to 1,244 millimeters  
*Annual temperature:* 3 to 5 degrees C  
*Frost-free period:* 90 to 144 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Typic Humicryods
- Coarse-loamy, mixed, superactive Typic Humicryods

### ***Typical Pedon***

D22—Maritime Forest Gravelly Slopes, High Elevation, on a 30-percent slope with mountain hemlock forest and rusty menziesia and feather moss understory. (Colors are for moist soil.)

Oe—0 to 12 centimeters; dark reddish brown (5YR 3/3) moderately decomposed plant material; common coarse, medium, and fine roots; extremely acid (pH 3.6); clear smooth boundary.

A—12 to 26 centimeters; very dark brown (7.5YR 2.5/3) highly organic fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; moderate medium granular structure; friable, nonsticky and nonplastic; common coarse and many medium and fine roots; extremely acid (pH 3.8); abrupt smooth boundary.

E—26 to 32 centimeters; brown (7.5YR 5/3) cobbly sandy loam; 65 percent sand, 23 percent silt, and 12 percent clay; weak medium granular structure; very friable, nonsticky and nonplastic; common fine roots; 10 percent gravel and 15 percent cobbles; extremely acid (pH 3.8); abrupt smooth boundary.

Bhs—32 to 57 centimeters; black (7.5YR 2.5/1) highly organic cobbly sandy loam; 60 percent sand, 32 percent silt, and 8 percent clay; strong medium subangular blocky structure; firm, slightly sticky and slightly plastic; common medium and fine roots; 5 percent gravel and 15 percent cobbles; extremely acid (pH 4.1); abrupt smooth boundary.

Bs—57 to 65 centimeters; dark reddish brown (5YR 3/3) cobbly sandy loam; 70 percent sand, 18 percent silt, and 12 percent clay; weak medium subangular blocky structure; very friable, slightly sticky and slightly plastic; 5 percent gravel and 30 percent cobbles; extremely acid (pH 4.1); abrupt irregular boundary.

R—65 to 183 centimeters; bedrock.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°26'51.07" north and longitude 135°17'5.42" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 3 to 12 centimeters

*Content of organic carbon in Bhs horizon:* More than 6 percent

*Thickness of solum:* 20 to 90 centimeters

*Depth to bedrock:* 50 to 183 centimeters or more

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—0 to 7 percent gravel, 0 to 7 percent cobbles

Reaction—ultra acid or extremely acid

*E horizon:*

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 5 to 7; chroma of 1 to 3

Texture—very cobbly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—extremely acid or very strongly acid

*Bhs horizon:*

Color—hue of 5YR or 7.5YR, value of 2.5 or 3, chroma of 1 to 3

Texture—highly organic very cobbly sandy loam, highly organic cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—extremely acid or very strongly acid

*Bs horizon:*

Color—hue of 5YR or 7.5YR, value of 3 to 5, chroma of 3 to 6

Texture—very cobbly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—very strongly acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very cobbly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—extremely acid to moderately acid

**Geographically Associated Soils**

D22—Maritime Forest Organic Slopes, Dry, High Elevation

**Drainage Class and Saturated Hydraulic Conductivity**

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layer, moderately high or high in surface layer, and high or very high in subsurface layers

**Use and Vegetation**

Recreation, wildlife habitat; mountain hemlock forest with rusty menziesia and feather moss understory

**Distribution and Extent**

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

**MLRA Soil Survey Regional Office (MO) Responsible**

Palmer, Alaska

**Established**

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

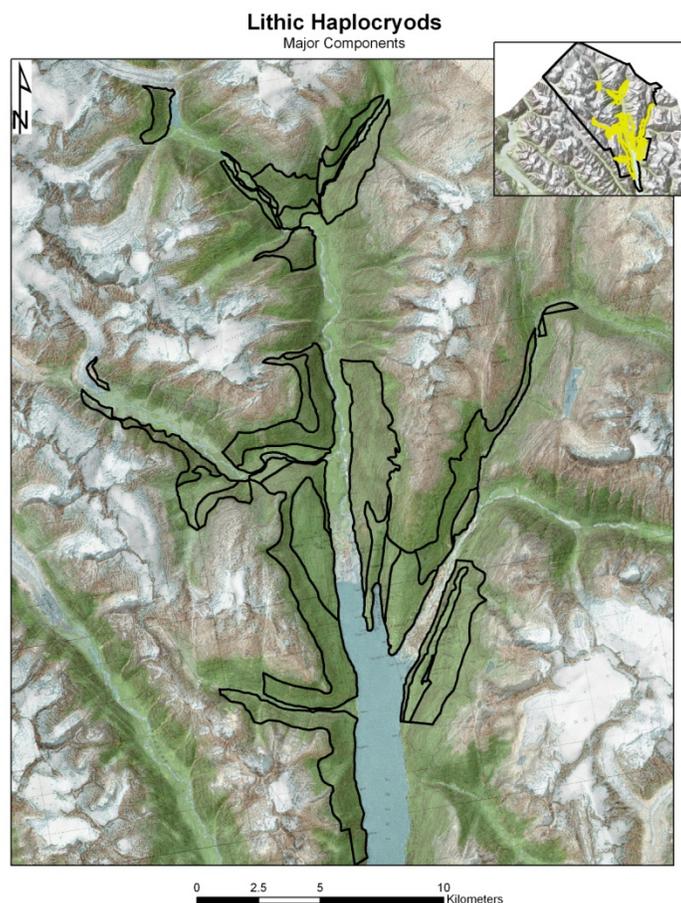
*Albic horizon:* 19 to 24 centimeters

*Spodic horizon:* 24 to 65 centimeters

*Organic carbon in Bhs horizon:* More than 6 percent

*Depth to bedrock:* 65 centimeters

## D22—Maritime Forest Gravelly Slopes, Shallow, Convex



*Depth class:* Shallow or moderately deep  
*Drainage class:* Well drained or moderately well drained  
*Landform:* Mountains  
*Parent material:* Gravelly colluvium over bedrock  
*Elevation:* 0 to 1,080 meters  
*Slope:* 50 to 90 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Lithic Haplocryods
- Coarse-loamy, mixed, superactive Lithic Haplocryods

### ***Typical Pedon***

D22—Maritime Forest Gravelly Slopes, Shallow, Convex, on a 53-percent slope with paper birch and lodgepole pine forest and moss and lichen understory. (Colors are for moist soil.)

Oi—0 to 10 centimeters; dark yellowish brown (10YR 3/4) slightly decomposed plant material; common coarse, medium, fine, and very fine roots throughout; extremely acid (pH 3.8); clear smooth boundary.

Oe—10 to 12 centimeters; dark brown (7.5YR 3/3) moderately decomposed plant material; common very coarse, coarse, medium, fine, and very fine roots throughout; extremely acid (pH 4.0); abrupt smooth boundary.

A—12 to 15 centimeters; very dark brown (10YR 2/2) gravelly sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common very fine, medium, coarse, and very coarse roots throughout; 20 percent gravel and 5 percent cobbles; extremely acid (pH 4.3); abrupt smooth boundary.

E—15 to 19 centimeters; gray (10YR 6/1) very gravelly coarse sandy loam; 68 percent sand, 27 percent silt, and 5 percent clay; moderate fine subangular blocky structure; very friable, nonsticky and nonplastic; common coarse, medium, and fine roots throughout; 38 percent gravel and 5 percent cobbles; very strongly acid (pH 4.5); abrupt smooth boundary.

Bs—19 to 30 centimeters; strong brown (7.5YR 4/6) very gravelly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak medium subangular blocky structure; friable, nonsticky and nonplastic; common very coarse, coarse, medium, and fine roots throughout; 25 percent (common) black (10YR 2/1) organic stains on all faces of peds; 40 percent gravel, 5 percent cobbles, and 5 percent stones; extremely acid (pH 4.3); abrupt smooth boundary.

R—30 to 183 centimeters; diorite.



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°36'51" north and longitude 135°19'26" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 4 to 9 centimeters

*Thickness of solum:* 29 to 40 centimeters

*Control section:* Loamy-skeletal from 25 to 65 centimeters

*Depth to bedrock:* 30 to 65 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic gravelly sandy loam, highly organic very gravelly sandy loam, highly organic extremely gravelly sandy loam,

Content of clay—3 to 8 percent

Content of rock fragments—15 to 70 percent gravel, 1 to 10 percent cobbles, 0 to 2 percent stones

Reaction—ultra acid or extremely acid

*E horizon:*

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 5 to 7; chroma of 1 to 3

Texture—gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 70 percent gravel, 1 to 10 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid or very strongly acid

*Bs horizon:*

Color—hue of 5YR or 7.5YR, value of 3 to 5, chroma of 3 to 6

Texture—gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 60 percent gravel, 5 to 25 percent cobbles, 5 to 25 percent stones

Reaction—extremely acid or very strongly acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam, cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 60 percent gravel, 5 to 25 percent cobbles, 5 to 12 percent stones

Reaction—very strongly acid to moderately acid

### ***Geographically Associated Soils***

D22—Maritime Forest Organic Slopes, Dry; D22—Maritime Forest Organic Slopes, Depression; D22—Maritime Forest Gravelly Slopes, Shallow

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in the organic layer and high or very high in the subsurface layers

***Use and Vegetation***

Forestry, urban development, recreation, wildlife habitat; paper birch and lodgepole pine forest with moss and lichen understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

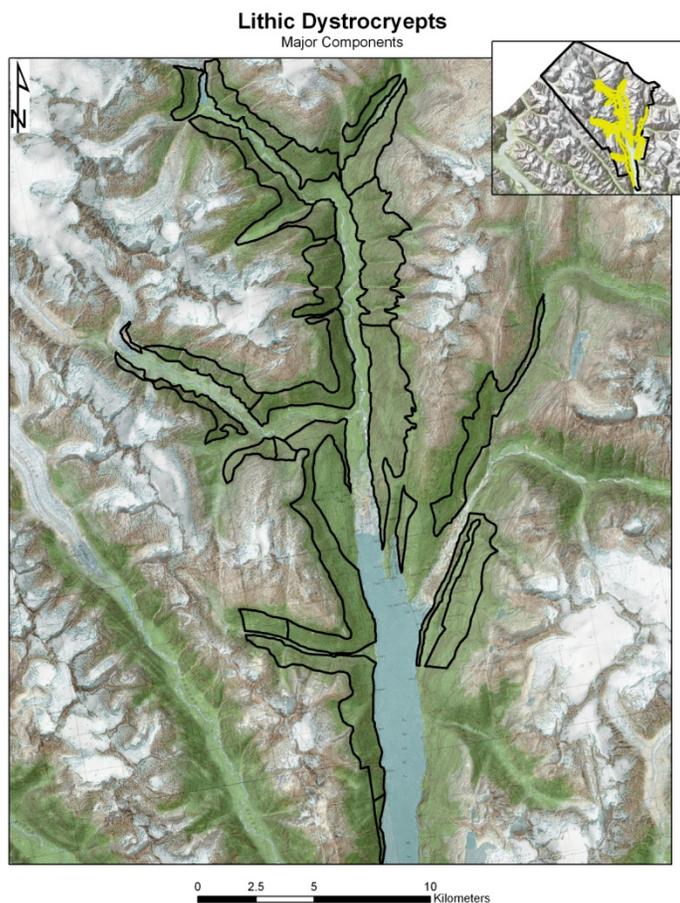
*Albic horizon:* 15 to 19 centimeters

*Spodic horizon:* 19 to 30 centimeters

*Depth to bedrock:* 30 centimeters

*Control section:* Loamy-skeletal from 25 to 30 centimeters

## D22—Maritime Forest Gravelly Slopes, Shallow



*Depth class:* Shallow or moderately deep

*Drainage class:* Well drained or moderately well drained

*Landform:* Mountains

*Parent material:* Gravelly colluvium over bedrock

*Elevation:* 0 to 1,080 meters

*Slope:* 50 to 90 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Lithic Dystricrypts
- Coarse-loamy, mixed, superactive Lithic Dystricrypts

### ***Typical Pedon***

D22—Maritime Forest Gravelly Slopes, Shallow, on a 53-percent slope with lodgepole pine and western hemlock forest and moss and lichen understory. (Colors are for moist soil.)

Oi—0 to 7 centimeters; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; many medium and fine roots; extremely acid (pH 4.1); abrupt smooth boundary.

A—7 to 10 centimeters; dark brown (10YR 3/3) very gravelly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common coarse and many medium and fine roots; 30 percent gravel and 10 percent cobbles; very strongly acid (pH 4.5); abrupt irregular boundary.

Bw—10 to 35 centimeters; 70 percent brownish yellow (10YR 6/6) and 30 percent strong brown (7.5YR 4/6) very gravelly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common coarse, medium, and fine roots; 30 percent gravel and 20 percent cobbles; 1 percent stones; extremely acid (pH 4.4); abrupt broken boundary.

R—35 to 183 centimeters; diorite.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'6.34" north and longitude 135°18'28.62" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 3 to 12 centimeters

*Thickness of solum:* 29 to 50 centimeters

*Control section:* Loamy-skeletal from 25 to 65 centimeters

*Depth to bedrock:* 30 to 65 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic gravelly sandy loam, highly organic very gravelly sandy loam, highly organic cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 15 percent cobbles, 0 to 2 percent stones

Reaction—ultra acid or extremely acid

*Bw horizon:*

Color—hue of 7.5YR or 10YR, value of 4 to 6, chroma of 3 to 6

Texture—extremely gravelly sandy loam, very gravelly sandy loam, very cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—30 to 50 percent gravel, 5 to 20 percent cobbles, 1 to 3 percent stones

Reaction—extremely acid or very strongly acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 55 percent gravel, 5 to 14 percent cobbles, 1 to 14 percent stones

Reaction—very strongly acid to moderately acid

***Geographically Associated Soils***

D22—Maritime Forest Organic Slopes, Dry; D22—Maritime Forest Organic Slopes, Depression; D22—Maritime Forest Gravelly Slopes, Shallow, Convex

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in the organic layer and high or very high below

***Use and Vegetation***

Forestry, urban development, recreation, wildlife habitat; lodgepole pine and western hemlock forest with moss and lichen understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

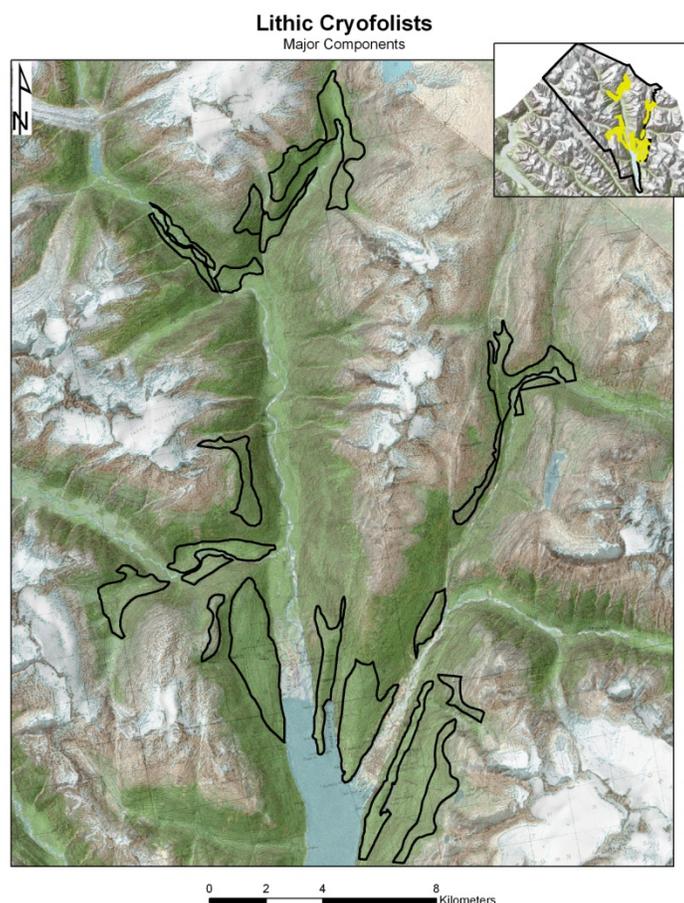
*Ochric epipedon:* 7 to 10 centimeters

*Cambic horizon:* 10 to 35 centimeters

*Depth to bedrock:* 35 centimeters

*Control section:* Loamy-skeletal from 25 to 35 centimeters

## D22—Maritime Forest Organic Slopes, Dry, High Elevation



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Landform:* Mountains

*Parent material:* Organic material

*Elevation:* 210 to 1,505 meters

*Slope:* 30 to 90 percent

*Annual precipitation:* 711 to 1,244 millimeters

*Annual temperature:* 3 to 5 degrees C

*Frost-free period:* 90 to 144 days

### ***Taxonomic Subgroups***

- Dysic Lithic Cryofolists
- Euic Lithic Cryofolists

### ***Typical Pedon***

D22—Maritime Forest Organic Slopes, Dry, High Elevation, on a 70-percent slope with mountain hemlock and subalpine fir forest and blueberry and feather moss understory. (Colors are for moist soil.)

Oi—0 to 7 centimeters; black (7.5YR 2.5/1) slightly decomposed plant material; common medium and fine roots; extremely acid (pH 4.1); abrupt smooth boundary.

Oe—7 to 54 centimeters; very dark brown (7.5YR 2.5/2) moderately decomposed plant material; many fine, medium, and coarse roots; ultra acid (pH 3.8); abrupt smooth boundary.

C—54 to 60 centimeters; 70 percent brown (7.5YR 4/3) and 30 percent black (10YR 2/1) very gravelly sandy loam; 60 percent sand, 28 percent silt, and 12 percent clay; massive; friable, slightly sticky and slightly plastic; 45 percent gravel, 5 percent cobbles, and 5 percent stones; extremely acid (pH 3.7); abrupt wavy boundary.

R—60 to 183 centimeters; diorite.



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°26'48.7" north and longitude 135°16'45.59" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic horizon:* 12 to 54 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 or 3

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

*C horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—gravelly sandy loam, very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 50 percent gravel, 1 to 10 percent cobbles, 5 to 15 percent stones

Reaction—extremely acid or very strongly acid

***Geographically Associated Soils***

D22—Maritime Forest Gravelly Slopes, High Elevation

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in organic layers and high or very high in loamy layer

***Use and Vegetation***

Recreation, wildlife habitat; mountain hemlock and subalpine fir forest with blueberry and feather moss understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

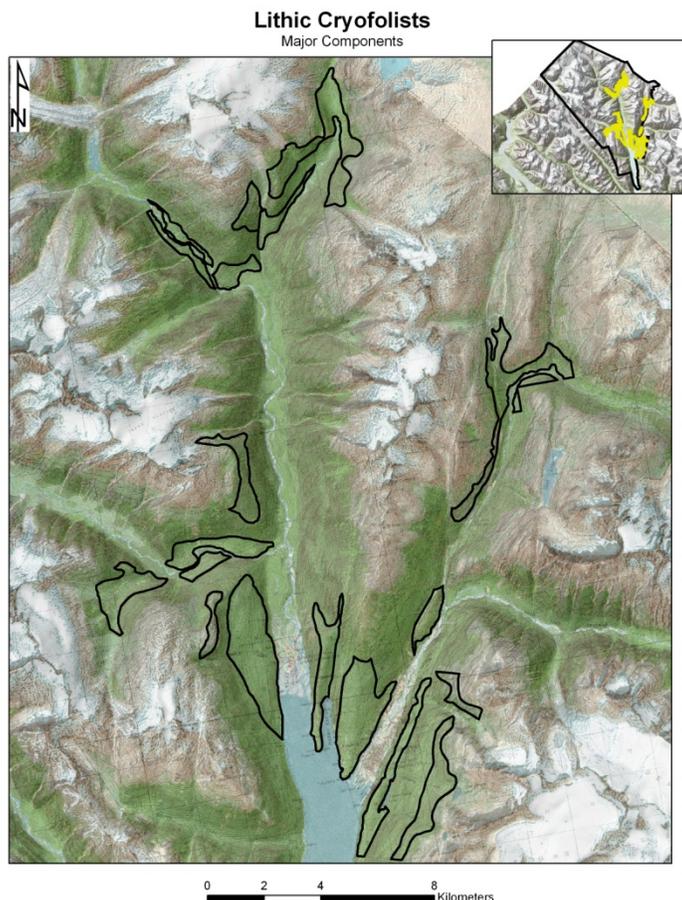
***Remarks***

*Organic material:* 0 to 54 centimeters

*Depth to lithic contact:* 60 centimeters

*pH in organic layer:* Less than 4.5 (0.01M CaCl) Soil

## D22—Maritime Forest Organic Slopes, Dry



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Landform:* Mountains

*Parent material:* Organic material

*Elevation:* 0 to 1,080 meters

*Slope:* 50 to 100 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Subgroups***

- Dysic Lithic Cryofolists
- Euic Lithic Cryofolists

### ***Typical Pedon***

D22—Maritime Forest Organic Slopes, Dry, on a 50-percent slope with western hemlock and Sitka spruce forest and feather moss understory. (Colors are for moist soil.)

Oi—0 to 7 centimeters; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; common medium and fine roots throughout; extremely acid (pH 4.1); abrupt wavy boundary.

- Oe—7 to 22 centimeters; black (7.5YR 2.5/1) moderately decomposed plant material; many fine and medium and common very fine and coarse roots throughout; extremely acid (pH 4.1); gradual wavy boundary.
- OC—22 to 36 centimeters; black (7.5YR 2.5/1) extremely stony moderately decomposed plant material; common medium and fine roots; 5 percent gravel, 10 percent cobbles, and 50 percent stones, extremely acid (pH 4.1).
- R—36 to 183 centimeters; diorite.



***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°39'14" north and longitude 135°24'35" west

***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic layers:* 14 to 36 centimeters

*O horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 or 2

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid or very strongly acid

C horizon (*where present*):

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—very stony sandy loam, extremely stony sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 15 percent gravel, 1 to 10 percent cobbles, 10 to 50 percent stones

Reaction—extremely acid or very strongly acid

### ***Geographically Associated Soils***

D22—Maritime Rubble Land; D22—Maritime Forest Gravelly Slopes, High Elevation;

D22—Maritime Forest Gravelly Slopes, Shallow; D20—Maritime Rock Outcrop

### ***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in organic layer and high or very high in loamy layers

### ***Use and Vegetation***

Recreation, wildlife habitat; western hemlock and Sitka spruce forest with feather moss understory

### ***Distribution and Extent***

Throughout major land resource area 222; extensive throughout southeast Alaska

### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

### ***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

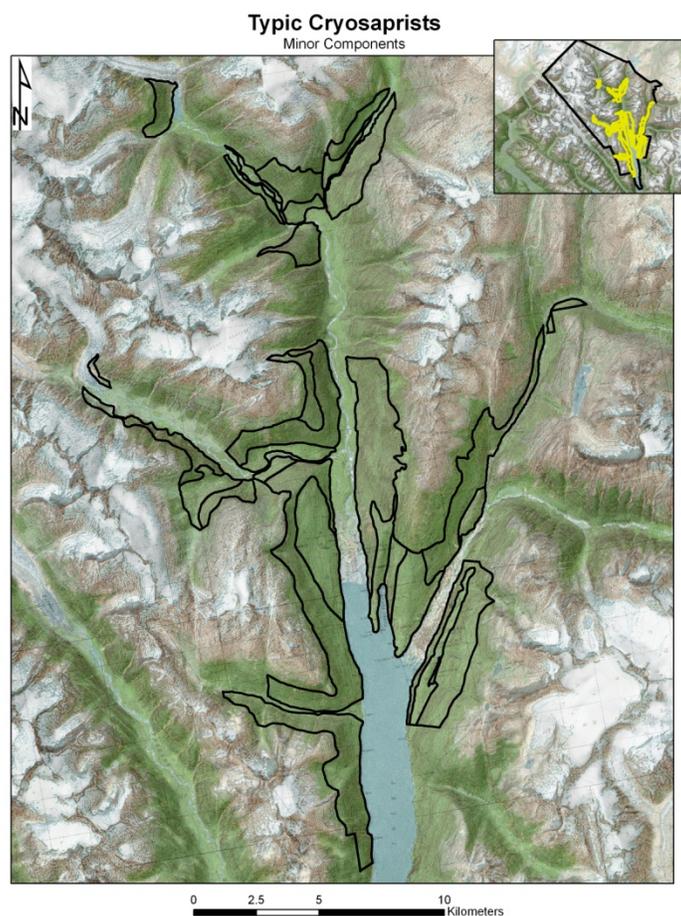
### ***Remarks***

*Organic material:* 0 to 36 centimeters

*Depth to lithic contact:* 36 centimeters

*pH of organic layer:* Less than 4.5 (0.01M CaCl)

## D22—Maritime Forest Organic Slopes, Depression



*Depth class:* Very deep

*Drainage class:* Very poorly drained

*Landform:* Depressions of mountains

*Parent material:* Organic material

*Elevation:* 0 to 1,080 meters

*Slope:* 0 to 7 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 98 to 171 days

### ***Taxonomic Subgroups***

- Dysic Typic Cryosaprists
- Euic Typic Cryosaprists

### ***Typical Pedon***

D22—Maritime Forest Organic Slopes, Depression, on a 1-percent slope with sphagnum moss and lodgepole pine vegetation. (Colors are for moist soil.)

Oi—0 to 10 centimeters; very dark brown (10YR 2/2) peat; common medium and fine roots; strongly acid (pH 5.4); clear smooth boundary.

Oe—10 to 30 centimeters; (7.5YR 2/2) mucky peat; common medium and fine roots; strongly acid (pH 5.5); clear smooth boundary.

Oa—30 to 183 centimeters; black (10YR 2/1) muck; common medium and fine roots; moderately acid (pH 5.6).



#### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°27'7.6" north and longitude 135°18'18.86" west

#### ***Range in Characteristics***

*Soil moisture class:* Aquic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic material:* More than 183 centimeters

*Surface tier:* Dominantly hemic material, but fibric material in upper part

*Subsurface tier:* Sapric material with hue of 5YR to 10YR; value of 2 or 3, and chroma of 1 to 4

*Reaction:* Extremely acid to moderately acid in surface tier, very strongly acid to slightly acid in subsurface tier

#### ***Geographically Associated Soils***

D22—Maritime Forest Gravelly Slopes, Shallow; D22—Maritime Forest Gravelly Slopes, Shallow, Convex; D22—Maritime Forest Organic Slopes, Dry; D22—Maritime Forest Gravelly Slopes, High Elevation

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in organic layers

***Use and Vegetation***

Recreation, wildlife habitat; Sphagnum moss and lodgepole pine vegetation

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

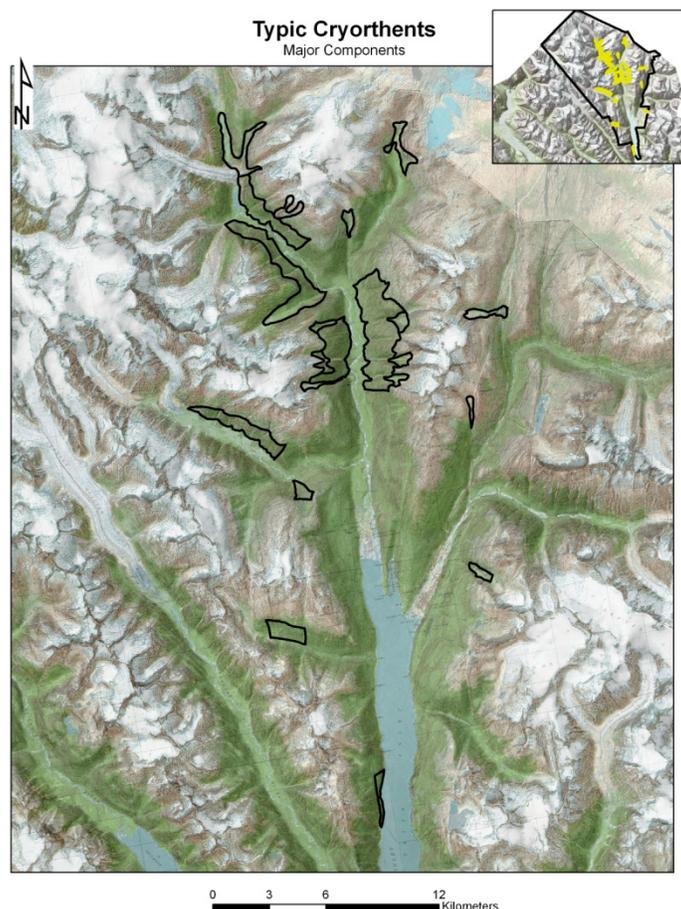
*Organic material:* 0 to 20 centimeters

*Content of organic matter in A horizon:* More than 20 percent, by weight

*Depth to lithic contact:* 20 centimeters

*pH:* More than 4.5 (0.01M CaCl) in one organic layer or more

## D22—Maritime Scrub/Herb Gravelly Slopes, Depositional



*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Talus cones on mountains

*Parent material:* Colluvium

*Elevation:* 300 to 1,600 meters

*Slope:* 20 to 40 percent

*Annual precipitation:* 660 to 703 millimeters

*Annual temperature:* 4 to 6 degrees C

*Frost-free period:* 65 to 100 days

### ***Taxonomic Family***

- Loamy-skeletal, mixed, superactive Typic Cryorthents

### ***Typical Pedon***

D22—Maritime Shrub/Herb Gravelly Slopes, Depositional, on a 27-percent slope with alder, willow, and sagebrush vegetation. (Colors are for moist soil.)

