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9. ABSTRACT

This bulletin describes the three systems of soil classification most widely used in the tropics and provides tables which allow correlation of soils of tropical countries with soil series of Hawaii. In these tables Hawaiian soils are classified according to the U.S. the French, and the FAO/UNESCO soil classification schemes. The basic purpose of these soil correlations is to provide a mechanism through which the agricultural experience developed in Hawaii over more than 70 years of experimentation can be extended to countries with similar soil conditions.

In order to establish which Hawaiian soil series corresponds to a particular soil in a given country, two steps are necessary. First, the classification of the soil under consideration should be determined through consultation of soil maps or of local soil scientists. Then either table 2,3, or 4 should be used to find its equivalent Hawaiian soil series. Information regarding soil management and other agronomic aspects about these soils may be solicited from the Department of Agronomy and Soil Science, University of Hawaii, 3190 Maile Way, Honolulu, Hawaii 96822, USA.

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CLASSIFICATION OF THE SOIL SERIES OF THE STATE OF HAWAII IN DIFFERENT SYSTEMS [1]

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PREFACE

This bulletin describes the three systems of soil classification most widely used in the tropics and provides tables which allow correlation of soils of tropical countries with soil series of Hawaii. In these tables Hawaiian soils are classified according to the U.S., the French, and the FAO/UNESCO soil classification schemes. The basic purpose of these soil correlations is to provide a mechanism through which the agricultural experience developed in Hawaii over more than 70 years of experimentation can be extended to countries with similar soil conditions.

In order to establish which Hawaiian soil series corresponds to a particular soil in a given country, two steps are necessary. First, the classification of the soil under consideration should be determined through consultation of soil maps or of local soil scientists. Then either table 2, 3, or 4 should be used to find its equivalent Hawaiian soil series. Information regarding soil management and other agronomic aspects about these soils may be solicited from the Department of Agronomy and Soil Science, University of Hawaii, 3190 Maile Way, Honolulu, Hawaii 96822, USA.

The Office of Agriculture, Technical Assistance Bureau (TA/AGR) is issuing a series of technical papers on subjects of primary importance to the developing countries. As is the case with previous issues in this series, this one treats its subject in a general sense and it does not attempt to deal with the particular problems of a specific country. This bulletin is the outgrowth of cooperative research efforts of two U.S. universities who have received AID 211(d) institutional grants for strengthening research and training capacity in tropical soils, in order to assist developing nations in agricultural production problems on small farms.

Additional copies of this Bulletin may be obtained from TA/AGR, through the U.S. Agency for International Development Missions (USAIDs), or through Regional Offices of AID overseas. Requests for more information regarding this publication may be directed to the authors or to this office.

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Classification of the Soil Series of the State of Hawaii in Different Systems

Introduction

This publication gives the placement of all soil series of the State of Hawaii in four different systems of soil classification, namely in the U.S. Soil Taxonomy, the FAO/UNESCO Legend for the Soil Map of the World, the French Soil Classification, and the U.S. classification system of 1938. The purpose of this report is to provide correlations that should be useful for a comparison of the soils of Hawaii with those of other tropical areas.

There are compelling reasons for undertaking such correlations at this time. First, while the growing necessity of the agricultural development of land resources in the tropics has generated much interest in tropical soils, international communication between pedologists and agronomists is severely hampered by the lack of a universally accepted soil classification system. Therefore, units of the existing schemes should be correlated to facilitate regional comparisons.

Second, the completion of the legend for the FAO/UNESCO Soil Map of the World and the forthcoming publication of the U.S. Soil Taxonomy mark two significant achievements in the field of soil classification. This further signals that, following a period of subsequent "approximations" and "drafts", the two schemes are now in a phase of consolidation and not subject to change in the near future.

Third, the modern soil survey of the State of Hawaii has recently been completed, and all 190 soil series have been classified according to the Soil Taxonomy.

In view of these facts and considering that all remaining sheets of the Soil Map of the World are scheduled to be published by 1975, it appears to be particularly timely to express the soils of Hawaii in terms of FAO/UNESCO soil units. Approximate equivalents in the French Classification of Soils are also provided in the correlation tables because of the importance of this system in tropical Africa. The classification in the U.S. system of 1938 was included because it is still referred to in Hawaii and in Central America.

It is hoped that the correlations presented in this report will prove useful in three ways. At the local level, the tables should be of use as a quick reference to the classification of the soils of Hawaii and particularly helpful for persons familiar with soil series and/or the old classification system but unfamiliar with Soil Taxonomy. In conjunction with the FAO/UNESCO Soil Map of the World, the tables should be profitable for purposes of teaching. And they should be expedient in relating pedology, management requirements and crop production potential of Hawaiian soils to those of other tropical regions.

The Soil Classification Systems Applied

Of the numerous taxonomic classifications used in tropical areas, the four systems referred to in this report are among the most important ones (Aubert and Tavernier, 1972).

Soil Taxonomy, the U.S. classification of 1938, the FAO/UNESCO Legend, and the French Soil Classification differ considerably as regards basic rationales, structural organization, precision of definition and number of taxa, differentiating criteria, and nomenclature. It should, therefore, be pertinent to the objective of this paper to briefly discuss these classification schemes.

(a) U.S. Soil Taxonomy

This system is an attempt at a comprehensive natural classification of soils. It has been developed over the past 20 years in the Soil Conservation Service of the USDA with cooperation of soil scientists of U.S. universities and certain pedologists from other countries. The system went through a series of approximations of which the "7th Approximation" was published in 1960 (Soil Survey Staff, 1960). After substantial revision, it is now in press and will be available as a book entitled "Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys".

Like most natural classifications, Soil Taxonomy is a multi-categoric system. Each category is an aggregate of taxa, defined at about the same level of abstraction, with the smallest number of classes in the highest category and the largest number in the lowest category. In order of decreasing rank these categories are order, suborder, great group, subgroup, family, and series.

Orders, suborders and great groups are differentiated on the basis of the presence or absence of a variety of combinations of diagnostic horizons and soil properties. Three levels of such sets are employed in the three highest categories, each set of properties marking pedogenic processes that operate within the sets characterizing the higher category or categories. Examples of the kinds of differentiae used at the order level are diagnostic

horizons, such as the oxic and spodic horizons or the mollic epipedon. Soil moisture regime and extreme chemical or mineralogical properties like the presence of large amounts of allophane are examples of criteria for differentiating suborders. Properties that appear to be superimposed on the diagnostic features of the orders and suborders, such as various kinds of pans or the presence of plinthite, are used to differentiate great groups.

Subgroups are subdivisions of great groups representing either the central concept of the category, intergrades to other great groups, or extragrades which have additional aberrant properties.

Families and series are distinguished on the basis of properties selected to create taxa that are successively more homogeneous for practical uses of soils. Thus, families attempt to provide classes with relative homogeneity in properties important to the growth of plants. Series are subdivisions of families that give the greatest homogeneity of properties in the genetic soil or the rooting zone, consistent with the occurrence of mapable areas at scales of detailed soil surveys.

Evidently, the classes of Soil Taxonomy have been formed in consideration of concepts of pedogenic processes. However, as these causes are not fit as diagnostic criteria, some of their more prominent effects were selected as differentiae. Insofar as possible, properties that are the result of soil genesis were chosen as differentiae because such properties carry the maximum number of accessory properties and have geographic implications of susceptibility to mapping. As a basic principle, these differentiae are soil properties and they are operational; i.e., they are defined in terms of actual operations (Smith, 1965). The Soil Survey Manual and the Soil Survey Laboratory Methods (Soil Survey Staff, 1951 and 1967, respectively) provide the definitions and procedures essential for these operations.

The nomenclature of Soil Taxonomy marks a complete departure from past practice. It was not designed to mystify the outsider but was conceived because the old names were ambigous, of diverse linguistic provenance, difficult to re-define and generally unsuited for use in systematic taxonomy. Therefore, new names were coined, largely from Greek and Latin roots, that fit any modern European language without translation. The name of each taxon clearly indicates the place of the taxon in the system and connotes some of its most important properties.

On the rationale that the same processes operate in most soils, though at widely different rates and intensities, the classification of tropical soils in Soil Taxonomy is consistent with that of other orders. Soils of the tropics are defined by the soil temperature regime, and importance is given to the degree of continuity of biologic activity. Soils of humid tropics are distinguished at the order, suborders or great groups level. With few exceptions, those of arid and semi-arid tropical regions are differentiated at the family level because seasonal lack of soil moisture is not unique to the tropics (Smith, 1965).

Soil Taxonomy is by far the most elaborate quantitative system of soil classification. It is the official system of the National Cooperative Soil Survey of the U.S., but it is also used in some other countries, particularly in South America (Costa de Lemos, 1971). Although it has not met with unanimous acceptance outside the U.S., it is likely to be adopted as a system of reference for international communication, especially in technical papers.

(b) U.S. Soil Classification of 1938

This system was developed by Baldwin, Kellogg and Thorp (1938) and published in the 1938 Yearbook of Agriculture of the USDA. In its revised

form (Thorp and Smith, 1949), it was the official system of the U.S. until the National Cooperative Soil Survey began using Soil Taxonomy in 1965. The classification of 1938 was employed and amended in the original soil survey of the then Territory of Hawaii (Cline, 1955).

Reflecting the knowledge of the time, this classification is dominated by the concept of soil zonality and assumed processes of pedogenesis as differentiating characteristics, not soil properties themselves. Although this does not conform to present thinking, the great soil group names of this system remain familiar terms, particularly with older generations of soil scientists. For this reason and because great soil groups are to some extent still referred to in Hawaii, the classifications according to the scheme of 1938 were included in the correlation tables presented below.

(c) FAO/UNESCO Legend

In 1961, FAO and UNESCO initiated a joint project for the preparation of the Soil Map of the World at a scale of 1:5,000,000. One of the most important aspects of this project was the correlation of soil units used in various parts of the world with the aim of preparing a universal legend. Field correlation activities and research undertaken to this effect eventually led to the publication of the "Definitions of Soil Units for the Soil Map of the World" (Dudal, 1968). Subsequent to minor revisions, the final key to soil units was distributed in 1970 (FAO, 1970). The legend was first applied in the two sheets of the Soil Map of the World covering South America (FAO/UNESCO, 1971).

The FAO/UNESCO legend is a bicategorical scheme which recognizes 26 higher classes subdivided into 104 soil units. For map units, three textural classes and nine phases are provided. The soil units have been selected on

the basis of their significance as resources for crop production, present knowledge of pedogenesis, and the feasibility of representing them on small scale maps. As a consequence, the soil units established may not strictly adhere to taxonomic rules and may belong to different levels of generalization (Dudal, 1968). It is further obvious that the FAO/UNESCO legend was not conceived as a scientific classification proper. Rather, it basically constitutes an organized compilation of definitions of map units and may be considered a compromise between a taxonomic and a technical classification.

Soil units of the FAO/UNESCO legend are differentiated on the basis of quantitative criteria similar to those of the U.S. Soil Taxonomy. In particular the definitions of most of the diagnostic horizons have been drawn largely from Soil Taxonomy and are, therefore, identical in both schemes as regards nomenclature and essence though not detail of definition. In addition to the diagnostic horizons of Soil Taxonomy, the FAO/UNESCO scheme further recognizes gleyic, plinthic and thionic horizons. At the phase level, classes of texture and slope, and phases to indicate the presence of hard rock, stones, gravel, indurated layers, and salinity and alkalinity may be employed as modifiers of the soil units.

The nomenclature of the units of the higher category of the FAO/UNESCO legend reflects a tendency to retain traditionally established names such as Chernozems, Podzols, Solonchaks, and Rendzinas. Also adopted were names that have become popular in recent years like Vertisols, Rankers, Andosols, and Ferralsols. The need to coin new terms was nevertheless felt in cases where existing names were liable to cause confusion due to different usage in different countries. Some of these new names include Luvisols, Acrisols, Yermosols and Nitosols. Twenty-eight connotative terms such as mollic, takyric,

dystric or luvic are used as adjectives to the names of units of the higher category to form the names of the lower category soil units. The etymology of this nomenclature and the justification for its selection are discussed in detail by Dudal (1968).

(d) French Classification of Soils

This system was developed by the Commission de Pédologie et de Cartographie des Sols between 1964 and 1967. Rather than contriving a completely new system, the Commission chose to elaborate the existing scheme used by O.R.S.T.O.M. and developed by Aubert and Duchaufour (1956) and Aubert (1965). The revised edition of the CPCS scheme published in 1967 (Commission de Pédologie et de Cartographie des Sols, 1967) is used in this report. It should be pointed out that this classification is of provisional character but the Commission is presently working on improving the definitions.

Contrary to Soil Taxonomy which was developed on the basis of detailed information on some some 10,000 soil series, the French classification is a descending system, i.e., it is built from above and is therefore strongly influenced by pedogenetic hypotheses. It may be characterized as a morphogenetic system of soil classification.

There are four major categories in this system. In decreasing rank these are: class ("classe"), subclass ("sous-classe"), group ("groupe"), and subgroup ("sous-groupe"). For detailed studies the subgroups may be further subdivided into families, series, types, and phases. These minor categories have not been defined in the present system.

At the highest category, soils are grouped into classes considering the following criteria:

1. Degree of profile development;
2. Kind of alteration of primary minerals in the upper part of the soil;

3. Composition and distribution of organic matter; and
4. Certain factors controlling soil evolution such as excessive soil moisture.

Subclasses are mainly differentiated on the basis of characteristics related to conditions of soil climate ("pédo-climat"). Thus, the physico-chemical environment is used to define subclasses. The principle criteria employed are temperature, moisture, redox potential, and concentration of certain cations in the soil solution.

Groups are subdivisions of subclasses distinguished by profile morphology as related to processes of soil formation, in particular the differentiation of certain horizons and properties resulting from eluviation and illuviation.

Subgroups are differentiated on the basis of the intensity of the processes typifying the group in addition to secondary processes as indicated by soil properties such as pans, mottling, or plinthite.

Families are established for soils that are derived from the same parent material. Series are subdivisons of families to provide groupings of soils having the same type of profile and occurring on similar positions in the landscape. These may be further subdivided in types comprising series with the same texture in the A horizon. Phases may be added to indicate features such as erosion, colluviation or alterations caused by man.

There are twelve classes at the highest category. Of these, two are differentiated on the basis of degree of horizon development which is absent in the "sols minéraux bruts", and restricted to the A horizon in the "sols peu évolués". Hydromorphic soils, sodic soils and soils with high organic matter content in the epipedon are grouped in the classes of "sols hydromorphes", "sols sodiques", and "sols isohumiques", respectively. Soils derived from

limestones and volcanic ash have independent status and are grouped into the classes of "sols calcimagnésiques" and "andosols". As in other systems, dark clay soils with high shrink-swell capacity are distinguished at the highest level of generalization ("classe des vertisols"). The basic pedogenetic processes of illuviation, podzolization, and laterization are employed in the definitions of the remaining classes: "sols brunifiés", "sols podzolisés", "sols à sesquioxydes de fer et de manganèse", and "sols ferrallitiques".