C1—0 to 24 centimeters; brown (10YR 4/3) extremely gravelly sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; weak medium subangular blocky structure; very friable, nonsticky and nonplastic; common medium and fine and many very fine roots throughout; 50 percent gravel and 10 percent cobbles; neutral (pH 7.0); abrupt, wavy boundary.

Oeb—24 to 30 centimeters; black (10YR 2/1) extremely gravelly moderately decomposed plant material; common fine and many very fine roots throughout; 55 percent gravel and 12 percent cobbles; neutral (pH 6.9); abrupt wavy boundary.

C'2—30 to 183 centimeters; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam; 70 percent sand, 25 percent silt, and 5 percent clay; massive; very friable, nonsticky and nonplastic; few fine roots throughout; 60 percent gravel and 15 percent cobbles; neutral (pH 7.1).



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°39'10" north and longitude 135°24'42" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Control section:* Loamy-skeletal from 25 to 100 centimeters

*C1 horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 5, chroma of 1 or 3

Texture—very gravelly sandy loam, extremely gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—50 to 75 percent gravel, 10 to 25 percent cobbles  
Reaction—moderately acid to neutral

*Oeb horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 or 2

Texture—very gravelly or extremely gravelly moderately decomposed plant material

Content of rock fragments—50 to 75 percent gravel, 10 to 25 percent cobbles

Reaction—strongly acid to neutral

*C'2 horizon:*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—very gravelly sandy loam, extremely gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—50 to 75 percent gravel, 10 to 25 percent cobbles

Reaction—extremely acid to slightly acid

### ***Geographically Associated Soils***

D22—Maritime Rubble Land; D22—Maritime Forest Gravelly Slopes, High Elevation;  
D22—Maritime Forest Organic Slopes, Dry; D22—Maritime Forest Gravelly Slopes,  
Shallow

### ***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity high or very high in loamy layers and  
moderately high to very high in organic layer

### ***Use and Vegetation***

Recreation, wildlife habitat, source of gravel; alder, willow, and sagebrush

### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minimal extent throughout southeast  
Alaska

### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

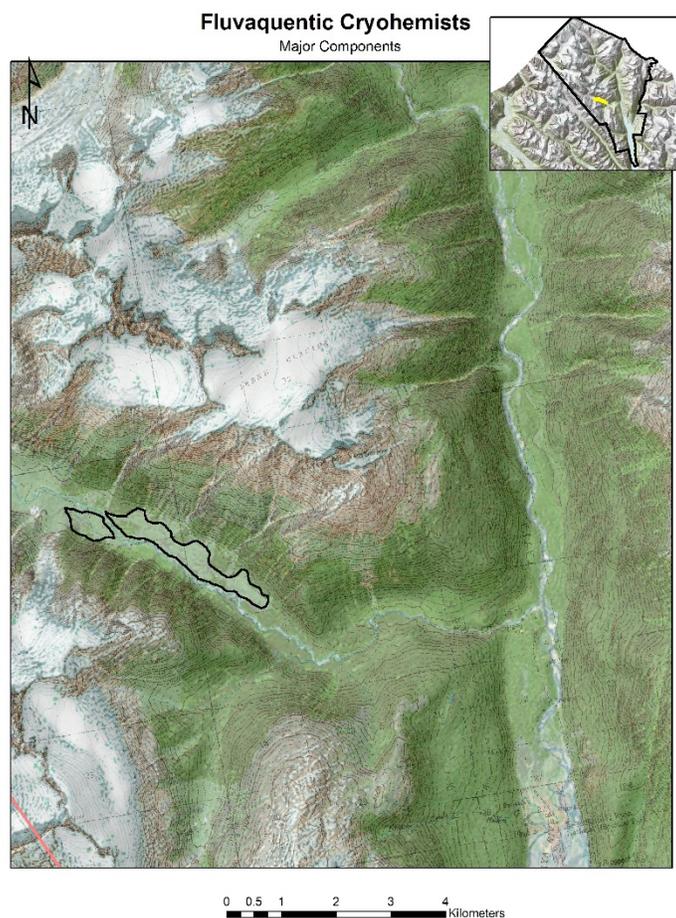
### ***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

### ***Remarks***

*Weighted average particle size:* Loamy-skeletal from 25 to 100 centimeters

## D22—Maritime Scrub/Herb Mosaic Organic Floodplains



*Depth class:* Very deep  
*Drainage class:* Very poorly drained  
*Landform:* Flood plains  
*Parent material:* Alluvium  
*Elevation:* 210 to 260 meters  
*Slope:* 0 to 2 percent  
*Annual precipitation:* 660 to 703 millimeters  
*Annual temperature:* 4 to 6 degrees C  
*Frost-free period:* 98 to 171 days

### ***Taxonomic Subgroup***

- Eucic Fluvaquentic Cryohemists

### ***Typical Pedon***

D22—Maritime Scrub/Herb Mosaic Organic Floodplains on a 0-percent slope with water sedge and willow vegetation. (Colors are for moist soil.)

Oi—0 to 10 centimeters; very dark grayish brown (10YR 3/2) peat; strongly acid (pH 5.4); abrupt smooth boundary.

Cg—10 to 20 centimeters; gray (2.5Y 5/1) silt loam; 40 percent sand, 55 percent silt, and 5 percent clay; massive; friable, nonsticky and nonplastic; moderately acid (pH 5.6); abrupt smooth boundary.

Oe—20 to 125 centimeters; very dark grayish brown (10YR 3/2) mucky peat; moderately acid (pH 5.7); clear smooth boundary.

2C—125 to 183 centimeters; variegated gravel; single grain; loose, nonsticky and nonplastic; 95 percent gravel; moderately acid, pH 6.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°32'27.6" north and longitude 135°26'20.4" west

### ***Range in Characteristics***

*Soil moisture class:* Aquic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic material:* 125 to 183 centimeters

*pH (0.01M CaCl<sub>2</sub>) of organic material:* More than 4.5 throughout control section

Thin layers of mineral soil are in control section.

*Oi horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 3

Texture—peat, mucky peat

Reaction—strongly acid to slightly acid

*Cg horizon:*

Color—hue of 10YR or 2.5Y, value of 2.5 to 5, chroma of 3 to 6

Texture—silt loam, fine sandy loam

Content of clay—3 to 8 percent

Reaction—moderately acid or slightly acid

*Oe horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 3

Texture—mucky peat

Reaction—slightly acid

*2C horizon (where present):*

Color—variegated; hue of 10YR or 2.5Y, value of 2.5 to 5, chroma of 3 to 6

Texture—gravel, extremely gravelly sand

Content of rock fragments—60 to 90 percent gravel, 0 to 10 percent cobbles

Reaction—slightly acid

### ***Drainage Class, Saturated Hydraulic Conductivity, and Flooding***

Very poorly drained; saturated hydraulic conductivity moderately high to very high in organic layers, moderately high or high in loamy layer, and very high in sand and gravel; may be subject to frequent flooding and frequent ponding

### ***Use and Vegetation***

Wildlife habitat; water sedge and willow

### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

### ***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

### ***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

*Fibric material:* From 0 to 10 centimeters

*Strata of silt loam:* From 10 to 20 centimeters

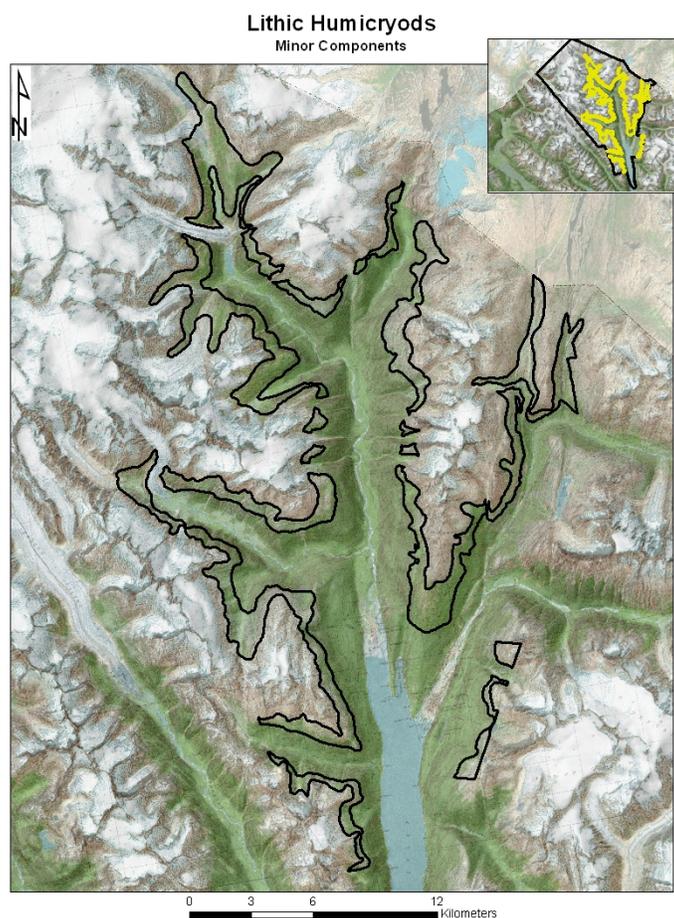
*Hemic material:* From 20 to 125 centimeters

*pH (0.01M CaCl<sub>2</sub>):* More than 4.5 throughout control section

*Water table:* At or near surface throughout the year

*Temperature regime:* Cryic

## D22—Subalpine Forest Gravelly Slopes



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained or moderately well drained

*Landform:* Mountains

*Parent material:* Colluvium over bedrock

*Elevation:* 300 to 1,600 meters

*Slope:* 20 to 50 percent

*Annual precipitation:* 980 to 1,900 millimeters

*Annual temperature:* 2 to 4 degrees C

*Frost-free period:* 65 to 100 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Lithic Humicryods
- Coarse-loamy, mixed, superactive Lithic Humicryods

### ***Typical Pedon***

D22—Subalpine Forest Gravelly Slopes on a 40-percent slope with stunted mountain hemlock forest and crowberry, heather, and lichen understory. (Colors are for moist soil.)

Oe—0 to 2 centimeters; black (10YR 2/1) moderately decomposed plant material; common medium and fine and many very fine roots throughout; strongly acid (pH 5.2); abrupt smooth boundary.

E—2 to 7 centimeters; brown (7.5YR 5/2) gravelly sandy loam; 62 percent sand, 33 percent silt, and 5 percent clay; weak medium subangular blocky structure; very

friable, nonsticky and nonplastic; common medium, fine, and very fine roots throughout; 25 percent gravel and 5 percent cobbles; strongly acid (pH 5.5); abrupt smooth boundary.

Bhs—7 to 11 centimeters; black (5YR 2.5/1) highly organic gravelly fine sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; moderate medium subangular blocky structure; very friable, nonsticky and nonplastic; common coarse, medium, and fine and many very fine roots throughout; 25 percent gravel, 7 percent cobbles, and 1 percent stones; moderately acid (pH 5.8); abrupt wavy boundary.

Bs—11 to 40 centimeters; dark reddish brown (5YR 3/3) very gravelly fine sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; moderate medium subangular blocky structure; very friable, nonsticky and nonplastic; common medium and fine roots throughout; 30 percent gravel and 10 percent cobbles; moderately acid (pH 5.7); clear wavy boundary.

R—40 to 183 centimeters; diorite.



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°31'55" north and longitude 135°28'7" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 2 to 11 centimeters

*Content of organic carbon in Bhs horizon:* More than 6 percent

*Thickness of solum:* 20 to 50 centimeters

*Depth to bedrock:* 20 to 50 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid to moderately acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic sandy loam, highly organic gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 30 percent gravel, 1 to 5 percent cobbles

Reaction—extremely acid to neutral

*E horizon:*

Color—hue of 7.5 YR, 10YR, or 2.5Y; value of 5 to 7; chroma of 1 to 3

Texture—sandy loam, gravelly sandy loam, very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid to strongly acid

*Bhs horizon:*

Color—hue of 5YR or 7.5YR, value of 2.5 or 3, chroma of 1 to 3

Texture—highly organic very gravelly sandy loam, highly organic gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 1 to 2 percent stones

Reaction—extremely acid to moderately acid

*Bs horizon:*

Color—hue of 5YR or 7.5YR, value of 3 to 5, chroma of 3 to 6

Texture—sandy loam, gravelly sandy loam, very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 0 to 2 percent stones

Reaction—very strongly acid to moderately acid

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—extremely gravelly sandy loam, very gravelly sandy loam, very cobbly sandy loam, extremely cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—35 to 60 percent gravel, 5 to 25 percent cobbles, 5 to 10 percent stones

Reaction—very strongly acid to slightly acid

### ***Geographically Associated Soils***

D22—Subalpine Scrub Organic Slopes; D22—Subalpine Shrub Loamy Slopes, Concave;

D22—Subalpine Scrub Organic Slopes, Wet

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained to moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layer and moderately high or high in loamy layers

***Use and Vegetation***

Recreation, wildlife habitat; stunted mountain hemlock forest with crowberry, heather, and lichen understory

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

*Albic horizon:* 2 to 7 centimeters

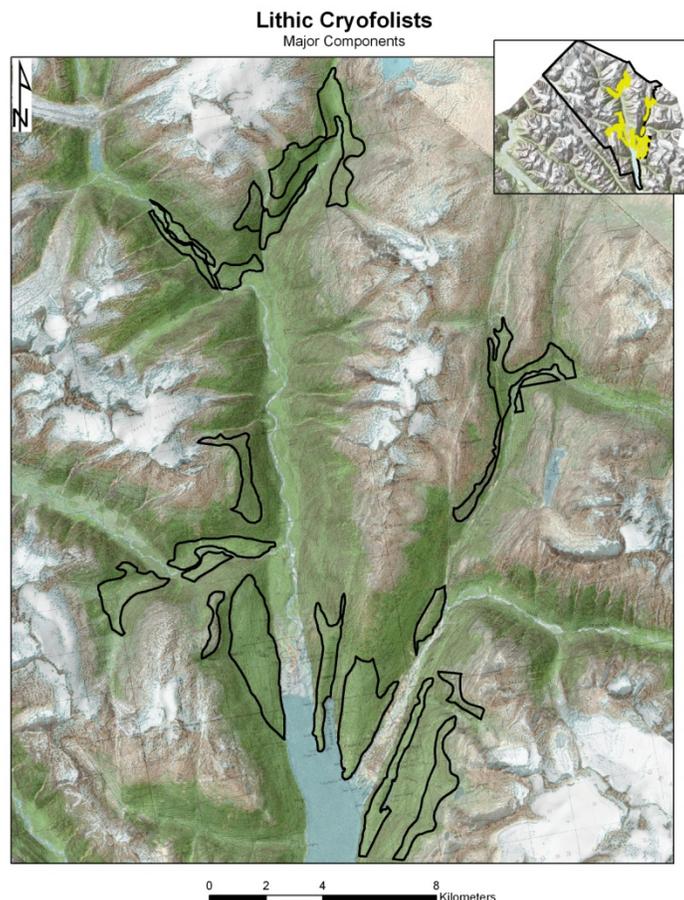
*Spodic horizon:* 7 to 40 centimeters

*Content of organic carbon in Bhs horizon:* More than 6 percent

*Control section:* Loamy-skeletal

*Depth to bedrock:* 40 centimeters

## D22—Subalpine Scrub Organic Slopes



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Landform:* Mountains

*Parent material:* Organic material

*Elevation:* 300 to 1,600 meters

*Slope:* 50 to 100 percent

*Annual precipitation:* 980 to 1,900 millimeters

*Annual temperature:* 2 to 4 degrees C

*Frost-free period:* 65 to 100 days

### ***Taxonomic Subgroups***

- Dysic Lithic Cryofolists
- Euic Lithic Cryofolists

### ***Typical Pedon***

D22—Subalpine Scrub Organic Slopes on a 70-percent slope with blueberry, crowberry, and lichen vegetation. (Colors are for moist soil.)

Oe—0 to 5 centimeters; dark reddish brown (5YR 2.5/2) moderately decomposed plant material; common fine and many very fine roots throughout; extremely acid (pH 4.4).

Oa—5 to 20 centimeters; dark reddish brown (5YR 2.5/2) extremely stony highly decomposed plant material; common coarse, medium, and fine and many very fine

roots throughout; 10 percent gravel, 5 percent cobbles, and 60 percent stones; very strongly acid (pH 5).  
R—20 to 183 centimeters; diorite.



***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°36'23" north and longitude 135°10'44" west

***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic layers:* 17 to 30 centimeters

*O horizon:*

Color—hue of 5YR, 7.5YR, or 10YR; value of 2 or 3; chroma of 1 or 3

Texture—slightly decomposed to moderately decomposed plant material, very stony

highly decomposed plant material, extremely stony highly decomposed plant material

Content of rock fragments—5 to 15 percent gravel, 5 to 10 percent cobbles, 25 to 65 percent stones

Reaction—extremely acid to neutral

*A horizon (where present):*

Color—hue of 5YR, 7.5YR, or 10YR; value of 1 or 2; chroma of 1 or 3

Texture—highly organic very stony sandy loam, highly organic extremely stony sandy loam

Content of rock fragments—5 to 15 percent gravel, 5 to 10 percent cobbles, 25 to 65 percent stones

Reaction—extremely acid to neutral

***Geographically Associated Soils***

D22—Subalpine Scrub Gravelly Slopes; D22—Subalpine Forest Gravelly Slopes; D22—Subalpine Scrub Loamy Slopes, Concave; D22—Subalpine Scrub Organic Slopes

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained; saturated hydraulic conductivity moderately high to very high in organic layers and high or very high in loamy layer

***Use and Vegetation***

Recreation, wildlife habitat; blueberry, crowberry, lichen

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

***Remarks***

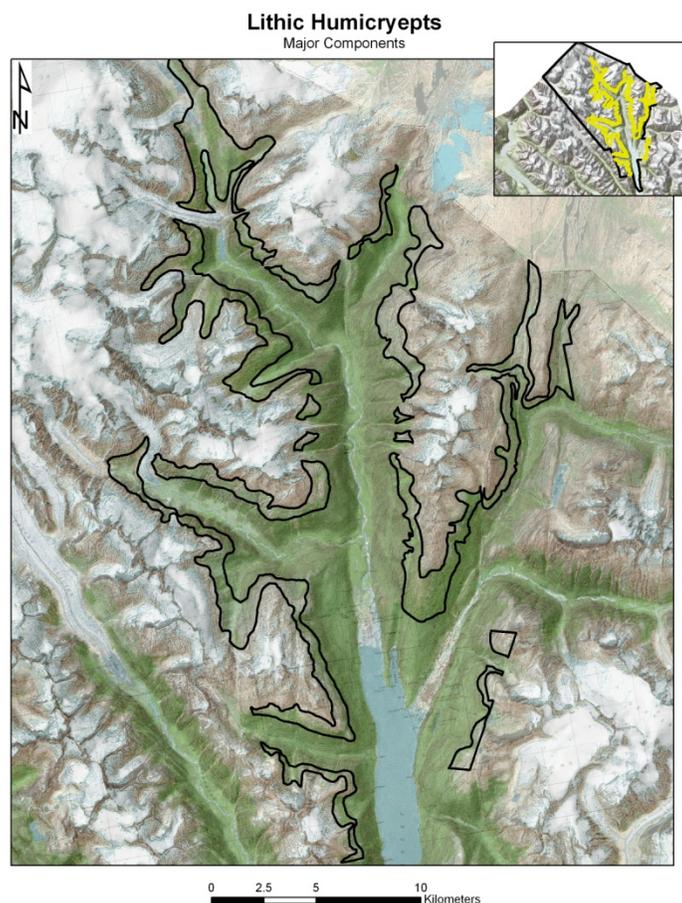
*Well drained organic material:* From 0 to 20 centimeters

*Content of organic matter in A horizon:* More than 20 percent, by weight

*Depth to lithic contact:* 20 centimeters

*pH in organic layers:* More than 4.5 (0.01M CaCl)

## D22—Subalpine Scrub Gravelly Slopes, Depositional



*Depth class:* Very shallow or shallow

*Drainage class:* Well drained or moderately well drained

*Landform:* Mountains

*Parent material:* Gravelly colluvium over bedrock

*Elevation:* 300 to 1,600 meters

*Slope:* 5 to 70 percent

*Annual precipitation:* 980 to 1,900 millimeters

*Annual temperature:* 2 to 4 degrees C

*Frost-free period:* 65 to 100 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Lithic Humicryepts
- Coarse-loamy, mixed, superactive Lithic Humicryepts

### ***Typical Pedon***

D22—Maritime Scrub Gravelly Slopes, Depositional, on a 45-percent slope with crowsberry and mountain heather. (Colors are for moist soil.)

Oi—0 to 1 centimeter; black (10YR 2/1) slightly decomposed plant material; common medium and many fine and very fine roots throughout; strongly acid (pH 5.3).

A1—1 to 7 centimeters; black (10YR 2/1) highly organic very gravelly sandy loam; 66 percent sand, 31 percent silt, and 3 percent clay; weak very fine granular structure; very friable, nonsticky and nonplastic; common medium, fine, and very fine roots

throughout; 40 percent gravel and 5 percent cobbles; moderately acid (pH 5.9); clear smooth boundary.

AC—7 to 26 centimeters; dark grayish brown (2.5Y 3/2) extremely cobbly sandy loam; 67 percent sand, 31 percent silt, and 2 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common fine and very fine roots throughout; 40 percent gravel and 30 percent cobbles; moderately acid (pH 5.9); clear irregular boundary.

R—26 to 183 centimeters; diorite.



### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°40'48" north and longitude 135°15'11" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 0 to 12 centimeters

*Depth to bedrock:* 20 to 50 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—very strongly acid or strongly acid

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic very gravelly sandy loam, highly organic very cobbly sandy loam

Content of clay—2 to 8 percent

Content of rock fragments—25 to 44 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—very strongly acid to moderately acid

*AC horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 2 to 4

Texture—very gravelly sandy loam, very cobbly sandy loam

Content of clay—2 to 8 percent

Content of rock fragments—25 to 44 percent gravel, 15 to 30 percent cobbles, 0 to 5 percent stones

Reaction—very strongly acid to moderately acid

***Geographically Associated Soils***

D22—Maritime Scrub/Herb Gravelly Slopes, Depositional

***Drainage Class and Saturated Hydraulic Conductivity***

Well drained to moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layer and high or very high below

***Use and Vegetation***

Forestry, urban development, recreation, wildlife habitat; crowberry, mountain heather

***Distribution and Extent***

Throughout major land resource area (MLRA) 222; minor extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

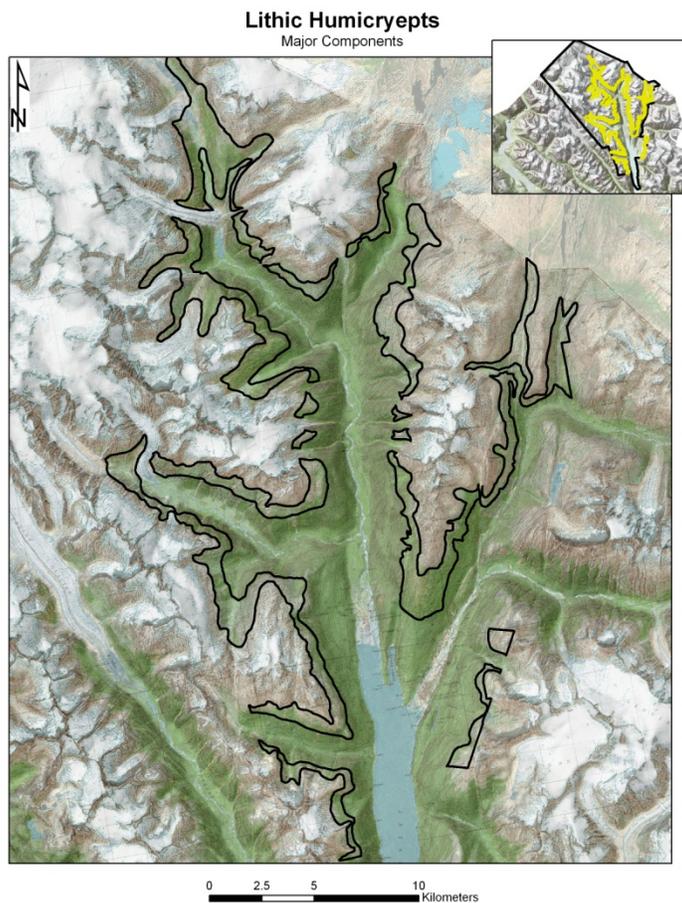
***Remarks***

*Umbric epipedon:* 7 to 19 centimeters

*Depth to bedrock:* 26 centimeters

*Control section:* Loamy-skeletal

## D22—Subalpine Scrub Gravelly Slopes, Convex



*Depth class:* Shallow

*Drainage class:* Well drained or moderately well drained

*Landform:* Mountains

*Parent material:* Gravelly colluvium over bedrock

*Elevation:* 300 to 1,600 meters

*Slope:* 50 to 90 percent

*Annual precipitation:* 980 to 1,900 millimeters

*Annual temperature:* 2 to 4 degrees C

*Frost-free period:* 65 to 100 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Lithic Humicryepts
- Coarse-loamy, mixed, superactive Lithic Humicryepts

### ***Typical Pedon***

D22—Subalpine Shrub Gravelly Slopes, Convex, on a 79-percent slope with spirea, crowberry, and moss vegetation. (Colors are for moist soil.)

Oi—0 to 7 centimeters; very dark brown (7.5YR 2.5/3) slightly decomposed plant material; common medium, fine, and very fine roots; very strongly acid (pH 4.6); clear wavy boundary.

Oe—7 to 13 centimeters; black (7.5YR 2.5/1) moderately decomposed plant material; common coarse and medium, many fine, and common very fine roots; extremely acid (pH 4.3); abrupt broken boundary.

A—13 to 22 centimeters; very dark brown (7.5YR 2.5/2) very cobbly coarse sandy loam; 70 percent sand and 7 percent clay; weak medium granular structure; very friable, nonsticky and nonplastic; common coarse, medium, fine, and very fine roots; 10 percent gravel, 30 percent cobbles, and 2 percent stones; clear broken boundary.

R—22 to 183 centimeters; diorite.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°36'14.98" north and longitude 135°10'38.78" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 0 to 17 centimeters

*Depth to bedrock:* 25 to 50 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid to moderately acid

*A horizon:*

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 3

Texture—highly organic sandy loam, highly organic gravelly sandy loam, organic very gravelly sandy loam, highly organic cobbly sandy loam, organic very cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—5 to 10 percent gravel, 10 to 30 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid to neutral

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—extremely gravelly sandy loam, very gravelly sandy loam, very cobbly sandy loam, extremely cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—35 to 60 percent gravel, 5 to 25 percent cobbles, 5 to 10 percent stones

Reaction—very strongly acid to slightly acid

### ***Geographically Associated Soils***

D22—Subalpine Scrub Organic Slopes; D22—Subalpine Forest Gravelly Slopes

### ***Drainage Class and Saturated Hydraulic Conductivity***

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layers and moderately high or high in loamy layers

### ***Use and Vegetation***

Recreation, wildlife habitat; spirea, crowberry, moss

### ***Distribution and Extent***

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

***MLRA Soil Survey Regional Office (MO) Responsible***

Palmer, Alaska

***Established***

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

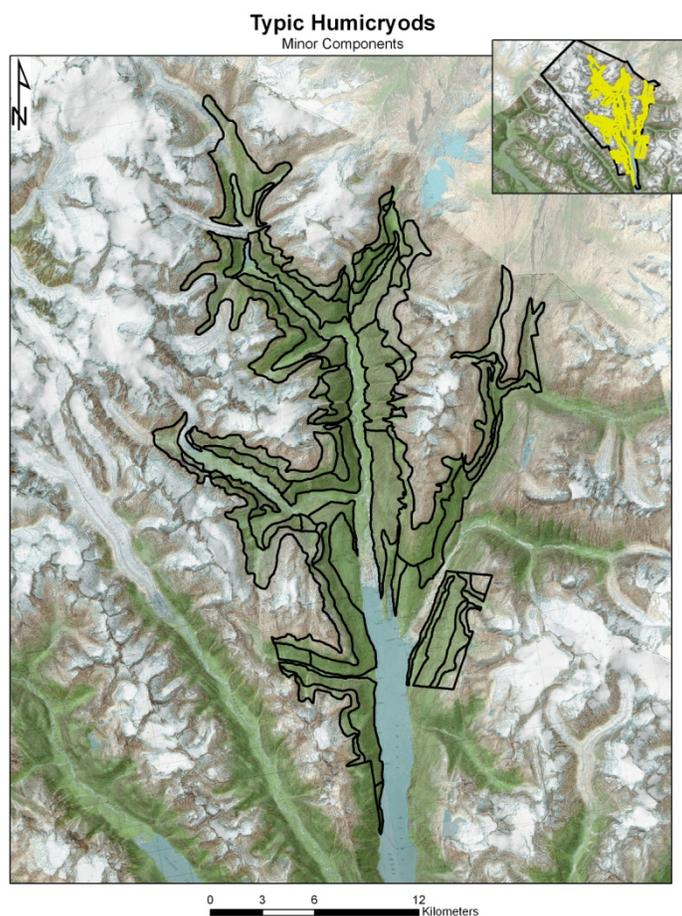
***Remarks***

*Umbric epipedon:* 13 to 22 centimeters

*Control section:* Loamy-skeletal

*Depth to bedrock:* 22 centimeters

## D22—Subalpine Shrub Gravelly Slopes



*Depth class:* Moderately deep to very deep  
*Drainage class:* Well drained or moderately well drained  
*Landform:* Mountains  
*Parent material:* Gravelly colluvium over bedrock  
*Elevation:* 300 to 1,600 meters  
*Slope:* 5 to 70 percent  
*Annual precipitation:* 980 to 1,900 millimeters  
*Annual temperature:* 2 to 4 degrees C  
*Frost-free period:* 65 to 100 days

### ***Taxonomic Families***

- Loamy-skeletal, mixed, superactive Typic Humicryods
- Coarse-loamy, mixed, superactive Typic Humicryods

### ***Typical Pedon***

D22—Subalpine Shrub Gravelly Slopes on a 30-percent slope with stunted Sitka spruce and western hemlock and mountain heath, heather, crowberry, and lichen. (Colors are for moist soil.)

Oe—0 to 4 centimeters; dark brown (7.5YR 3/2) stony moderately decomposed plant material; many very fine and common fine, medium, and coarse roots; 10 percent cobbles and 25 percent stones; extremely acid (pH 3.9); abrupt smooth boundary.

A—4 to 7 centimeters; black (10YR 2/1) highly organic gravelly sandy loam; 55 percent sand, 40 percent silt, and 5 percent clay; moderate medium granular structure; very friable, nonsticky and nonplastic; many very fine and common fine, medium, and coarse roots; 25 percent gravel, 10 percent cobbles, and 2 percent stones; extremely acid (pH 3.9); abrupt smooth boundary.

E—7 to 10 centimeters; pink (7.5YR 7/3) very gravelly sandy loam; 60 percent sand, 33 percent silt, and 7 percent clay; moderate medium angular blocky structure; very friable, nonsticky and nonplastic; 25 percent cobbles and 10 percent stones; extremely acid (pH 4.2); abrupt broken boundary.

Bhs—10 to 12 centimeters; black (7.5YR 2.5/1) highly organic very gravelly sandy loam; 40 percent sand, 51 percent silt, and 9 percent clay; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; common fine and medium roots; 25 percent gravel and 10 percent cobbles; extremely acid (pH 4.1); abrupt wavy boundary.

Bs—12 to 62 centimeters; dark reddish brown (5YR 2.5/2) very gravelly sandy loam; 65 percent sand, 28 percent silt, and 7 percent clay; moderate medium subangular blocky structure; friable, nonsticky and nonplastic; common fine and medium roots; 50 percent gravel, 10 percent cobbles, and 2 percent stones; very strongly acid (pH 4.6); clear smooth boundary.

R—62 to 183 centimeters; bedrock.

### ***Type Location***

Soil survey of Skagway-Klondike Gold Rush National Historical Park; latitude 59°35'30.05" north and longitude 135°11'13.67" west

### ***Range in Characteristics***

*Soil moisture class:* Udic

*Annual soil temperature:* 1 to 3 degrees C

*Thickness of organic mat:* 2 to 7 centimeters

*Content of organic carbon in Bhs horizon:* More than 6 percent

*Thickness of solum:* 13 to 60 centimeters

*Depth to bedrock:* 50 to 80 centimeters

*O horizon:*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed to moderately decomposed plant material

Reaction—extremely acid to moderately acid

*A horizon (where present):*

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 to 3

Texture—highly organic sandy loam, highly organic gravelly sandy loam, organic very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—15 to 40 percent gravel, 1 to 20 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid to neutral

*E horizon:*

Color—hue of 7.5 YR, 10YR, or 2.5Y; value of 5 to 7; chroma of 1 to 3

Texture—sandy loam, gravelly sandy loam, very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid to strongly acid

*Bhs horizon:*

Color—hue of 5YR or 7.5YR, value of 2.5 or 3, chroma of 1 to 3

Texture—highly organic gravelly sandy loam, highly organic very gravelly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 0 to 2 percent stones

Reaction—extremely acid to moderately acid

*Bs horizon:*

Color—hue of 5YR or 7.5YR, value of 3 to 5, chroma of 3 to 6

Texture—sandy loam, gravelly sandy loam, very gravelly sandy loam

Content of rock fragments—10 to 40 percent gravel, 5 to 20 percent cobbles, 0 to 2 percent stones

Reaction—very strongly acid to moderately acid

Content of clay—3 to 8 percent

*C horizon (where present):*

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 3 to 6; variegated

Texture—extremely gravelly sandy loam, very gravelly sandy loam, very cobbly sandy loam, extremely cobbly sandy loam

Content of clay—3 to 8 percent

Content of rock fragments—35 to 60 percent gravel, 5 to 25 percent cobbles, 5 to 10 percent stones

Reaction—very strongly acid to slightly acid

**Geographically Associated Soils**

D22—Subalpine Scrub Organic Slopes; D22—Subalpine Forest Gravelly Slopes;

D22—Subalpine Shrub Loamy Slopes, Concave

**Drainage Class and Saturated Hydraulic Conductivity**

Well drained or moderately well drained; saturated hydraulic conductivity moderately high to very high in organic layer and moderately high or high in loamy layers

**Use and Vegetation**

Recreation, wildlife habitat; stunted Sitka spruce and western hemlock with mountain heath, heather, crowberry, and lichen

**Distribution and Extent**

Throughout major land resource area (MLRA) 222; moderate extent throughout southeast Alaska

**MLRA Soil Survey Regional Office (MO) Responsible**

Palmer, Alaska

**Established**

Soil survey of Skagway-Klondike Gold Rush National Historical Park, Alaska; 2012

**Remarks**

*Albic horizon:* 7 to 10 centimeters

*Spodic horizon:* 10 to 62 centimeters

Content of organic carbon in Bhs horizon: More than 6 percent

*Control section:* Loamy-skeletal

*Depth to bedrock:* 62 centimeters



# Formation of the Soils

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Soil is a natural, three-dimensional body on the earth's surface. It has properties that result from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over a period of time (Jenny, 1941). Although there are many different soils, each soil is the result of the interaction of the same five factors. These factors are the physical and chemical composition of the parent material; the effect of climate on the parent material; the kinds of plants and other organisms living in or on the soil; relief, or topography; and the length of time the soils have been forming. The combination of these factors varies within relatively short distances. Consequently, the soils that form differ in fertility, productivity, and physical and chemical characteristics. In the following paragraphs, the factors of soil formation are related to the soils in the survey area.

## Climate

Climate, mainly temperature and precipitation, is an active force in the formation of soils. Because of the height of the mountains, the survey area crosses three different life zones—maritime, subalpine, and alpine. Each of these zones is characterized by a different climate, which decreases in temperature and increases in precipitation as elevation increases. Alternating periods of freezing and thawing break down rock into material in which soils form. Precipitation and temperature also affect the kind and amount of vegetation that will grow.

An example of a soil in the maritime zone is D22—Maritime Forest Gravelly Slopes, Shallow. This soil is at sea level to an elevation of 3,500 feet (0 to 1,080 meters). The mean annual air temperature is 39 to 39 degrees F (4 to 6 degrees C), and the mean annual precipitation is 25 to 28 inches (66 to 70 centimeters).

An example of a soil in the subalpine zone is D22—Subalpine Scrub/Herb Gravelly Slopes, Depositional. This soil is at an elevation of about 985 to 5,250 feet (300 to 1,600 meters). The mean annual air temperature is 35 to 42 degrees F (2 to 4 degrees C), and the mean annual precipitation is 38 to 75 inches (100 to 190 centimeters).

An example of a soil in the alpine zone is D22—Alpine Herbaceous Gravelly Diorite Slopes. This soil is at an elevation of about 2,484 to 8,125 feet (757 to 2,477 meters). The mean annual air temperature is 32 to 37 degrees F (0.5 to 3 degrees C), and the mean annual precipitation is 60 to 200 inches (150 to 500 centimeters).

Most of the soils in the survey area have a udic moisture regime because of the amount and distribution of the precipitation (Soil Survey Staff, 1975). Soils in poorly drained or very poorly drained areas have an aquic moisture regime because of the high level of the groundwater, which keeps the soils saturated for prolonged periods. All of the soils in the survey area have a cryic temperature regime because of the cool average annual temperature.

## Living Organisms

Living organisms are active in the formation of soils. Plants, animals, insects, and micro-organisms contribute to the gains or losses in organic matter, plant nutrients in the soil, and changes in porosity and structure. Roots, rodents, worms, and insects penetrate the soil and alter its structure. Animals increase porosity by burrowing through the soil and leaving open channels for the movement of water and air. Common burrowing animals in the survey area include ground squirrels and marmot. Soils are churned when

trees are blown over with their root systems intact. Leaves, roots, and entire plants that remain in the surface layer are changed to humus by micro-organisms, chemicals in the soil, and insects. Fungi and algae also contribute to the decomposition of bedrock.

## Topography

Topography, or relief, of the survey area is determined by past glaciations. Topography influences soil development through its effect on drainage, runoff, and colluvial action.

Soils that formed on steep side slopes have rock fragments incorporated into the loamy matrix from downhill movement, called colluviation. An example is D22—Maritime Forest Gravelly Slopes, Shallow. Soils that formed in concave positions from which water cannot freely move away commonly are wet. An example is D22—Maritime Shrub Organic Slopes, Depression, which formed in depressions of hills. Soils that are on broad floodplains have a seasonal high water table near the surface. An example is 22—Estuarine Graminoid Sandy Floodplains, Depression. Soils that formed on moderately sloping fans commonly are drier because the slope allows water to drain freely. An example is D22—Maritime Forest Gravelly Floodplains, Fans.

## Parent Material

Parent material is the unconsolidated and chemically weathered mineral or organic material in which soils form.

Soils on mountain slopes and hillsides formed in a thin mantle of colluvium or residuum over bedrock. These soils commonly have angular fragments throughout as a result of downslope movement. D22—Maritime Forest Gravelly Slopes, Shallow, is an example.

Soils on floodplains and alluvial fans formed in alluvium. Alluvium in the survey area typically is comprised of rounded gravel and cobbles in a sandy or loamy matrix. The size of the fragments and texture of the material is determined by the energy of the water that caused the deposition. Soils on fans and in relatively steep mountain valleys have larger stones and a sandier texture. D22—Maritime Forest Gravelly Floodplains is an example. Soils that formed on broad, level floodplains have smaller stones and a loamier texture. 22—Estuarine Graminoid Sandy Floodplains is an example.

Some soils formed almost entirely in dead, decomposing plant material. These soils commonly are very poorly drained, which restricts the ability of microbes to break down the material. D22—Maritime Shrub Organic Slopes, Depression, formed in thick deposits of moss and sedge peat.

## Time

The changes that take place in a soil over long periods of time are referred to as soil genesis. Distinct horizons, or layers, develop in soils as a result of these changes. The length of time that the parent material has been in place and exposed to climate and living organisms is generally reflected in the degree of development in the soil profile. The kinds and arrangement of layers, or soil morphology, are described in terms of color, texture, structure, consistence, thickness, permeability, and chemistry. Soils are classified as young to mature. The relative age of a soil can be determined by the thickness of its horizons, the types of minerals that have developed, and the depth to which soluble material is leached. In terms of geologic time, all of the soils in the survey area are young because they have been recently glaciated and then mantled by colluvial and alluvial deposits. Erosional processes have redistributed some of material on active landforms, such as alluvial fans and floodplains. The youngest soils on these landforms, such as 22—Maritime Shrub Gravelly Floodplains, Frequently Flooded, exhibit very little profile development other than the accumulation of organic matter in the surface horizon. In contrast, D22—Maritime Forest Gravelly Slopes, High Elevation, which is on mountain slopes that are mantled by thin to moderately deep colluvial deposits, have horizons that are strongly leached by organic acids. Minerals and organic matter have been

translocated to the lower horizons by the process of podzolization. This is the dominant soil-forming process in the survey area, and it takes place relatively rapidly in this environment.

## Soil Processes and Indicators

Soil processes are a combination of physiochemical and biological reactions that transform material into soil horizons. The factors of soil formation are thought of as controls on processes that result in observable and measurable soil features. Simplified concepts of solution, oxidation, reduction, hydrolysis, hydration, chelation, ionic substitution, synthesis, and crystallization have been applied to the transformation of individual compounds and components of soils. Combinations of these elementary processes are believed to occur in the development of soils. Combinations in which a particular process is dominant or the rate of a particular process is distinct have been named (Wilding and others, 1984). Braunification, colluviation, fluvial processes, hydromorphism, and podzolization are described in this section. Each process is related to observable sets of soil properties, or field indicators.

*Colluviation* is a depositional process as a result of mass wasting or overland flow. Sediment deposited by mass wasting generally is unsorted and nonstratified. Individual particles are not rounded. These characteristics distinguish colluvium from sediment deposited by fluvial processes (Longwell and others, 1969). Colluvial material includes talus and solifluction deposits. In this survey area, this process is enhanced by extreme temperature variations throughout the year. Multiple freeze-thaw cycles fracture exposed bedrock and destabilize the slopes on which the rock fragments accumulate. This process is extensive throughout the mountains and along river escarpments. Field indicators of this process include long plain slopes or conical features extending downslope from steep exposures of bedrock to the base of the slope. Soils within colluvial cones consist of nonsorted material with 30 percent angular rock fragments or more, by volume. Soils on steep colluvial slopes are characterized by an absence of horizons and a lack of vegetation because of the unstable surface. On more stable, or metastable, colluvial slopes, a continuous organic mat underlain by an A, Bw, C, and R horizon sequence is common.

*Fluvial processes* include erosion, transportation, and deposition of alluvium by water. These processes are a good example of the topographic and time factors of soil formation. Soils that are subject to periodic flooding exhibit minimal horizon development. Along low-gradient streams, low-velocity floodwaters deposit stratified sandy and silty sediment. Soils such as 22—Maritime Forest Loamy Floodplains, Rarely Flooded, formed in this sediment. Along higher gradient streams, such as those along the upper reaches of the Skagway River, high-velocity floodwaters deposit gravelly and cobbly alluvium as channel deposits. Landscape indicators of fluvial processes include the presence of barren or sparsely vegetated gravel bars, channels, and alluvial flats adjacent to active river channels and debris, ice-gouged trees, and watermarked vegetation. Vegetation indicators of fluvial processes include the presence of young stands of fettleaf willow and alder shrub, herbaceous vegetation, or balsam poplar forests adjacent to stream channels. Soil indicators include stratification of sandy and silty sediment and buried organic layers and relatively high soil reaction (pH) as compared to soils in adjacent upland positions.

*Hydromorphism* is associated with near-surface saturated conditions. This process occurs extensively throughout the survey area. Hydromorphism is a good example of the topographic factor of soil formation. Water collects locally in small, concave micro-positions on all landforms above restrictive layers with low permeability, such as bedrock, that act as regional features that may underlie river valleys. This process includes the chemical reduction, mobilization, and movement of soluble minerals and the formation of a thick organic mat on the surface under saturated anaerobic conditions.

Plant roots and soil microbes deplete the oxygen in these saturated soils, causing anaerobic conditions. Subsequently, iron and manganese, the primary pigments in mineral soils, are converted to reduced forms. These reduced compounds are mobile in the soil solution and are easily stripped from the soil by the water table. Soils stripped of mineral pigments have a neutral gray to bluish color, which is referred to as redoximorphic depletions. A soil morphological feature indicative of this process is the Cg horizon. The mobilized minerals are transported through the soil by groundwater to an oxidized zone. Mineral oxidation and precipitation occur, imparting a yellowish to reddish color to the soil. This feature is referred to as redoximorphic concentrations. In areas where the water table fluctuates near the surface, the soil environment commonly alternates between reduced and oxidized states and the soils commonly display a complex mottled pattern of both reddish oxidized colors (concentrations) and grayish reduced colors (depletions). Permanently saturated soils commonly have a thick organic layer. The accumulation and stability of the organic deposits in these soils is attributed to prolonged saturation and the associated anaerobic environment.

Two general groups of hydromorphic soils are in the survey area. These include aquifer-wet soils and topographically-wet soils. Aquifer-wet soils include those on floodplains and in broad depressions. A local or regional water table is present within the soil profile. Evidence of aquifer-wet or extensive aquifer systems include the presence of multiple oxbows and cutoff meanders on floodplains. Soil indicators of hydromorphism on these landforms include a water table near the surface during much of the year, abundant redoximorphic depletions and concentrations, and a thick, saturated organic horizon. Vegetation indicators include a prevalence of wet sedge meadow or willow/sedge meadow.

Topographically-wet soils include those in open swales and closed depressions, where the source of water is run-in from adjacent uplands or from precipitation. Water is near the surface for prolonged periods because of the relatively low rate of permeability in the underlying material. Topographically-wet mineral soils in swales or nivation hollows with snowbeds are common in the alpine and subalpine biomes. Saturated conditions result from melting snowdrifts that persist into summer and saturate soils downslope. Soils in these depressions commonly are slightly more nutrient rich than adjacent well drained soils and have a water table at or near the surface some time during the growing season. Soil indicators of hydromorphism in these soils include a thick organic layer at the surface or an organic-rich mineral layer 8 inches thick or more. Soil indicators of these seasonally saturated, topographically-wet soils include a thick, dark-colored mineral surface horizon and faint reddish redoximorphic concentrations in the subsoil.

*Braunification* is the release of iron from primary minerals by oxidation or hydration, which gives the soil matrix a brownish, reddish brown, or red color (Wilding and others, 1984). This process is a good example of the time and topographic factors of soil formation. Braunification is common on vegetated mountain slopes, terraces, plains, and hills throughout the uplands of the survey area. The process is common in soils on relatively stable surfaces that are not influenced by flooding or excessive downslope movement of soil material. The downward movement of water through the soil profile and free movement of oxygen promote weathering of primary iron minerals. Surface stability promotes the removal of excess basic metal cations from the soil through leaching and plant use. This normally is accompanied by a reduction in soil reaction (pH) in the upper part of the soil. The weathering and translocation of primary soil minerals, including iron and organic matter, accompany soil acidification. Indicators of braunification include the presence of a continuous organic mat on the surface or a cover of dwarf shrub and a thin, dark surface mineral horizon, which are a result of surface stability. Additional soil indicators include the presence of a light brown to yellowish brown subsurface layer as a result of the weathering and translocation of primary soil minerals. Soil reaction also gradually increases as depth increases.

*Podzolization* includes the chelation and chemical migration of aluminum and iron and organic matter downward in the soil profile, leaving silica in the leached layer (Wilding and others, 1984). This process is a good example of the climate and parent material factors of soil formation. This alteration and translocation normally is active under extremely acid soil conditions, which generally are associated with high precipitation. Indicators of this process include a thin, gray, leached surface E horizon over a brown Bs horizon. Podzolization is dependent on specific site and soil properties, including coarse texture and the presence of shrub birch, a known soil acidifier.

The following table is an overview of the soils in the survey area.



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# Glossary

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- Acidification (process).** A subprocess of braunification in which excess basic metal cations are removed from the soil profile by leaching or plant use. Acidification normally is accompanied by a reduction in soil reaction (pH).
- Active layer.** The top layer of ground subject to annual thawing and freezing in areas underlain by permafrost.
- Aerobic.** A condition in which molecular oxygen is in the soil.
- Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
- Alluvial fan.** A body of alluvium, with overflow of water and debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a less sloping surface. Source uplands range in relief and areal extent from mountains to gullied terrains on hillslopes.
- Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.
- Alpine.** Land and related resources above the upper elevation limit of trees (treeline).
- Anaerobic.** A condition in which molecular oxygen is absent in the soil.
- Aspect.** The direction in which a slope faces. Also, the general physical appearance of a vegetation cover type.
- Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.
- Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:
- |                |              |
|----------------|--------------|
| Very low ..... | 0 to 3       |
| Low .....      | 3 to 6       |
| Moderate.....  | 6 to 9       |
| High.....      | 9 to 12      |
| Very high..... | more than 12 |
- Basal area.** For trees, the area of the cross section of a single tree or of all trees in a stand, usually measured at breast height (see breast height), expressed as square feet per acre or square meters per hectare. For herbs and shrubs, the area or proportion of the ground surface covered by the stems of plants at about ground level, expressed as square feet per acre or square meters per hectare or as a percentage.
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Biome.** A continental-scale ecosystem characterized by similarities in plant lifeforms and environment. Examples are boreal, subalpine, and alpine.
- Bog.** A peat-forming ecosystem influenced solely by water, which falls directly onto it as rain or snow. Bog vegetation is dominantly herbs, shrubs, and stunted trees. *Sphagnum spp.* commonly is dominant in the moss layer.

- Boreal.** The biome of North America that stretches from Alaska and the Rocky Mountains eastward to the Atlantic Ocean. It is bounded by the treeline to the north and by aspen parkland to the south, which is a transition zone to the prairie grassland. The boreal biome supports dominantly forest vegetation.
- Braunification (process).** Release of iron from primary minerals in soil by hydration or oxidation, giving the soil a yellowish, brownish, or reddish brown color.
- Breast height.** A standard height for measurement of tree diameter and age, or 1.5 meters above the average ground level.
- Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Canopy.** The cover of leaves and branches formed by the tops or crowns of plants as viewed from above.
- Canopy cover.** The proportion of the ground area covered by the vertical projections of the canopy, express as a percentage.
- Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.
- Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Coarse fragments.** Mineral or rock particles larger than 2 millimeters in diameter.
- Coarse textured soil.** Sand or loamy sand.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 7.6 to 25 centimeters in diameter.
- Codominant trees.** Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.
- Colluviation (processes).** Processes associated with transportation and/or deposition by mass movement (direct gravitational action) and local, unconcentrated runoff on side slopes and/or at the base of slopes.
- Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.
- Complex, soil.** A map unit with two or more soils or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:
- Loose*—Noncoherent when dry or moist; does not hold together in a mass.
- Friable*—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
- Firm*—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
- Plastic*—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
- Sticky*—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
- Hard*—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
- Soft*—When dry, breaks into powder or individual grains under very slight pressure.
- Cemented*—Hard; little affected by moistening.
- Cover type.** A unit of vegetation essentially similar in composition and development throughout its extent. Synonyms: community type, vegetation type.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Cryic.** Soil temperature regime in which the mean annual soil temperature is 0 to 8 degrees C.

**Cryoturbation (frost churning).** The churning of soil material by frost action, resulting in disrupted or broken horizons, incorporation of material from other horizons, organic matter accumulation on the permafrost table, and oriented rock fragments.

**Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

**Diffusion.** Movement from a zone of high concentration to one of lower concentration.

**Dominant trees.** Trees whose crown forms the general level of the forest canopy and receives full light from above and from the sides.

**Drainage class (natural).** Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage. Altered drainage is commonly the result of artificial drainage or irrigation, but it may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

*Excessively drained*—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

*Somewhat excessively drained*—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

*Well drained*—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

*Moderately well drained*—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. These soils commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

*Somewhat poorly drained*—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, have a high water table, receive additional water from seepage, receive nearly continuous rainfall, or a combination of these.

*Poorly drained*—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

*Very poorly drained*—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. In areas where rainfall is high and nearly continuous, they can have a moderate or high slope gradient.

**Effervescence.** A bubbling reaction upon addition of dilute hydrochloric acid.

- Enrichment (process).** A fluvial subprocess that includes the accumulation of bases such as calcium carbonate in the soil. The process includes fluvial deposits of base-rich material and concentration in the surface layer due to evaporation.
- Ericaceous.** Refers primarily to the heath family, *Ericaceae* (for example, Labrador-tea), but usually includes the crowberry family, *Empetraceae*.
- Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
- Erosion* (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
- Erosion* (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature (for example, fire that exposes the surface).
- Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. The term is most often applied to cliffs resulting from differential erosion.
- Esker.** A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.
- Evapotranspiration.** The combined loss of water from a given area and during a specific period of time by evaporation from the soil surface and by transpiration from plants.
- Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well-preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.
- Fine textured soil.** Sandy clay, silty clay, or clay.
- Flood plain.** A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the stream.
- Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.
- Fluvial (processes).** Processes including erosion, transportation, deposition, and enrichment of alluvium by water.
- Footslope.** The geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, a footslope is a transition zone between an upslope site of erosion (backslope) and a downslope site of deposition (toeslope).
- Forb.** Any herbaceous plant that is not a grass or a sedge.
- Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.
- Forest type.** A unit of forest vegetation essentially similar in composition and development throughout its extent.
- Frost boil.** A small mound of fresh soil material formed by frost action. A type of nonsorted circle commonly found in fine grained sediment underlain by permafrost.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Geomorphic processes.** Natural processes that form the landscape and surficial sediment. For example, colluvial processes, deposition, and erosion.
- Glacial drift** (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.
- Glacial outwash** (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.
- Glacial till** (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

- Glaciated uplands.** Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.
- Glaciofluvial deposits** (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.
- Gravel.** Rounded or angular fragments of rock as much as 3 inches in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 7.6 centimeters in diameter.
- Ground water** (geology). Water filling all the unblocked pores of underlying material below the water table.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.
- Herb.** Grasses, sedges, forbs, and any other non-woody herbaceous plants.
- Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well-defined outline. Hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.
- Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons of mineral soil are as follows:
- O horizon*—An organic layer of fresh and decaying plant residue.
  - A horizon*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
  - B horizon*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.
  - E horizon*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
  - C horizon*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the number 2 precedes the letter C.
  - Cr horizon*—Sedimentary beds of consolidated sandstone and semiconsolidated and consolidated shale. Generally, roots can penetrate this horizon only along fracture planes.
  - R layer*—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.
- Hummock.** A rounded or conical mound or other small elevation. Also, a slight rise of ground above a level surface.
- Hydrologic soil groups.** Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of

vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. Group A soils have a high infiltration rate when thoroughly wet and have a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. Group D soils, at the other extreme, have a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

**Hydromorphism (process).** Soil process associated with saturated conditions that includes accumulation of organic material and formation of redoximorphic features (gray and red soil mottles caused by saturation or alternating saturated and unsaturated conditions in soils).

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in centimeters per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .....	very low
0.2 to 0.4 .....	low
0.4 to 0.75 .....	moderately low
0.75 to 1.25 .....	moderate
1.25 to 1.75 .....	moderately high
1.75 to 2.5 .....	high
More than 2.5 .....	very high

**Interior (Alaska).** Physiographic area north of the summit of the Alaska Range and south of the summit of the Brooks Range that has a dominantly continental climate.

**Interstitial (ice crystals).** Ice formation in voids between soil particles.

**Lacustrine deposit (geology).** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loamy soil.** Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

**Loess.** Fine grained material, consisting dominantly of silt-sized particles, deposited by wind.

**Maritime-continental (climate).** A blend of two climate types in which either the maritime or continental climate may be the dominant local weather for extended periods of time.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minor components.** A component of limited extent that may or may not be present in any given area.

- Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms for abundance are *few*, *common*, and *many*; for size are *fine*, *medium*, and *coarse*; and for contrast are *faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain.** A natural elevation of the land surface, rising more than 305 meters above surrounding lowlands, commonly of limited summit area and generally having steep sides (slopes of more than 25 percent) and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are primarily formed by deep-seated earth movements or volcanic action and secondarily by differential erosion.
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Munsell notation.** A designation of color by three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Neutral soil.** A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)
- Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil; and carbon, hydrogen, and oxygen obtained from the air and water.
- Observed rooting depth.** Depth to which roots have been observed to penetrate.
- Organic matter.** Plant and animal residue in the soil in various stages of decomposition.
- Outwash plain.** An extensive area of glaciofluvial material that was deposited by meltwater streams.
- Overstory.** The trees in a forest that form the upper canopy layer or layers.
- Oxbow.** The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.
- Oxidation.** Combination with oxygen; addition of oxygen or other atom or group; removal of hydrogen or other atom or group.
- Parent material.** The unconsolidated organic and mineral material in which soil forms.
- Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture conditions. (See Fibric soil material.)
- Pedon.** The smallest volume that can be called "soil." A pedon is three-dimensional and large enough to permit study of all the horizons. Its area ranges from about 10 to 100 square feet, depending on the variability of the soil.
- Pergelic.** Soil temperature regime where the mean annual soil temperature is below freezing or lower.
- Permafrost.** Layers of soil, or bedrock, in arctic or subarctic regions in which a temperature below freezing has existed continuously for 2 years or more.
- Permafrost extent or distribution.** The percentage of a map unit consisting of soils with permafrost.
- Continuous*—More than 80 percent of the composition of a map unit consists of soils with permafrost.
- Discontinuous*—20 to 80 percent of a map unit consists of soils with permafrost.
- Sporadic*—More than 5 percent but less than 20 percent of a map unit consists of soils with permafrost.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the *Soil Survey Manual*. In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow.....	0.0 to 0.01 inch
Very slow .....	0.01 to 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid .....	2.0 to 6.0 inches
Rapid .....	6.0 to 20 inches
Very rapid .....	more than 20 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Physiochemical.** Related to physical and chemical soil properties.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Podzolization (process).** The removal and translocation of iron and aluminum from surface layers into underlying soil material. The soils typically have a gray, leached surface mineral layer a few centimeters thick underlain by a dark red layer of accumulated iron, aluminum, and organic compounds.

**Ponding.** Standing water on soils in closed depressions. Only percolation or evapotranspiration can remove the water.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Potential natural community.** The assemblage of plants that most nearly achieves a long-term steady state of productivity, structure, and composition on a site. Synonyms: potential plant community, climax plant community, and plant association.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Reaction, soil.** A measure of acidity or alkalinity of a soil. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid.....	Below 3.5
Extremely acid .....	3.5 to 4.5
Very strongly acid .....	4.6 to 5.0
Strongly acid .....	5.1 to 5.5
Moderately acid .....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral .....	6.6 to 7.3
Slightly alkaline .....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline .....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

- Redoximorphic concentrations.** Bodies of apparent accumulation of iron-manganese oxides.
- Redoximorphic depletions.** Bodies of low chroma ( $\leq 1$ ) having value of 4 or more where iron-manganese oxides alone have been stripped out or where both iron-manganese oxides and clay have been stripped out.
- Redoximorphic features.** Patches of contrasting colors and low chroma colors formed by the processes of reduction, translocation, and oxidation of iron and manganese oxides.
- Regeneration.** The new growth of a natural plant community, developing from seed.
- Relief.** The elevations, or inequalities, of a land surface, considered collectively.
- Riparian (or riparian zone).** Land in close proximity to a watercourse, lake, or spring and influenced by surface water and groundwater during all or part of the year.
- Riverine.** Associated with a river system; active river channel, and land adjacent to the river that is inundated when stream discharge exceeds channel capacity.
- Riverwash.** Unstable areas of sandy, silty, clayey, or gravelly sediment. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.
- Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more. For example, pebbles, cobbles, stones, and boulders.
- Rock outcrop.** Exposures of bare bedrock other than lava flows and rock-lined pits.
- Root zone.** The part of the soil that can be penetrated by plant roots.
- Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.
- Representative value (RV).** Used in the map unit descriptions to designate a representative value of the composition of each major component within a map unit. This value is expressed as a percentage.
- Sand.** s a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.
- Sandy soil.** Sand or loamy sand.
- Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.
- Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
- Scrub type.** A unit of scrub vegetation essentially similar in composition and development throughout its extent.
- Shoulder slope.** The uppermost inclined surface at the top of a hillside. It is the transition zone from the backslope to the summit of a hill or mountain. The surface is dominantly convex in profile and erosional in origin.
- Shrink-swell.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Similar soils.** Soils that have similar limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by the horizontal distance and then multiplied by 100. Thus, a slope of 20 percent is a drop of about 6 meters in 30.5 meters of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level.....	0 to 2 percent
Gently sloping.....	2 to 4 percent
Moderately sloping .....	4 to 8 percent
Strongly sloping.....	8 to 15 percent
Moderately steep.....	15 to 25 percent
Steep .....	25 to 45 percent
Very steep .....	More than 45 percent

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil group.** A collection of soils that form under the influence of similar soil and geomorphic processes and share similar chemical and physical properties.

**Soil process.** A physical or chemical change in soil brought about by exterior influences.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand .....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand.....	0.5 to 0.25
Fine sand.....	0.25 to 0.10
Very fine sand .....	0.10 to 0.05
Silt.....	0.05 to 0.002
Clay .....	less than 0.002

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons.

Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activity are largely confined to the solum.

**Species.** A single, distinct kind of plant or animal having certain distinguishing characteristics.

**Stone line.** A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment thick or more. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

**Stones.** Rock fragments 10 to 24 inches in diameter if rounded or 15 to 24 inches in length if flat.

**Stream channel.** The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

**Stream terrace.** One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhere without any regular cleavage, as in many hardpans).

**Subalpine.** The biome between the boreal and alpine biomes that consists of alder scrub.

**Subarctic continental.** The climate of interior Alaska that is characterized by long, cold winters and short, warm summers.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any soil horizon (A, E, AB, or EB) below the surface layer.

**Summit.** A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches. Frequently designated as the "plow layer," or the "Ap horizon."

**Surface soil.** The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

**Taiga.** A Russian term meaning "land of little sticks" that is applied to the dwarf or stunted open conifer woodland and forests that are typically underlain by permafrost.

**Talus.** Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed mainly by falling, rolling, or sliding.

**Terrace** (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by the terms "coarse," "fine," or "very fine."

**Thermal conductivity.** A measure of heat transfer through soil.

**Thermokarst.** Subsidence of the ground surface due to melting of ice masses.

**Till plain.** An extensive, nearly level to gently rolling or moderately sloping area that is underlain by or consists of till and that has a slope of 0 to 8 percent.

**Toeslope.** The outermost inclined surface at the base of a hill. Toeslopes are commonly gentle and linear in profile.

**Tussock.** A pedestal or rounded mound or other small elevation consisting of sedges and sedge detritus.

**Understory.** Any plants in a forest or scrub community that grow below the tree or shrub overstory and are partially shaded by the overstory.

**Upland** (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowland along streams.

**Valley.** An elongated depressional area primarily developed by stream action.

**Variiegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than a result of poor drainage.



# Tables

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Table 1.--Temperature

(Recorded in the period 1950 to 2012 at Skagway 1 NW [508525], Alaska.)

Month	Monthly average			Daily extreme				Monthly extreme				Maximum temperature		Minimum temperature	
	Maximum	Minimum	Mean	High	Date	Low	Date	Highest mean	Year	Lowest mean	Year	≥90 °F	≤32 °F	≤32 °F	≤0 °F
	°F	°F	°F	°F	Day/year	°F	Day/year	°F		°F		Days	Days	Days	Days
January----	28.1	18.7	23.6	55	19/2009	-16	03/1965	31.9	2001	11.0	1959	0.0	15.9	28.0	3.1
February---	33.5	22.0	27.7	48	24/1963	-7	09/2008	35.1	1964	20.5	1965	0.0	9.0	24.7	1.1
March-----	37.6	23.6	30.5	58	29/1954	-5	05/1951	37.2	2005	24.7	2007	0.0	7.0	27.1	0.3
April-----	50.4	31.0	40.8	76	27/1958	10	06/1954	45.1	1958	34.9	2002	0.0	0.2	17.6	0.0
May-----	60.4	39.2	49.8	82	31/1958	22	11/1952	54.6	2005	46.3	2012	0.0	0.0	4.0	0.0
June-----	66.7	46.5	56.6	87	20/2004	5	19/1962	60.1	1958	51.4	1962	0.0	0.0	0.2	0.0
July-----	67.1	49.6	58.3	85	10/1953	38	20/1963	60.9	2004	55.8	2008	0.0	0.0	0.0	0.0
August-----	65.5	48.3	56.9	91	17/2004	28	26/1952	60.7	2004	55.2	2011	0.1	0.0	0.0	0.0
September--	58.1	42.5	50.3	83	04/1957	22	28/1954	55.7	1957	48.3	2000	0.0	0.0	2.1	0.0
October----	48.4	35.8	42.1	68	07/1957	20	20/1961	45.5	1957	39.0	1961	0.0	0.1	9.2	0.0
November---	37.2	27.1	31.9	56	01/2003	-6	23/1963	38.6	1957	18.1	2006	0.0	6.2	20.9	0.4
December---	32.1	22.4	27.3	50	02/1963	-20	15/1964	34.1	2005	10.2	1964	0.0	12.5	27.4	1.3

Table 1.--Temperature--Continued

Month	Monthly average			Daily extreme				Monthly extreme				Maximum temperature		Minimum temperature	
	Maxi- mum	Mini- mum	Mean	High	Date	Low	Date	Highest mean	Year	Lowest mean	Year	≥90 °F	≤32 °F	≤32 °F	≤0 °F
	°F	°F	°F	°F	Day/year	°F	Day/year	°F		°F		Days	Days	Days	Days
Yearly:															
Annual----	48.8	33.9	41.3	91	08/17/2004	-20	12/15/1964	43.6	2005	40.0	1961	0.1	50.8	161.2	6.2
Winter----	31.2	21.0	26.2	55	01/19/2009	-20	12/15/1964	30.8	1960	16.1	1965	0.0	37.4	80.0	5.5
Spring----	49.5	31.3	40.4	82	05/31/1958	-5	03/05/1951	45.6	2005	37.3	2002	0.0	7.2	48.6	0.3
Summer----	66.5	48.1	57.3	91	08/17/2004	5	06/19/1962	60.4	2004	55.4	2012	0.1	0.0	0.2	0.0
Fall-----	47.9	35.1	41.4	83	09/04/1957	-6	11/23/1963	46.6	1957	37.2	2006	0.0	6.2	32.2	0.4

This table was updated on October 31, 2012. For monthly and annual means, thresholds, and sums, months with 5 missing days or more and years with 1 missing month or more were not considered. Seasons are climatologic, not calendar. Winter consists of December, January, and February; spring of March, April, and May; summer of June, July, and August; and fall of September, October, and November.

Table 2.--Precipitation

(Recorded in the period 1950 to 2012 at Skagway 1 NW [508525], Alaska.)

Month	Precipitation											Total snowfall		
	Mean	High	Year	Low	Year	1-day maximum	≥0.01 in.	≥0.10 in.	≥0.50 in.	≥1.00 in.	Mean	High	Year	
	In	In		In		In	Day/year	Days	Days	Days	Days	In	In	
January----	2.43	5.62	2009	0.39	1958	1.60	06/2003	11	7	1	0	12.6	34.7	2012
February---	1.65	3.56	2004	0.23	2007	1.50	09/2004	9	5	1	0	7.3	24.0	2009
March-----	1.87	6.75	2010	0.00	1958	3.50	10/2007	8	5	1	0	8.9	26.0	2010
April-----	1.23	3.28	2006	0.00	1958	0.99	03/2004	8	4	1	0	0.6	2.5	2002
May-----	0.89	2.12	2012	0.09	1952	0.69	15/2008	8	3	0	0	0.0	0.0	1952
June-----	1.09	2.22	2010	0.00	1952	0.95	28/2008	8	4	0	0	0.0	0.0	1952
July-----	1.64	4.34	2007	0.12	1963	1.21	01/2000	11	5	1	0	0.0	0.0	1952
August-----	2.32	5.42	2011	0.00	1963	1.19	20/2011	13	7	1	0	0.0	0.0	1952
September--	4.04	7.66	2011	0.43	1963	1.65	02/2006	17	10	3	1	0.0	0.0	1957
October----	3.88	7.15	2008	1.40	2012	1.75	21/2002	16	10	2	0	0.5	3.0	2004
November---	3.45	10.74	2005	0.08	2006	2.70	23/2005	13	8	2	1	3.8	20.9	2011
December---	2.85	7.35	2006	0.78	2010	2.65	24/2001	11	8	1	0	12.5	44.5	2006

Table 2.--Precipitation--Continued

Month	Precipitation											Total snowfall		
	Mean	High	Year	Low	Year	1-day maximum		≥0.01 in.	≥0.10 in.	≥0.50 in.	≥1.00 in.	Mean	High	Year
	<i>In</i>	<i>In</i>		<i>In</i>		<i>In</i>	<i>Day/year</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>In</i>	<i>In</i>	
Yearly:														
Annual-----	27.33	37.69	2005	26.50	2002	3.50	03/10/2007	132	77	13	3	46.3	63.6	2006
Winter-----	6.92	12.59	2007	2.06	1958	2.65	12/24/2001	31	19	3	1	32.4	68.8	2007
Spring-----	3.99	8.21	2010	0.45	1958	3.50	03/10/2007	24	12	1	0	9.5	27.0	2010
Summer-----	5.05	7.45	2008	0.57	1963	1.21	07/01/2000	32	16	2	0	0.0	0.0	1952
Fall-----	11.37	19.78	2005	5.42	1963	2.70	11/23/2005	45	29	7	2	4.3	8.4	2003

This table was updated on October 31, 2012. For monthly and annual means, thresholds, and sums, months with 5 missing days or more and years with 1 missing month or more were not considered. Seasons are climatologic, not calendar. Winter consists of December, January, and February; spring of March, April, and May; summer of June, July, and August; and fall of September, October, and November.

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 3.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
22CF1	Estuarine Floodplains	215	0.1
22CP3	Estuarine Coastal Plains	126	0.1
22FF1	Maritime Fans	773	0.4
22HF1	Maritime Floodplains, High Gradient	836	0.4
22LF1	Maritime Floodplains, Gravelly	1,891	0.9
22LF2	Maritime Floodplains, Loamy	1,072	0.5
22LM1	Maritime Mountains, Steep	6,695	3.3
22UF1	Maritime Floodplains, Urban Land	359	0.2
D22AM1	Alpine Diorite Mountains	125,305	62.6
D22BF1	Maritime Floodplains, High Gradient, Jokulhlaup	1,085	0.5
D22DW1	Maritime Organic Floodplains	350	0.2
D22HM2	Maritime Mountains, High Elevation	3,326	1.7
D22LM2	Maritime Mountains, Very Steep, Smooth	17,666	8.8
D22LM3	Maritime Mountains, Very Steep, Dissected	7,305	3.7
D22SA1	Subalpine Mountains	23,551	11.8
D22SA2	Subalpine Mountains, Avalanche Chutes	2,517	1.3
D22WF1	Maritime Water, Lakes and Ponds	207	0.1
D22WS1	Estuarine Water, Salt	6,853	3.4
	Total-----	200,131	100.0

Table 4.--Soil-Ecological Site Correlation

Map unit symbol and soil name	Ecological site identification number	Ecological site name
22CF1:		
22-Estuarine Graminoid Loamy Floodplains	R222XY329AK	Estuarine Graminoid Loamy Floodplain
22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
22-Estuarine Graminoid Loamy Floodplains, Depression-----	R222XY330AK	Estuarine Graminoid Loamy Floodplain, Depression
22CP3:		
22-Estuarine Graminoid Gravelly Coastal Plain-----	R222XY323AK	Estuarine Graminoid Gravelly Coastal Plain
22-Estuarine Graminoid Loamy Floodplains	R222XY329AK	Estuarine Graminoid Loamy Floodplain
22-Estuarine Water, Saline-----	R222XY300AK	Estuarine Water Saline
22FF1:		
22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	F222XY327AK	<i>Tsuga heterophylla-Picea sitchensis/Viburnum edule/Gymnocarpium dryopteris</i>
22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
22HF1:		
22-Maritime Riverwash, Bouldery-----	R222XY306AK	Maritime Riverwash, Bouldery
22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	F222XY325AK	<i>Picea sitchensis-Tsuga heterophylla/Menziesia ferruginea-Oplopanax horridus/Gymnocarpium dryopteris-Athyrium filix-femina</i>
22LF1:		
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	F222XY334AK	<i>Betula papyrifera-Picea sitchensis/Dryopteris expansa-Pyrola asarifolia</i>
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	F222XY333AK	<i>Populus balsamifera-Picea sitchensis/Alnus viridis ssp. sinuata-Viburnum edule/Gymnocarpium dryopteris</i>
22-Maritime Riverwash, Gravelly-----	R222XY307AK	Maritime Gravelly Floodplains
22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
22-Maritime Scrub Gravelly Floodplains, Frequently Flooded-----	R222XY332AK	Maritime Scrub Gravelly Floodplains, Frequently Flooded
22-Maritime Scrub Gravelly Floodplains, Depression-----	R222XY331AK	Maritime Scrub Gravelly Floodplain, Depression
22-Maritime Gravel Pit-----	R222XY312AK	Maritime Gravel Pits

Table 4.--Soil-Ecological Site Correlation--Continued

Map unit symbol and soil name	Ecological site identification number	Ecological site name
22LF2:		
22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	F222XY334AK	<i>Betula papyrifera-Picea sitchensis/Dryopteris expansa-Pyrola asarifolia</i>
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	F222XY334AK	<i>Betula papyrifera-Picea sitchensis/Dryopteris expansa-Pyrola asarifolia</i>
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	F222XY333AK	<i>Populus balsamifera-Picea sitchensis/Alnus viridis ssp. sinuata-Viburnum edule/Gymnocarpium dryopteris</i>
22-Maritime Riverwash, Gravelly-----	R222XY307AK	Maritime Gravelly Floodplains
22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
22-Maritime Scrub Gravelly Floodplains, Depression-----	R222XY331AK	Maritime Scrub Gravelly Floodplain, Depression
22-Maritime Scrub Gravelly Floodplains, Frequently Flooded-----	R222XY332AK	Maritime Scrub Gravelly Floodplains, Frequently Flooded
22LM1:		
22-Maritime Forest Gravelly Slopes, Shallow-----	F222XY337AK	<i>Picea sitchensis-Pinus contorta/Menziesia ferruginea-Vaccinium ovalifolium/Orthilia secunda</i>
22-Maritime Forest Organic Slopes, Dry---	F222XY337AK	<i>Picea sitchensis-Pinus contorta/Menziesia ferruginea-Vaccinium ovalifolium/Orthilia secunda</i>
22-Maritime Rock Outcrop-----	R222XY313AK	Maritime Rock Outcrop
22-Maritime Forest Organic Slopes, Depression-----	F222XY341AK	<i>Picea sitchensis-Betula papyrifera/Menziesia ferruginea-Viburnum edule/Gymnocarpium dryopteris</i>
22UF1:		
22-Maritime Urban Land-----	R222XY332AK	Maritime Scrub Gravelly Floodplains, Frequently Flooded
22-Maritime Urban Land, Flooded-----	R222XY332AK	Maritime Scrub Gravelly Floodplains, Frequently Flooded
22-Maritime Gravel Pit-----	R222XY312AK	Maritime Gravel Pits
22-Maritime Levees-----	R222XY309AK	Maritime Levees
D22AM1:		
D22-Subalpine and Alpine Permanent Ice and Snow-----	R222XY321AK	Subalpine and Alpine Permanent Ice and Snow
D22-Subalpine and Alpine Rock Outcrop----	R222XY317AK	Subalpine and Alpine Rock Outcrop
D22-Subalpine and Alpine Rubble Land----	R222XY318AK	Subalpine and Alpine Rubble Land
D22-Alpine Herbaceous Gravelly Diorite Slopes-----	R222XY356AK	Alpine Herbaceous Gravelly Slopes

Table 4.—Soil-Ecological Site Correlation—Continued

Map unit symbol and soil name	Ecological site identification number	Ecological site name
D22BF1:		
D22-Maritime Riverwash, Bouldery-----	R222XY306AK	Maritime Riverwash, Bouldery
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded----	F222XY325AK	<i>Picea sitchensis-Tsuga heterophylla/Menziesia ferruginea-Oplopanax horridus/Gymnocarpium dryopteris-Athyrium filix-femina</i>
D22-Maritime Water, Flowing-----	R222XY304AK	Maritime Water, Flowing
D22DW1:		
D22-Maritime Scrub/Herb Mosaic Organic Floodplains-----	R222XY328AK	Maritime Scrub/Herb Mosaic Organic Floodplain
D22-Maritime Water, Lakes and Ponds-----	R222XY305AK	Maritime Water, Lakes and Ponds
D22HM2:		
D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	F222XY338AK	<i>Tsuga mertensiana-Abies lasiocarpa/Vaccinium ovalifolium-Menziesia ferruginea/Dryopteris expansa</i>
D22-Maritime Rock Outcrop-----	R222XY313AK	Maritime Rock Outcrop
D22-Maritime Rubble Land-----	R222XY314AK	Maritime Rubble Land
D22-Maritime Forest Gravelly Slopes, High Elevation-----	F222XY338AK	<i>Tsuga mertensiana-Abies lasiocarpa/Vaccinium ovalifolium-Menziesia ferruginea/Dryopteris expansa</i>
D22LM2:		
D22-Maritime Forest Gravelly Slopes, Shallow-----	F222XY337AK	<i>Picea sitchensis-Pinus contorta/Menziesia ferruginea-Vaccinium ovalifolium/Orthilia secunda</i>
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	F222XY337AK	<i>Picea sitchensis-Pinus contorta/Menziesia ferruginea-Vaccinium ovalifolium/Orthilia secunda</i>
D22-Maritime Rock Outcrop-----	R222XY313AK	Maritime Rock Outcrop
D22-Maritime Forest Organic Slopes, Dry	F222XY337AK	<i>Picea sitchensis-Pinus contorta/Menziesia ferruginea-Vaccinium ovalifolium/Orthilia secunda</i>
D22-Maritime Forest Gravelly Slopes, High Elevation-----	F222XY338AK	<i>Tsuga mertensiana-Abies lasiocarpa/Vaccinium ovalifolium-Menziesia ferruginea/Dryopteris expansa</i>
D22-Maritime Forest Organic Slopes, Depression-----	F222XY341AK	<i>Picea sitchensis-Betula papyrifera/Menziesia ferruginea-Viburnum edule/Gymnocarpium dryopteris</i>

Table 4.--Soil-Ecological Site Correlation--Continued

Map unit symbol and soil name	Ecological site identification number	Ecological site name
D22LM3:		
D22-Maritime Forest Gravelly Slopes, Shallow-----	F222XY337AK	<i>Picea sitchensis</i> - <i>Pinus contorta</i> / <i>Menziesia ferruginea</i> - <i>Vaccinium ovalifolium</i> / <i>Orthilia secunda</i>
D22-Maritime Rubble Land-----	R222XY314AK	Maritime Rubble Land
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	R222XY342AK	Maritime Scrub/Herb Gravelly Slopes, Depositional
D22-Maritime Rock Outcrop-----	R222XY313AK	Maritime Rock Outcrop
D22-Maritime Forest Organic Slopes, Dry--	F222XY337AK	<i>Picea sitchensis</i> - <i>Pinus contorta</i> / <i>Menziesia ferruginea</i> - <i>Vaccinium ovalifolium</i> / <i>Orthilia secunda</i>
D22-Maritime Forest Gravelly Slopes, High Elevation-----	F222XY338AK	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Vaccinium ovalifolium</i> - <i>Menziesia ferruginea</i> / <i>Dryopteris expansa</i>
D22SA1:		
D22-Subalpine and Alpine Rubble Land----	R222XY318AK	Subalpine and Alpine Rubble Land
D22-Subalpine and Alpine Rock Outcrop----	R222XY317AK	Subalpine and Alpine Rock Outcrop
D22-Subalpine Scrub Gravelly Slopes, Convex-----	R222XY355AK	Subalpine Scrub Gravelly Slopes
D22-Subalpine Scrub Organic Slopes-----	R222XY352AK	Subalpine Scrub Organic Slopes
D22-Subalpine Scrub Gravelly Slopes-----	R222XY355AK	Subalpine Scrub Gravelly Slopes
D22-Subalpine Scrub Gravelly Slopes, Depositional-----	R222XY349AK	Subalpine Scrub Gravelly Slopes, Depositional
D22-Subalpine and Alpine Permanent Ice and Snow-----	R222XY321AK	Subalpine and Alpine Permanent Ice and Snow
D22-Subalpine Forest Gravelly Slopes----	R222XY350AK	Subalpine Forest Gravelly Slopes
D22SA2:		
D22-Subalpine and Alpine Rubble Land----	R222XY318AK	Subalpine and Alpine Rubble Land
D22-Subalpine and Alpine Rock Outcrop----	R222XY317AK	Subalpine and Alpine Rock Outcrop
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	R222XY342AK	Maritime Scrub/Herb Gravelly Slopes, Depositional
D22-Subalpine Scrub Gravelly Slopes, Depositional-----	R222XY349AK	Subalpine Scrub Gravelly Slopes, Depositional
D22WF1:		
D22-Maritime Water, Lakes and Ponds-----	222XY305AK	Maritime Water, Lakes and Ponds
D22WS1:		
D22-Estuarine Water, Saline-----	R222XY300AK	Estuarine Water, Saline
D22-Estuarine Gravelly Tidal Flats-----	R222XY302AK	Estuarine Gravelly Tidal Flats

Table 5.--Engineering Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	0-2	Highly organic silt loam, silt loam	OL, ML	A-5, A-4	0	0	100	100	87-91	60-66	0-43	NP-4
	2-66	Very fine sandy loam, stratified silt loam	ML	A-4	0	0	100	100	88-97	64-76	0-25	NP-6
	66-90	Very fine sandy loam, silt loam	ML	A-4	0	0	100	100	88-96	64-75	0-23	NP-4
	90-183	Extremely gravelly coarse sand	GP	A-1-a	0	7-31	11-25	8-23	3-10	0-2	0-14	NP
22-Maritime Water, Flowing	0-183				---	---	---	---	---	---	---	---
22-Estuarine Graminoid Loamy Floodplains, Depression-----	0-23	Very fine sandy loam, silt loam	ML	A-4	0	0	88-100	88-100	76-96	55-75	0-25	NP-6
	23-43	Silt loam	ML	A-4	0	0	77-100	76-100	67-95	51-75	0-23	NP-4
	43-183	Extremely gravelly coarse sand	GP	A-1-a	0	7-31	11-25	8-23	3-10	0-2	0-14	NP
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain--	0-55	Very gravelly Loamy sand, gravelly sandy loam	SP-SM, GP-GM, SM, GM	A-1-b, A-2-4	0	0	39-71	37-70	26-54	10-26	0-23	NP-4
	55-183	Extremely gravelly sand, very gravelly sand	GP-GM, GP	A-1-a	0	0-4	16-44	13-42	10-34	2-7	0-14	NP

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	0-4	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	4-13	Highly organic sandy loam, highly organic gravelly sandy loam, sandy loam, gravelly sandy loam	SP-SM, GP-GM, GM, SM	A-1-b, A-2-4	0	0	34-63	31-61	23-49	11-27	0-43	NP-4
	13-43	Gravelly Loamy sand, very gravelly Loamy sand	SP-SM, GP-GM, GM, SM	A-2-4, A-1-b	0	0	29-69	27-68	21-55	8-24	0-23	NP-2
	43-183	Extremely cobbly sandy loam, very cobbly sandy loam	GM, SM	A-2-4	2-10	33-46	53-80	51-79	38-63	18-34	0-21	NP-2
22HF1: 22-Maritime Riverwash, Bouldery-----	0-183	Very cobbly coarse sand, extremely cobbly coarse sand, stratified very stony coarse sand, stratified extremely stony coarse sand	SW-SM	A-1-b	45-60	2-11	62-95	61-95	26-45	5-12	0-14	NP
22-Maritime Water, Flowing	0-183				---	---	---	---	---	---	---	---