It is important to note that these classes are defined in terms of the kind of process rather than its intensity. Thus, a soil undergoing "ferrallitic" weathering is classified directly into the "sols ferrallitiques" even though the soil may only show incipient features of this weathering process. Its young character is then recognized at the subgroup level, e.g. as "faiblement rajeuni".

Two kinds of weathering processes are important in the tropics: the formation of ferrallitic material ($SiO_2/Al_2O_3 < 2$) and that of fersiallitic material ($SiO_2/Al_2O_3 > 2$ and $SiO_2/R_2O_3 < 2$). The former usually takes place under warm humid conditions where leaching is intense. Fersiallitic weathering is considered typical for subhumid and semiarid tropical environments where leaching is not strong and migrating silica may re-combine to form layer silicates. For practical purposes, the climatic limit between these two environments is set somewhat arbitrarily at 1,200 mm (47") annual precipitation.

The nomenclature of the French system is heterogeneous. In some classes, old conventional terms such as Rendzinas, Podzols and Chernozems have been retained. Other taxa are named by more recent terms like Rankers, Vertisols or Andosols. For the most part, however, the nomenclature is

qualitative-descriptive. Consequently, names of lower category classes are unavoidably long. However, numerical designations with Roman and Arabic numerals are provided for all taxa. For example, "sols ferrallitiques fortement désaturés en (B), humifères, modal" may be abbreviated as X/321.

Correlation of Taxa of Soil Taxonomy with FAO/UNESCO Soil Units and Classes of the French System

The correlation of taxa of different systems has to be carried out on the basis of the information implicit in their definitions. Yet the name of a taxon only conveys quantitative information about those soil properties which are differentiating criteria in its definition. Thus, the more specific the definition, the more specific statements can be inferred about the properties of the taxon. Vice versa, a greater number of criteria have to be known to allow positive placement in specifically defined taxa. It is also obvious that correlations of taxa cannot be achieved with any degree of accuracy in cases where different criteria are employed in their respective definitions.

FAO/UNESCO soil units and taxa of Soil Taxonomy are often thought to have a high degree of correlation because both schemes use similar or identical differentiae and definitions. However, this holds true only in a general way because additional criteria are used in Soil Taxonomy and some of the same criteriae are employed at different categorical rank. For example, in the Soil Taxonomy udic and ustic moisture regimes are used as differentiae at high categoric level -- suborder or great group -- whereas this criterion is not recognized in the FAO scheme. Also, definitions are less precise in the FAO system. Thus Acrisols are defined as soils with argillic horizons having a base saturation of less than 50 percent

(by NH_4OAc) in at least some part of the B horizon and Luvisols are other soils with argillic horizons. As Alfisols are only required to have a base saturation of more than 35 percent (by sum of cations) at 125 cm depth, some Alfisols, such as Ultic Tropudalfs, may actually be Acrisols, although Alfisols are customarily correlated with Luvisols. In addition, the key to soil units of the FAO/UNESCO legend is structured differently than that of Soil Taxonomy. For example, the gleyic horizon takes precedence over the cambic horizon in the FAO scheme while in Soil Taxonomy the aquic moisture regime is recognized at the suborder level of Inceptisols.

An analysis of the two schemes suggests that seven orders of Soil Taxonomy correspond closely to seven higher category units of the FAO/UNESCO legend; e.g. Spodosols = Podzols and Oxisols = Ferralsols with the exception of Plinthaquox which are Gleysols. The remaining three orders are spread over 1º FAO units; e.g. Aridisols may be Xerosols or Yermosols. The lower category units of FAO are roughly equivalent to great groups and, in some cases, to suborders or subgroups of Soil Taxonomy; e.g., some Humic Ferralsols = Humox; some Haplic Luvisols = Hapludalfs, and some Dystric Nitosols = Oxic Palehumults.

The diagnostic criteria used in the French classification not only differ from those of the two other systems but are also employed on divergent rationales. Thus, less importance is given to horizons with clay accumulation and consequently the class of "sols ferrallitiques", for example, comprises both Ultisols and Oxisols. Greater emphasis is attached to soil properties associated with wetness on the assumption that wetness induces a peculiar profile development and masks or prevents any other pedogenetic processes (Aubert, 1965). The main difficulty, however, encountered in using the

French system stems from the fact that the criteria are not yet quantitatively defined and that there exists no key. Classes of the lower categories are, therefore, not mutually exclusive and unequivocal placements are not possible as the system in its present form leaves a considerable margin for conjecture.

In correlating the soil series of Hawaii with FAO/UNESCO units, it was necessary to refer to profile descriptions and analytical data for additional soil properties such as color or pH which are included in the FAO definition but are not criteria at the family level of Soil Taxonomy. The classification of the Hawaiian soil series according to the French classification was hampered by the inadequacies still inherent in this scheme. For the series for which no analytical data were available, the classifications must be considered provisional. The following is a summary of the reasons and principles used for the correlations presented below.

(a) Alfisols

There are only two Hawaiian series classified in this order as Oxic Paleustalfs and Oxic Rhodustalfs.

In the FAO/UNESCO legend, three units have been established for soils characterized mainly by the presence of an argillic horizon: Nitosols, Acrisols and Luvisols. The Paleustalfs of Hawaii were correlated with Nitosols on account of the clay distribution in the argillic horizon and as Eutric Nitosols because of low organic matter content and high base saturation. The Rhodustalfs were placed with the Luvisols because they lack the clay distribution typical for Nitosols and their base saturation is too high for Acrisols. Failing the requirements for all other units of Luvisols, the Rhodustalfs were correlated with Chromic Luvisols because of their color.

In the French system, the Ustalfs were correlated with "sols fersiallitiques" on the basis of the ustic moisture regime, the oxidic mineralogy and the high base saturation. Both the Paleustalfs and the Rhodustalfs are considered to belong to the group characterized by the absence of a reserve of calcium carbonate.

(b) Aridisols

Three series, classified as Ustollic Camborthids and Typic Salorthids, represent this order in the State of Hawaii.

In the FAO/UNESCO legend, there are two main units defined by aridic moisture regimes, Xerosols and Yermosols. The Hawaiian Camborthids were placed in the Xerosols because of A horizon development; as they lack argillic, calcic or gypsic horizons, they qualify for Haplic Xerosols. The Salorthids have a salic horizon and thus are Solonchaks in the FAO scheme. They key out as Orthic Solonchaks because they have no gleyic or mollic horizons and do not crack into polygonal elements when dry.

In the French system, the Camborthids are tentatively classified as "sols ferrugineux tropicaux peu lessivés" because the presence of a cambic horizon precludes placement into the class of "sols peu evolués" into which desert soils are usually classified. The Salorthids correlate with "sols sodique" and were placed into the group of "sols salins."

(c) Entisols

Five series of Entisols occur in the State of Hawaii. They are classified in the suborders of Aquents, Orthents, Fluvents, and Psamments.

The FAO/UNESCO legend provides three main units for soils without diagnostic horizons: Lithosols, Fluvisols and Regosols. The Entisols of Hawaii correspond to Fluvisols and Regosols. The Fluvaquents correlate

with Gleysols because they have a gleyic horizon and key out as Eutric Gleysols. The Torrifluvents were placed in the unit of Calcaric Fluvisols because they are developed from recent alluvial deposits, do not have a thionic horizon but are calcareous. The Ustipsamments and Ustorthents are considered Regosols. The former are calcareous and thus are Calcaric Regosols, whereas the noncalcareous Ustorthents have too high a base saturation for Dystric Regosols and therefore are Eutric Regosols.

In the French system, the Fluvaquents were classified as "sols hydromorphes minéraux". The other Entisols were correlated with "sols peu evolués xeriques" as they have ustic or torric moisture regimes.

(d) Histosols

There are fifteen series of Histosols in Hawaii of which 14 are Tropofolists and one is a Troposaprist.

In the FAO/UNESCO scheme, organic soils are also named Histosols and are, at the highest category, defined identically. The Hawaiian Histosols were correlated with either Dystric Histosols or Eutric Histosols depending on whether the pH value was below or above 5.5.

In the French system, the Lithic and Typic Tropofolists are tentatively classified as "sols peu evolués humifères" and placed in the "groupe des rankers". This classification is unsatisfactory, but the generally well-drained Tropofolists with O horizons of between 7.5 to 25 cm (3 to 10") thickness are not considered to fit into the "sols hydromorphes organiques", as anaerobic conditions are a criterion for this subclass. The Troposaprists, however, were placed into this subclass and correlated with the group of "sabrists" of the French system.

(e) Inceptisols

Inceptisols are the most extensive soils in the State of Hawaii and comprise 89 series classified in the suborders of Andepts, Aquepts and Tropepts.

In the FAO/UNESCO legend, these soils are mainly Gleysols, Andosols and Cambisols.

Andepts are developed from volcanic ash and therefore correspond to Andosols. The Eutrandepts have, by definition, a surface horizon that meets the color and thickness requirements for a mollic epipedon and also have a high base saturation. The Eutrandepts and the Mollic Vitrandepts were, therefore, correlated with Mollic Andosols. The Dystrandepts have surface horizons similar to umbric epipedons and thus keyed out as Humic Andosols. Most Hydrandepts were correlated with Ochric Andosols if they have smeary consistence and/or textures of silt loam or finer. (As the definition of Hydrandepts and their position in the key to Andepts does not preclude that they may have umbric epipedons, some Hydrandepts could in fact be Humic Andosols.) The Vitrandepts, except those of the mollic subgroup, keyed out as Vitric Andosols.

The Aquepts of Hawaii could be correlated with Gleysols or Cambisols because cambic horizons are permitted in the Gleysols and gleyic horizons are allowed in Cambisols. Depending on the degree of expression of hydromorphic features, the Tropaquepts were, therefore, matched with either Humic Gleysols or Gleyic Cambisols. The Placaquepts were considered equivalent to Humic Gleysols on account of strong mottling and the presence of a histic epipedon.

Most Humitropepts were correlated with Humic Cambisols as they have cambic horizons and umbric epipedons but fail to meet the requirements for Gelic, Gleyic, Vertic, or Calcic Cambisols. Of the Ustropepts, the Oxic and Vertic subgroups keyed out as Ferralic and Vertic Cambisols, respectively. The Fluventic and the Lithic Vertic Ustropepts, however, appear to be lacking a cambic horizon and do not have umbric epipedons. They can, therefore, not be correlated with Cambisols. The Fluventic Ustropepts were keyed out as Eutric Fluvisols and the Lithic Vertic Ustropepts as Eutric Regosols.

In the French system, the Andepts are equivalent to the "classe des andosols". The Hydrandepts, Dystrandepts and Placandepts approximately correspond to the "andosols des pays tropicaux, désaturés, humiques". Included in this subgroup were the Andic Humitropets. The Eutrandepts were placed into the group provided for andosols with higher base saturation. In the respective groups, the Andepts were placed in the modal or humic subgroups depending on the thickness of the A horizon; less or more than 25 cm, respectively.

The Aquepts were correlated with soils belonging to the class of hydromorphic soils and placed in subgroups of the "groupe des sols à gley" according to the depth were mottling occurs. The Plinthic Aquepts approximately correspond to the group of hydromorphic soils which is typified by accumulation of iron.

The Humitropepts were mainly correlated with "sols ferrallitiques" because they are, in most cases, too developed for "sols peu evolués" but show evidence of ferrallitic weathering as indicated by their usually oxidic or kaolinitic mineralogy classes. The Humitropepts were placed into groups

of the ferralitic soils according to their base saturation. On account of their ustic moisture regime and kaolinitic mineralogy, the Oxic and Vertic Ustropepts were correlated with the "sols fersiallitiques" and were classified in the modal and vertic subgroups, respectively. The Lithic Vertic Ustropepts and the Fluventic Ustropepts were classified in subgroups of the class of "soils peu évolués" on the basis of profile development.

(f) Mollisols

Twenty-seven series of Mollisols are recognized in the State of Hawaii. Of these, twenty-five are classified as Haplustolls and two as Aquolls.

In the FAO/UNESCO legend, soils with mollic epipedons may be placed in one of five main units: Rendzinas, Greyzems, Chernozems, Kastanozems, and Phaeozems.

The Calciaquolls could qualify for Rendzinas if they contain or overlie calcareous material with a calcium carbonate equivalent of more than 40 percent. As this cannot be substantiated without analytical data, these soils were keyed out as Calcic Kastanozems because they lack the argillic horizon required for Greyzems, and have too high chromas for Chernozems. The Calciaquolls of the Kaloko series qualify for Kastonozems on the basis of color and because they have a calcic horizon. They are not placed into the Gleysols because the gleyic horizon starts below 50 cm (20") depth. The Haplaquolls (e.g., Nohili series) were correlated with Mollic Gleysols as their gleyic horizon occurs within 50 cm (20") depth.

Of the twenty-five Haplustolls, two series (Mamala and Mokuleia) were classified as Rendzinas because they have calcareous mollic epipedons of less than 50 cm (20") thickness directly overlying coral sand or reef limestone. All other Haplustolls fail to meet the requirements for Rendzinas.

They do not have argillic horizons, chromas of less than 1.5, calcic or gypsic horizons, or concentrations of soft powdery lime, and therefore do not qualify for Greyzems, Chernozems or Kastanozems. Consequently, these Haplustolls must be Phaeozems. The Haplustolls that are calcareous were correlated with Calcaric Phaeozems, all remaining Haplustolls were correllated with Haplic Phaeozems.

In the French system, the Aquolls of Hawaii correspond to hydromorphic soils with gley at shallow depth. Two of the Lithic Haplustolls (Mamala and Mokuleia series) were classified as "sols calcimagnesiques" and placed into the subgroup of "xerorendzines" of the subclass of carbonate soils on account of their ustic moisture regime. The third series classified as Lithic Haplustoll (Waikomo) was not included in this subgroup as it is developed on lava. The Typic, Aridic, Cumulic, Oxic, and Pachic Haplustolls and the Waikomo series were correlated with the "classe des sols isohumiques", and classified into the subclass characterized by a tropical pedoclimate. For lack of detailed subdivisions, all of these Haplustolls were placed into the subgroup of brown-red, sub-arid soils.

(g) Oxisols

The 19 series of Oxisols found in Hawaii are grouped in the suborders Humox, Orthox, Torrox and Ustox.

In the FAO/UNESCO legend, soils with oxic horizons are Ferralsols. These are subdivided into six lower category units. Applying the key to Ferralsols, the Hawaiian Oxisols were correlated as follows: The Plinthic Acrorthox were matched with Plinthic Ferralsols because of the presence of plinthite which has precedence over acric properties in the FAO key. The Acrohumox, Gibbsihumox, Gibbsiorthox and Umbriorthox were correlated with Humic Ferralsols because they have no plinthite but meet the require-

ments for organic matter content for Humic Ferralsols. The Eutrorthox, Torrox and all except one series of the Haplustox keyed out as Rhodic Ferralsols because they lack plinthite, are too low in organic matter or have too high base a saturation, have a cation exchange capacity (from NH_4Cl) of more than 1 meq., but have a B horizon with hues redder than 5YR and moist values of less than 4. One Haplustox (Wailuka series) was correlated with Orthic Ferralsols because colors in the B horizon are not red enough for Rhodic Ferralsols and not yellow enough for Xanthic Ferralsols.