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	7-21	Stratified highly organic very Gravelly sandy loam, stratified highly organic gravelly sandy loam, stratified very gravelly sandy loam, stratified gravelly sandy loam	SP-SM, GP-GM, GM, SM	A-2-4, A-1-b	0	0	34-63	31-61	23-49	11-27	0-43	NP-4
	21-183	Extremely bouldery coarse sand, very bouldery coarse sand, very stony coarse sand, extremely stony coarse sand	GP-GM, SP, SW-SM, GP	A-1-a, A-1-b	12-68	25-42	34-80	32-79	14-37	2-10	0-14	NP
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded	0-5	Slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	5-9	Highly organic silt loam, highly organic very fine sandy loam, silt loam, very fine sandy loam	OL, ML	A-5, A-4	0	0	74-91	73-91	64-87	47-68	0-43	NP-4
	9-183	Very gravelly Loamy coarse sand, very gravelly coarse sand	GP, SP, SP-SM, GP-GM	A-1-b, A-1-a	2-9	6-12	43-58	40-56	18-28	4-9	0-18	NP-2

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22LF1: 22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	3-5	Highly organic sandy loam, highly organic silt loam, sandy loam, silt loam	SM	A-5, A-4	0	0-17	80-86	79-85	59-69	38-48	0-43	NP-4
	5-183	Cobbly sand, extremely cobbly sand, very cobbly Loamy sand, very gravelly sand, gravelly Loamy sand, very gravelly Loamy sand, gravelly sand	GM, SP, SM, SP-SM, GP-GM, GP	A-1-b, A-2-4	0-3	8-55	18-84	15-84	12-68	2-17	0-17	NP-1
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded	0-5	Slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	5-45	Highly organic silt loam, highly organic very fine sandy loam, silt loam, very fine sandy loam	OL, ML	A-5, A-4	0	0	74-91	73-91	64-87	47-68	0-43	NP-4
	45-183	Very gravelly Loamy coarse sand, very gravelly coarse sand	GP, SP, SP-SM, GP-GM	A-1-b, A-1-a	2-9	6-12	43-58	40-56	18-28	4-9	0-18	NP-2

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22LF2: 22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	3-5	Highly organic sandy loam, highly organic silt loam, sandy loam, silt loam	SM	A-5, A-4	0	0-17	80-86	79-85	59-69	38-48	0-43	NP-4
	5-183	Cobbly sand, extremely cobbly sand, very cobbly Loamy sand, very gravelly sand, gravelly Loamy sand, very gravelly Loamy sand, gravelly sand	GM, SP, SM, SP-SM, GP-GM, GP	A-1-b, A-2-4	0-3	8-55	18-84	15-84	12-68	2-17	0-17	NP-1
22-Maritime Forest Gravelly Floodplains, Rarely Flooded	0-5	Slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	5-9	Highly organic silt loam, highly organic very fine sandy loam, silt loam, very fine sandy loam	OL, ML	A-5, A-4	0	0	74-91	73-91	64-87	47-68	0-43	NP-4
	9-183	Very gravelly Loamy coarse sand, very gravelly coarse sand	GP, SP, SP-SM, GP-GM	A-1-b, A-1-a	2-9	6-12	43-58	40-56	18-28	4-9	0-18	NP-2

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow	0-8	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	8-12	Highly organic very gravelly sandy loam, highly organic gravelly sandy loam, highly organic sandy loam	SM, SP-SM, GM, GP-GM	A-5, A-4, A-2-5, A-2-4, A-1-b	0-3	0-30	26-83	23-82	17-67	11-47	0-52	NP-4
	12-17	Very gravelly sandy loam, gravelly sandy loam, sandy loam	SM, GM	A-2-4, A-1-b, A-4	0-4	0-25	36-89	34-89	25-72	13-42	0-28	NP-4
	17-22	Very gravelly sandy loam, gravelly sandy loam	SM, GM	A-4, A-2-4, A-1-b	0-4	9-30	37-79	35-78	26-64	13-37	0-28	NP-4
	27-40	Very gravelly sandy loam, gravelly sandy loam, extremely gravelly sandy loam	SP-SM, GP-GM, GM, SM	A-2-4, A-1-b, A-1-a	2-20	7-20	20-75	17-74	12-60	6-33	0-23	NP-4
	40-183	Bedrock			---	---	---	---	---	---	---	---
22-Maritime Forest Organic Slopes, Dry-----	0-22	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	22-28	Very stony sandy loam, stony sandy loam	GM, SM	A-2-4, A-4, A-1-b	16-62	1-12	63-91	62-90	45-71	21-37	0-23	NP-4
	28-183	Bedrock			---	---	---	---	---	---	---	---
22UF1: Maritime Urban Land.												
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	0-183											

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22AM1: D22-Subalpine and Alpine Rock Outcrop----	0-183	Bedrock			---	---	---	---	---	---	---	---
D22-Subalpine and Alpine Rubble Land-----	0-183	Boulders			84-100	0	0	0	0	0	---	---
D22BF1: D22-Maritime Riverwash, Bouldery-----	0-183	Very cobbly coarse sand, extremely cobbly coarse sand, stratified very stony coarse sand, stratified extremely stony coarse sand	SW-SM	A-1-b	45-60	2-11	62-95	61-95	26-45	5-12	0-14	NP
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	7-21	Stratified highly organic very Gravelly sandy loam, stratified highly organic gravelly sandy loam, stratified very gravelly sandy loam, stratified gravelly sandy loam	SP-SM, GP-GM, GM, SM	A-2-4, A-1-b	0	0	34-63	31-61	23-49	11-27	0-43	NP-4
	21-183	Extremely bouldery coarse sand, very bouldery coarse sand, very stony coarse sand, extremely stony coarse sand	GP-GM, SP, SW-SM, GP	A-1-a, A-1-b	12-68	25-42	34-80	32-79	14-37	2-10	0-14	NP

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22BF1: D22-Maritime Water, Flowing	0-183				---	---	---	---	---	---	---	---
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains----	0-10 10-32 32-125 125-183	Mucky peat, peat Fine sandy loam, silt loam Mucky peat, peat Extremely gravelly sand, gravel	PT ML PT GP	A-8 A-4 A-8 A-1-a	---	---	---	---	---	---	---	---
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	0-31 31-36 36-183	Moderately decomposed plant material, slightly decomposed plant material Very gravelly sandy loam, gravelly sandy loam Bedrock	PT SP-SM, GP-GM, GM, SM	A-8 A-1-b	---	---	---	---	---	---	---	---
D22-Maritime Rock Outcrop----	0-183	Bedrock			---	---	---	---	---	---	---	---
D22-Maritime Rubble Land----	0-183	Boulders			84-100	0	0	0	0	0	---	---

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow	0-8	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	8-15	Highly organic very gravelly sandy loam, highly organic gravelly sandy loam, highly organic cobbly sandy loam	GP-GM, GM, SM, SP-SM	A-2-4, A-2-5, A-1-b	0-3	13-30	24-69	21-68	16-54	10-37	0-52	NP-4
	15-39	Very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam	GP-GM, GM	A-1-a	2-5	8-25	23-51	20-49	15-40	7-23	0-28	NP-4
	39-40	Gravelly sandy loam, extremely gravelly sandy loam, very gravelly sandy loam	SM, SP-SM, GM, GP-GM	A-2-4, A-1-b, A-1-a	2-20	7-20	20-75	17-74	12-60	6-33	0-23	NP-4
	40-183	Bedrock			---	---	---	---	---	---	---	---

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow, Convex	0-6	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	6-7	Highly organic extremely gravelly sandy loam, highly organic very Gravelly sandy loam, highly organic gravelly sandy loam	SP, SP-SM, GP-GM, GM, SM, GP	A-1-b, A-1-a	0-3	2-28	9-60	6-58	4-46	3-32	0-52	NP-4
	7-12	Extremely gravelly sandy loam, very gravelly sandy loam, gravelly sandy loam	GP-GM, GP, SP, GM, SM, SP-SM	A-2-4, A-1-a, A-1-b	0-14	2-25	13-71	10-70	7-57	4-33	0-28	NP-4
	12-33	Very cobbly sandy loam, extremely gravelly sandy loam, cobbly sandy loam, gravelly sandy loam, very gravelly sandy loam	SP, GP, GM, GP-GM, SP-SM, SM	A-1-b, A-1-a	10-17	10-28	13-69	10-68	7-55	4-32	0-28	NP-4
	33-40	Very gravelly sandy loam, gravelly sandy loam, extremely gravelly sandy loam	SW-SM, GM, GW-GM, SM	A-1-b, A-1-a	7-12	7-26	15-74	12-73	9-59	5-33	0-23	NP-4
	40-183	Bedrock			---	---	---	---	---	---	---	---
D22-Maritime Rock Outcrop---	0-183	Bedrock			---	---	---	---	---	---	---	---

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow	0-8	Moderately decomposed plant material, slightly decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	8-15	Highly organic very gravelly sandy loam, highly organic gravelly sandy loam, highly organic cobbly sandy loam	GP-GM, GM, SM, SP-SM	A-2-4, A-2-5, A-1-b	0-3	13-30	24-69	21-68	16-54	10-37	0-52	NP-4
	15-39	Very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam	GP-GM, GM	A-1-a	2-5	8-25	23-51	20-49	15-40	7-23	0-28	NP-4
	39-40	Gravelly sandy loam, extremely gravelly sandy loam, very gravelly sandy loam	SM, SP-SM, GM, GP-GM	A-2-4, A-1-b, A-1-a	2-20	7-20	20-75	17-74	12-60	6-33	0-23	NP-4
	40-183	Bedrock			---	---	---	---	---	---	---	---
D22-Maritime Rubble Land----	0-183	Boulders			84-100	0	0	0	0	0	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional----	0-24	Very gravelly sandy loam, extremely gravelly sandy loam	GP-GM, GM, GP	A-1-a	0	15-50	11-34	8-32	6-25	3-13	0-23	NP-4
	24-30	Very Gravelly moderately decomposed plant material, extremely gravelly moderately decomposed plant material	PT	A-8	0	15-30	---	---	---	---	---	---
	30-183	Very gravelly sandy loam, extremely gravelly sandy loam	GM, GP, GP-GM	A-1-a	0	15-30	11-34	8-32	6-26	3-14	0-23	NP-4
D22-Maritime Rock Outcrop----	0-183	Bedrock			---	---	---	---	---	---	---	---

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
D22SA1: D22-Subalpine and Alpine Rubble Land----	0-183	Boulders			84-100	0	0	0	0	0	---	---
D22-Subalpine and Alpine Rock Outcrop---	0-183	Bedrock			---	---	---	---	---	---	---	---
D22-Subalpine Scrub Gravelly Slopes, Convex	0-3	Slightly decomposed plant material, moderately decomposed plant material	PT	A-8	---	---	---	---	---	---	---	---
	3-38	Cobbly sandy loam, cobbly silt loam	SM	A-4	0-3	20-45	80-91	79-90	56-72	32-48	0-23	NP-4
	38-183	Bedrock			---	---	---	---	---	---	---	---
D22SA2: D22-Subalpine and Alpine Rubble Land----	0-183	Boulders			84-100	0	0	0	0	0	---	---
D22-Subalpine and Alpine Rock Outcrop---	0-183	Bedrock			---	---	---	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional---	0-24	Very gravelly sandy loam, extremely gravelly sandy loam	GP-GM, GM, GP	A-1-a	0	15-50	11-34	8-32	6-25	3-13	0-23	NP-4
	24-30	Very Gravelly moderately decomposed plant material, extremely gravelly moderately decomposed plant material	PT	A-8	0	15-30	---	---	---	---	---	---
	30-183	Very gravelly sandy loam, extremely gravelly sandy loam	GM, GP, GP-GM	A-1-a	0	15-30	11-34	8-32	6-26	3-14	0-23	NP-4

Table 5.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	<i>cm</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
D22WF1: Maritime Water, Lakes and Ponds.												
D22WS1: Estuarine Water, Saline.												

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Table 6.--Erosion Properties

(Entries under "Erosion factors" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer.)

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Kw	Kf	T		
	<i>cm</i>					
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	0-2	.37	.37	2	2	134
	2-66	.55	.55			
	66-90	.55	.55			
	90-183	.02	.02			
22-Maritime Water, Flowing-----	0-183	---	---	---	---	---
22-Estuarine Graminoid Loamy Floodplains, Depression-----	0-23	.55	.55	1	5	56
	23-43	.55	.55			
	43-183	.02	.02			
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	0-55	.10	.24	2	5	56
	55-183	.02	.02			
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	0-4	---	---	5	5	56
	4-13	.10	.17			
	13-43	.10	.24			
	43-183	.10	.32			
22HF1: 22-Maritime Riverwash, Bouldery-----	0-183	.02	.02	---	---	---
22-Maritime Water, Flowing-----	0-183	---	---	---	---	---
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7	---	---	1	5	56
	7-21	.10	.17			
	21-183	.02	.02			
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	0-5	---	---	5	5	56
	5-9	.37	.37			
	9-183	.02	.02			
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3	---	---	5	3	86
	3-5	.28	.28			
	5-183	.02	.02			
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	0-5	---	---	5	5	56
	5-45	.37	.37			
	45-183	.02	.02			
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3	---	---	5	3	86
	3-5	.28	.28			
	5-183	.02	.02			

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Table 6.--Erosion Properties--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Kw	Kf	T		
	<i>cm</i>					
22LF2: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	0-5 5-9 9-183	--- .37 .02	--- .37 .02	5	5	56
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	0-8 8-12 12-17 17-22 27-40 40-183	--- .20 .15 .15 .10 ---	--- .32 .37 .37 .43 ---	1	5	56
22-Maritime Forest Organic Slopes, Dry	0-22 22-28 28-183	--- .10 ---	--- .43 ---	1	8	0
22UF1: Maritime Urban Land.						
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	0-183	---	---	---	---	---
D22-Subalpine and Alpine Rock Outcrop--	0-183	---	---	---	---	---
D22-Subalpine and Alpine Rubble Land---	0-183	---	---	---	---	---
D22BF1: D22-Maritime Riverwash, Bouldery-----	0-183	.02	.02	---	---	---
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7 7-21 21-183	--- .10 .02	--- .17 .02	1	5	56
D22-Maritime Water, Flowing-----	0-183	---	---	---	---	---
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains-----	0-10 10-32 32-125 125-183	--- .43 --- .02	--- .43 --- .02	1	7	38
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	0-31 31-36 36-183	--- .15 ---	--- .43 ---	1	8	0
D22-Maritime Rock Outcrop-----	0-183	---	---	---	---	---
D22-Maritime Rubble Land-----	0-183	---	---	---	---	---

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Table 6.--Erosion Properties--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Kw	Kf	T		
	<i>cm</i>					
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	0-8	---	---	1	6	48
	8-15	.15	.32			
	15-39	.10	.37			
	39-40	.10	.43			
	40-183	---	---			
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	0-6	---	---	1	8	0
	6-7	.10	.32			
	7-12	.10	.37			
	12-33	.05	.37			
	33-40	.05	.43			
	40-183	---	---			
D22-Maritime Rock Outcrop-----	0-183	---	---	---	---	---
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow-----	0-8	---	---	1	6	48
	8-15	.15	.32			
	15-39	.10	.37			
	39-40	.10	.43			
	40-183	---	---			
D22-Maritime Rubble Land-----	0-183	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	0-24	.02	.32	5	8	0
	24-30	---	---			
	30-183	.02	.32			
D22-Maritime Rock Outcrop-----	0-183	---	---	---	---	---
D22SA1: D22-Subalpine and Alpine Rubble Land---	0-183	---	---	---	---	---
D22-Subalpine and Alpine Rock Outcrop--	0-183	---	---	---	---	---
D22-Subalpine Scrub Gravelly Slopes, Convex-----	0-3	---	---	1	2	134
	3-38	.24	.49			
	38-183	---	---			
D22SA2: D22-Subalpine and Alpine Rubble Land---	0-183	---	---	---	---	---
D22-Subalpine and Alpine Rock Outcrop--	0-183	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	0-24	.02	.32	5	8	0
	24-30	---	---			
	30-183	.02	.32			
D22WF1: Maritime Water, Lakes and Ponds.						
D22WS1: Estuarine Water, Saline.						

Table 7.--Physical Soil Properties

(Sand, silt, and clay values are shown either as a range or a representative value (RV). Absence of an entry indicates that data were not estimated. Soil properties are measured or inferred from direct observations in the field or laboratory. Map units and map unit components that are dominantly nonsoil are not included in this table.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Ksat	Available water capacity	Linear extensi- bility	Organic matter
	cm	Pct	Pct	Pct	g/cc	um/sec	cm/cm	Pct	Pct
22CF1: 22-Estuarine Graminoid Loamy Floodplains----	0-2 2-66 66-90 90-183	40-47 35-53 35-53 90-98	45-56 43-62 44-62 1-9	3-8 3-10 3-8 0-1	0.60-1.10 1.30-1.50 1.30-1.54 1.64-1.80	4.0-14.0 4.0-14.0 4.0-14.0 141.0-705.0	0.20-0.24 0.16-0.20 0.08-0.20 0.00-0.02	0.1-0.8 0.2-1.1 0.2-0.9 0.0-0.0	6.0-22 0.5-2.0 0.5-2.0 0.1-1.0
22-Estuarine Graminoid Loamy Floodplains, Depression-----	0-23 23-43 43-183	35-53 30-45 90-98	43-62 49-67 1-9	3-10 3-8 0-1	1.30-1.50 1.30-1.48 1.64-1.80	4.0-14.0 4.0-14.0 141.0-705.0	0.16-0.20 0.16-0.20 0.00-0.02	0.2-1.1 0.2-0.9 0.0-0.0	0.5-2.0 0.5-2.0 0.1-1.0
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain--	0-55 55-183	70-85 87-95	10-27 3-12	3-8 1-3	1.51-1.57 1.55-1.70	14.0-141.0 141.0-705.0	0.02-0.10 0.00-0.02	0.1-0.7 0.0-0.1	0.5-2.0 0.1-1.0
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace----	0-4 4-13 13-43 43-183	62-75 71-80 60-73	19-35 17-28 22-37	3-8 1-5 1-5	0.05-0.18 0.60-1.10 1.23-1.54 1.53-1.62	4.0-141.0 14.0-42.0 42.0-141.0 14.0-42.0	0.05-0.50 0.08-0.12 0.02-0.06 0.01-0.08	--- 0.0-0.7 0.0-0.4 0.0-0.4	50-100 6.0-22 2.0-6.0 0.5-2.0

Table 7.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Ksat	Available water capacity	Linear extensi- bility	Organic matter
	cm	Pct	Pct	Pct	g/cc	um/sec	cm/cm	Pct	Pct
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	7-21	62-75	19-35	3-8	0.60-1.10	14.0-42.0	0.05-0.13	0.0-0.7	6.0-22
	21-183	90-99	0-10	0-3	1.59-1.80	141.0-705.0	0.00-0.02	0.0-0.1	0.1-1.0
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded	0-5				0.05-0.10	42.0-141.0	0.05-0.35	---	50-100
	5-9	35-53	43-62	3-8	0.60-1.10	4.0-14.0	0.12-0.24	0.1-0.8	6.0-22
	9-183	85-97	0-13	2-5	1.56-1.80	42.0-705.0	0.01-0.04	0.0-0.3	0.1-1.0
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	3-5	44-60	37-53	3-8	0.60-1.10	4.0-14.0	0.12-0.24	0.1-0.8	6.0-22
	5-183	77-90	6-19	2-4	1.56-1.70	42.0-705.0	0.00-0.04	0.0-0.3	0.1-1.0
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded	0-5				0.05-0.10	42.0-141.0	0.05-0.35	---	50-100
	5-45	35-53	43-62	3-8	0.60-1.10	4.0-14.0	0.12-0.24	0.1-0.8	0.5-2.0
	45-183	85-97	0-13	2-5	1.56-1.80	42.0-705.0	0.01-0.04	0.0-0.3	0.1-1.0
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	0-3				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	3-5	44-60	37-53	3-8	0.60-1.10	4.0-14.0	0.12-0.24	0.1-0.8	6.0-22
	5-183	77-90	6-19	2-4	1.56-1.70	42.0-705.0	0.00-0.04	0.0-0.3	0.1-1.0

Table 7.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Ksat	Available water capacity	Linear extensi- bility	Organic matter
	cm	Pct	Pct	Pct	g/cc	um/sec	cm/cm	Pct	Pct
22LF2:									
22-Maritime Forest Gravelly Floodplains, Rarely Flooded	0-5				0.05-0.10	42.0-141.0	0.05-0.35	---	50-100
	5-9	35-53	43-62	3-8	0.60-1.10	4.0-14.0	0.12-0.24	0.1-0.8	6.0-22
	9-183	85-97	0-13	2-5	1.56-1.80	42.0-705.0	0.01-0.04	0.0-0.3	0.1-1.0
22LM1:									
22-Maritime Forest Gravelly Slopes, Shallow	0-8				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	8-12	50-60	33-47	3-8	0.50-0.90	14.0-42.0	0.08-0.24	0.0-0.5	12-28
	12-17	52-70	22-42	3-8	0.90-1.30	14.0-42.0	0.03-0.12	0.1-0.8	2.0-4.0
	17-22	52-70	22-42	3-8	0.90-1.39	14.0-42.0	0.03-0.10	0.1-0.7	4.0-8.0
	27-40	61-71	22-36	3-8	1.53-1.62	14.0-42.0	0.01-0.12	0.0-0.6	0.5-2.0
	40-183				---	0.0-0.0	---	---	---
22-Maritime Forest Organic Slopes, Dry----	0-22				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	22-28	60-73	19-34	3-8	1.53-1.62	14.0-42.0	0.03-0.10	0.1-0.6	0.5-2.0
	28-183				---	0.0-0.0	---	---	---
D22BF1:									
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	0-7				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	7-21	62-75	19-35	3-8	0.60-1.10	14.0-42.0	0.05-0.13	0.0-0.7	6.0-22
	21-183	90-99	0-10	0-3	1.59-1.80	141.0-705.0	0.00-0.02	0.0-0.1	0.1-1.0
D22DW1:									
D22-Maritime Scrub/Herb Mosaic Organic Floodplains----	0-10				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	10-32	46-56	38-51	3-8	1.30-1.50	4.0-14.0	0.12-0.20	0.2-0.9	1.0-3.0
	32-125				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	125-183	93-98	0-6	0-2	1.62-1.80	141.0-705.0	0.00-0.02	0.0-0.1	0.1-1.0

Table 7.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Ksat	Available water capacity	Linear extensibility	Organic matter
	cm	Pct	Pct	Pct	g/cc	um/sec	cm/cm	Pct	Pct
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	0-31				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	31-36	60-73	19-34	3-8	1.53-1.62	14.0-42.0	0.03-0.10	0.1-0.6	0.5-2.0
	36-183				---	0.0-0.0	---	---	---
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow	0-8				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	8-15	50-60	33-47	3-8	0.50-0.90	14.0-42.0	0.01-0.13	0.0-0.5	12-28
	15-39	52-70	22-42	3-8	0.90-1.39	14.0-42.0	0.01-0.08	0.0-0.5	4.0-8.0
	39-40	61-71	22-36	3-8	1.53-1.62	14.0-42.0	0.01-0.12	0.0-0.6	0.5-2.0
	40-183				---	0.0-0.0	---	---	---
D22-Maritime Forest Gravelly Slopes, Shallow, Convex	0-6				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	6-7	50-60	33-47	3-8	0.50-0.90	14.0-42.0	0.01-0.13	0.0-0.5	12-28
	7-12	52-70	22-42	3-8	0.90-1.30	14.0-42.0	0.01-0.10	0.0-0.7	2.0-4.0
	12-33	52-70	22-42	3-8	0.90-1.39	14.0-42.0	0.01-0.10	0.0-0.6	4.0-8.0
	33-40	61-71	22-36	3-8	1.53-1.62	14.0-42.0	0.01-0.12	0.0-0.5	0.5-2.0
	40-183				---	0.0-0.0	---	---	---
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow	0-8				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	8-15	50-60	33-47	3-8	0.50-0.90	14.0-42.0	0.01-0.13	0.0-0.5	12-28
	15-39	52-70	22-42	3-8	0.90-1.39	14.0-42.0	0.01-0.08	0.0-0.5	4.0-8.0
	39-40	61-71	22-36	3-8	1.53-1.62	14.0-42.0	0.01-0.12	0.0-0.6	0.5-2.0
	40-183				---	0.0-0.0	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional---	0-24	60-73	19-34	3-8	1.53-1.62	14.0-42.0	0.01-0.08	0.0-0.4	0.5-2.0
	24-30				0.07-0.18	4.0-14.0	0.05-0.50	---	50-100
	30-183	61-71	22-36	3-8	1.53-1.59	14.0-42.0	0.01-0.08	0.0-0.4	0.5-2.0

Table 7.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Ksat	Available water capacity	Linear extensi- bility	Organic matter
	cm	Pct	Pct	Pct	g/cc	um/sec	cm/cm	Pct	Pct
D22SA1: D22-Subalpine Scrub Gravelly Slopes, Convex	0-3				0.05-0.18	4.0-141.0	0.05-0.50	---	50-100
	3-38	45-70	22-50	3-8	1.30-1.62	4.0-42.0	0.05-0.17	0.1-0.8	0.5-2.0
	38-183				---	0.0-0.0	---	---	---
D22SA2: D22-Maritime Scrub/Herb Gravelly Slopes, Depositional---	0-24	60-73	19-34	3-8	1.53-1.62	14.0-42.0	0.01-0.08	0.0-0.4	0.5-2.0
	24-30				0.07-0.18	4.0-14.0	0.05-0.50	---	50-100
	30-183	61-71	22-36	3-8	1.53-1.59	14.0-42.0	0.01-0.08	0.0-0.4	0.5-2.0

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 8.--Chemical Soil Properties

(Absence of an entry indicates that data were not estimated. Map units and map unit components that are dominantly nonsoil are not included in this table.)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
22CF1:								
22-Estuarine Graminoid Loamy Floodplains-----	0-2	5.0-25.0	---	7.1-7.4	0	0	4.0-16.0	0-2
	2-66	2.0-10.0	---	7.1-7.5	0	0	4.0-16.0	0-2
	66-90	2.0-10.0	---	7.1-7.5	0	0	4.0-16.0	0-2
	90-183	0.5-2.0	---	7.3-7.7	0	0	4.0-16.0	0-2
22-Estuarine Graminoid Loamy Floodplains, Depression-----	0-23	2.0-10.0	---	7.1-7.7	0	0	4.0-16.0	0-2
	23-43	2.0-10.0	---	7.1-7.7	0	0	4.0-16.0	0-2
	43-183	0.5-2.0	---	7.4-7.9	0	0	4.0-16.0	0-2
22CP3:								
22-Estuarine Graminoid Gravelly Coastal Plain-----	0-55	1.0-10.0	---	7.0-7.7	0	0	16.0-50.0	1-3
	55-183	0.5-2.0	---	7.0-7.7	0	0	16.0-50.0	1-3
22FF1:								
22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace----	0-4	---	17.0-55.0	3.8-6.3	---	---	---	---
	4-13	---	1.0-10.0	4.3-6.4	0	0	0.0-2.0	0
	13-43	1.0-5.0	---	5.2-6.2	0	0	0.0-2.0	0
	43-183	2.0-10.0	---	5.2-6.9	0	0	0.0-2.0	0
22HF1:								
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded	0-7	---	17.0-55.0	3.9-5.9	---	---	---	---
	7-21	---	1.0-10.0	4.2-6.4	0	0	0.0-2.0	0
	21-183	0.5-2.0	---	4.4-6.5	0	0	0.0-2.0	0
22LF1:								
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	0-5	75.0-150.0	---	4.3-6.3	---	---	---	---
	5-9	5.0-25.0	---	5.4-7.0	0	0	0.0-2.0	0
	9-183	0.5-5.0	---	5.7-7.0	0	0	0.0-2.0	0
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded	0-3	75.0-210.0	---	4.8-6.3	---	---	---	---
	3-5	5.0-25.0	---	5.4-7.0	0	0	0.0-2.0	0
	5-183	0.5-5.0	---	5.7-7.0	0	0	0.0-2.0	0
22LF2:								
22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	0-5	75.0-150.0	---	4.3-6.3	---	---	---	---
	5-45	5.0-25.0	---	5.4-7.0	0	0	0.0-2.0	0
	45-183	0.5-5.0	---	5.7-7.0	0	0	0.0-2.0	0