In the French system, all Hawaiian Oxisols are considered to be "sols ferrallitiques", although an argument could be made for the correlation of the Torrox and Ustox with "sols fersiallitiques" on the basis of their ustic or torric moisture regimes and their kaolinitic mineralogy. However, the Torrox and Ustox of Hawaii have probably developed under a more humid paleoclimate and they do not exhibit eluvial horizons which are usually present in the "sols fersiallitiques". Depending on their base saturation status, the Oxisols were classified in the subclasses of strongly, moderately or weakly desatured ferrallitic soils corresponding to values of less than 20 percent, between 20 and 40 percent, and more than 40 percent base saturation, respectively. These three subclasses are further characterized by contents of exchangeable bases of 1, 1 to 3, and 2 to 8 meq. per 100 g of soil. As no key is provided for the French system, these subclasses are not mutually exclusive and personal judgement is, therefore, reflected in the correlations presented below.

The Acrorthox, Acrohumox, Gibbsihumox, Gibbsiorthox, and one Umbriorthox (Makapili series) were classified as strongly desaturated "sols ferrallitiques". The Petroferric Acrohumox (Kahanui series) and the Plinthic Acrorthox

(Kunuweia series) were placed into the typic group and, at the subgroup level, correlated with indurated soils as both series contain ironstone. The Typic Acrohumox, Typic Gibbsihumox, Typic Gibbsiorthox and the Makapili series meet the organic matter requirements for the humic group and were there placed into the modal or gibbsitic subgroup.

The Haplustox, Torrox and two Umbriorthox (Hanamaulu and Lawai series) were classified as moderately desaturated "soils ferrallitiques" because they have more than 1 meq. of bases per 100 g of soil. The two Umbriorthox were correlated with soils of the humic group, whereas the Haplustox and Torrox are considered to belong to the modal subgroup of the group set up for typical but not extremely deep soils.

All of the four Hawaiian series of Eutrustox were classified as weakly desaturated "sols ferrallitiques" as their base saturation exceeds 40 percent. In this subclass they only qualify for the typic group as they have no stone-lines, have not been reworked and there is no evidence of significant clay illuviation. The Eutrustox were, therefore, placed in the modal subgroup.

(h) Spodosols

In the State of Hawaii there is only one series, a Tropaquod, classified in this order.

In the FAO/UNESCO legend, soils with spodic horizons are differentiated as Podzols. The Tropaquod was correlated with the Gleyic Podzols because it has no placic horizon but is saturated with water during some period of the year. It cannot be correlated with Gleysols because spodic horizons are not allowed in this unit.

In the French system, the Tropaquod was classified as a "sol podzolisé hydromorphe". As it has a histic epipedon and a gley horizon, it qualifies for the group "podzols à gley" and the subgroup "podzols humiques à gley".

(i) Ultisols

Twenty series of Ultisols occur in Hawaii. They are all classified as Tropohumults.

In the FAO/UNESCO legend, soils with argillic horizons of low base saturation key out as Acrisols. All of the Hawaiian Tropohumults were correlated with the Humic Acrisols of this unit because they have neither plinthic nor gleyic horizons but meet the organic matter requirements for this unit.

In the French system, the Tropohumults were classified as "sols ferrallitiques" on the basis of their udic moisture regimes and their mostly oxidic mineralogy indicative of ferrallitic weathering. As the Tropohumults have argillic horizons with rather uniform clay distribution underlying less clayey A horizons, they have been correlated with the group provided for such soils ("sols ferrallitiques moyennement désaturés appauvris") and were there placed in the modal subgroup.

(j) Vertisols

The nine Hawaiian series belonging to this order are classified as Torrerts, Uderts and Usterts.

In the FAO/UNESCO legend, Vertisols carry the same name and are defined according to the same central concept as in Soil Taxonomy. The FAO key, however, provides only two subdivisons of this unit based on the dominant chroma in the soil matrix. Applying this criterion, the Vertisols with chromas of less than 1.5 were placed in the Pellic Vertisols; all other Vertisols were correlated with Chromic Vertisols.

In the French system, the "classe des vertisols" is subdivided in two subclasses on the basis of drainage. In one subclass, external drainage

is nil or reduced; in the other, drainage is possible. Two groups are provided in each subclass, one for soils with granular structure and one for soils with angular structure. Based on their profile descriptions, three Hawaiian Vertisols (Honoluiuli, Lualualei, and Waihuna series) are considered to have reduced external drainage and were classified accordingly. In the case of all other Vertisols external drainage is possible as they mainly occur on sloping terrain. They were therefore placed in the second subclass. In both subclasses all series qualify for the group of soils with granular structure and all were placed in the modal subgroups. There is no clear trend for consistent correlation of taxa of Soil Taxonomy with those of the French system.

Materials Used

The following materials were used for the preparation of the correlation tables:

1. Soil Survey, Territory of Hawaii, Islands of Hawaii, Kauai, Lanai, Maui, Molokai, and Oahu (Cline, 1955).
2. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii (Soil Survey Staff, 1972).
3. Soil series descriptions for the soils of the Island of Hawaii, State of Hawaii, prepared by the National Cooperative Soil Survey of the U.S.
4. Classification of Soils - State of Hawaii (Soil Survey Staff, 1973).
5. Soil Data Bank, Soil Data Report No. 3 (Oldeman and Schroth, 1970).
6. Soil Taxonomy of the National Cooperative Soil Survey. Selected chapters from the unedited text (Soil Survey Staff, 1970).
7. Key to Soil Units for the Soil Map of the World (FAO, 1970).
8. Definitions of Soil Units for the Soil Map of the World (FAO, 1968).
9. Classification des Sols, Edition 1967 (Commission de Pédologie et

de Cartographie des Sols, 1967).

Tables

The reader who uses the correlation tables as a reference should understand that:

1. The classifications according to Soil Taxonomy and the 1938 Great Soil Group system are the official classifications established by the National Cooperative Soil Survey and by Cline (1955), respectively. The fact that they are used does not necessarily imply that the authors fully agree with all of these classifications. For example, the Hoolehua series is classified as a Oxic Ustropept but no such taxon exists, and the Lolekaa series is classified as a Humoxic Tropohumult although the base saturation in its argillic horizon is between 60 and 70 percent which should exclude it from the Ultisols.
2. The placements in units or taxa of the FAO/UNESCO legend and the French system were established under consultation of profile descriptions and analytical data. Thus, information beyond that contained in the taxonomic name was used. The correlations presented are, therefore, only valid for the particular series under consideration but are not necessarily correct for other series of the same subgroup and family. Table 1 should, therefore, be read from left to right but not in the other direction. (For a general correlation of FAO/UNESCO units with taxa of Soil Taxonomy the reader is referred to the tables prepared by Dudal and reproduced in Buol (1972).)

3. The placements in the French soil classification system could be achieved with some degree of accuracy only in the cases of series for which analytical data are available. (These series are identified by an asterisk in table 1.) In general, unequivocal classifications are not possible because a) there exists no key to the French system and classes are therefore not always mutually exclusive, and b) subjective judgements are unavoidable in interpreting the pedogenic processes on which the system is largely based.

Summary

The 190 soil series occurring in the State of Hawaii and classified in Soil Taxonomy were correlated with units of the FAO/UNESCO legend for the Soil Map of the World and classified according to the French system of soil classification. These three classification schemes are extensively used in the tropics. The U.S. classification of 1938 was included because it is still referred to in Hawaii and some Central American countries.

The objective of this publication is to provide correlations that should be useful a) as a reference for the classification of the soils of Hawaii in different systems, b) for purposes of teaching in conjunction with the FAO/UNESCO Soil Map of the World, and c) for a comparison of the soils of Hawaii with those of other tropical areas. The correlations presented are for specific series and therefore are only valid for the particular soils under consideration. As units of the FAO/UNESCO and the French schemes do not always correspond to the same taxa of Soil Taxonomy, the tables should not be used for identifying units of these two systems in Soil Taxonomy.

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3 Taxa of the French Soil Classification that correlate with Soil Series of the State of Hawaii.

4 Placement of the Soil Series of the State of Hawaii in Soil Taxonomy.

5 Placement of the Soil Series of the State of Hawaii in the U.S. System of 1938.

Table 1. Classification of the Soil Series of the State of Hawaii in Soil Taxonomy, in the FAO/UNESCO Legend, in the French Soil Classification, and in the U.S. System of 1938[1]

Series	Soil Taxonomy[2] Subgroup and Family	FAO/UNESCO[3]	French Classification[4] Subgroup	U.S. System of 1938[5] Great Soil Group
Ainakea	Andic Ustic Humitropepts fine, oxidic, isohyperthermic	Humic Cambisols	X/253[6]	Humic Latosols
Akaka*[7]	Typic Hydrandepts thixotropic, isomesic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Alae	Mollic Vitrandepts medial, isohyperthermic	Mollic Andosols	IV/211	Alluvial Soils
Alaeloa	Orthoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Low Humic Latosols
Alakai	Terric Troposaprists clayey, kaolinitic, dysic, isomesic	Dystric Histosols	XI/121	Bog Soils
Alapai	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/222	Hydrol Humic Latosols

[1]This table should be read from left to right only. It should not be used for general correlations of the different units of the four systems.
[2]Soil Survey Staff (1970); classifications from Soil Survey Staff (1973).
[3]FAO (1970).
[4]Commission de Pédologie et de Cartographie des Sols (1967).
[5]Baldwin et al. (1938); classifications from Cline (1955).
[6]For nomenclature, see Table 3.
[7]Asterisk indicates availability of laboratory data, see Oldeman and Schroth (1970).

Amalu	Histic Placaquepts fine, mixed, acid, isomesic ortstein	Humic Gleysols	XI/212	Hydrol Humic Latosols
Apakuie*	Typic Vitrandepts medial, isomesic	Vitric Andosols	IV/212	Latosolic Brown Forest Soils
Bwa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Haiku*	Humoxic Tropohumults clayey, ferritic, isohyperthermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Halawa	Orthoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Haleiwa	Typic Haplustolls fine, mixed, isohyperthermic	Haplic Phaeozems	VI/412	Alluvial Soils
Halii	Typic Gibbsihumox clayey, ferritic, isothermic	Humic Ferralsols	X/322	Humic Latosols
Haliimaile	Ustoxic Humitropepts fine, kaolinitic, isothermic	Humic Cambisols	X/217	Low Humic Latosols
Hamakuapoko	Orthoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Low Humic Latosols
Hana	Typic Hydrandepts thixotropic, isohyperthermic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Hanalei*	Tropic Fluvaquents very-fine, oxidic, nonacid, isohyperthermic	Eutric Gleysols	XI/311	Alluvial Soils
Hanamaulu	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic	Humic Ferralsols	X/241	Humic Latosols

Hanipoe	Typic Dystrandepts medial, isomesic	Humic Andosols	IV/222	Latosolic Brown Forest Soil
Hawi	Typic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Heake	Lithic Dystrandepts medial, isothermic	Vitric Andosols	IV/223	Regosols
Helemano	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/241	Low Humic Latosols
Hihimanu	Oxic Humitropepts fine, oxidic, isothermic	Humic Cambisols	X/217	Humic Latosols
Hilea	Lithic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/223	Hydrol Humic Latosols
Hilo*	Typic Hydrandepts thixotropic, isohyperthermic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Holomua*	Ustollic Camborthids fine-loamy, kaolinitic, isohyperthermic	Haplic Xerosols	IX/111	Low Humic Latosols
Honaunau	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Honokaa*	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/221	Hydrol Humic Latosols
Honolua	Humoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Latosols
Honomanu	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/222	Hydrol Humic Latosols

Honouliuli*	Typic Chromusterts fine, kaolinitic, isohyperthermic	Chromic Vertisols	III/111	Gray Hydromorphic Soils
Honuaulu*	Hydric Dystrandepts thixotropic over fragmental, isothermic	Ochric Andosols	IV/221	Humic Latosols
Hoolehua*	Oxic Ustropepts fine, kaolinitic, isohyperthermic	Ferralic Cambisols	IX/221	Low Humic Latosols
Huikau	Typic Vitrandepts medial over cindery, isomesic	Vitric Andosols	IV/213	Regosols
Hulua	Typic Placaquepts fine, oxidic, acid, isothermic, ortstein	Humic Gleysols	XI/35	Gray Hydromorphic Soils
Iao	Typic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Alluvial Soils
Io*	Typic Eutrandepts medial over cindery, isothermic	Mollic Andosols	IV/212	Reddish Prairie Soils
Ioleau	Orthoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Jaucas	Typic Ustipsamments carbonatic, isohyperthermic	Calcaric Regosols	II/311	Regosols
Kaalualu	Ustollic Eutrandepts medial over fragmental, isohyperthermic	Mollic Andosols	IV/211	Reddish Brown Soils
Kaena	Typic Pelluderts very fine, montmorillonitic, isohyperthermic	Pellic Vertisols	III/211	Gray Hydromorphic Soils
Kahalui	Lithic Tropofolists dysic, isomesic	Dystric Histosols	II/212	Lithosols

Kahana	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/241	Low Humic Latosols
Kahanui	Petroferric Acrohumox clayey, ferritic, isothermic	Humic Ferralsols	X/313	Humic Ferruginous Latosols
Kahua	Typic Placandepts thixotropic, isomesic	Ochric Andosols	IV/221	Hydrol Humic Latosols
Kailua	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/221	Humic Latosols
Kaimu	Typic Tropofolists euic, isohyperthermic	Eutric Histosols	II/212	Lithosols
Kainaliu	Typic Eutrandepts medial over fragmental, isohyperthermic	Mollic Andosols	IV/211	Humic Latosols
Kaipoioi*	Typic Dystrandepts medial, isomesic	Humic Andosols	IV/222	Latosolic Brown Forest Soils
Kaiwiki	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Kalae*	Ustoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Kalapa	Humoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Humic Latosols
Kalaupapa	Lithic Eutrandepts medial, isohyperthermic	Mollic Andosols	IV/213	Reddish Prairie Soils
Kalihi	Typic Tropaquepts very-fine, kaolinitic, nonacid, isohyperthermic	Gleyic Cambisols	XI/311	Gray Hydromorphic Soils