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Table 8.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>22LF2:</b>								
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded	0-3	75.0-210.0	---	4.8-6.3	---	---	---	---
	3-5	5.0-25.0	---	5.4-7.0	0	0	0.0-2.0	0
	5-183	0.5-5.0	---	5.7-7.0	0	0	0.0-2.0	0
<b>22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----</b>								
	0-5	75.0-150.0	---	4.3-6.3	---	---	---	---
	5-9	5.0-25.0	---	5.4-7.0	0	0	0.0-2.0	0
	9-183	0.5-5.0	---	5.7-7.0	0	0	0.0-2.0	0
<b>22LM1:</b>								
22-Maritime Forest Gravelly Slopes, Shallow-----	0-8	---	17.0-55.0	3.7-4.7	---	---	---	---
	8-12	---	1.0-10.0	3.2-4.3	0	0	0.0-2.0	0
	12-17	---	1.0-10.0	3.6-4.6	0	0	0.0-2.0	0
	17-22	---	1.0-10.0	4.3-5.0	0	0	0.0-2.0	0
	27-40	---	1.0-7.0	4.4-5.7	0	0	0.0-2.0	0
	40-183	---	---	---	---	---	---	---
<b>22-Maritime Forest Organic Slopes, Dry</b>								
	0-22	---	17.0-55.0	3.8-5.0	---	---	---	---
	22-28	---	1.0-7.0	3.7-4.8	0	0	0.0-2.0	0
	28-183	---	---	---	---	---	---	---
<b>D22BF1:</b>								
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded	0-7	---	17.0-55.0	3.9-5.9	---	---	---	---
	7-21	---	1.0-10.0	4.2-6.4	0	0	0.0-2.0	0
	21-183	0.5-2.0	---	4.4-6.5	0	0	0.0-2.0	0
<b>D22DW1:</b>								
D22-Maritime Scrub/Herb Mosaic Organic Floodplains	0-10	75.0-210.0	---	5.3-6.2	---	---	---	---
	10-32	2.0-10.0	---	5.6-6.2	0	0	0.0-2.0	0
	32-125	90.0-210.0	---	6.0-6.2	---	---	---	---
	125-183	0.5-2.0	---	6.0-6.2	0	0	0.0-2.0	0
<b>D22HM2:</b>								
D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	0-31	---	17.0-55.0	3.8-5.0	---	---	---	---
	31-36	---	1.0-7.0	3.7-4.8	0	0	0.0-2.0	0
	36-183	---	---	---	---	---	---	---
<b>D22LM2:</b>								
D22-Maritime Forest Gravelly Slopes, Shallow-----	0-8	---	17.0-55.0	3.7-4.7	---	---	---	---
	8-15	---	1.0-10.0	3.2-4.3	0	0	0.0-2.0	0
	15-39	---	1.0-10.0	4.3-5.0	0	0	0.0-2.0	0
	39-40	---	1.0-7.0	4.4-5.7	0	0	0.0-2.0	0
	40-183	---	---	---	---	---	---	---

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Table 8.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>D22LM2:</b>								
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	0-6	---	17.0-55.0	3.7-4.7	---	---	---	---
	6-7	---	1.0-10.0	3.2-4.3	0	0	0.0-2.0	0
	7-12	---	1.0-10.0	3.6-4.6	0	0	0.0-2.0	0
	12-33	---	1.0-10.0	4.3-5.0	0	0	0.0-2.0	0
	33-40	---	1.0-7.0	4.4-5.7	0	0	0.0-2.0	0
	40-183	---	---	---	---	---	---	---
<b>D22LM3:</b>								
D22-Maritime Forest Gravelly Slopes, Shallow-----	0-8	---	17.0-55.0	3.7-4.7	---	---	---	---
	8-15	---	1.0-10.0	3.2-4.3	0	0	0.0-2.0	0
	15-39	---	1.0-10.0	4.3-5.0	0	0	0.0-2.0	0
	39-40	---	1.0-7.0	4.4-5.7	0	0	0.0-2.0	0
	40-183	---	---	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional	0-24	2.0-10.0	---	6.0-7.0	0	0	0.0-2.0	0
	24-30	75.0-150.0	---	5.4-6.9	---	---	---	---
	30-183	2.0-10.0	---	6.0-7.0	0	0	0.0-2.0	0
<b>D22SA1:</b>								
D22-Subalpine Scrub Gravelly Slopes, Convex-----	0-3	---	17.0-55.0	3.7-5.7	---	---	---	---
	3-38	2.0-10.0	---	4.9-6.4	0	0	0.0-2.0	0
	38-183	---	---	---	---	---	---	---
<b>D22SA2:</b>								
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional	0-24	2.0-10.0	---	6.0-7.0	0	0	0.0-2.0	0
	24-30	75.0-150.0	---	5.4-6.9	---	---	---	---
	30-183	2.0-10.0	---	6.0-7.0	0	0	0.0-2.0	0

Table 9.--Total Soil Carbon

(This table gives soil organic carbon (SOC) and soil inorganic carbon (SIC) in kilograms per square meter to a depth of 2 meters or to the representative top depth of any kind of bedrock or any cemented soil horizon. SOC and SIC are given on a volumetric whole soil basis, corrected for representative rock fragments indicated in the database. SOC is converted from horizon soil organic matter of the fraction of the soil less than 2 millimeters in diameter. If the SOC indicated in the database is NULL, SOC is assumed to be zero. SIC is converted from horizon calcium carbonate content fraction of the soil less than 2 millimeters in diameter. If the horizon calcium carbonate indicated in the database is NULL, SIC is assumed to be zero. A weighted average of all horizons is used in the calculations. Only major components of a map unit are shown in this table.)

Map unit symbol, component name, and percentage of map unit	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
22CF1:		
22--Estuarine Graminoid Loamy Floodplains (65 percent)-----	9	0
22--Maritime Water, Flowing (20 percent)-----	0	0
22--Estuarine Graminoid Loamy Floodplains, Depression (15 percent)-----	4	0
22CP3:		
22--Estuarine Graminoid Gravelly Coastal Plain (95 percent)-----	5	0
22FF1:		
22--Maritime Forest Gravelly Alluvial Fan, Fan Terrace (95 percent)-----	19	0
22HF1:		
22--Maritime Riverwash, Bouldery (45 percent)-----	4	0
22--Maritime Water, Flowing (30 percent)-----	0	0
22--Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded (25 percent)-----	12	0
22LF1:		
22--Maritime Forest Gravelly Floodplains, Rarely Flooded (60 percent)-----	8	0
22--Maritime Forest Gravelly Floodplains, Occasionally Flooded (20 percent)-----	6	0
22LF2:		
22--Maritime Forest Loamy Floodplains, Rarely Flooded (40 percent)-----	6	0
22--Maritime Forest Gravelly Floodplains, Occasionally Flooded (20 percent)-----	6	0
22--Maritime Forest Gravelly Floodplains, Rarely Flooded (20 percent)-----		

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 9.--Total Soil Carbon--Continued

Map unit symbol, component name, and percentage of map unit	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
22LM1:		
22-Maritime Forest Gravelly Slopes, Shallow (60 percent)-----	7	0
22-Maritime Forest Organic Slopes, Dry (20 percent)-----	7	0
22UF1:		
Maritime Urban Land.		
D22AM1:		
D22-Subalpine and Alpine Permanent Ice and Snow (33 percent)-----	0	0
D22-Subalpine and Alpine Rock Outcrop (33 percent)-----	0	0
D22-Subalpine and Alpine Rubble Land (30 percent)	0	0
D22BF1:		
D22-Maritime Riverwash, Bouldery (45 percent)----	4	0
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded (40 percent)----	12	0
D22-Maritime Water, Flowing (15 percent)-----	0	0
D22DW1:		
D22-Maritime Scrub/Herb Mosaic Organic Floodplains (90 percent)-----	37	0
D22HM2:		
D22-Maritime Forest Organic Slopes, Dry, High Elevation (50 percent)-----	10	0
D22-Maritime Rock Outcrop (20 percent)-----	0	0
D22-Maritime Rubble Land (20 percent)-----	0	0
D22LM2:		
D22-Maritime Forest Gravelly Slopes, Shallow (35 percent)-----	10	0
D22-Maritime Forest Gravelly Slopes, Shallow, Convex (25 percent)-----	5	0
D22-Maritime Rock Outcrop (20 percent)-----	0	0
D22LM3:		
D22-Maritime Forest Gravelly Slopes, Shallow (30 percent)-----	10	0
D22-Maritime Rubble Land (20 percent)-----	0	0
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional (20 percent)-----	3	0
D22-Maritime Rock Outcrop (15 percent)-----	0	0
D22SA1:		
D22-Subalpine and Alpine Rubble Land (25 percent)	0	0

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 9.--Total Soil Carbon--Continued

Map unit symbol, component name, and percentage of map unit	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
D22SA1: D22-Subalpine and Alpine Rock Outcrop (20 percent)-----	0	0
D22-Subalpine Scrub Gravelly Slopes, Convex (15 percent)-----	4	0
D22SA2: D22-Subalpine and Alpine Rubble Land (34 percent)	0	0
D22-Subalpine and Alpine Rock Outcrop (33 percent)-----	0	0
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional (30 percent)-----	3	0
D22WF1: Maritime Water, Lakes and Ponds.		
D22WS1: Estuarine Water, Saline.		

Table 10.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	---	---	---	---	0	0	Moderate	High	Moderate
22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---
22-Estuarine Graminoid Loamy Floodplains, Depression-----	---	---	---	---	0	0	High	High	Moderate
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain	---	---	---	---	0	0	Low	High	High
22-Estuarine Graminoid Loamy Floodplains-----	---	---	---	---	0	0	Moderate	High	Moderate
22-Estuarine Water, Saline-----	---	---	---	---	---	---	---	---	---
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	---	---	---	---	0	0	Moderate	High	High
22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---
22HF1: 22-Maritime Riverwash Bouldery-----	---	---	---	---	---	---	---	---	---
22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded--	---	---	---	---	0	0	Low	High	High

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
22LF1:									
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	---	---	---	---	0	0	Low	Moderate	Moderate
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded--	---	---	---	---	0	0	Low	Moderate	Moderate
22-Maritime Riverwash Gravelly-----	---	---	---	---	---	---	---	---	---
22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---
22-Maritime Scrub Gravelly Floodplains, Frequently Flooded----	---	---	---	---	0	0	Low	Low	Moderate
22-Maritime Scrub Gravelly Floodplains, Depression-----	---	---	---	---	0	0	Low	Moderate	Low
22-Maritime Gravel Pit	---	---	---	---	---	---	---	---	---
22LF2:									
22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	---	---	---	---	0	0	Low	Moderate	Moderate
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded--	---	---	---	---	0	0	Low	Moderate	Moderate
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	---	---	---	---	0	0	Low	Moderate	Moderate
22-Maritime Riverwash, Gravelly-----	---	---	---	---	---	---	---	---	---
22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
22LF2: 22-Maritime Scrub Gravelly Floodplains, Depression-----	---	---	---	---	0	0	Low	Moderate	Low
22-Maritime Scrub Gravelly Floodplains, Frequently Flooded----	---	---	---	---	0	0	Low	Low	Moderate
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	Lithic bedrock	12-26	---	Indurated	0	0	Moderate	High	High
22-Maritime Forest Organic Slopes, Dry----	Lithic bedrock	7-14	---	Indurated	---	---	High	High	High
22-Maritime Rock Outcrop-----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
22-Maritime Forest Organic Slopes, Depression-----	---	---	---	---	28-55	39-79	High	High	High
22UF1: 22-Maritime Urban Land	---	---	---	---	---	---	---	---	---
22-Maritime Urban Land, Flooded-----	---	---	---	---	---	---	---	---	---
22-Maritime Gravel Pit	---	---	---	---	---	---	---	---	---
22-Maritime Levees-----	---	---	---	---	---	---	---	---	---
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	---	---	---	---	---	---	---	---	---
D22-Subalpine and Alpine Rock Outcrop----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Subalpine and Alpine Rubble Land----	---	---	---	---	---	---	---	---	---

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
D22AM1: D22-Alpine Herbaceous Gravelly Diorite Slopes-----	Lithic bedrock	9-20	---	Indurated	0	0	Moderate	High	High
D22BF1: D22-Maritime Riverwash Bouldery-----	---	---	---	---	---	---	---	---	---
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded--	---	---	---	---	0	0	Low	High	High
D22-Maritime Water, Flowing-----	---	---	---	---	---	---	---	---	---
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains---	---	---	---	---	19-31	26-44	High	High	Moderate
D22-Maritime Water, Lakes and Ponds-----	---	---	---	---	---	---	---	---	---
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	Lithic bedrock	7-24	---	Indurated	2-11	4-16	High	Moderate	High
D22-Maritime Rock Outcrop-----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Maritime Rubble Land-----	---	---	---	---	---	---	---	---	---
D22-Maritime Forest Gravelly Slopes, High Elevation-----	Lithic bedrock	21-72	---	Indurated	0	0	Moderate	High	High
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	Lithic bedrock	12-26	---	Indurated	0	0	Moderate	High	High

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	Lithic bedrock	12-26	---	Indurated	0	0	Moderate	High	High
D22-Maritime Rock Outcrop-----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Maritime Forest Organic Slopes, Dry---	Lithic bedrock	7-14	---	Indurated	3-6	4-8	High	Moderate	High
D22-Maritime Forest Gravelly Slopes, High Elevation-----	Lithic bedrock	21-72	---	Indurated	0	0	Moderate	High	High
D22-Maritime Forest Organic Slopes, Depression-----	---	---	---	---	28-55	39-79	High	High	High
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow-----	Lithic bedrock	12-26	---	Indurated	0	0	Moderate	High	High
D22-Maritime Rubble Land-----	---	---	---	---	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional--	---	---	---	---	0	0	Moderate	Low	Moderate
D22-Maritime Rock Outcrop-----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Maritime Forest Organic Slopes, Dry---	Lithic bedrock	7-14	---	Indurated	3-6	4-8	High	Moderate	High
D22-Maritime Forest Gravelly Slopes, High Elevation-----	Lithic bedrock	21-72	---	Indurated	0	0	Moderate	High	High
D22SA1: D22-Subalpine and Alpine Rubble Land----	---	---	---	---	---	---	---	---	---

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>In</i>	<i>In</i>		<i>In</i>	<i>In</i>			
D22SA1: D22-Subalpine and Alpine Rock Outcrop----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Subalpine Scrub Gravelly Slopes, Convex-----	Lithic bedrock	10-22	---	Indurated	0	0	Moderate	High	Moderate
D22-Subalpine Scrub Organic Slopes-----	Lithic bedrock	7-12	---	Indurated	1-5	2-5	High	High	High
D22-Subalpine Scrub Gravelly Slopes-----	Lithic bedrock	20-31	---	Indurated	0	0	Moderate	High	High
D22-Subalpine Scrub Gravelly Slopes, Depositional-----	Lithic bedrock	8-20	---	Indurated	0	0	Moderate	Moderate	Moderate
D22-Subalpine and Alpine Permanent Ice and Snow-----	---	---	---	---	---	---	---	---	---
D22-Subalpine Forest Gravelly Slopes-----	Lithic bedrock	8-20	---	Indurated	0	0	Moderate	High	High
D22SA2: D22-Subalpine and Alpine Rubble Land----	---	---	---	---	---	---	---	---	---
D22-Subalpine and Alpine Rock Outcrop----	Lithic bedrock	0-0	---	Indurated	---	---	---	---	---
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional--	---	---	---	---	0	0	Moderate	Low	Moderate
D22-Subalpine Scrub Gravelly Slopes, Depositional-----	Lithic bedrock	8-20	---	Indurated	0	0	Moderate	Moderate	Moderate
D22WF1: D22-Maritime Water, Lakes and Ponds-----	---	---	---	---	---	---	---	---	---

Table 10.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		<i>In</i>	<i>In</i>		<i>In</i>	<i>In</i>			
D22WS1: D22-Estuarine Water, Saline-----	---	---	---	---	---	---	---	---	---
D22-Estuarine Gravelly Tidal Flats-----	---	---	---	---	---	---	---	---	---

Table 11.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated. Depth to water table is based on a representative value.)

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Flooding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			<i>cm</i>	<i>cm</i>	<i>cm</i>				
22CF1: 22-Estuarine Graminoid Loamy Floodplains	B	January	130	>200	---	---	None	---	---
		February	130	>200	---	---	None	---	---
		March	130	>200	---	---	None	---	---
		April	130	>200	---	---	None	---	---
		May	130	>200	---	---	None	Long	Frequent
		June	130	>200	---	---	None	Long	Frequent
		July	130	>200	---	---	None	Long	Frequent
		August	16	>200	---	---	None	Long	Frequent
		September	16	>200	---	---	None	Long	Frequent
		October	16	>200	---	---	None	Long	Frequent
		November	130	>200	---	---	None	---	---
		December	130	>200	---	---	None	---	---
22-Maritime Water, Flowing-----	---	January	0	>200	---	---	None	---	---
		February	0	>200	---	---	None	---	---
		March	0	>200	---	---	None	---	---
		April	0	>200	---	---	None	---	---
		May	0	>200	---	---	None	Very long	Very frequent
		June	0	>200	---	---	None	Very long	Very frequent
		July	0	>200	---	---	None	Very long	Very frequent
		August	0	>200	---	---	None	Very long	Very frequent
		September	0	>200	---	---	None	Very long	Very frequent
		October	0	>200	---	---	None	Very long	Very frequent
		November	0	>200	---	---	None	---	---
		December	0	>200	---	---	None	---	---

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
22CF1: 22--Estuarine Graminoid Loamy Floodplains, Depression-----	B	January	10	>200	---	---	---	---	---
		February	10	>200	---	---	---	---	---
		March	10	>200	---	---	---	---	---
		April	10	>200	---	---	---	---	---
		May	0	>200	2-25	Very long	Frequent	Long	Frequent
		June	0	>200	2-25	Very long	Frequent	Long	Frequent
		July	0	>200	2-25	Very long	Frequent	Long	Frequent
		August	0	>200	2-25	Very long	Frequent	Long	Frequent
		September	0	>200	2-25	Very long	Frequent	Long	Frequent
		October	0	>200	2-25	Very long	Frequent	Long	Frequent
		November	10	>200	---	---	---	---	---
		December	10	>200	---	---	---	---	---
22CP3: 22--Estuarine Graminoid Gravelly Coastal Plain-----	A	May	---	---	---	---	None	Brief	Rare
		June	---	---	---	---	None	Brief	Rare
		July	---	---	---	---	None	Brief	Rare
		August	---	---	---	---	None	Brief	Rare
		September	---	---	---	---	None	Brief	Rare
		October	---	---	---	---	None	Brief	Rare
22FF1: 22--Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	A	Jan-Dec	---	---	---	---	None	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
22HF1: 22--Maritime Riverwash, Bouldery-----	---	January	40	>200	---	---	None	---	---
		February	40	>200	---	---	None	---	---
		March	40	>200	---	---	None	---	---
		April	40	>200	---	---	None	---	---
		May	10	>200	---	---	None	Long	Very frequent
		June	10	>200	---	---	None	Long	Very frequent
		July	10	>200	---	---	None	Long	Very frequent
		August	10	>200	---	---	None	Long	Very frequent
		September	10	>200	---	---	None	Long	Very frequent
		October	10	>200	---	---	None	Long	Very frequent
		November	10	>200	---	---	None	---	---
		December	40	>200	---	---	None	---	---
22--Maritime Water, Flowing-----	---	January	0	>200	---	---	None	---	---
		February	0	>200	---	---	None	---	---
		March	0	>200	---	---	None	---	---
		April	0	>200	---	---	None	---	---
		May	0	>200	---	---	None	Very long	Very frequent
		June	0	>200	---	---	None	Very long	Very frequent
		July	0	>200	---	---	None	Very long	Very frequent
		August	0	>200	---	---	None	Very long	Very frequent
		September	0	>200	---	---	None	Very long	Very frequent
		October	0	>200	---	---	None	Very long	Very frequent
		November	0	>200	---	---	None	---	---
		December	0	>200	---	---	None	---	---

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Surface water depth	Ponding		Flooding	
			Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
			cm	cm	cm				
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	A	May	---	---	---	---	None	Brief	Occasional
		June	---	---	---	---	None	Brief	Occasional
		July	---	---	---	---	None	Brief	Occasional
		August	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
		October	---	---	---	---	None	Brief	Occasional
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----		B	May	---	---	---	---	None	Brief
	June		---	---	---	---	None	Brief	Rare
	July		---	---	---	---	None	Brief	Rare
	August		---	---	---	---	None	Brief	Rare
	September		---	---	---	---	None	Brief	Rare
	October		---	---	---	---	None	Brief	Rare
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	B		May	100	>200	---	---	None	Brief
		June	100	>200	---	---	None	Brief	Occasional
		July	100	>200	---	---	None	Brief	Occasional
		August	100	>200	---	---	None	Brief	Occasional
		September	100	>200	---	---	None	Brief	Occasional
		October	100	>200	---	---	None	Brief	Occasional

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	B	May	---	---	---	---	None	Brief	Rare
		June	---	---	---	---	None	Brief	Rare
		July	---	---	---	---	None	Brief	Rare
		August	---	---	---	---	None	Brief	Rare
		September	---	---	---	---	None	Brief	Rare
		October	---	---	---	---	None	Brief	Rare
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	B	May	100	>200	---	---	None	Brief	Occasional
		June	100	>200	---	---	None	Brief	Occasional
		July	100	>200	---	---	None	Brief	Occasional
		August	100	>200	---	---	None	Brief	Occasional
		September	100	>200	---	---	None	Brief	Occasional
		October	100	>200	---	---	None	Brief	Occasional
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	B	May	---	---	---	---	None	Brief	Rare
		June	---	---	---	---	None	Brief	Rare
		July	---	---	---	---	None	Brief	Rare
		August	---	---	---	---	None	Brief	Rare
		September	---	---	---	---	None	Brief	Rare
		October	---	---	---	---	None	Brief	Rare
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	D	Jan-Dec	---	---	---	---	None	---	None
22-Maritime Forest Organic Slopes, Dry---	D	Jan-Dec	---	---	---	---	None	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Surface water depth	Ponding		Flooding	
			Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
			cm	cm	cm				
22UF1: Maritime Urban Land.									
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	---	January	0	>200	---	---	None	---	None
		February	0	>200	---	---	None	---	None
		March	0	>200	---	---	None	---	None
		April	0	>200	---	---	None	---	None
		May	0	>200	---	---	None	---	None
		June	0	>200	---	---	None	---	None
		July	0	>200	---	---	None	---	None
		August	0	>200	---	---	None	---	None
		September	0	>200	---	---	None	---	None
		October	0	>200	---	---	None	---	None
		November	0	>200	---	---	None	---	None
		December	0	>200	---	---	None	---	None
D22-Subalpine and Alpine Rock Outcrop----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Subalpine and Alpine Rubble Land-----	---	Jan-Dec	---	---	---	---	None	---	None
D22BF1: D22-Maritime Riverwash, Bouldery-----	---	January	40	>200	---	---	None	---	---
		February	40	>200	---	---	None	---	---
		March	40	>200	---	---	None	---	---
		April	40	>200	---	---	None	---	---
		May	10	>200	---	---	None	Long	Very frequent
		June	10	>200	---	---	None	Long	Very frequent
		July	10	>200	---	---	None	Long	Very frequent
		August	10	>200	---	---	None	Long	Very frequent
		September	10	>200	---	---	None	Long	Very frequent
		October	10	>200	---	---	None	Long	Very frequent
		November	10	>200	---	---	None	---	---
		December	40	>200	---	---	None	---	---

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
D22BF1: D22--Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	A	May	---	---	---	---	None	Brief	Occasional
		June	---	---	---	---	None	Brief	Occasional
		July	---	---	---	---	None	Brief	Occasional
		August	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
		October	---	---	---	---	None	Brief	Occasional
D22--Maritime Water, Flowing-----	---	January	0	>200	---	---	None	---	---
		February	0	>200	---	---	None	---	---
		March	0	>200	---	---	None	---	---
		April	0	>200	---	---	None	---	---
		May	0	>200	---	---	None	Very long	Very frequent
		June	0	>200	---	---	None	Very long	Very frequent
		July	0	>200	---	---	None	Very long	Very frequent
		August	0	>200	---	---	None	Very long	Very frequent
		September	0	>200	---	---	None	Very long	Very frequent
		October	0	>200	---	---	None	Very long	Very frequent
		November	0	>200	---	---	None	---	---
		December	0	>200	---	---	None	---	---
D22DW1: D22--Maritime Scrub/Herb Mosaic Organic Floodplains-----	B	January	10	>200	---	---	---	---	---
		February	10	>200	---	---	---	---	---
		March	10	>200	---	---	---	---	---
		April	10	>200	---	---	---	---	---
		May	0	>200	5-35	Very long	Frequent	Long	Frequent
		June	0	>200	5-35	Very long	Frequent	Long	Frequent
		July	0	>200	5-35	Very long	Frequent	Long	Frequent
		August	0	>200	5-35	Very long	Frequent	Long	Frequent
		September	0	>200	5-35	Very long	Frequent	Long	Frequent
		October	0	>200	5-35	Very long	Frequent	Long	Frequent
		November	10	>200	---	---	---	---	---
		December	10	>200	---	---	---	---	---

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Surface water depth	Ponding		Flooding	
			Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
			cm	cm	cm				
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	D	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Rock Outcrop-----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Rubble Land-----	---	Jan-Dec	---	---	---	---	None	---	None
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	D	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	D	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Rock Outcrop-----	---	Jan-Dec	---	---	---	---	None	---	None
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow-----	D	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Rubble Land-----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	B	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Rock Outcrop-----	---	Jan-Dec	---	---	---	---	None	---	None
D22SA1: D22-Subalpine and Alpine Rubble Land-----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Subalpine and Alpine Rock Outcrop-----	---	Jan-Dec	---	---	---	---	None	---	None

Table 11.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding		Flooding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
D22SA1: D22-Subalpine Scrub Gravelly Slopes, Convex-----	D	Jan-Dec	---	---	---	---	None	---	None
D22SA2: D22-Subalpine and Alpine Rubble Land-----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Subalpine and Alpine Rock Outcrop-----	---	Jan-Dec	---	---	---	---	None	---	None
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	B	Jan-Dec	---	---	---	---	None	---	None
D22WF1: Maritime Water, Lakes and Ponds.									
D22WS1: Estuarine Water, Saline.									

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 12.--Planting

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	65	Well suited		Well suited		Severe Low strength	1.00
22-Maritime Water, Flowing-----	20	Not rated		Not rated		Not rated	
22-Estuarine Graminoid Loamy Floodplains, Depression-----	15	Moderately suited Wetness	0.50	Poorly suited Wetness	0.75	Severe Low strength Wetness	1.00 0.50
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	95	Well suited		Moderately suited Rock fragments	0.50	Moderate Low strength	0.50
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Moderately suited Rock fragments	0.50	Poorly suited Rock fragments Slope	0.75 0.50	Slight Strength	0.10
22HF1: 22-Maritime Riverwash, Bouldery	45	Not rated		Not rated		Not rated	
22-Maritime Water, Flowing-----	30	Not rated		Not rated		Not rated	
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Moderately suited Sandiness Rock fragments	0.50 0.50	Unsuited Rock fragments Sandiness	1.00 0.50	Slight Strength	0.10
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Sandiness	0.75 0.50	Moderate Low strength	0.50

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 12.--Planting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22LF1: 22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Sandiness	0.75 0.50	Slight Strength	0.10
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded----	40	Moderately suited Rock fragments	0.50	Poorly suited Rock fragments	0.75	Severe Low strength	1.00
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Sandiness	0.75 0.50	Slight Strength	0.10
22-Maritime Forest Gravelly Floodplains, Rarely Flooded----	20	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Sandiness	0.75 0.50	Moderate Low strength	0.50
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Severe Low strength	1.00
22-Maritime Forest Organic Slopes, Dry	20	Unsuited Restrictive layer Rock fragments	1.00 0.50	Unsuited Rock fragments Restrictive layer Slope	1.00 1.00 0.50	Moderate Low strength	0.50
22UF1: Maritime Urban Land.							
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 12.--Planting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22BF1:							
D22-Maritime Riverwash, Boulderly	45	Not rated		Not rated		Not rated	
D22-Maritime Forest							
Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Moderately suited Sandiness Rock fragments	0.50 0.50	Unsuited Rock fragments Sandiness	1.00 0.50	Slight Strength	0.10
D22-Maritime Water, Flowing-----	15	Not rated		Not rated		Not rated	
D22DW1:							
D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Moderately suited Wetness	0.50	Poorly suited Wetness	0.75	Severe Low strength Wetness	1.00 0.50
D22HM2:							
D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Severe Low strength	1.00
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated		Not rated	
D22LM2:							
D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Severe Low strength	1.00
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Unsuited Restrictive layer Slope Sandiness Rock fragments	1.00 0.50 0.50 0.50	Unsuited Slope Restrictive layer Rock fragments Sandiness	1.00 1.00 0.75 0.50	Severe Low strength	1.00
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated		Not rated	
D22LM3:							
D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Severe Low strength	1.00

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Table 12.--Planting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM3:							
D22-Maritime Rubble Land-----	20	Not rated		Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Moderately suited Rock fragments	0.50	Unsuited Slope Rock fragments	1.00 1.00	Slight Strength	0.10
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated		Not rated	
D22SA1:							
D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
D22SA2:							
D22-Subalpine and Alpine Rubble Land	34	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Moderately suited Rock fragments	0.50	Unsuited Slope Rock fragments	1.00 1.00	Slight Strength	0.10
D22WF1: Maritime Water, Lakes and Ponds.							
D22WS1: Estuarine Water, Saline.							