Kaloko	Typic Calciaquolls fine, carbonatic, isohyperthermic	Calcic Kastanozems	XI/311	Gray Hydromorphic Soils
Kamakoa	Mollic Vitrandepts medial, isothermic	Mollic Andosols	IV/211	Alluvial Soils
Kamaoa	Typic Eutrandepts medial, isothermic	Mollic Andosols	IV/211	Reddish Prairie Soils
Kamaole	Aridic Haplustolls clayey-skeletal, kaolinitic, isothermic	Haplic Phaeozems	VI/412	Reddish Brown Soils
Kaneohe	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic	Humic Acrisols	X/231	Humic Latosols
Kanepuu	Oxic Paleustalfs fine, oxidic, isothermic	Eutric Nitosols	IX/221	Humic Ferruginous Latosols
Kapaa*	Typic Gibbsiorthox clayey, oxidic, isohyperthermic	Humic Ferralsols	X/322	Humic Ferruginous Latosols
Kapapala	Typic Dystrandepts medial, isomesic	Humic Andosols	IV/223	Latosolic Brown Forest Soil
Kapuhikani	Mollic Torrerts very-fine, montmorillonitic, isohyperthermic	Chromic Vertisols	III/211	Dark Magnesium Clays
Kaupo	Pachic Haplustolls fine-silty over fragmental, mixed, isohyperthermic	Haplic Phaeozems	VI/412	Alluvial Soils
Kawaihae*	Ustollic Camborthids fine loamy, mixed, isohyperthermic	Haplic Xerosols	IX/111	Red Desert Soils
Kawaihapai	Cumulic Haplustolls fine, mixed, isohyperthermic	Haplic Phaeozems	VI/412	Alluvial Soils

Keaau	Typic Tropaquepts very-fine, montmorillonitic, nonacid, isohyperthermic	Calcaric Cambisols	XI/311	Gray Hydromorphic Soils
Keahua*	Torroxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Kealakekua*	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/221	Hydrol Humic Latosols
Kealia	Typic Salorthids coarse-loamy, mixed, isohyperthermic	Orthic Solonchaks	XII/112	Solonchaks
Keaukaha	Lithic Tropofolists dysic, isohyperthermic	Dystric Histosols	II/212	Lithosols
Keawakapu	Aridic Haplustolls clayey over fragmental, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/411	Red Desert Soils
Keei	Lithic Tropofolists dysic, isothermic	Dystric Histosols	II/212	Lithosols
Keekee	Mollic Vitrandepts medial, isomesic	Mollic Andosols	IV/211	Alluvial Soils
Kehena	Aeric Andaquepts thixotropic, acid, isothermic	Ochric Andosols	IV/221	Humic Latosols
Kekaha*	Cumulic Haplustolls very-fine, mixed, isohyperthermic	Calcaric Phaeozems	VI/412	Low Humic Latosols
Kekake	Lithic Tropofolists dysic, isomesic	Dystric Histosols	II/212	Lithosols
Kemoo	Oxic Rhodustalfs fine, oxidic, isohyperthermic	Chromic Luvisols	IX/212	Humic Ferruginous Latosols

Kikoni	Typic Eutrandepts medial, isothermic	Mollic Andosols	IV/211	Reddish Prairie Soils
Kilauea	Typic Ustorthents ashy-skeletal, isothermic	Eutric Regosols	II/311	Regosols
Kiloa	Typic Tropofolists dysic, isothermic	Dystric Histosols	II/212	Lithosols
Kilohana	Mollic Vitrandepts medial, isomesic	Mollic Andosols	IV/212	Regosols
Koele	Aridic Haplustolls fine, kaolinitic, isothermic	Haplic Phaeozems	VI/412	Alluvial Soils
Kohala*	Ustic Humitropepts very-fine, mixed, isohyperthermic	Humic Cambisols	X/217	Low Humic Latosols
Kokee	Humoxic Tropohumults clayey, oxidic, isomesic	Humic Acrisols	X/231	Humic Latosols
Koko	Ustollic Eutrandepts medial, isohyperthermic	Mollic Andosols	IV/212	Red Desert Soils
Kokokahi	Udorthentic Pellusterts very-fine, montomorillonitic, isohyperthermic	Pellic Vertisols	III/111	Dark Magnesium Clays
Kolekole	Ustoxic Humitropepts fine, oxidic, isohyperthermic	Humic Cambisols	X/217	Humic Ferruginous Latosols
Koloa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic, shallow	Rhodic Ferralsols	X/111	Low Humic Latosols
Kolokolo	Fluventic Humitropepts fine, mixed, isohyperthermic	Eutric Fluvisols	II/423	Alluvial Soils

Kona	Lithic Tropofolists euic, isothermic	Eutric Histosols	II/212	Lithosols
Koolau	Plinthic Tropaquepts fine, halloysitic, acid, isothermic	Plinthic Gleysols	XI/35	Hydrol Humic Latosols
Kukaiau	Hydric Dystrandepts thixotropic, isothermic	Ochric Andosols	IV/222	Humic Latosols
Kula	Typic Eutrandepts medial, isothermic	Mollic Andosols	IV/211	Reddish Prairie Soils
Kunia	Ustoxic Humitropepts fine, kaolinitic, isohyperthermic	Humic Cambisols	X/217	Low Humic Latosols
Kunuweia	Plinthic Acrorthox clayey, ferritic, isothermic	Plinthic Ferralsols	X/313	Humic Ferruginous Latosols
Lahaina	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/241	Low Humic Latosols
Lalaau	Typic Tropofolists dysic, isomesic	Dystric Histosols	II/212	Lithosols
Laumaia	Typic Dystrandepts medial, isomesic	Humic Andosols	IV/222	Latosolic Brown Forest Soils
Lawai*	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic	Humic Ferralsols	X/222	Humic Ferruginous Latosols
Leilehua*	Humoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Lihue*	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/111	Low Humic Latosols
Lolekaa*	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic	Humic Acrisols	X/231	Humic Latosols

Lualualei*	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic	Chromic Vertisols	III/111	Dark Magnesium Clays
Mahana*	Typic Acrohumox clayey, oxidic, isothermic	Humic Ferralsols	X/321	Humic Ferruginous Latosols
Mahukona	Aridic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Maile*	Hydric Dystrandepts thixotropic, isomesic	Humic Andosols	IV/222	Latosolic Brown Forest Soil
Makaalae	Oxic Humitropepts clayey-skeletal, mixed, isohyperthermic	Rankers	II/211	Humic Latosols
Makalapa	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic	Chromic Vertisols	III/211	Dark Magnesium Clays
Makapili*	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic	Humic Ferralsols	X/321	Humic Ferruginous Latosols
Makawao	Humoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Latosols
Makaweli*	Oxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Makena	Aridic Haplustolls ashy, isohyperthermic	Calcaric Phaeozems	VI/412	Red Desert Soils
Makiki	Andic Ustic Humitropepts fine, mixed, isohyperthermic	Humic Cambisols	X/251	Low Humic Latosols
Mala	Typic Torrifluvents fine, kaolinitic, nonacid, isohyperthermic	Calcaric Fluvisols	II/312	Alluvial Soils

Malama	Typic Tropofolists dysic, isohyperthermic	Dystric Histosols	II/212	Lithosols
Mamala*	Lithic Haplustolls clayey, kaolinitic, isohyperthermic	Rendzinas	V/115	Low Humic Latosols
Manahaa	Hydric Dystrandepts thixotropic, isomesic	Ochric Andosols	IV/221	Latosolic Brown Forest Soils
Manana*	Orthoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Manu	Hydric Dystrandepts medial, isothermic	Humic Andosols	IV/223	Regosols
Mawae	Typic Tropofolists euic, isomesic	Eutric Histosols	II/212	Lithosols
Moaula	Hydric Dystrandepts thixotropic, isothermic	Humic Andosols	IV/221	Humic Latosols
Mokuleia	Entic Haplustolls sandy, carbonatic, isohyperthermic	Rendzinas	V/115	Alluvial Soils
Molokai	Typic Torrox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/211	Low Humic Latosols
Naalehu*	Typic Eutrandepts medial, isohyperthermic	Mollic Andosols	IV/212	Reddish Prairie Soils
Naiwa*	Andic Humitropepts medial, isothermic	Humic Cambisols	IV/222	Humic Ferruginous Latosols
Niu	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/241	Low Humic Latosols
Niulii	Hydric Dystrandepts thixotropic, isothermic	Humic Andosols	IV/222	Humic Latosols

Nohili*	Cumulic Haplaquolls very-fine, montmorillonitic (calcareous), isohyperthermic	Mollic Gleysols	XI/311	Gray Hydromorphic Soils
Nonopahu	Entic Chromusterts very-fine, kaolinitic, isohyperthermic	Chromic Vertisols	III/211	Dark Magnesium Clays
Oanapuka	Ustollic Eutrandepts medial, isohyperthermic	Mollic Andosols	IV/211	Reddish Brown Soils
Ohia	Typic Hydrandepts thixotropic, isothermic	Ochric Andosols	IV/221	Hydrol Humic Latosols
Olaa	Typic Hydrandepts thixotropic over fragmental, isohyperthermic	Ochric Andosols	IV/221	Hydrol Humic Latosols
Olelo	Humoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Oli	Oxic Dystrandepts medial, isothermic	Humic Andosols	IV/222	Latosolic Brown Forest Soils
Olinda	Entic Dystrandepts medial, isomesic	Humic Andosols	IV/221	Latosolic Brown Forest Soils
Olokui	Typic Placaquepts fine, mixed, acid, isomesic	Humic Gleysols	XI/212	Gray Hydromorphic Soils
Ookala	Hydric Dystrandepts thixotropic, isohyperthermic	Humic Andosols	IV/222	Humic Latosols
Opihikao	Lithic Tropofolists dysic, isohyperthermic	Dystric Histosols	II/212	Lithosols
Paaiki	Oxic Dystrandepts medial, isothermic	Humic Andosols	IV/221	Humic Latosols

Paaloa*	Humoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Latosols
Paauhau*	Hydric Dystrandepts thixotropic, isohyperthermic	Ochric Andosols	IV/222	Humic Latosols
Paia*	Oxic Haplustolls very-fine, kaolinitic, isohyperthermic	Calcaric Phaeozems	VI/412	Low Humic Latosols
Pakala	Fluventic Ustropepts fine, oxidic, isohyperthermic	Eutric Fluvisols	II/421	Alluvial Soils
Pakini*	Entic Eutrandepts medial, isohyperthermic	Mollic Andosols	IV/212	Reddish Brown Soils
Palapalai	Typic Eutrandepts medial, isothermic	Mollic Andosols	IV/212	Reddish Prairie Soils
Pamoa*	Torrertic Haplustolls very-fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Panaewa	Lithic Hydrandepts thixotropic, isohyperthermic	Ochric Andosols	IV/222	Hydrol Humic Latosols
Pane*	Oxic Dystrandepts medial, isothermic	Humic Andosols	IV/221	Reddish Prairie Soils
Papaa	Udic Chromusterts very-fine, montmorillonitic, isohyperthermic	Chromic Vertisols	III/211	Dark Magnesium Clays
Papai	Typic Tropofolists euic, isohyperthermic	Eutric Histosols	II/212	Lithosols
Paumalu	Humoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Humic Latosols

Pauwela*	Humoxic Tropohumults clayey, oxidic, isohyperthermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Pearl Harbor	Typic Tropaquepts fine, montmorillonitic, nonacid, isohyperthermic	Eutric Gleysols	XI/311	Gray Hydromorphic Soils
Piihonua	Typic Hydrandepts thixotropic, isomesic	Ochric Andosols	IV/221	Latosolic Brown Forest Soils
Pohakupu	Ustoxic Humitropepts fine, oxidic, isohyperthermic	Humic Cambisols	X/217	Humic Latosols
Pooku*	Typic Gibbsiorthox clayey, oxidic, isohyperthermic	Humic Ferralsols	X/322	Humic Ferruginous Latosols
Puaulu	Typic Hydrandepts medial over thixotropic, isomesic	Ochric Andosols	IV/223	Regosols
Puhi*	Tropeptic Eutrorthox clayey, oxidic, isohyperthermic	Rhodic Ferralsols	X/111	Humic Ferruginous Latosols
Puhimau	Hydric Lithic Dystrandepts medial, isothermic	Humic Andosols	IV/223	Regosols
Pulehu	Cumulic Haplustolls fine-loamy, mixed, isohyperthermic	Haplic Phaeozems	VI/412	Alluvial Soils
Puna	Typic Tropofolists euic, isothermic	Eutric Histosols	II/212	Lithosols
Punaluu	Lithic Tropofolists euic, isohyperthermic	Eutric Histosols	II/212	Lithosols
Punohu	Hydric Dystrandepts thixotropic, isomesic	Ochric Andosols	IV/221	Reddish Prairie Soils
Puukala	Hydric Lithic Dystrandepts thixotropic, isomesic	Ochric Andosols	IV/221	Latosolic Brown Forest Soils

Puuone	Typic Ustipsamments carbonatic, isohyperthermic	Calcaric Regosols	II/311	Regosols
Puu Oo	Hydric Dystrandepts thixotropic, isomesic	Ochric Andosols	IV/221	Latosolic Brown Forest Soils
Puu Opae	Ustoxic Tropohumults clayey, oxidic, isothermic	Humic Acrisols	X/231	Humic Ferruginous Latosols
Puu Pa	Ustollic Eutrandepts medial over fragmental, isothermic	Mollic Andosols	IV/213	Reddish Brown Soils
Tantalus	Typic Dystrandepts medial over cindery, isothermic	Humic Andosols	IV/222	Humic Latosols
Ulupalakua	Typic Eutrandepts medial over cindery, isothermic	Mollic Andosols	IV/211	Reddish Prairie Soils
Uma	Typic Vitrandepts cindery, isomesic	Vitric Andosols	IV/213	Regosols
Umikoa	Typic Dystrandepts medial, isomesic	Humic Andosols	IV/211	Latosolic Brown Forest Soils
Uwala*	Oxic Ustropepts very-fine, kaolinitic, isohyperthermic	Ferralic Cambisols	IX/221	Low Humic Latosols
Wahiawa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic	Rhodic Ferralsols	X/111	Low Humic Latosols
Wahikuli	Torroxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Waiaha	Lithic Eutrandepts medial, isohyperthermic	Ochric Andosols	IV/213	Reddish Brown Soils
Waiakoa*	Torroxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols

Waialeale	Histic Lithic Tropaquods fine, oxidic, isomesic	Gleyic Podzols	VIII/311	Lithosols
Waialua	Vertic Haplustolls very-fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/414	Low Humic Latosols
Waiawa	Lithic Vertic Ustropepts clayey, montmorillonitic, isohyperthermic	Eutric Regosols	II/431	Lithosols
Waihuna	Typic Chromusterts very-fine, kaolinitic, isothermic	Chromic Vertisols	III/111	Low Humic Latosols
Waikaloa*	Ustollic Eutrandepts medial, isothermic	Mollic Andosols	IV/212	Reddish Brown Soils
Waikane	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic	Humic Acrisols	X/231	Humic Latosols
Waikapu	Torroxic Haplustolls fine, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Waikomo	Lithic Haplustolls clayey, mixed, isohyperthermic	Haplic Phaeozems	VI/412	Reddish Brown Soils
Wailuku	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic	Orthic Ferralsols	X/241	Low Humic Latosols
Waimea*	Typic Eutrandepts medial, isothermic	Mollic Andosols	IV/212	Reddish Prairie Soils
Wainee	Aridic Haplustolls clayey-skeletal, kaolinitic, isohyperthermic	Haplic Phaeozems	VI/412	Low Humic Latosols
Waipahu	Vertic Ustropepts very-fine, kaolinitic, isohyperthermic	Vertic Cambisols	IX/223	Low Humic Latosols

Table 2. FAO/UNESCO Soil Units that Correlate with Soil Series of the State of Hawaii[1]

FAO/UNESCO Soil Units[2]		Soil Series	Classification in Soil Taxonomy[3]
Acrisols	Humic Acrisols	Alaeloa	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
		Haiku	Humoxic Tropohumults clayey, ferritic, isohyperthermic
		Halawa	Orthoxic Tropohumults clayey, oxidic, isothermic
		Hamakuapoko	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
		Honolua	Humoxic Tropohumults clayey, oxidic, isothermic
		Ioleau	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
		Kalae	Ustoxic Tropohumults clayey, oxidic, isothermic
		Kalapa	Humoxic Tropohumults clayey, oxidic, isohyperthermic
		Kaneohe	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
		Kokee	Humoxic Tropohumults clayey, oxidic, isomesic

[1]This table lists only those FAO/UNESCO soil units that correlate with soil series of the State of Hawaii. It should not be used for general correlations of FAO/UNESCO soil units with families and subgroups of Soil Taxonomy.

[2]FAO (1970).

[3]Soil Survey Staff (1970); classifications from Soil Survey Staff (1973).

		Leilehua	Humoxic Tropohumults clayey, oxidic, isothermic
		Lolekaa	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
		Makawao	Humoxic Tropohumults clayey, oxidic, isothermic
		Manana	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
		Olelo	Humoxic Tropohumults clayey, oxidic, isothermic
		Paaloa	Humoxic Tropohumults clayey, oxidic, isothermic
		Paumalu	Humoxic Tropohumults clayey, oxidic, isohyperthermic
		Pauwela	Humoxic Tropohumults clayey, oxidic, isohyperthermic
		Puu Opae	Ustoxic Tropohumults clayey, oxidic, isothermic
		Waikane	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
Andosols	Humic Andosols	Hanipoe	Typic Dystrandepts medial, isomesic
		Kaipoioi	Typic Dystrandepts medial, isomesic
		Kapapala	Typic Dystrandepts medial, isomesic

Laumaia	Typic Dystrandepts medial, isomesic
Maile	Hydric Dystrandepts thixotropic, isomesic
Manu	Hydric Dystrandepts medial, isothermic
Moaula	Hydric Dystrandepts thixotropic, isothermic
Niulii	Hydric Dystrandepts thixotropic, isothermic
Oli	Oxic Dystrandepts medial, isothermic
Olinda	Entic Dystrandepts medial, isomesic
Ookala	Hydric Dystrandepts thixotropic, isohyperthermic
Paaiki	Oxic Dystrandepts medial, isothermic
Pane	Oxic Dystrandepts medial, isothermic
Puhimau	Hydric Lithic Dystrandepts medial, isothermic
Tantalus	Typic Dystrandepts medial over cindery, isothermic
Umikoa	Typic Dystrandepts medial, isomesic

Mollic Andosols	**Alae**	Mollic Vitrandepts medial, isohyperthermic
	Io	Typic Eutrandepts medial over cindery, isothermic
	Kaalualu	Ustollic Eutrandepts medial over fragmental, isohyperthermic
	Kainaliu	Typic Eutrandepts medial over fragmental, isohyperthermic
	Kalaupapa	Lithic Eutrandepts medial, isohyperthermic
	Kamakoa	Mollic Vitrandepts medial, isothermic
	Kamaoa	Typic Eutrandepts medial, isothermic
	Keekee	Mollic Vitrandepts medial, isomesic
	Kikoni	Typic Eutrandepts medial, isomesic
	Kilohana	Mollic Vitrandepts medial, isomesic
	Koko	Ustollic Eutrandepts medial, isohyperthermic
	Kula	Typic Eutrandepts medial, isothermic
	Naalehu	Typic Eutrandepts medial, isohyperthermic

	Oanapuka	Ustollic Eutrandepts medial, isohyperthermic
	Pakini	Entic Eutrandepts medial, isohyperthermic
	Palapalai	Typic Eutrandepts medial, isothermic
	Puu Pa	Ustollic Eutrandepts medial over fragmental, isothermic
	Ulupalakua	Typic Eutrandepts medial, over cindery, isothermic
	Waikaloa	Ustollic Eutrandepts medial, isothermic
	Waimea	Typic Eutrandepts medial, isothermic
Ochric Andosols	**Akaka**	Typic Hydrandepts thixotropic, isomesic
	Alapai	Typic Hydrandepts thixotropic, isothermic
	Hana	Typic Hydrandepts thixotropic, isohyperthermic
	Hilea	Lithic Hydrandepts thixotropic, isothermic
	Hilo	Typic Hydrandepts thixotropic, isohyperthermic
	Honaunau	Typic Hydrandepts thixotropic, isothermic

Honokaa	Typic Hydrandepts thixotropic, isothermic
Honomanu	Typic Hydrandepts thixotropic, isothermic
Honuaulu	Hydric Dystrandepts thixotropic over fragmental, isothermic
Kahua	Typic Placandepts thixotropic, isomesic
Kailua	Typic Hydrandepts thixotropic, isothermic
Kaiwiki	Typic Hydrandepts thixotropic, isothermic
Kealakekua	Typic Hydrandepts thixotropic, isothermic
Kehena	Aeric Andaquepts thixotropic, acid, isothermic
Kukaiau	Hydric Dystrandepts thixotropic, isothermic
Manahaa	Hydric Dystrandepts thixotropic, isomesic
Ohia	Typic Hydrandepts thixotropic, isothermic
Olaa	Typic Hydrandepts thixotropic over fragmental, isohyperthermic
Paauhau	Hydric Dystrandepts thixotropic, isohyperthermic

		Panaewa	Lithic Hydrandepts thixotropic, isohyperthermic
		Piihonua	Typic Hydrandepts thixotropic, isomesic
		Puaulu	Typic Hydrandepts medial over thixotropic, isomesic
		Punohu	Hydric Dystrandepts thixotropic, isomesic
		Puukala	Hydric Lithic Dystrandepts thixotropic, isomesic
		Puu Oo	Hydric Dystrandepts thixotropic, isomesic
		Waiaha	Lithic Eutrandepts medial, isohyperthermic
	Vitric Andosols	Apakuie	Typic Vitrandepts medial, isomesic
		Heake	Lithic Dystrandepts medial, isothermic
		Huikau	Typic Vitrandepts medial over cindery, isomesic
		Uma	Typic Vitrandepts cindery, isomesic
Cambisols	Calcaric Cambisols	Keaau	Typic Tropaquepts very-fine, montmorillonitic, nonacid, isohyperthermic

Ferralic Cambisols	Hoolehua	Oxic Ustropepts fine, kaolinitic, isohyperthermic
	Uwala	Oxic Ustropepts very-fine, kaolinitic, isohyperthermic
Gleyic Cambisols	Kalihi	Typic Tropaquepts very-fine, kaolinitic, nonacid, isohyperthermic
Humic Cambisols	Ainakea	Andic Ustic Humitropepts fine, oxidic, isohyperthermic
	Haliimaile	Ustoxic Humitropepts fine, kaolinitic, isothermic
	Hihimanu	Oxic Humitropepts fine, oxidic, isothermic
	Kohala	Ustic Humitropepts very-fine, mixed, isohyperthermic
	Kolekole	Ustoxic Humitropepts fine, oxidic, isohyperthermic
	Kunia	Ustoxic Humitropepts fine, kaolinitic, isohyperthermic
	Makiki	Andic Ustic Humitropepts fine, mixed, isohyperthermic
	Naiwa	Andic Humitropepts medial, isothermic
	Pohakupu	Ustoxic Humitropepts fine, oxidic, isohyperthermic

	Vertic Cambisols	Waipahu	Vertic Ustropepts very-fine, kaolinitic, isohyperthermic
Ferralsols	Humic Ferralsols	Halii	Typic Gibbsihumox clayey, ferritic, isothermic
		Hanamaulu	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
		Kahanui	Petroferric Acrohumox clayey, ferritic, isothermic
		Kapaa	Typic Gibbsiorthox clayey, oxidic, isohyperthermic
		Lawai	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
		Mahana	Typic Acrohumox clayey, oxidic, isothermic
		Makapili	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
		Pooku	Typic Gibbsiorthox clayey, oxidic, isohyperthermic
	Orthic Ferralsols	Wailuku	Topeptic Haplustox clayey, kaolinitic, isohyperthermic
	Plinthic Ferralsols	Kunuweia	Plinthic Acrorthox clayey, ferritic, isothermic
	Rhodic Ferralsols	Helemano	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic

		Kahana	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
		Koloa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic, shallow
		Lahaina	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
		Lihue	Tropeptic Eutrustox clayey, kaolinitic,, isohyperthermic
		Molokai	Typic Torrox clayey, kaolinitic, isohyperthermic
		Niu	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
		Puhi	Tropeptic Eutrorthox clayey, oxidic, isohyperthermic
		Wahiawa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic
Fluvisols	**Calcaric Fluvisols**	**Mala**	Typic Torrifluvents fine, kaolinitic, nonacid, isohyperthermic
	Eutric Fluvisols	**Kolokolo**	Fluventic Humitropepts fine, mixed, isohyperthermic
		Pakala	Fluventic Ustropepts fine, oxidic, isohyperthermic

Gleysols	**Eutric Gleysols**	**Hanalei**	Tropic Fluvaquents very-fine, oxidic, nonacid, isohyperthermic
		Pearl Harbor	Typic Tropaquepts fine, montmorillonitic, nonacid, isohyperthermic
	Humic Gleysols	**Amalu**	Histic Placaquepts fine, mixed, acid, isomesic, ortstein
		Hulua	Typic Placaquepts fine, oxidic, acid, isothermic, ortstein
		Olokui	Typic Placaquepts fine, mixed, acid, isomesic
	Mollic Gleysols	**Nohili**	Cumulic Haplaquolls very-fine, montmorillonitic (calcareous), isohyperthermic
	Plinthic Gleysols	**Koolau**	Plinthic Tropaquepts fine, halloysitic, acid, isothermic
Histosols	**Dystric Histosols**	**Alakai**	Terric Troposaprists clayey, kaolinitic, dysic, isomesic
		Kahaluu	Lithic Tropofolists dysic, isomesic
		Keaukaha	Lithic Tropofolists dysic, isohyperthermic
		Keei	Lithic Tropofolists dysic, isothermic

		Kekake	Lithic Tropofolists dysic, isomesic
		Kiloa	Typic Tropofolists dysic, isothermic
		Lalaau	Typic Tropofolists dysic, isomesic
		Malama	Typic Tropofolists dysic, isohyperthermic
		Opihikao	Lithic Tropofolists dysic, isohyperthermic
	Eutric Histosols	Kaimu	Typic Tropofolists euic, isohyperthermic
		Kona	Typic, Tropofolists euic, isomesic
		Papai	Typic Tropofolists euic, isohyperthermic
		Puna	Typic Tropofolists euic, isothermic
		Punaluu	Lithic Tropofolists euic, isohyperthermic
Kastanozems	Calcic Kastanozems	Kaloko	Typic Calciaquolls fine, carbonatic, isohyperthermic
Luvisols	Chromic Luvisols	Kemoo	Oxic Rhodustalfs fine, oxidic, isohyperthermic
Nitosols	Eutric Nitosols	Kanepuu	Oxic Paleustalfs fine, oxidic, isothermic

Phaeozems	Calcaric Phaeozems	Kekaha	Cumulic Haplustolls very-fine, mixed, ixohyperthermic
		Makena	Aridic Haplustolls ashy, isohyperthermic
		Paia	Oxic Haplustolls very-fine, kaolinitic, isohyperthermic
	Haplic Phaeozems	Ewa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
		Haleiwa	Typic Haplustolls fine, mixed, isohyperthermic
		Hawi	Typic Haplustolls fine, kaolinitic, isohyperthermic
		Iao	Typic Haplustolls fine, kaolinitic, isohyperthermic
		Kamaole	Aridic Haplustolls clayey-skeletal, kaolinitic, isothermic
		Kaupo	Pachic Haplustolls fine-silty over fragmental, mixed, isohyperthermic
		Kawaihapai	Cumulic Haplustolls fine, mixed, isohyperthermic
		Keahua	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
		Keawakapu	Aridic Haplustolls clayey over fragmental, kaolinitic, isohyperthermic

Koele	Aridic Haplustolls fine, kaolinitic, isothermic
Mahukona	Aridic Haplustolls fine, kaolinitic, isohyperthermic
Makaweli	Oxic Haplustolls fine, kaolinitic, isohyperthermic
Pamoa	Torrertic Haplustolls very-fine, kaolinitic, isohyperthermic
Pulehu	Cumulic Haplustolls fine-loamy, mixed, isohyperthermic
Wahikuli	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waiakoa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waialua	Vertic Haplustolls, very-fine, kaolinitic, isohyperthermic
Waikapu	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waikomo	Lithic Haplustolls clayey, mixed, isohyperthermic
Wainee	Aridic Haplustolls clayey-skeletal, kaolinitic, isohyperthermic

Podzols	Gleyic Podzols	Waialeale	Histic Lithic Tropaquods fine, oxidic, isomesic
Rankers		Makaalae	Oxic Humitropepts clayey-skeletal, mixed, isohyperthermic
Regosols	Calcaric Regosols	Jaucas	Typic Ustipsamments carbonatic, isohyperthermic
		Puuone	Typic Ustipsamments carbonatic, isohyperthermic
	Eutric Regosols	Kilauea	Typic Ustorthents ashy-skeletal, isothermic
		Waiawa	Lithic Vertic Ustropepts clayey, montmorillonitic, isohyperthermic
Rendzinas		Mamala	Lithic Haplustolls clayey, kaolinitic, isohyperthermic
		Mokuleia	Typic Haplustolls sandy, carbonatic, isohyperthermic
Solonchaks	Orthic Solonchaks	Kealia	Typic Salorthids coarse-loamy, mixed, isohyperthermic
Vertisols	Chromic Vertisols	Honouliuli	Typic Chromusterts fine, kaolinitic, isohyperthermic
		Kapuhikani	Mollic Torrerts very-fine, montmorillonitic, isohyperthermic
		Lualualei	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic

		Makalapa	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic
		Nonopahu	Entic Chromusterts very-fine, kaolinitic, isohyperthermic
		Papaa	Udic Chromusterts very-fine, montmorillonitic, isohyperthermic
		Waihuna	Typic Chromusterts very-fine, kaolinitic, isothermic
	Pellic Vertisols	Kaena	Typic Pelluderts very-fine, montmorillonitic, isohyperthermic
		Kokokahi	Udorthentic Pellusterts very-fine, montmorillonitic, isohyperthermic
Xerosols	Haplic Xerosols	Holomua	Ustollic Camborthids fine-loamy, kaolinitic, isohyperthermic
		Kawaihae	Ustollic Camborthids medial, isohyperthermic

Table 3. Taxa of the French Soil Classification that Correlate with Soil Series of the State of Hawaii[1]

French Taxa[2]	Soil Series	Classification in Soil Taxonomy[3]
II - Classe des sols peu évolués		
II/2 Sous-classe des sols peu évolués humifères		
II/21 Groupe des rankers		
II/212 Sous-groupe à moder	Kahaluu	Lithic Tropofolists dysic, isomesic
	Kaimu	Typic Tropofolists euic, isohyperthermic
	Keaukaha	Lithic Tropofolists dysic, isohyperthermic
	Keei	Lithic Tropofolists dysic, isothermic
	Kekake	Lithic Tropofolists dysic, isomesic
	Kiloa	Typic Tropofolists dysic, isothermic

[1]This table lists only those taxa of the French classification that correlate with soil series of the State of Hawaii. It should not be used for general correlations of taxa of the French System with families and subgroups of Soil Taxonomy.