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 13.--Hazard of Erosion and Suitability for Roads

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22--Estuarine Graminoid Loamy Floodplains-----	65	Slight		Slight		Poorly suited Flooding Low strength Dusty	1.00 0.50 0.01
22--Maritime Water, Flowing-----	20	Not rated		Not rated		Not rated	
22--Estuarine Graminoid Loamy Floodplains, Depression-----	15	Slight		Slight		Poorly suited Ponding Flooding Wetness Low strength Dusty	1.00 1.00 1.00 0.50 0.01
22CP3: 22--Estuarine Graminoid Gravelly Coastal Plain-----	95	Slight		Slight		Well suited	
22FF1: 22--Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Slope Rock fragments	1.00 0.50
22HF1: 22--Maritime Riverwash, Bouldery	45	Not rated		Not rated		Not rated	
22--Maritime Water, Flowing-----	30	Not rated		Not rated		Not rated	
22--Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Slight		Slight		Poorly suited Flooding Rock fragments	1.00 0.50
22LF1: 22--Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Slight		Slight		Well suited	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 13.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22LF1: 22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Slight		Slight		Poorly suited Flooding Sandiness	1.00 0.50
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Slight		Slight		Moderately suited Low strength Dusty	0.50 0.01
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Slight		Slight		Poorly suited Flooding Sandiness	1.00 0.50
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Slight		Slight		Well suited	
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope Low strength Dusty	1.00 1.00 0.01
22-Maritime Forest Organic Slopes, Dry	20	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Low strength Slope Rock fragments Dusty	1.00 1.00 0.50 0.01
22UF1: Maritime Urban Land.							
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 13.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22BF1: D22-Maritime Riverwash, Bouldery	45	Not rated		Not rated		Not rated	
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Slight		Slight		Poorly suited Flooding Rock fragments	1.00 0.50
D22-Maritime Water, Flowing-----	15	Not rated		Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Slight		Slight		Poorly suited Low strength Ponding Flooding Wetness Dusty	1.00 1.00 1.00 1.00 0.01
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Low strength Rock fragments	1.00 1.00 0.50
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated		Not rated	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Low strength Dusty	1.00 1.00 0.01
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Sandiness Dusty	1.00 0.50 0.01
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated		Not rated	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 13.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM3: D22--Maritime Forest Gravelly Slopes, Shallow-----	30	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Low strength Dusty	1.00 1.00 0.01
D22--Maritime Rubble Land-----	20	Not rated		Not rated		Not rated	
D22--Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Sandiness Rock fragments	1.00 0.50 0.50
D22--Maritime Rock Outcrop-----	15	Not rated		Not rated		Not rated	
D22SA1: D22--Subalpine and Alpine Rubble Land	25	Not rated		Not rated		Not rated	
D22--Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated		Not rated	
D22--Subalpine Scrub Gravelly Slopes, Convex-----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Rock fragments	1.00 0.50
D22SA2: D22--Subalpine and Alpine Rubble Land	34	Not rated		Not rated		Not rated	
D22--Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22--Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Sandiness Rock fragments	1.00 0.50 0.50
D22WF1: Maritime Water, Lakes and Ponds.							
D22WS1: Estuarine Water, Saline.							

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 14.--Site Preparation

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	65	Unsuited Wetness	1.00	Well suited	
22-Maritime Water, Flowing-----	20	Not rated		Not rated	
22-Estuarine Graminoid Loamy Floodplains, Depression-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	95	Well suited		Well suited	
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Poorly suited Slope Rock fragments	0.50 0.50	Poorly suited Slope Rock fragments	0.50 0.50
22HF1: 22-Maritime Riverwash, Bouldery	45	Not rated		Not rated	
22-Maritime Water, Flowing-----	30	Not rated		Not rated	
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Poorly suited Rock fragments	0.50	Poorly suited Rock fragments	0.50
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Well suited		Well suited	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Well suited		Poorly suited Rock fragments	0.50

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 14.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22LF2:					
22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Well suited		Well suited	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Well suited		Poorly suited Rock fragments	0.50
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Well suited		Well suited	
22LM1:					
22-Maritime Forest Gravelly Slopes, Shallow-----	60	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope Rock fragments	1.00 0.50
22-Maritime Forest Organic Slopes, Dry	20	Unsuited Restrictive layer Slope Rock fragments	1.00 0.50 0.50	Unsuited Restrictive layer Slope Rock fragments	1.00 0.50 0.50
22UF1:					
Maritime Urban Land.					
D22AM1:					
D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated	
D22BF1:					
D22-Maritime Riverwash, Bouldery	45	Not rated		Not rated	
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Poorly suited Rock fragments	0.50	Poorly suited Rock fragments	0.50
D22-Maritime Water, Flowing-----	15	Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 14.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22DW1:					
D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
D22HM2:					
D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Unsuited Slope Restrictive layer Rock fragments	1.00 1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22LM2:					
D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope Rock fragments	1.00 0.50
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope Restrictive layer Rock fragments	1.00 1.00 0.50
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22LM3:					
D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope Rock fragments	1.00 0.50
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Poorly suited Slope Rock fragments	0.50 0.50	Poorly suited Slope Rock fragments	0.50 0.50
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated	
D22SA1:					
D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated	

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Table 14.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22SA1:					
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Unsuited Slope Restrictive layer Rock fragments	1.00 1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
D22SA2:					
D22-Subalpine and Alpine Rubble Land	34	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Poorly suited Slope Rock fragments	0.50 0.50	Poorly suited Slope Rock fragments	0.50 0.50
D22WF1: Maritime Water, Lakes and Ponds.					
D22WS1: Estuarine Water, Saline.					

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 15.--Site Restoration

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	65	Low		High Wetness Salinity	1.00 0.50
22-Maritime Water, Flowing-----	20	Not rated		Not rated	
22-Estuarine Graminoid Loamy Floodplains, Depression-----	15	Low		High Wetness Salinity	1.00 0.50
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	95	Low		High Salinity	1.00
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Low		Low	
22HF1: 22-Maritime Riverwash, Bouldery	45	Not rated		Not rated	
22-Maritime Water, Flowing-----	30	Not rated		Not rated	
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Low		Low	
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Low		Low	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Low		Moderate Available water	0.50

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 15.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Low		Low	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Low		Moderate Available water	0.50
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Low		Low	
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Low		Moderate Soil reaction	0.50
22-Maritime Forest Organic Slopes, Dry	20	Low		Moderate Soil reaction	0.50
22UF1: Maritime Urban Land.					
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated	
D22BF1: D22-Maritime Riverwash, Bouldery	45	Not rated		Not rated	
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Low		Low	
D22-Maritime Water, Flowing-----	15	Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Low		High Wetness	1.00

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 15.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22HM2:					
D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Low		Moderate Soil reaction	0.50
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22LM2:					
D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Low		Moderate Soil reaction	0.50
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Low		Moderate Soil reaction	0.50
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22LM3:					
D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Low		Moderate Soil reaction	0.50
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Low		Low	
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated	
D22SA1:					
D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Low		Low	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 15.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire	Potential for seedling mortality
		Rating class and limiting features	Value
D22SA2: D22-Subalpine and Alpine Rubble Land	34	Not rated	Not rated
D22-Subalpine and Alpine Rock Outcrop	33	Not rated	Not rated
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Low	Low
D22WF1: Maritime Water, Lakes and Ponds.			
D22WS1: Estuarine Water, Saline.			

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 16.--Source of Reclamation Material, Roadfill, and Topsoil

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22--Estuarine Graminoid Loamy Floodplains-----	65	Poor Wind erosion Low content of organic matter Water erosion	0.00 0.32 0.37	Poor Wetness Dusty	0.00 0.00 0.95	Poor Wetness Hard to reclaim (rock fragments) Salinity	0.00 0.00 0.00 0.50
22--Maritime Water, Flowing-----	20	Not rated		Not rated		Not rated	
22--Estuarine Graminoid Loamy Floodplains, Depression-----	15	Fair Droughty Low content of organic matter Water erosion	0.10 0.32 0.37	Poor Wetness	0.00	Poor Wetness Hard to reclaim (rock fragments) Rock fragments	0.00 0.00 0.00 0.00
22CP3: 22--Estuarine Graminoid Gravelly Coastal Plain-----	95	Poor Salinity Droughty Too sandy	0.00 0.00 0.09	Good		Poor Hard to reclaim (rock fragments) Rock fragments Salinity	0.00 0.00 0.00 0.00
22FF1: 22--Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Fair Droughty Too acid Cobble content	0.02 0.50 0.95	Fair Cobble content	0.78	Poor Hard to reclaim (rock fragments) Rock fragments Slope	0.00 0.00 0.00 0.00
22HF1: 22--Maritime Riverwash, Bouldery	45	Poor Too sandy Stone content Low content of organic matter	0.00 0.00 0.32	Poor Wetness Stones	0.00 0.00	Poor Wetness Too sandy Rock fragments	0.00 0.00 0.00 0.92
22--Maritime Water, Flowing-----	30	Not rated		Not rated		Not rated	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 16.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Poor Too sandy Droughty Stone content	0.00 0.00 0.00	Poor Stones Cobble content	0.00 0.00 0.27	Poor Hard to reclaim (rock fragments) Too sandy Rock fragments	0.00 0.00 0.00 0.00
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Poor Too sandy Droughty Low content of organic matter	0.00 0.00 0.32	Fair Stones	0.96	Poor Rock fragments Too sandy Hard to reclaim (rock fragments)	0.00 0.00 0.08
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Poor Too sandy Droughty Low content of organic matter	0.00 0.00 0.32	Fair Cobble content	0.19	Poor Too sandy Rock fragments Hard to reclaim (rock fragments)	0.00 0.00 0.00
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Fair Low content of organic matter Droughty Too acid	0.32 0.74 0.84	Good		Poor Rock fragments Hard to reclaim (rock fragments)	0.00 0.08
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Poor Too sandy Droughty Low content of organic matter	0.00 0.00 0.32	Fair Cobble content	0.19	Poor Too sandy Rock fragments Hard to reclaim (rock fragments)	0.00 0.00 0.00
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Poor Too sandy Droughty Low content of organic matter	0.00 0.00 0.32	Fair Stones	0.96	Poor Rock fragments Too sandy Hard to reclaim (rock fragments)	0.00 0.00 0.08

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 16.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material	Potential as source of roadfill	Potential as source of topsoil			
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.50	Poor Depth to bedrock Slope	0.00 0.00	Poor Depth to bedrock Slope Rock fragments	0.00 0.00 0.00
22-Maritime Forest Organic Slopes, Dry	20	Poor Depth to bedrock Droughty Too acid	0.00 0.00 0.50	Poor Depth to bedrock Dusty	0.00 0.80	Poor High content of organic matter Depth to bedrock Slope	0.00 0.00 0.00 0.00
22UF1: Maritime Urban Land.							
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Poor Stones Slope Dusty	0.00 0.00 0.80	Not rated	
D22BF1: D22-Maritime Riverwash, Boulderly	45	Poor Too sandy Stone content Low content of organic matter	0.00 0.00 0.32	Poor Wetness Stones	0.00 0.00	Poor Wetness Too sandy Rock fragments	0.00 0.00 0.92
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Poor Too sandy Droughty Stone content	0.00 0.00 0.00	Poor Stones Cobble content	0.00 0.27	Poor Hard to reclaim (rock fragments) Too sandy Rock fragments	0.00 0.00 0.00
D22-Maritime Water, Flowing-----	15	Not rated		Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Fair Too acid Water erosion	0.80 0.90	Poor Wetness Dusty	0.00 0.80	Poor Wetness High content of organic matter	0.00 0.00

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 16.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22HM2:							
D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	High content of organic matter	0.00
		Droughty	0.00	Slope	0.00	Slope	0.00
		Too acid	0.50	Dusty	0.80	Depth to bedrock	0.00
D22-Maritime Rock Outcrop-----							
	20	Not rated		Not rated		Not rated	
D22-Maritime Rubble Land-----							
	20	Not rated		Poor		Not rated	
				Slope	0.00		
				Stones	0.00		
				Dusty	0.80		
D22LM2:							
D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Slope	0.00	Slope	0.00
		Too acid	0.50			Depth to bedrock	0.00
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----							
	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Too acid	0.50	Stones	0.48	Slope	0.00
D22-Maritime Rock Outcrop-----							
	20	Not rated		Not rated		Not rated	
D22LM3:							
D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Slope	0.00	Slope	0.00
		Too acid	0.50			Depth to bedrock	0.00
D22-Maritime Rubble Land-----							
	20	Not rated		Poor		Not rated	
				Slope	0.00		
				Stones	0.00		
				Dusty	0.80		
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----							
	20	Fair		Poor		Poor	
		Droughty	0.18	Slope	0.00	Hard to reclaim (rock fragments)	0.00
		Too acid	0.92	Cobble content	0.50	Rock fragments	0.00
						Slope	0.00

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 16.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM3: D22-Maritime Rock Outcrop-----	15	Not rated		Not rated		Not rated	
D22SA1: D22-Subalpine and Alpine Rubble Land	25	Not rated		Poor Stones	0.00	Not rated	
				Slope	0.00		
				Dusty	0.80		
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Poor Wind erosion Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Slope Cobble content	0.00 0.00 0.27	Poor Slope Depth to bedrock Rock fragments	0.00 0.00 0.00
D22SA2: D22-Subalpine and Alpine Rubble Land	34	Not rated		Poor Stones Slope Dusty	0.00 0.00 0.80	Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Fair Droughty Too acid	0.18 0.92	Poor Slope Cobble content	0.00 0.50	Poor Hard to reclaim (rock fragments) Rock fragments Slope	0.00 0.00 0.00
D22WF1: Maritime Water, Lakes and Ponds.							
D22WS1: Estuarine Water, Saline.							

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 17.--Source of Gravel and Sand

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Gravel source		Sand source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	65	Fair Thickest layer Bottom layer	0.00 0.54	Fair Thickest layer Bottom layer	0.09 0.54
22-Maritime Water, Flowing-----	20	Not rated		Not rated	
22-Estuarine Graminoid Loamy Floodplains, Depression-----	15	Fair Thickest layer Bottom layer	0.00 0.54	Fair Thickest layer Bottom layer	0.30 0.54
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	95	Fair Thickest layer Bottom layer	0.00 0.68	Fair Bottom layer Thickest layer	0.38 0.53
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.10
22HF1: 22-Maritime Riverwash, Bouldery	45	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
22-Maritime Water, Flowing-----	30	Not rated		Not rated	
22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.08

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 17.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel source		Sand source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.47 0.80
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.14 0.15
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.17 0.47
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.14 0.15
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.47 0.80
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Fair Thickest layer Bottom layer	0.00 0.25	Fair Bottom layer Thickest layer	0.02 0.08
22-Maritime Forest Organic Slopes, Dry	20	Not rated		Poor Thickest layer Bottom layer	0.00 0.00
22UF1: Maritime Urban Land.					
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 17.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel source		Sand source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22AM1: D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated	
D22BF1: D22-Maritime Riverwash, Bouldery	45	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.08
D22-Maritime Water, Flowing-----	15	Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Not rated		Fair Thickest layer Bottom layer	0.00 0.80
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Not rated		Fair Thickest layer Bottom layer	0.00 0.04
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Fair Thickest layer Bottom layer	0.00 0.25	Fair Bottom layer Thickest layer	0.02 0.07
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Fair Thickest layer Bottom layer	0.00 0.26	Fair Bottom layer Thickest layer	0.02 0.08
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 17.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel source		Sand source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Fair Thickest layer Bottom layer	0.00 0.25	Fair Bottom layer Thickest layer	0.02 0.07
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Fair Bottom layer Thickest layer	0.29 0.29	Fair Bottom layer Thickest layer	0.02 0.09
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated	
D22SA1: D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.06
D22SA2: D22-Subalpine and Alpine Rubble Land	34	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Fair Bottom layer Thickest layer	0.29 0.29	Fair Bottom layer Thickest layer	0.02 0.09
D22WF1: Maritime Water, Lakes and Ponds.					
D22WS1: Estuarine Water, Saline.					

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 18.--Camp and Picnic Areas

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22--Estuarine Graminoid Loamy Floodplains-----	65	Very limited Depth to saturated zone Flooding Salinity Dusty	1.00 1.00 0.50 0.01	Very limited Depth to saturated zone Salinity Flooding Dusty	1.00 0.50 0.40 0.01
22--Maritime Water, Flowing-----	20	Not rated		Not rated	
22--Estuarine Graminoid Loamy Floodplains, Depression-----	15	Very limited Depth to saturated zone Flooding Ponding Salinity Dusty	1.00 1.00 1.00 0.50 0.01	Very limited Ponding Depth to saturated zone Salinity Flooding Dusty	1.00 1.00 0.50 0.40 0.01
22CP3: 22--Estuarine Graminoid Gravelly Coastal Plain-----	95	Very limited Salinity Flooding Gravel content Too sandy	1.00 1.00 0.68 0.13	Very limited Salinity Gravel content Too sandy	1.00 0.68 0.13
22FF1: 22--Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Very limited Gravel content Slope Large stones content	1.00 1.00 1.00	Very limited Gravel content Slope Large stones content	1.00 1.00 1.00
22HF1: 22--Maritime Riverwash, Bouldery	45	Very limited Depth to saturated zone Flooding Large stones content Too sandy	1.00 1.00 1.00 1.00	Very limited Large stones content Too sandy Depth to saturated zone Flooding	1.00 1.00 1.00 0.60
22--Maritime Water, Flowing-----	30	Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 18.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Very limited Flooding Gravel content Large stones content	1.00 1.00 1.00	Very limited Gravel content Large stones content	1.00 1.00
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded----	60	Very limited Flooding	1.00	Not limited	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Very limited Flooding	1.00	Not limited	
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded----	40	Very limited Flooding Dusty	1.00 0.01	Somewhat limited Dusty	0.01
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Very limited Flooding	1.00	Not limited	
22-Maritime Forest Gravelly Floodplains, Rarely Flooded----	20	Very limited Flooding	1.00	Not limited	
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.36 0.01	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.36 0.01
22-Maritime Forest Organic Slopes, Dry	20	Not rated		Not rated	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 18.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22UF1: Maritime Urban Land.					
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated	
D22BF1: D22-Maritime Riverwash, Bouldery	45	Very limited Depth to saturated zone Flooding Large stones content Too sandy	1.00 1.00 1.00 1.00	Very limited Large stones content Too sandy Depth to saturated zone Flooding	1.00 1.00 1.00 0.60
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Very limited Flooding Gravel content Large stones content	1.00 1.00 1.00	Very limited Gravel content Large stones content	1.00 1.00
D22-Maritime Water, Flowing-----	15	Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Not rated		Not rated	
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Not rated		Not rated	
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.96 0.01	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.96 0.01

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 18.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM2:					
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	25	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 1.00 0.01	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 1.00 0.01
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22LM3:					
D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.96 0.01	Very limited Slope Depth to bedrock Gravel content Dusty	1.00 1.00 0.96 0.01
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Very limited Slope Large stones content Gravel content	1.00 1.00 1.00	Very limited Slope Large stones content Gravel content	1.00 1.00 1.00
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated	
D22SA1:					
D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Very limited Slope Large stones content Depth to bedrock	1.00 1.00 1.00	Very limited Slope Large stones content Depth to bedrock	1.00 1.00 1.00
D22SA2:					
D22-Subalpine and Alpine Rubble Land	34	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 18.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22SA2: D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Very limited Slope Large stones content Gravel content	1.00 1.00 1.00	Very limited Slope Large stones content Gravel content	1.00 1.00 1.00
D22WF1: Maritime Water, Lakes and Ponds.					
D22WS1: Estuarine Water, Saline.					

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Table 19.--Trail Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22CF1: 22-Estuarine Graminoid Loamy Floodplains-----	65	Very limited Depth to saturated zone Flooding Dusty	1.00  0.40 0.01	Very limited Depth to saturated zone Flooding Dusty	1.00  0.40 0.01
22-Maritime Water, Flowing-----	20	Not rated		Not rated	
22-Estuarine Graminoid Loamy Floodplains, Depression-----	15	Very limited Depth to saturated zone Ponding Flooding Dusty	1.00  1.00 0.40 0.01	Very limited Depth to saturated zone Ponding Flooding Dusty	1.00  1.00 0.40 0.01
22CP3: 22-Estuarine Graminoid Gravelly Coastal Plain-----	95	Somewhat limited Too sandy	0.13	Somewhat limited Too sandy	0.13
22FF1: 22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace---	95	Very limited Large stones content	1.00	Very limited Large stones content	1.00
22HF1: 22-Maritime River Wash, Boulderly-----	45	Very limited Large stones content Depth to saturated zone Too sandy Flooding	1.00  1.00  1.00 0.60	Very limited Large stones content Depth to saturated zone Too sandy Flooding	1.00  1.00  1.00 0.60
22-Maritime Water, Flowing-----	30	Not rated		Not rated	

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Table 19.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22HF1: 22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	25	Very limited Large stones content	1.00	Very limited Large stones content	1.00
22LF1: 22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	60	Not limited		Not limited	
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Not limited		Not limited	
22LF2: 22-Maritime Forest Loamy Floodplains, Rarely Flooded-----	40	Somewhat limited Dusty	0.01	Somewhat limited Dusty	0.01
22-Maritime Forest Gravelly Floodplains, Occasionally Flooded-----	20	Not limited		Not limited	
22-Maritime Forest Gravelly Floodplains, Rarely Flooded-----	20	Not limited		Not limited	
22LM1: 22-Maritime Forest Gravelly Slopes, Shallow-----	60	Very limited Slope Dusty	1.00 0.01	Very limited Slope Dusty	1.00 0.01
22-Maritime Forest Organic Slopes, Dry	20	Not rated		Not rated	
22UF1: Maritime Urban Land.					
D22AM1: D22-Subalpine and Alpine Permanent Ice and Snow-----	33	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Subalpine and Alpine Rubble Land	30	Not rated		Not rated	

Soil Survey and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 19.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22BF1: D22-Maritime Riverwash, Boulderly	45	Very limited Large stones content Depth to saturated zone Too sandy Flooding	1.00 1.00 1.00 0.60	Very limited Large stones content Depth to saturated zone Too sandy Flooding	1.00 1.00 1.00 0.60
D22-Maritime Forest Gravelly Floodplains, High Gradient, Occasionally Flooded-----	40	Very limited Large stones content	1.00	Very limited Large stones content	1.00
D22-Maritime Water, Flowing-----	15	Not rated		Not rated	
D22DW1: D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Not rated		Not rated	
D22HM2: D22-Maritime Forest Organic Slopes, Dry, High Elevation	50	Not rated		Not rated	
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22LM2: D22-Maritime Forest Gravelly Slopes, Shallow-----	35	Very limited Slope Dusty	1.00 0.01	Very limited Slope Dusty	1.00 0.01
D22-Maritime Forest Gravelly Slopes, Shallow, Convex----	25	Very limited Slope Dusty	1.00 0.01	Very limited Slope Dusty	1.00 0.01
D22-Maritime Rock Outcrop-----	20	Not rated		Not rated	
D22LM3: D22-Maritime Forest Gravelly Slopes, Shallow-----	30	Very limited Slope Dusty	1.00 0.01	Very limited Slope Dusty	1.00 0.01

Soil and Ecological Site Inventory of Skagway-Klondike Gold Rush National Historical Park, Alaska

Table 19.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
D22LM3: D22-Maritime Rubble Land-----	20	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	20	Very limited Large stones content Slope Gravel content	1.00 1.00 1.00	Very limited Large stones content Gravel content Slope	1.00 1.00 0.22
D22-Maritime Rock Outcrop-----	15	Not rated		Not rated	
D22SA1: D22-Subalpine and Alpine Rubble Land	25	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	20	Not rated		Not rated	
D22-Subalpine Scrub Gravelly Slopes, Convex-----	15	Very limited Slope Large stones content	1.00 1.00	Very limited Slope Large stones content	1.00 1.00
D22SA2: D22-Subalpine and Alpine Rubble Land	34	Not rated		Not rated	
D22-Subalpine and Alpine Rock Outcrop	33	Not rated		Not rated	
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	30	Very limited Large stones content Slope Gravel content	1.00 1.00 1.00	Very limited Large stones content Gravel content Slope	1.00 1.00 0.22
D22WF1: Maritime Water, Lakes and Ponds.					
D22WS1: Estuarine Water, Saline.					

Table 20.--Hydric Soils

(Only the soils that are rated as hydric are shown in this table.)