[2]Commission de Pédologie et de Cartographie des Sols (1967).

[3]Soil Survey Staff (1970); classifications from Soil Survey Staff (1973).

	Kona	Lithic Tropofolists euic, isothermic
	Lalaau	Typic Tropofolists dysic, isomesic
	Malama	Typic Tropofolists dysic, isohyperthermic
	Mawae	Typic Tropofolists euic, isomesic
	Opihikao	Lithic Tropofolists dysic, isohyperthermic
	Papai	Typic Tropofolists euic, isohyperthermic
	Puna	Typic Tropofolists euic, isothermic
	Punaluu	Lithic Tropofolists euic, isohyperthermic
II/3 Sous-classe des sols peu évolués xeriques		
II/31 Groupe des sols gris subdésertiques		
II/311 Sous-groupe modal	Jaucas	Typic Ustipsamments carbonatic, isohyperthermic
	Kilauea	Typic Ustorthents ashy-skeletal, isothermic
	Puuone	Typic Ustipsamments carbonatic, isohyperthermic
II/312 Sous-groupe faiblement salin . .	Mala	Typic Torrifluvents fine, kaolinitic, nonacid, isohyperthermic

II/4 Sous-classe des sols peu évolués non climatiques

II/42 Groupe des sols d'apport alluvial

II/421 Sous-groupe modal	Pakala	Fluventic Ustropepts fine, oxidic, isohyperthermic
II/423 Sous-groupe humifère	Kolokolo	Fluventic Humitropepts fine, mixed, isohyperthermic

II/43 Groupe des sols d'apport colluvial

II/431 Sous-groupe modal	Waiawa	Lithic Vertic Ustropepts clayey, montmorillonitic, isohyperthermic

II/45 Groupe des sols d'apport volcanique friable

II/453 Sous-groupe humifère	Makaalae	Oxic Humitropepts clayey-skeletal, mixed, isohyperthermic

III - Classe des vertisols

III/1 Sous-classe des vertisols à drainage externe nul ou reduit

III/11 Groupe des vertisols à drainage nul ou reduit à structure arrondie

III/111 Sous-groupe modal	Honouliuli	Typic Chromusterts fine, kaolinitic, isohyperthermic
	Kokokahi	Udorthentic Pellusterts very-fine, montmorillonitic, isohyperthermic
	Lualualei	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic

	Waihuna	Typic Chromusterts very-fine, kaolinitic, isothermic

III/2 Sous-classe des vertisols à drainage externe possible

III/21 Groupe des vertisols à drainage externe possible à structure arrondie

III/211 Sous-groupe modal	Kaena	Typic Pelluderts very-fine, montmorillonitic, isohyperthermic
	Kapuhikani	Mollic Torrerts very-fine, montmorillonitic, isohyperthermic
	Makalapa	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic
	Nonopahu	Entic Chromusterts very-fine, kaolinitic, isohyperthermic
	Papaa	Udic Chromusterts very-fine, montmorillonitic, isohyperthermic

IV - Classe des andosols

IV/2 Sous-classe des andosols des pays tropicaux

IV/21 Groupe des sols saturés

IV/211 Sous-groupe modal	Alae	Mollic Vitrandepts medial, isohyperthermic
	Kaalualu	Ustollic Eutrandepts medial over fragmental, isohyperthermic

	Kainaliu	Typic Eutrandepts medial over fragmental, isohyperthermic
	Kamakoa	Mollic Vitrandepts medial, isothermic
	Kamaoa	Typic Eutrandepts medial, isothermic
	Keekee	Mollic Vitrandepts medial, isomesic
	Kikoni	Typic Eutrandepts medial, isothermic
	Kula	Typic Eutrandepts medial, isothermic
	Oanapuka	Ustollic Eutrandepts medial, isohyperthermic
	Ulupalakua	Typic Eutrandepts medial over cindery, isothermic
IV/212 Sous-groupe humique	Apakuie	Typic Vitrandepts medial, isomesic
	Io	Typic Eutrandepts medial over cindery, isothermic
	Kilohana	Mollic Vitrandepts medial, isomesic
	Koko	Ustollic Eutrandepts medial, isohyperthermic
	Naalehu	Typic Eutrandepts medial, isohyperthermic

	Pakini	Entic Eutrandepts medial, isohyperthermic
	Palapalai	Typic Eutrandepts medial, isothermic
	Waikaloa	Ustollic Eutrandepts medial, isothermic
	Waimea	Typic Eutrandepts medial, isothermic
IV/213 Sous-groupe peu développe	Huikau	Typic Vitrandepts medial over cindery, isomesic
	Kalaupapa	Lithic Eutrandepts medial, isohyperthermic
	Puu Pa	Ustollic Eutrandepts medial over fragmental, isothermic
	Uma	Typic Vitrandepts cindery, isomesic
	Waiaha	Lithic Eutrandepts medial, isohyperthermic
IV/22 Groupe des sols désaturés		
IV/221 Sous-groupe modal	Honokaa	Typic Hydrandepts thixotropic, isothermic
	Honuaulu	Hydric Dystrandepts thixotropic over fragmental, isothermic
	Kahua	Typic Placandepts thixotropic, isomesic
	Kailua	Typic Hydrandepts thixotropic, isothermic

Kealakekua	Typic Hydrandepts thixotropic, isothermic
Kehena	Aeric Andaquepts thixotropic, acid, isothermic
Manahaa	Hydric Dystrandepts thixotropic, isomesic
Moaula	Hydric Dystrandepts thixotropic, isothermic
Ohia	Typic Hydrandepts thixotropic, isothermic
Olaa	Typic Hydrandepts thixotropic over fragmental, isohyperthermic
Olinda	Entic Dystrandepts medial, isomesic
Paaiki	Oxic Dystrandepts medial, isothermic
Pane	Oxic Dystrandepts medial, isothermic
Piihonua	Typic Hydrandepts thixotropic, isomesic
Punohu	Hydric Dystrandepts thixotropic, isomesic
Puukala	Hydric Lithic Dystrandepts thixotropic, isomesic
Puu Oo	Hydric Dystrandepts thixotropic, isomesic
Umikoa	Typic Dystrandepts medial, isomesic

IV/222 Sous-groupe humique	Akaka	Typic Hydrandepts thixotropic, isomesic
	Alapai	Typic Hydrandepts thixotropic, isothermic
	Hana	Typic Hydrandepts thixotropic, isohyperthermic
	Hanipoe	Typic Dystrandepts medial, isomesic
	Hilo	Typic Hydrandepts thixotropic, isohyperthermic
	Honaunau	Typic Hydrandepts thixotropic, isothermic
	Honomanu	Typic Hydrandepts thixotropic, isothermic
	Kaipoioi	Typic Dystrandepts medial, isomesic
	Kaiwiki	Typic Hydrandepts thixotropic, isothermic
	Kukaiau	Hydric Dystrandepts thixotropic, isothermic
	Laumaia	Typic Dystrandepts medial, isomesic
	Maile	Hydric Dystrandepts thixotropic, isomesic
	Naiwa	Andic Humitropepts medial, isothermic
	Niulii	Hydric Dystrandepts thixotropic, isothermic

	Oli	Oxic Dystrandepts medial, isothermic
	Ookala	Hydric Dystrandepts thixotropic, isohyperthermic
	Paauhau	Hydric Dystrandepts thixotropic, isohyperthermic
	Panaewa	Lithic Hydrandepts thixotropic, isohyperthermic
	Tantalus	Typic Dystrandepts medial over cindery, isothermic
IV/223 Sous-groupe peu developpé	Heake	Lithic Dystrandepts medial, isothermic
	Kilea	Lithic Hydrandepts thixotropic, isothermic
	Kapapala	Typic Dystrandepts medial, isomesic
	Manu	Hydric Dystrandepts medial, isothermic
	Puaulu	Typic Hydrandepts medial over thixotropic, isomesic
	Puhimau	Hydric Lithic Dystrandepts medial, isothermic

V - Classe des sols calcimagnesiques

V/1 Sous-classe des sols carbonates

V/11 Groupe des rendzines

V/115 Sous-groupe xerorendzines	Mamala	Lithic Haplustolls clayey, kaolinitic, isohyperthermic

	Mokuleia	Entic Haplustolls sandy, carbonatic, isohyperthermic

VI - Classe des sols isohumiques

VI/4 Sous-classe des sols isohumiques, saturés, sous pédoclimat à temperature élevée en période pluvieuse

VI/41 Groupe des sols bruns sub-arides

VI/411 Sous-groupe modal	Keawakapu	Aridic Haplustolls clayey over fragmental, kaolinitic, isohyperthermic
VI/412 Sous-groupe brun rouge, sub-arid .	Ewa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
	Haleiwa	Typic Haplustolls fine, mixed, isohyperthermic
	Hawi	Typic Haplustolls fine, mixed, isohyperthermic
	Iao	Typic Haplustolls fine, kaolinitic, isohyperthermic
	Kamaole	Aridic Haplustolls clayey-skeletal, kaolinitic, isothermic
	Kaupo	Pachic Haplustolls fine-silty over fragmental, mixed, isohyperthermic
	Kawaihapai	Cumulic Haplustolls fine, mixed, isohyperthermic

Keahua	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Kekaka	Cumulic Haplustolls very-fine, kaolinitic, isohyperthermic
Koele	Aridic Haplustolls fine, kaolinitic, isothermic
Mahukona	Aridic Haplustolls fine, kaolinitic, isohyperthermic
Makaweli	Oxic Haplustolls fine, kaolinitic, isohyperthermic
Makena	Aridic Haplustolls ashy, isohyperthermic
Paia	Oxic Haplustolls very-fine, kaolinitic, isohyperthermic
Pamoa	Torrertic Haplustolls very-fine, kaolinitic, isohyperthermic
Pulehu	Cumulic Haplustolls fine-loamy, mixed, isohyperthermic
Wahikuli	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waiakoa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waikapu	Torroxic Haplustolls fine, kaolinitic, isohyperthermic

	Waikomo	Lithic Haplustolls clayey, mixed, isohyperthermic
	Wainee	Aridic Haplustolls clayey-skeletal, kaolinitic, isohyperthermic
VI/414 Sous-groupe vertique	Waialua	Vertic Haplustolls very-fine, kaolinitic, isohyperthermic
VIII - Classe des sols podzolisés		
VIII/3 Sous-classe des sols podzolisés hydromorphes		
VIII/31 Groupe des podzols à gley		
VIII/311 Sous-groupe humique à gley	Waialeale	Histic Lithic Tropaquods fine, oxidic, isomesic
IX - Classe des sols à sesquioxydes de fer		
IX/1 Sous-classe des sols ferrugineux (tropicaux)		
IX/11 Groupe des sols ferrugineaux tropicaux peu lessives		
IX/111 Sous-groupe modal	Holomua	Ustollic Camborthids fine-loamy, kaolinitic, isohyperthermic
	Kawaihae	Ustollic Camborthids fine-loamy, mixed, isohyperthermic
IX/2 Sous-classe des sols fersiallitiques		
IX/22 Groupe des sols fersiallitiques sans réserve calcique		
IX/221 Sous-groupe modal	Hoolehua	Oxic Ustropepts fine, kaolinitic, isohyperthermic

	Kanepuu	Oxic Paleustalfs fine, oxidic, isothermic
	Kemoo	Oxic Phodustalfs fine, oxidic, isohyperthermic
	Uwala	Oxic Ustropepts very-fine, kaolinitic, isohyperthermic
IX/223 Sous-groupe à caractère vertiques	Waipahu	Vertic Ustropepts very-fine, kaolinitic, isohyperthermic

X - Classe des sols ferrallitiques

X/1 Sous-classe des sols ferrallitiques faiblement désaturés en (B)

X/11 Groupe des sols ferrallitiques faiblement désaturés en (B) - typique

X/111 Sous-groupe modal	Koloa	Tropeptic Eutrustox clayey, kaolinitic, isohyper-thermic, shallow
	Lihue	Tropeptic Eutrustox clayey, kaolinitic, isohyper-thermic
	Puhi	Tropeptic Eutrorthox clayey, oxidic, isohyperthermic
	Wahiawa	Tropeptic Eutrustox clayey, kaolinitic, isoper-thermic

X/2 Sous-classe des sols ferrallitiques moyennement désaturés en (B)

X/21 Groupe des sols ferrallitiques moyennement désaturés en (B) - typiques

X/211 Sous-groupe modal	Molokai	Typic Torrox clayey, kaolinitic, isohyperthermic
X/217 Sous-groupe humique	Haliimaile	Ustoxic Humitropepts fine, kaolinitic
	Hihimanu	Oxic Humitropepts fine, oxidic, isothermic
	Kohala	Ustic Humitropepts very-fine, mixed, isohyperthermic
	Kolekole	Ustoxic Humitropepts fine, oxidic, isohyperthermic
	Kunia	Ustoxic Humitropepts fine, kaolinitic, isohyperthermic
	Pohakupu	Ustoxic Humitropepts fine, oxidic, isohyperthermic

X/22 Groupe des sols ferrallitiques moyennement désaturés en (B) - humiféres

X/222 Sous-groupe à horizon A tres profond.	Lawai	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic

X/23 Groupe des sols ferrallitiques moyennement désaturés appauvris

X/231 Sous-groupe modal	Alaeloa	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
	Haiku	Humoxic Tropohumults clayey, ferritic, isohyperthermic
	Halawa	Orthoxic Tropohumults clayey, oxidic, isothermic
	Hamakuapoko	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
	Honolua	Humoxic Tropohumults clayey, oxidic, isothermic
	Ioleau	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
	Kalae	Ustoxic Tropohumults clayey, oxidic, isothermic
	Kalapa	Humoxic Tropohumults clayey, oxidic, isohyperthermic
	Kaneohe	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
	Kokee	Humoxic Tropohumults clayey, oxidic, isomesic
	Leilehua	Humoxic Tropohumults clayey, oxidic, isothermic

	Lolekaa	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
	Makawao	Humoxic Tropohumults clayey, oxidic, isothermic
	Manana	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
	Oleio	Humoxic Tropohumults clayey, oxidic, isothermic
	Paaloa	Humoxic Tropohumults clayey, oxidic, isothermic
	Paumalu	Humoxic Tropohumults clayey, oxidic, isohyperthermic
	Pauwela	Humoxic Tropohumults clayey, oxidic, isohyperthermic
	Puu Opae	Ustoxic Tropohumults clayey, oxidic, isothermic
	Waikane	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
X/24 Groupe des sols ferrallitiques moyennement désaturés		
X/241 Sous-groupe modal	Hanamaulu	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
	Helemano	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic

	Kahana	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
	Lahaina	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
	Niu	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
	Wailuku	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
X/25 Groupe des sols ferrallitiques moyennement désaturés, rajeunis ou pénévolués		
X/251 Sous-groupe avec apport éolien . . .	Makiki	Andic Ustic Humitropepts fine, mixed, isohyperthermic
X/253 Sous-groupe avec érosion et remaniement	Ainakea	Andic Ustic Humitropepts fine, oxidic, isohyperthermic
X/3 Sous-classe des sols ferrallitiques fortement désaturés en (B)		
X/31 Groupe des sols ferrallitiques fortement désaturés en (B) - typiques		
X/313 Sous-groupe induré	Kahanui	Petroferric Acrohumox clayey, ferritic, isothermic
	Kunuweia	Plinthic Acrorthox clayey, ferritic, isothermic

X/32 Groupe des sols ferrallitiques fortement désaturés en (B) - humifères

X/321 Sous-groupe modal	Mahana	Typic Acrohumox clayey, oxidic, isothermic
	Makapili	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
X/322 Sous-groupe gibbsitique	Halii	Typic Gibbsihumox clayey, ferritic, isothermic
	Kapaa	Typic Gibbsiorthox clayey, oxidic, isohyperthermic
	Pooku	Typic Gibbsiorthox clayey, oxidic, isohyperthermic

XI - Classe des sols hydromorphes

XI/1 Sous-classe des sols hydromorphes organiques

XI/13 Groupe des sols à tourbe alterée (Saprist)

XI/131 Sous-groupe oligotrophe	Alakai	Terric Troposaprists clayey, kaolinitic, dysic, isomesic

XI/2 Sous-classe des sols hydromorphes moyennement organiques

XI/21 Groupe des sols humiques à gley

XI/212 Sous-groupe à anmoor acide . . .	Amalu	Histic Placaquepts fine, mixed, acid, isomesic, ortstein
	Olokui	Typic Placaquepts fine, mixed, acid, isomesic

XI/3 Sous-classe des sols hydromorphes minéraux ou peu humifères

XI/31 Groupe des sols hydromorphes peu humifères à gley

XI/311 Sous-groupe à gley peu profond . .	Hanalei	Tropic Fluvqeuents very-fine, oxidic, nonacid, isohyperthermic
	Kalihi	Typic Tropaquepts very-fine, kaolinitic, nonacid, isohyperthermic
	Kaloko	Typic Calciaquolls fine, carbonatic, isohyperthermic
	Keaau	Typic Tropaquepts very-fine, montmorillonitic, nonacid, isohyperthermic
	Nohili	Cumulic Haplaquolls very-fine, montmorillonitic, (calcareous), isohyperthermic
	Pearl Harbor	Typic Tropaquepts fine, montmorillonitic, nonacid, isohyperthermic

XI/35 Groupe des sols hydromorphes à accumulation de fer en carapace ou cuirasse . . . . .

	Hulua	Typic Placaquepts fine, oxidic, acid, isothermic, ortstein
	Koolau	Plinthic Tropaquepts fine, halloysitic, acid, isothermic

XIII - Classe des sols sodiques

XII/1 Sous-classe des sols sodiques à structure non degradée

XII/11 Groupe des sols salin (Solontchak)

XII/112 Sous-groupe à horizon superficiel friable . . . . .Kealia — Typic Salorthids coarse-loamy, mixed, isohyperthermic

Table 4. Placement of the Soil Series of the State of Hawaii in Soil Taxonomy[1]

Order	Suborder	Great Group	Subgroup	Family	Series
ALFISOLS	Ustalfs	Paleustalfs	Oxic Paleustalfs	Fine, oxidic, isothermic	Kanepuu
		Rhodustalfs	Oxic Rhodustalfs	Fine, oxidic, isohyperthermic	Kemoo
ARIDISOLS	Orthids	Salorthids	Typic Salorthids	Coarse-loamy, mixed, isohyperthermic	Kealia
		Camborthids	Ustollic Camborthids	Medial, isohyperthermic	Kawaihae
				Fine-loamy, kaolinitic, isohyperthermic	Holomua
ENTISOLS	Aquents	Fluvaquents	Tropic Fluvaquents	Very fine, oxidic, nonacid, isohyperthermic	Hanalei
	Fluvents	Torrifluvents	Typic Torrifluvents	Fine, kaolinitic, nonacid, isohyperthermic	Mala
	Orthents	Ustorthents	Typic Ustorthents	Ashy-sketetal, isothermic	Kilauea
	Psamments	Ustipsamments	Typic Ustipsamments	Carbonatic, isohyperthermic	Jaucas Puuone

[1]Source: Classification of Soils--State of Hawaii (Soil Survey Staff, 1973).

HISTOSOLS	Saprists	Troposaprists	Terric Troposaprists	Clayey, kaolinitic, dysic, isomesic	Alakai
	Folists	Tropofolists	Typic Tropofolists	Euic, isohyperthermic	Kaimu Papai
				Euic, isothermic	Puna
				Euic, isomesic	Mawae
				Dysic, isohyperthermic	Malama
				Dysic, isothermic	Kiloa
				Dysic, isomesic	Lalaau
			Lithic Tropofolists	Euic, isohyperthermic	Punaluu
				Euic, isothermic	Kona
				Dysic, isohyperthermic	Keaukaha Opihikao
				Dysic, isothermic	Keei
				Dysic, isomesic	Kahaluu Kekake
INCEPTISOLS	Andepts	Dystrandepts	Typic Dystrandepts	Medial, isomesic	Hanipoe Kaipoioi Kapapala Laumaia Umikoa
				Medial over cindery, isothermic	Tantalus

		Entic Dystrandepts	Medial, isomesic	Olinda
		Hydric Dystrandepts	Medial, isothermic	Manu
			Thixotropic, isomesic	Maile Manahaa Punohu Puu Oo
			Thixotropic, isothermic	Kukaiau Moaula Niulii
			Thixotropic over fragmental, isothermic	Honuaulu
			Thixotropic, isohyperthermic	Ookala Paauhau
		Hydric Lithic Dystrandepts	Thixotropic, isomesic	Puukala
			Medial, isothermic	Puhimau
		Lithic Dystrandepts	Medial, isothermic	Heake
Andepts	Dystrandepts	Oxic Dystrandepts	Medial, isothermic	Oli Paaiki Pane
	Eutrandepts	Typic Eutrandepts	Medial, isothermic	Kamaoa Kikoni Kula Palapalai Waimea

			Medial over cindery, isothermic	Io Ulupalakua
			Medial, isohyperthermic	Naalehu
			Medial over fragmental, isohyperthermic	Kainaliu
		Entic Eutrandepts	Medial, isohyperthermic	Pakini
		Lithic Eutrandepts	Medial, isohyperthermic	Kalaupapa Waiaha
		Ustollic Eutrandepts	Medial, isothermic	Waikaloa
			Medial, isohyperthermic	Koko Oanapuka
			Medial over fragmental, isothermic	Puu Pa
			Medial over fragmental, isohyperthermic	Kaalualu
Andepts	Hydrandepts	Typic Hydrandepts	Thixotropic, isomesic	Akaka Piihonua
			Medial over thixotropic, isomesic	Puaulu
			Thixotropic, isothermic	Alapai Honaunau Honokaa Honomanu Kailua Kaiwiki Kealakekua Ohia

			Thixotropic, isohyperthermic	Hana Hilo
			Thixotropic over fragmental, isohyperthermic	Olaa
		Lithic Hydrandepts	Thixotropic, isothermic	Hilea
			Thixotropic, isohyperthermic	Panaewa
	Vitrandepts	Typic Vitrandepts	Medial over cindery, isomesic	Huikau
			Medial, isomesic	Apakuie
			Cindery, isomesic	Uma
		Mollic Vitrandepts	Medial, isomesic	Keekee Kilohana
			Medial, isothermic	Kamakoa
			Medial, isohyperthermic	Alae
Andepts	Placandepts	Typic Placandepts	Thixotropic, isomesic	Kahua
Aquepts	Andaquepts	Aeric Andaquepts	Thixotropic, acid, isothermic	Kehena
	Tropaquepts	Typic Tropaquepts	Fine, montmorillonitic, nonacid, isohyperthermic	Pearl Harbor
			Very fine, kaolinitic, nonacid, isohyperthermic	Kalihi
			Very fine, montmorillonitic, nonacid, isohyperthermic	Keaau
		Plinthic Tropaquepts	Fine, halloysitic, acid, isothermic	Koolau

	Placaquepts	Typic Placaquepts	Fine, mixed, acid, isomesic	Olokui
			Fine, oxidic, acid, isothermic, ortstein	Hulua
		Histic Placaquepts	Fine, mixed, acid, isomesic, ortstein	Amalu
Tropepts	Humitropepts	Andic Humitropepts	Medial, isothermic	Naiwa
		Andic Ustic Humitropepts	Fine, oxidic, isohyperthermic	Ainakea
			Fine, mixed, isohyperthermic	Makiki
Tropepts	Humitropepts	Fluventic Humitropepts	Fine, mixed, isohyperthermic	Kolokolo
		Oxic Humitropepts	Clayey-skeletal, mixed, isohyperthermic	Makaalae
			Fine, oxidic, isothermic	Hihimanu
		Ustic Humitropepts	Very fine, mixed, isohyperthermic	Kohala
		Ustoxic Humitropepts	Fine, oxidic, isohyperthermic	Kolekole Pohakupu
			Fine, kaolinitic, isothermic	Haliimaile
			Fine, kaolinitic, isohyperthermic	Kunia
	Ustropepts	Fluventic Ustropepts	Fine, oxidic, isohyperthermic	Pakala
		Oxic Ustropepts	Fine, kaolinitic, isohyperthermic	Hoolehua
			Very fine, kaolinitic, isohyperthermic	Uwala

			Vertic Ustropepts	Very fine, kaolinitic, isohyperthermic	Waipahu
			Lithic Vertic Ustropepts	Clayey, montmorillonitic, isohyperthermic	Waiawa
MOLLISOLS	Aquolls	Calciaquolls	Typic Calciaquolls	Fine, isohyperthermic	Kaloko
		Haplaquolls	Cumulic Haplaquolls	Very fine, montmorillonitic (calcareous), isohyperthermic	Nohili
	Ustolls	Haplustolls	Typic Haplustolls	Fine, kaolinitic, isohyperthermic	Hawi Iao
				Fine, mixed, isohyperthermic	Haleiwa
			Cumulic Haplustolls	Fine-loamy, mixed, isohyperthermic	Kekaha
			Entic Haplustolls	Sandy, carbonatic, isohyperthermic	Mokuleia
			Lithic Haplustolls	Clayey, mixed, isohyperthermic	Waikomo
				Clayey, kaolinitic, isohyperthermic	Mamala
			Oxic Haplustolls	Fine, kaolinitic, isohyperthermic	Makaweli
				Very fine, kaolinitic, isohyperthermic	Paia
	Ustolls	Haplustolls	Pachic Haplustolls	Fine-silty over fragmental, mixed, isohyperthermic	Kaupo
			Torrertic Haplustolls	Very fine, kaolinitic, isohyperthermic	Pamoa

			Torroxic Haplustolls	Fine, kaolinitic, isohyperthermic	Ewa Keahua Waikapu Wahikuli Waiakoa
			Aridic Haplustolls	Fine, kaolinitic, isothermic	Koele
				Fine, kaolinitic, isohyperthermic	Mahukona
				Clayey-skeletal, kaolinitic, isothermic	Kamaole
				Clayey over fragmental, kaolinitic, isohyperthermic	Keawakapu
				Clayey-skeletal, kaolinitic, isohyperthermic	Wainee
				Ashy, isohyperthermic	Makena
			Vertic Haplustolls	Very fine, kaolinitic, isohyperthermic	Waialua
OXISOLS	Humox	Acrohumox	Typic Acrohumox	Clayey, oxidic, isothermic	Mahana
			Petroferric Acrohumox	Clayey, ferritic, isothermic	Kahanui
		Gibbsihumox	Typic Gibbsihumox	Clayey, ferritic, isothermic	Halii
	Orthox	Acrorthox	Plinthic Acrorthox	Clayey, ferritic, isothermic	Kunuweia
		Eutrorthox	Tropeptic Eutrorthox	Clayey, oxidic, isohyperthermic	Puhi
		Gibbsiorthox	Typic Gibbsiorthox	Clayey, oxidic, isohyperthermic	Pooku Kapaa
		Umbriorthox	Tropeptic Umbriorthox	Clayey, oxidic, isohyperthermic	Hanamaulu Lawai Makapili

	Torrox	Torrox	Typic Torrox	Clayey, kaolinitic, isohyperthermic	Molokai
	Ustox	Haplustox	Tropeptic Haplustox	Clayey, kaolinitic, isohyperthermic	Kahana Lahaina Niu Helemano Wailuku
		Eutrustox	Tropeptic Eutrustox	Clayey, kaolinitic, isohyperthermic	Lihue Wahiawa
				Clayey, kaolinitic, isohyperthermic, shallow	Koloa
SPODOSOLS	Aquods	Tropaquods	Histic Lithic Tropaquods	Fine, oxidic, isomesic	Waialeale
ULTISOLS	Humults	Tropohumults	Humoxic Tropohumults	Clayey, ferritic, isohyperthermic	Haiku
				Clayey, oxidic, isohyperthermic	Kalapa Paumalu Pauwela
				Clayey, oxidic, isomesic	Kokee
				Clayey, oxidic, isothermic	Honolua Leilehua Makawao Olelo Paaloa
				Clayey, kaolinitic, isohyperthermic	Kaneohe Lolekaa Waikane

			Orthoxic Tropohumults	Clayey, oxidic, isothermic	Halawa
				Clayey, oxidic, isohyperthermic	Alaeloa Hamakuapol Ioleau Manana
			Ustoxic Tropohumults	Clayey, oxidic, isothermic	Kalae Puu Opae
VERTISOLS	Torrerts	Torrerts	Mollic Torrerts	Very fine, montmorillonitic, isohyperthermic	Kapuhikan
	Uderts	Pelluderts	Typic Pelluderts	Very fine, montmorillonitic, isohyperthermic	Kaena
	Usterts	Chromusterts	Typic Chromusterts	Very fine, kaolinitic, isothermic	Waihuna
				Fine, kaolinitic, isohyperthermic	Honouliuli
				Very fine, montmorillonitic, isohyperthermic	Lualualei Makalapa
			Entic Chromusterts	Very fine, kaolinitic, isohyperthermic	Nonopahu
			Udic Chromusterts	Very fine, montmorillonitic, isohyperthermic	Papaa
		Pellusterts	Udorthentic Pellusterts	Very fine, montmorillonitic, isohyperthermic	Kokokahi

Table 5. Placement of the Soil Series of the State of Hawaii in the U.S. System of 1938[1]

Order	Suborder	Great Soil Group	Soil Series	Classification in Soil Taxonomy
I. ZONAL SOILS				
	A. LATOSOLS			
		LOW HUMIC LATOSOLS		
			Alaeloa	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
			Ewa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
			Haliimaile	Ustoxic Humitropepts fine, kaolinitic, isothermic
			Hamakuapoko	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
			Hawi	Typic Haplustolls fine, kaolinitic, isohyperthermic
			Helemano	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
			Holomua	Ustollic Camborthids fine-loamy, kaolinitic, isohyperthermic

[1]Source: Soil Survey, Territory of Hawaii (Cline, 1955).