Map symbol and map unit name	Component	Pct. of map unit	Hydric rating	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
22CF1: Estuarine Floodplains	22-Estuarine Graminoid Loamy Floodplains	65	Yes	Flood plains	4	No	Yes	No
	22-Estuarine Graminoid Loamy Floodplains, Depression	15	Yes	Depressions of flood plains	3, 4, 2B3	Yes	Yes	Yes
22LM1: Maritime Mountains, Steep	22-Maritime Scrub Organic Slopes, Depression	5	Yes	Depressions of mountains	1	No	No	No
D22DW1: Maritime Organic Floodplains	D22-Maritime Scrub/Herb Mosaic Organic Floodplains	90	Yes	Depressions of flood plains	3, 4, 1	No	Yes	Yes
D22LM2: Maritime Mountains, Very Steep, Smooth	D22-Maritime Scrub Organic Slopes, Depression	5	Yes	Depressions of mountains	1	No	No	No

Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

Table 21.--Taxonomic Classification of the Soils

Soil name	Family or higher taxonomic class
22-Estuarine Graminoid Gravelly Coastal Plain--	Sandy-skeletal, mixed Typic Cryorthents
22-Estuarine Graminoid Loamy Floodplains-----	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Aquic Cryofluvents
22-Estuarine Graminoid Loamy Floodplains, Depression-----	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Typic Fluvaquents
22-Maritime Forest Gravelly Alluvial Fan, Fan Terrace-----	Sandy-skeletal, mixed Typic Cryorthents
22-Maritime Forest Gravelly Floodplains----	Sandy-skeletal, mixed Typic Cryofluvents Sandy-skeletal, mixed Typic Cryorthents
22-Maritime Forest Gravelly Floodplains, High Gradient-----	Sandy-skeletal, mixed Typic Cryofluvents
22-Maritime Forest Gravelly Slopes, Shallow	Loamy-skeletal, mixed, superactive Lithic Dystrocryepts
22-Maritime Forest Loamy Floodplains-----	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Typic Cryorthents
22-Maritime Forest Organic Slopes, Depression-----	Euic Typic Cryosaprists
22-Maritime Forest Organic Slopes, Dry----	Dysic Lithic Cryofolists
22-Maritime Scrub Gravelly Floodplains----	Sandy-skeletal, mixed Typic Cryorthents
22-Maritime Scrub Gravelly Floodplains, Depression-----	Sandy-skeletal, mixed Aquic Cryofluvents Sandy-skeletal, mixed Typic Cryofluvents
D22-Alpine Herbaceous Gravelly Diorite Slopes	Lithic Humicryepts
D22-Maritime Forest Gravelly Floodplains, High Gradient-----	Typic Cryofluvents
D22-Maritime Forest Gravelly Slopes, High Elevation-----	Typic Humicryods
D22-Maritime Forest Gravelly Slopes, Shallow	Lithic Dystrocryepts
D22-Maritime Forest Gravelly Slopes, Shallow, Convex-----	Lithic Haplocryods

Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

Table 21.--Taxonomic Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
D22-Maritime Forest Organic Slopes, Depression-----	Typic Cryosaprists
D22-Maritime Forest Organic Slopes, Dry-----	Lithic Cryofolists
D22-Maritime Forest Organic Slopes, Dry, High Elevation-----	Lithic Cryofolists
D22-Maritime Scrub/Herb Gravelly Slopes, Depositional-----	Typic Cryorthents
D22-Maritime Scrub/Herb Mosaic Organic Floodplains-----	Fluvaquentic Cryohemists
D22-Subalpine Forest Gravelly Slopes-----	Lithic Humicryods
D22-Subalpine Scrub Gravelly Slopes-----	Typic Humicryods
D22-Subalpine Scrub Gravelly Slopes, Convex	Lithic Humicryepts
D22-Subalpine Scrub Gravelly Slopes, Depositional-----	Lithic Humicryepts
D22-Subalpine Scrub Organic Slopes-----	Lithic Cryofolists

# Appendix

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Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

Plants Observed in Survey Area

Plant code	Scientific name	Common name
ABLA	<i>Abies lasiocarpa</i>	Subalpine fir
ACDE2	<i>Aconitum delphiniiifolium</i>	Larkspurleaf monkshood
ACGL	<i>Acer glabrum</i>	Rocky Mountain maple
ACHIL	<i>Achillea</i>	Yarrow
ACMI2	<i>Achillea millefolium</i>	Common yarrow
ACMIA	<i>Achillea millefolium var. alpicola</i>	Common yarrow
ACONI	<i>Aconitum</i>	Monkshood
ACRU2	<i>Actaea rubra</i>	Red baneberry
ACRUR2	<i>Actaea rubra ssp. rubra</i>	Red baneberry
AGAE	<i>Agrostis aequivalvis</i>	Arctic bentgrass
AGEX	<i>Agrostis exarata</i>	Spike bentgrass
AGROP2	<i>Agropyron</i>	Wheatgrass
AGROS2	<i>Agrostis</i>	Bentgrass
AGSC5	<i>Agrostis scabra</i>	Rough bentgrass
ALNUS	<i>Alnus</i>	Alder
ALVI5	<i>Alnus viridis</i>	Green alder
ALVIS	<i>Alnus viridis ssp. sinuata</i>	Sitka alder
AMAL2	<i>Amelanchier alnifolia</i>	Saskatoon serviceberry
AMALS	<i>Amelanchier alnifolia var. semiintegrifolia</i>	Saskatoon serviceberry
ANGE2	<i>Angelica genuflexa</i>	Kneeling angelica
ANLU	<i>Angelica lucida</i>	Seacoast angelica
ANNA	<i>Anemone narcissiflora</i>	Narcissus anemone
ANTEN	<i>Antennaria</i>	Pussytoes
AQFO	<i>Aquilegia formosa</i>	Western columbine
AQUIL	<i>Aquilegia</i>	Columbine
ARAN7	<i>Argentina anserina</i>	Silverweed cinquefoil
ARAR9	<i>Artemisia arctica</i>	Boreal sagebrush
ARARC	<i>Artemisia arctica ssp. comata</i>	Boreal sagebrush
ARDI8	<i>Aruncus dioicus</i>	Bride's feathers
ARFR4	<i>Artemisia frigida</i>	Prairie sagewort
ARTEM	<i>Artemisia</i>	Sagebrush
ARTI	<i>Artemisia tilesii</i>	Tilesius' wormwood
ARUNC	<i>Aruncus</i>	Aruncus
ARUV	<i>Arctostaphylos uva-ursi</i>	Kinnikinnick
ASTER	<i>Aster</i>	Aster
ATFI	<i>Athyrium filix-femina</i>	Ladyfern
BENE4	<i>Betula neoalaskana</i>	Resin birch
BEPA	<i>Betula papyrifera</i>	Paper birch
BEPAP	<i>Betula papyrifera var. papyrifera</i>	Paper birch
BETUL	<i>Betula</i>	Birch
BORO	<i>Boschniakia rossica</i>	Northern groundcone
BOSCH	<i>Boschniakia</i>	Groundcone
BRDI60	<i>Bryocaulon divergens</i>	Bryocaulon lichen
CAAN10	<i>Carex anthoxantha</i>	Grassyslope arctic sedge
CAAQ	<i>Carex aquatilis</i>	Water sedge
CACA11	<i>Carex canescens</i>	Silvery sedge
CACA13	<i>Carex capitata</i>	Capitate sedge
CACA4	<i>Calamagrostis canadensis</i>	Bluejoint
CACH5	<i>Carex chordorrhiza</i>	Creeping sedge
CADI6	<i>Carex disperma</i>	Softleaf sedge
CAGM	<i>Carex gmelinii</i>	Gmelin's sedge
CALA7	<i>Campanula lasiocarpa</i>	Mountain harebell
CALE4	<i>Caltha leptosepala</i>	White marsh marigold
CALI	<i>Carex livida</i>	Livid sedge
CALI7	<i>Carex limosa</i>	Mud sedge
CALY3	<i>Carex lyngbyei</i>	Lyngbye's sedge
CALY4	<i>Cassiope lycopodioides</i>	Clubmoss mountain heather
CALYC6	<i>Cassiope lycopodioides var. cristapilosa</i>	Clubmoss mountain heather
CALYL2	<i>Cassiope lycopodioides var. lycopodioides</i>	Clubmoss mountain heather
CAMA10	<i>Carex macrocephala</i>	Largehead sedge
CAMA11	<i>Carex macrochaeta</i>	Longawn sedge
CAME7	<i>Cassiope mertensiana</i>	White mountain-heather
CAMI4	<i>Carex microchaeta</i>	Smallawned sedge

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Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
CANA2	<i>Carex nardina</i>	Spike sedge
CANI2	<i>Carex nigricans</i>	Black alpine sedge
CAPA5	<i>Caltha palustris</i>	Yellow marsh marigold
CAPL6	<i>Carex pluriflora</i>	Manyflower sedge
CAREX	<i>Carex</i>	Sedge
CASP5	<i>Carex spectabilis</i>	Showy sedge
CASSI3	<i>Cassiope</i>	Mountain heather
CAST10	<i>Carex stylosa</i>	Variegated sedge
CHAN9	<i>Chamerion angustifolium</i>	Fireweed
CHAR13	<i>Chrysanthemum arcticum</i>	Arctic daisy
CHLA13	<i>Chamerion latifolium</i>	Dwarf fireweed
CIAL	<i>Circaea alpina</i>	Small enchanter's nightshade
CLADI3	<i>Cladina</i>	Reindeer lichen
CLADO3	<i>Cladonia</i>	Deer moss
CLAR60	<i>Cladonia arbuscula</i>	Reindeer lichen
CLBE4	<i>Cladonia bellidiflora</i>	Cup lichen
CLBO7	<i>Cladonia borealis</i>	Boreal cup lichen
CLCH3	<i>Cladonia chlorophaea</i>	Cup lichen
CLDE70	<i>Climacium dendroides</i>	Tree climacium moss
CLGR13	<i>Cladonia gracilis</i>	Cup lichen
CLGRG3	<i>Cladonia gracilis ssp. gracilis</i>	Cup lichen
CLMA11	<i>Cladonia macilenta</i>	Cup lichen
CLMI60	<i>Cladina mitis</i>	Reindeer lichen
CLPL60	<i>Cladonia pleurota</i>	Cup lichen
CLPO4	<i>Cladina portentosa</i>	Reindeer lichen
CLRA60	<i>Cladina rangiferina</i>	Greygreen reindeer lichen
CLSQ60	<i>Cladonia squamosa</i>	Cup lichen
CLST5	<i>Cladina stygia</i>	Reindeer lichen
CLST60	<i>Cladina stellaris</i>	Star reindeer lichen
CLUN60	<i>Cladonia uncialis</i>	Cup lichen
COCA13	<i>Cornus canadensis</i>	Bunchberry dogwood
CONIO	<i>Conioselinum</i>	Hemlockparsley
COPA28	<i>Comarum palustre</i>	Purple marshlocks
CORNI	<i>Cornicularia</i>	Brittle lichen
CORNU	<i>Cornus</i>	Dogwood
COSE16	<i>Cornus sericea</i>	Redosier dogwood
COSEO	<i>Cornus sericea ssp. occidentalis</i>	Western dogwood
COSES	<i>Cornus sericea ssp. sericea</i>	Redosier dogwood
COSU4	<i>Cornus suecica</i>	Lapland cornel
CRAC3	<i>Cryptogramma acrostichoides</i>	American rockbrake
DELPH	<i>Delphinium</i>	Larkspur
DICRA8	<i>Dicranum</i>	Dicranum moss
DIFU5	<i>Dicranum fuscescens</i>	Dicranum moss
DILA	<i>Diapensia lapponica</i>	Pincushion plant
DISC71	<i>Dicranum scoparium</i>	Dicranum moss
DOPU	<i>Dodecatheon pulchellum</i>	Darkthroat shootingstar
DREX2	<i>Dryopteris expansa</i>	Spreading woodfern
DROC	<i>Dryas octopetala</i>	White dryad
DROCO	<i>Dryas octopetala ssp. octopetala</i>	Eightpetal mountain-avens
DRRO	<i>Drosera rotundifolia</i>	Roundleaf sundew
ELGL	<i>Elymus glaucus</i>	Blue wildrye
ELPA3	<i>Eleocharis palustris</i>	Common Spikerush
ELRE4	<i>Elymus repens</i>	Quackgrass
ELYMU	<i>Elymus</i>	Wildrye
EMNI	<i>Empetrum nigrum</i>	Black crowberry
EMNIN	<i>Empetrum nigrum ssp. nigrum</i>	Black crowberry
EPCI	<i>Epilobium ciliatum</i>	Fringed willowherb
EPCIC	<i>Epilobium ciliatum ssp. ciliatum</i>	Fringed willowherb
EPILO	<i>Epilobium</i>	Willowweed
EQAR	<i>Equisetum arvense</i>	Field horsetail
EQFL	<i>Equisetum fluviatile</i>	Water horsetail
EQHY	<i>Equisetum hyemale</i>	Scouringrush horsetail
ERAN6	<i>Eriophorum angustifolium</i>	Tall cottongrass

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Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
ERCH7	<i>Eriophorum chamissonis</i>	Chamisso's cottongrass
ERIGE2	<i>Erigeron</i>	Fleabane
ERPE3	<i>Erigeron peregrinus</i>	Subalpine fleabane
ERVA4	<i>Eriophorum vaginatum</i>	Tussock cottongrass
FACR	<i>Fauria crista-galli</i>	Deercabbage
FERU2	<i>Festuca rubra</i>	Red fescue
GABO2	<i>Galium boreale</i>	Northern bedstraw
GATR3	<i>Galium triflorum</i>	Sweet-scented bedstraw
GECA6	<i>Geum calthifolium</i>	Calthaleaf avens
GELI2	<i>Geocaulon lividum</i>	False toadflax
GEMA4	<i>Geum macrophyllum</i>	Largeleaf avens
GEUM	<i>Geum</i>	Geum
GLMA	<i>Glaux maritima</i>	Sea milkwort
GYDR	<i>Gymnocarpium dryopteris</i>	Western oakfern
GYMNO	<i>Gymnocarpium</i>	Oakfern
HAST3	<i>Harrimanella stelleriana</i>	Alaska bellheather
HEGL5	<i>Heuchera glabra</i>	Alpine heuchera
HEMA80	<i>Heracleum maximum</i>	Cowparsnip
HIAL3	<i>Hierochloe alpina</i>	Alpine sweetgrass
HIALA	<i>Hierochloe alpina ssp. alpina</i>	Alpine sweetgrass
HOBR2	<i>Hordeum brachyantherum</i>	Meadow barley
HOJU	<i>Hordeum jubatum</i>	Foxtail barley
HOPE	<i>Honckenya peploides</i>	Seaside sandplant
HUCH	<i>Huperzia chinensis</i>	Chinese clubmoss
HYLOC2	<i>Hylocomium</i>	Hylocomium feather moss
HYSP70	<i>Hylocomium splendens</i>	Splendid feather moss
HYSP70	<i>Hylocomium splendens</i>	Stairstep moss
ICER	<i>Icmadophila ericetorum</i>	Peppermint drop lichen
IRIS	<i>Iris</i>	Iris
JUAR2	<i>Juncus arcticus</i>	Arctic rush
JUCO6	<i>Juniperus communis</i>	Common juniper
JUDR	<i>Juncus drummondii</i>	Drummond's rush
JUME3	<i>Juncus mertensianus</i>	Mertens' rush
JUNCU	<i>Juncus</i>	Rush
KAMI	<i>Kalmia microphylla</i>	Alpine laurel
LAJA	<i>Lathyrus japonicus</i>	Beach pea
LATHY	<i>Lathyrus</i>	Peavine
LAVE	<i>Lathyrus venosus</i>	Veiny pea
LEGR	<i>Ledum groenlandicum</i>	Bog Labrador tea
LEMOM2	<i>Leymus mollis ssp. mollis</i>	American dunegrass
LEPAD	<i>Ledum palustre ssp. decumbens</i>	Marsh Labrador tea
LEPY	<i>Leptarrhena pyrolifolia</i>	Fireleaf leptarrhena
LEYMU	<i>Leymus</i>	Wildrye
LIBO3	<i>Linnaea borealis</i>	Twinflower
LICA10	<i>Listera caurina</i>	Northwestern twayblade
LICO6	<i>Listera cordata</i>	Heartleaf twayblade
LLOYD	<i>Lloydia</i>	Alplily
LOOR60	<i>Lobaria oregana</i>	Oregon lung lichen
LOPR	<i>Loiseleuria procumbens</i>	Alpine azalea
LUAR2	<i>Lupinus arcticus</i>	Arctic lupine
LUAR5	<i>Luzula arcuata</i>	Curved woodrush
LUPA4	<i>Luzula parviflora</i>	Smallflowered woodrush
LUPE	<i>Luetkea pectinata</i>	Partridgefoot
LUPI2	<i>Luzula piperi</i>	Piper's woodrush
LUWA	<i>Luzula wahlenbergii</i>	Wahlenberg's woodrush
LUZUL	<i>Luzula</i>	Woodrush
LYAL3	<i>Lycopodium alpinum</i>	Alpine clubmoss
LYAN2	<i>Lycopodium annotinum</i>	Stiff clubmoss
LYCL	<i>Lycopodium clavatum</i>	Running clubmoss
LYCO3	<i>Lycopodium complanatum</i>	Groundcedar
LYCOP2	<i>Lycopodium</i>	Clubmoss
MABR5	<i>Malaxis brachypoda</i>	White adder's-mouth orchid
MADI6	<i>Matricaria discoidea</i>	Disc mayweed

## Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

## Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
MEFE	<i>Menziesia ferruginea</i>	Rusty menziesia
MEHE6	<i>Melanelia hepatizon</i>	Melanelia lichen
MENZI	<i>Menziesia</i>	Menziesia
METR3	<i>Menyanthes trifoliata</i>	Buckbean
MNIUM2	<i>Mnium</i>	Mnium calcareous moss
MOUN2	<i>Moneses uniflora</i>	Single delight
NEAR60	<i>Nephroma arcticum</i>	Arctic kidney lichen
NECR2	<i>Nephrophyllidium crista-galli</i>	Deercabbage
NULUP	<i>Nuphar lutea ssp. polysepala</i>	Rocky Mountain pond-lily
OPHO	<i>Oplopanax horridus</i>	Devilsclub
OPLOP	<i>Oplopanax</i>	Oplopanax
ORSE	<i>Orthilia secunda</i>	Sidebells wintergreen
ORTHI	<i>Orthilia</i>	Orthilia
OSBE	<i>Osmorhiza berteroi</i>	Sweetcicely
OSDE	<i>Osmorhiza depauperata</i>	Mountain sweetroot
OSMOR	<i>Osmorhiza</i>	Sweetroot
OXCA4	<i>Oxytropis campestris</i>	Field locoweed
PAFI3	<i>Parnassia fimbriata</i>	Fringed grass of Parnassus
PEAP60	<i>Peltigera aphthosa</i>	Felt lichen
PECA2	<i>Pedicularis capitata</i>	Capitate lousewort
PEFR5	<i>Petasites frigidus</i>	Arctic sweet coltsfoot
PELTI2	<i>Peltigera</i>	Felt lichen
PHCO24	<i>Phegopteris connectilis</i>	Long beechfern
PHFO6	<i>Philonotis fontana</i>	Philonotis moss
PHGL6	<i>Phyllodoce glanduliflora</i>	Yellow mountainheath
PHPR3	<i>Phleum pratense</i>	Timothy
PHYLL3	<i>Phyllodoce</i>	Mountainheath
PICO	<i>Pinus contorta</i>	Lodgepole pine
PICOC	<i>Pinus contorta var. contorta</i>	Shore pine
PICOL	<i>Pinus contorta var. latifolia</i>	Tall lodgepole pine
PISI	<i>Picea sitchensis</i>	Sitka spruce
PLAGI7	<i>Plagiomnium</i>	Plagiomnium moss
PLDI3	<i>Platanthera dilatata</i>	Scentbottle
PLEUR10	<i>Pleurozium</i>	Big red stem moss
PLEUR2	<i>Pleuropogon</i>	Semaphoregrass
PLIN11	<i>Plagiomnium insigne</i>	Plagiomnium moss
PLLA	<i>Plantago lanceolata</i>	Narrowleaf plantain
PLMAJ	<i>Plantago maritima var. juncooides</i>	Goose tongue
PLOB	<i>Platanthera obtusata</i>	Bluntleaved orchid
PLSC70	<i>Pleurozium schreberi</i>	Schreber's big red stem moss
PLST4	<i>Platanthera stricta</i>	Slender bog orchid
PLUN4	<i>Plagiothecium undulatum</i>	Undulate plagiothecium moss
POA	<i>Poa</i>	Bluegrass
POAL2	<i>Poa alpina</i>	Alpine bluegrass
POAR2	<i>Poa arctica</i>	Arctic bluegrass
POARA2	<i>Poa arctica ssp. arctica</i>	Arctic bluegrass
POBA2	<i>Populus balsamifera</i>	Balsam poplar
POBAB2	<i>Populus balsamifera ssp. balsamifera</i>	Balsam poplar
POBAT	<i>Populus balsamifera ssp. trichocarpa</i>	Black cottonwood
POBR4	<i>Polystichum braunii</i>	Braun's hollyfern
POCO38	<i>Polytrichum commune</i>	Polytrichum moss
POGL8	<i>Polypodium glycyrrhiza</i>	Licorice fern
POJU70	<i>Polytrichum juniperinum</i>	Juniper polytrichum moss
POLE2	<i>Poa leptocoma</i>	Marsh bluegrass
POLYS	<i>Polystichum</i>	Swordfern
POLYT5	<i>Polytrichum</i>	Polytrichum moss
PONU70	<i>Pohlia nutans</i>	Pohlia moss
POPA2	<i>Poa palustris</i>	Fowl bluegrass
POPR	<i>Poa pratensis</i>	Kentucky bluegrass
POPU3	<i>Polemonium pulcherrimum</i>	Skunkleaf polemonium
POTEN	<i>Potentilla</i>	Cinquefoil
PRAL	<i>Prenanthes alata</i>	Western rattlesnakeroot
PTCR70	<i>Ptilium crista-castrensis</i>	Knights plume moss

## Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

## Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
PYAS	<i>Pyrola asarifolia</i>	Pink wintergreen
PYASA	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Liverleaf wintergreen
PYGR	<i>Pyrola grandiflora</i>	Largeflowered wintergreen
RAAQ	<i>Ranunculus aquatilis</i>	Whitewater crowfoot
RAES	<i>Ranunculus eschscholtzii</i>	Eschscholtz's buttercup
RALA70	<i>Racomitrium lanuginosum</i>	Racomitrium moss
RANUN	<i>Ranunculus</i>	Buttercup
RAOC	<i>Ranunculus occidentalis</i>	Western buttercup
RHGL70	<i>Rhizomnium glabrescens</i>	Rhizomnium moss
RHIZO2	<i>Rhizomnium</i>	Rhizomnium moss
RHLO70	<i>Rhytidiadelphus loreus</i>	Loreus goose neck moss
RHMI13	<i>Rhinanthus minor</i>	Little yellowrattle
RHTR70	<i>Rhytidiadelphus triquetrus</i>	Rough goose neck moss
RHYTI2	<i>Rhytidiadelphus</i>	Goose neck moss
RIBES	<i>Ribes</i>	Currant
RIBR	<i>Ribes bracteosum</i>	Stink currant
RIGL	<i>Ribes glandulosum</i>	Skunk currant
RILA	<i>Ribes lacustre</i>	Prickly currant
RILA3	<i>Ribes laxiflorum</i>	Trailing black currant
RITR	<i>Ribes triste</i>	Red currant
ROAC	<i>Rosa acicularis</i>	Prickly rose
RONU	<i>Rosa nutkana</i>	Nootka rose
RONUN	<i>Rosa nutkana</i> var. <i>nutkana</i>	Nootka rose
ROSA5	<i>Rosa</i>	Rose
RUAC2	<i>Rumex acetosa</i>	Garden sorrel
RUAC3	<i>Rumex acetosella</i>	Common sheep sorrel
RUAR	<i>Rubus arcticus</i>	Arctic blackberry
RUCH	<i>Rubus chamaemorus</i>	Cloudberry
RUCR	<i>Rumex crispus</i>	Curly dock
RUID	<i>Rubus idaeus</i>	American red raspberry
RUIDI	<i>Rubus idaeus</i> ssp. <i>idaeus</i>	American red raspberry
RULE	<i>Rubus leucodermis</i>	Whitebark raspberry
RUMEX	<i>Rumex</i>	Dock
RUPE	<i>Rubus pedatus</i>	Strawberryleaf raspberry
RUSP	<i>Rubus spectabilis</i>	Salmonberry
SAAL	<i>Salix alaxensis</i>	Feltleaf willow
SAALA	<i>Salix alaxensis</i> var. <i>alaxensis</i>	Feltleaf willow
SAAR27	<i>Salix arctica</i>	Arctic willow
SABA3	<i>Salix barclayi</i>	Barclay's willow
SABE2	<i>Salix bebbiana</i>	Bebb willow
SABR6	<i>Saxifraga bronchialis</i>	Yellowdot saxifrage
SACA14	<i>Sanguisorba canadensis</i>	Canadian burnet
SACO2	<i>Salix commutata</i>	Undergreen willow
SAFE	<i>Saxifraga ferruginea</i>	Russethair saxifrage
SALIX	<i>Salix</i>	Willow
SALY3	<i>Saxifraga lyallii</i>	Redstem saxifrage
SAMA6	<i>Sagina maxima</i>	Stickystem pearlwort
SAME7	<i>Saxifraga mertensiana</i>	Wood saxifrage
SAOV	<i>Salix ovalifolia</i>	Oval-leaf willow
SAPU15	<i>Salix pulchra</i>	Tealeaf willow
SARA2	<i>Sambucus racemosa</i>	Red elderberry
SARAR3	<i>Sambucus racemosa</i> var. <i>racemosa</i>	Red elderberry
SARE2	<i>Salix reticulata</i>	Netleaf willow
SARER	<i>Salix reticulata</i> ssp. <i>reticulata</i>	Netleaf willow
SARI4	<i>Salix richardsonii</i>	Richardson's willow
SARO2	<i>Salix rotundifolia</i>	Least willow
SASC	<i>Salix scouleriana</i>	Scouler's willow
SASE4	<i>Salix setchelliana</i>	Setchell's willow
SASI2	<i>Salix sitchensis</i>	Sitka willow
SAST2	<i>Salix stolonifera</i>	Sprouting leaf willow
SATR5	<i>Saxifraga tricuspidata</i>	Three toothed saxifrage
SAXIF	<i>Saxifraga</i>	Saxifrage
SETR	<i>Senecio triangularis</i>	Arrowleaf ragwort

Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
SHCA	<i>Shepherdia canadensis</i>	Russet buffaloberry
SIAC	<i>Silene acaulis</i>	Moss campion
SOAR2	<i>Sonchus arvensis</i>	Field sowthistle
SOSI2	<i>Sorbus sitchensis</i>	western mountain ash
SOSIS2	<i>Sorbus sitchensis</i> var. <i>sitchensis</i>	Sitka mountain-ash
SPCA70	<i>Sphagnum capillifolium</i>	Sphagnum
SPDO	<i>Spiraea douglasii</i>	Rose spirea
SPGI70	<i>Sphagnum girgensohnii</i>	Girgensohn's sphagnum
SPHAG2	<i>Sphagnum</i>	Sphagnum moss
SPIRA	<i>Spiraea</i>	Spirea
SPPA71	<i>Sphagnum papillosum</i>	Papillose sphagnum
SPSQ70	<i>Sphagnum squarrosum</i>	Sphagnum
SPST3	<i>Spiraea stevenii</i>	Beauverd spirea
STAM2	<i>Streptopus amplexifolius</i>	Claspleaf twistedstalk
STAMA2	<i>Streptopus amplexifolius</i> var. <i>amplexifolius</i>	Claspleaf twistedstalk
STCA	<i>Stellaria calycantha</i>	Northern starwort
STCR2	<i>Stellaria crispa</i>	Curled starwort
STERE2	<i>Stereocaulon</i>	Snow lichen
STME2	<i>Stellaria media</i>	Common chickweed
STREP3	<i>Streptopus</i>	Twistedstalk
TAOF	<i>Taraxacum officinale</i>	Common dandelion
TAOFO	<i>Taraxacum officinale</i> ssp. <i>officinale</i>	Common dandelion
THELY2	<i>Thelypteris</i>	Maiden fern
THSP	<i>Thalictrum sparsiflorum</i>	Fewflower meadow-rue
THUJA	<i>Thuja</i>	Red cedar
TITR	<i>Tiarella trifoliata</i>	Threeleaf foamflower
TITRU	<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	Oneleaf foamflower
TOFIE	<i>Tofieldia</i>	Tofieldia
TORTE	<i>Tortella</i>	Tortella moss
TORTU	<i>Tortula</i>	Tortula moss
TRAL7	<i>Trichophorum alpinum</i>	Alpine bulrush
TRCA30	<i>Trichophorum caespitosum</i>	Tufted bulrush
TREU	<i>Trientalis europaea</i>	Arctic starflower
TREUA	<i>Trientalis europaea</i> ssp. <i>arctica</i>	Arctic starflower
TRIEN	<i>Trientalis</i>	Starflower
TRIGL	<i>Triglochin</i>	Arrowgrass
TRRE3	<i>Trifolium repens</i>	White clover
TSHE	<i>Tsuga heterophylla</i>	Western hemlock
TSME	<i>Tsuga mertensiana</i>	Mountain hemlock
TSUGA	<i>Tsuga</i>	Hemlock
USLA60	<i>Usnea lapponica</i>	Lapland beard lichen
USNEA2	<i>Usnea</i>	Beard lichen
VAAT2	<i>Vahlodea atropurpurea</i>	Mountain hairgrass
VACCI	<i>Vaccinium</i>	Huckleberry
VAOV	<i>Vaccinium ovalifolium</i>	Oval-leaf huckleberry
VAOX	<i>Vaccinium oxycoccus</i>	Small cranberry
VASI	<i>Valeriana sitchensis</i>	Sitka valerian
VAUL	<i>Vaccinium uliginosum</i>	Bog blueberry
VAVI	<i>Vaccinium vitis-idaea</i>	Lingonberry
VAVIM	<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Northern mountain cranberry
VEAL3	<i>Veratrum album</i>	White false hellebore
VEVI	<i>Veratrum viride</i>	Green false hellebore
VIBUR	<i>Viburnum</i>	Viburnum
VIED	<i>Viburnum edule</i>	squashberry
VILA6	<i>Viola langsdorfii</i>	Aleutian violet
VIOLA	<i>Viola</i>	violet
VIPA4	<i>Viola palustris</i>	marsh violet
2FORB	---	Forb (herbaceous, not grass or grasslike)
2FUNGI	---	Fungus
2GRAM	---	Graminoid (grass or grasslike)
2LC	---	Lichen, crustose
2LICHN	---	Lichen

Soil Survey and Ecological Site Inventory of Skagway-Gold Rush Klondike National Historical Park, Alaska

Plants Observed in Survey Area—Continued

Plant code	Scientific name	Common name
2LW	---	Liverwort
2MOSS	---	Moss

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