Hoolehua	Oxic Ustropepts fine, kaolinitic, isohyperthermic
Kahana	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
Keahua	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Kekaha	Cumulic Haplustolls very-fine, mixed, isohyperthermic
Kohala	Ustic Humitropepts very-fine, mixed, isohyperthermic
Koloa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic, shallow
Kunia	Ustoxic Humitropepts fine, kaolinitic, isohyperthermic
Lahaina	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
Lihue	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic
Mahukona	Aridic Haplustolls fine, kaolinitic, isohyperthermic
Makaweli	Oxic Haplustolls fine, kaolinitic, isohyperthermic
Makiki	Andic Ustic Humitropepts fine, mixed, isohyperthermic

Mamala	Lithic Haplustolls clayey, kaolinitic, isohyperthermic
Molokai	Typic Torrox clayey, kaolinitic, isohyperthermic
Niu	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
Paia	Oxic Haplustolls very-fine, kaolinitic, isohyperthermic
Pamoa	Torrertic Haplustolls very-fine, kaolinitic, isohyperthermic
Uwala	Oxic Ustropepts very-fine, kaolinitic, isohyperthermic
Wahiawa	Tropeptic Eutrustox clayey, kaolinitic, isohyperthermic
Wahikuli	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waiakoa	Torroxic Haplustolls fine, kaolinitic, isohyperthermic
Waialua	Vertic Haplustolls very-fine, kaolinitic, isohyperthermic
Waihuna	Typic Chromusterts very-fine, kaolinitic, isothermic
Waikapu	Torroxic Haplustolls fine, kaolinitic, isohyperthermic

Wailuku	Tropeptic Haplustox clayey, kaolinitic, isohyperthermic
Wainee	Aridic Haplustolls clayey-skeletal, kaolinitic, isohyperthermic
Waipahu	Vertic Ustropepts very-fine, kaolinitic, isohyperthermic

HUMIC LATOSOLS

Ainakea	Andic Ustic Humitropepts fine, oxidic, isohyperthermic
Halii	Typic Gibbsihumox clayey, ferritic, isothermic
Hanamaulu	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
Hihimanu	Oxic Humitropepts fine, oxidic, isothermic
Honolua	Humoxic Tropohumults clayey, oxidic, isothermic
Honuaulu	Hydric Dystrandepts thixotropic over fragmental, isothermic
Kailua	Typic Hydrandepts thixotropic, isothermic
Kainaliu	Typic Eutrandepts medial over fragmental, isohyperthermic

Kalapa	Humoxic Tropohumults clayey, oxidic, isohyperthermic
Kaneohe	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
Kehena	Aeric Andaquepts thixotropic, acid, isothermic
Kokee	Humoxic Tropohumults clayey, oxidic, isomesic
Kukaiau	Hydric Dystrandepts thixotropic, isothermic
Lolekaa	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
Makaalae	Oxic Humitropepts clayey-skeletal, mixed, isohyperthermic
Makawao	Humoxic Tropohumults clayey, oxidic, isothermic
Moaula	Hydric Dystrandepts thixotropic, isothermic
Niulii	Hydric Dystrandepts thixotropic, isothermic
Ookala	Hydric Dystrandepts thixotropic, isohyperthermic
Paaiki	Oxic Dystrandepts medial, isothermic
Paaloa	Humoxic Tropohumults clayey, oxidic, isothermic

	Paauhau	Hydric Dystrandepts thixotropic, isohyperthermic
	Paumalu	Humoxic Tropohumults clayey, oxidic, isohyperthermic
	Pohakupu	Ustoxic Humitropepts fine, oxidic, isohyperthermic
	Tantalus	Typic Dystrandepts medial over cindery, isothermic
	Waikane	Humoxic Tropohumults clayey, kaolinitic, isohyperthermic
HYDROL HUMIC LATOSOLS		
	Akaka	Typic Hydrandepts thixotropic, isomesic
	Alapai	Typic Hydrandepts thixotropic, isothermic
	Amalu	Histic Placaquepts fine, mixed, acid, isomesic, orstein
	Hana	Typic Hydrandepts thixotropic, isohyperthermic
	Hilea	Lithic Hydrandepts thixotropic, isothermic
	Hilo	Typic Hydrandepts thixotropic, isohyperthermic
	Honaunau	Typic Hydrandepts thixotropic, isothermic

	Honokaa	Typic Hydrandepts thixotropic, isothermic
	Kahua	Typic Placandepts thixotropic, isomesic
	Kaiwiki	Typic Hydrandepts thixotropic, isothermic
	Kealakekua	Typic Hydrandepts thixotropic, isothermic
	Koolau	Plinthic Tropaquepts fine, halloysitic, acid, isothermic
	Ohia	Typic Hydrandepts thixotropic, isothermic
	Olaa	Typic Hydrandepts thixotropic over fragmental, isohyperthermic
	Panaewa	Lithic Hydrandepts thixotropic, isohyperthermic
HUMIC FERRUGINOUS LATOSOLS		
	Haiku	Humoxic Tropohumults clayey, ferritic, isohyperthermic
	Halawa	Orthoxic Tropohumults clayey, oxidic, isothermic
	Ioleau	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
	Kahanui	Petroferric Acrohumox clayey, ferritic, isothermic

Kalae	Ustoxic Tropohumults clayey, oxidic, isothermic
Kanepuu	Oxic Paleustalfs fine, oxidic, isothermic
Kapaa	Typic Gibbsiorthox clayey, oxidic, isohyperthermic
Kemoo	Oxic Rhodustalfs fine, oxidic, isohyperthermic
Kolekole	Ustoxic Humitropepts fine, oxidic, isohyperthermic
Kunuweia	Plinthic Acrorthox clayey, ferritic, isothermic
Lawai	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
Leilehua	Humoxic Tropohumults clayey, oxidic, isothermic
Mahana	Typic Acrohumox clayey, oxidic, isothermic
Makapili	Tropeptic Umbriorthox clayey, oxidic, isohyperthermic
Manana	Orthoxic Tropohumults clayey, oxidic, isohyperthermic
Naiwa	Andic Humitropepts medial, isothermic
Olelo	Humoxic Tropohumults clayey, oxidic, isothermic

	Pauwela	Humoxic Tropohumults clayey, oxidic, isohyperthermic
	Pooku	Typic Gibbsiorthox clayey, oxidic, isohyperthermic
	Puhi	Tropeptic Eutrorthox clayey, oxidic, isohyperthermic
	Puu Opae	Ustoxic Tropohumults clayey, oxidic, isothermic
B. LIGHT-COLORED SOILS OF ARID REGIONS		
RED DESERT SOILS	Kawaihae	Ustollic Camborthids medial, isohyperthermic
	Keawakapu	Aridic Haplustolls clayey over fragmental, kaolinitic, isohyperthermic
	Koko	Ustollic Eutrandepts medial, isohyperthermic
	Makena	Aridic Haplustolls ashy, isohyperthermic
C. DARK-COLORED SOILS OF SEMI-ARID AND SUBHUMID REGIONS		
REDDISH BROWN SOILS		
	Kaalualu	Ustollic Eutrandepts medial over fragmental, isohyperthermic
	Kamaole	Aridic Haplustolls clayey-skeletal, kaolinitic, isothermic

Oanapuka	Ustollic Eutrandepts medial, isohyperthermic
Pakini	Entic Eutrandepts medial, isohyperthermic
Puu Pa	Ustollic Eutrandepts medial over fragmental, isothermic
Waiaha	Lithic Eutrandepts medial, isohyperthermic
Waikaloa	Ustollic Eutrandepts medial, isothermic
Waikomo	Lithic Haplustolls clayey, mixed, isohyperthermic

REDDISH PRAIRIE SOILS

Io	Typic Eutrandepts medial over cindery, isothermic
Kalaupapa	Lithic Eutrandepts medial, isohyperthermic
Kamaoa	Typic Eutrandepts medial, isothermic
Kikoni	Typic Eutrandepts medial, isothermic
Kula	Typic Eutrandepts medial, isothermic
Naalehu	Typic Eutrandepts medial, isohyperthermic

Palapalai	Typic Eutrandepts medial, isothermic
Pane	Oxic Dystrandepts medial, isothermic
Punohu	Hydric Dystrandepts thixotropic, isomesic
Ulupalakua	Typic Eutrandepts medial over cindery, isothermic
Waimea	Typic Eutrandepts medial, isothermic

II. INTRAZONAL SOILS

A. CALCIMORPHIC SOILS

LATOSOLIC BROWN FOREST SOILS

Apakui	Typic Vitrandepts medial, isomesic
Hanipoe	Typic Dystrandepts medial, isomesic
Kaipoioi	Typic Dystrandepts medial, isomesic
Kapapala	Typic Dystrandepts medial, isomesic
Laumaia	Typic Dystrandepts medial, isomesic
Maile	Hydric Dystrandepts thixotropic, isomesic
Manahaa	Hydric Dystrandepts thixotropic, isomesic

Oli	Oxic Dystrandepts medial, isothermic
Olinda	Entic Dystrandepts medial, isomesic
Piihonua	Typic Hydrandepts thixotropic, isomesic
Puukala	Hydric Lithic Dystrandepts thixotropic, isomesic
Puu Oo	Hydric Dystrandepts thixotropic, isomesic
Umikoa	Typic Dystrandepts medial, isomesic

B. HYDROMORPHIC SOILS

GRAY HYDROMORPHIC SOILS

Honouliuli	Typic Chromusterts fine, kaolinitic, isohyperthermic
Hulua	Typic Placaquepts fine, oxidic, acid, isothermic, ortstein
Kaena	Typic Pelluderts very-fine, montmorillonitic, isohyperthermic
Kalihi	Typic Tropaquepts very-fine, kaolinitic, nonacid, isohyperthermic
Kaloko	Typic Calciaquolls fine, carbonatic, isohyperthermic

Keaau	Typic Tropaquepts very-fine, montmorillonitic, nonacid, isohyperthermic
Nohili	Cumulic Haplaquolls very-fine, montmorillonitic (calcareous), isohyperthermic
Olokui	Typic Placaquepts fine, mixed, acid, isomesic
Pearl Harbor	Typic Tropaquepts fine, montmorillonitic, nonacid, isohyperthermic

BOG SOILS

Alakai	Terric Troposaprists clayey, kaolinitic, dysic, isomesic

C. UNNAMED SUBORDER

DARK MAGNESIUM CLAYS

Kapuhikani	Mollic Torrerts very-fine, montmorillonitic, isohyperthermic
Kokokahi	Udorthentic Pellusterts very-fine, montmorillonitic, isohyperthermic
Lualualei	Typic Chromusterts very-fine, montmorillonitic, isohyperthermic

D. HALOMORPHIC SUBORDER

SOLONCHAK

Kealia	Typic Salorthids coarse-loamy, mixed, isohyperthermic

III. AZONAL SOILS

A. Recent alluvium

ALLUVIAL SOILS

Alae	Mollic Vitrandepts medial, isohyperthermic
Haleiwa	Typic Haplustolls fine, mixed, isohyperthermic
Hanalei	Tropic Fluvaquents very-fine, oxidic, nonacid, isohyperthermic
Iao	Typic Haplustolls fine, kaolinitic, isohyperthermic
Kamakoa	Mollic Vitrandepts medial, isothermic
Kaupo	Pachic Haplustolls fine-silty over fragmental, mixed, isohyperthermic
Kawaihapai	Cumulic Haplustolls fine, mixed, isohyperthermic
Keekee	Mollic Vitrandepts medial, isomesic
Koele	Aridic Haplustolls fine, kaolinitic, isothermic
Kolokolo	Fluventic Humitropepts fine, mixed, isohyperthermic
Mala	Typic Torrifluvents fine, kaolinitic, nonacid, isohyperthermic

Mokuleia	Typic Haplustolls sandy, carbonatic, isohyperthermic
Pakala	Fluventic Ustropepts fine, oxidic, isohyperthermic
Pulehu	Cumulic Haplustolls fine-loamy, mixed, isohyperthermic

B. Deep, unconsolidated, unweathered materials other than alluvium

REGOSOLS

Heake	Lithic Dystrandepts medial, isothermic
Huikau	Typic Vitrandepts medial over cindery, isomesic
Jaucas	Typic Ustipsamments carbonatic, isohyperthermic
Kilauea	Typic Ustorthents ashy-skeletal, isothermic
Kilohana	Mollic Vitrandepts medial, isomesic
Manu	Hydric Dystrandepts medial, isothermic
Puaulu	Typic Hydrandepts medial over thixotropic, isomesic
Puhimau	Hydric Lithic Dystrandepts medial, isothermic

	Puuone	Typic Ustipsamments carbonatic, isohyperthermic
	Uma	Typic Vitrandepts cindery, isomesic
C. Weathered bedrock or alluvium without soil profiles, unweathered bedrock, or very stony deposits		
LITHOSOLS		
	Kahaluu	Lithic Tropofolists dysic, isomesic
	Kaimu	Typic Tropofolists euic, isohyperthermic
	Keaukaha	Lithic Tropofolists dysic, isohyperthermic
	Keei	Lithic Tropofolists dysic, isothermic
	Kekake	Lithic Tropofolists dysic, isomesic
	Kiloa	Typic Tropofolists dysic, isothermic
	Kona	Lithic Tropofolists euic, isothermic
	Lalaau	Typic Tropofolists dysic, isomesic
	Malama	Typic Tropofolists dysic, isohyperthermic

Mawae	Typic Tropofolists euic, isomesic
Opihikao	Lithic Tropofolists dysic, isohyperthermic
Papai	Typic Tropofolists euic, isohyperthermic
Puna	Typic Tropofolists euic, isothermic
Punaluu	Lithic Tropofolists euic, isohyperthermic
Waialeale	Histic Lithic Tropaquods fine, oxidic, isomesic
Waiawa	Lithic Vertic Ustropepts clayey, montmorillonitic, isohyperthermic