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# Atlas of Soil Reflectance Properties

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1979

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## Soil Color in Perspective

In delineating differences between soils and in describing the characteristics of a soil profile, color is one of the most obvious and useful attributes for documenting these differences. For more than 50 years soil scientists have worked to refine and make more quantitative the descriptions of soil color.

In the 1920's a national committee on soil color standards was established and assigned the task of developing a standardized procedure for determining soil color. The work of this committee resulted in the adoption of the Munsell color notation along with color descriptions to document the color characteristics of specific soils and the different horizons within any soil profile (Pendleton and Nickerson, 1951).

Today the common method for determining this important soil property is for the human observer of soils to make a visual comparison between a given soil sample and the various color chips in an array of artificially produced Munsell colors, arranged according to hue, value and chroma. Once the observer has matched the color of the soil sample with that of the appropriate color chip, the soil is then assigned an alphanumeric Munsell color notation and a word description of the soil color. Often soil color will be determined by this method for soil samples in both air dry and moist conditions. In general, increasing moisture content will lower the numerical designation for value, i.e., reduce reflectance.

Since soil color is related to numerous other soil properties, it is important that soil color descriptions be as precise as possible. Recent developments in field and laboratory instrumentation now make it possible to reduce much of the subjectivity involved in the determination of soil color. New instrumentation also provides the opportunity to obtain precise quantitative reflectance measurements not only in the visible portion (color) of the electromagnetic spectrum but also in the near and middle infrared regions (Figure 1). This capability adds a new dimension to the possible use of soil spectral measurements to explain other soil characteristics and to predict soil response to different treatments, management, and variations in climate.

Reflectance measurements in the near and middle infrared often reveal textural, structural, mineralogical and/or other significant differences which may not be detectable by standard color observations (Figure 2). In this example, soils from three very different climatic regimes (Oklahoma, USA; Badajoz, Spain; Paraná, Brazil) were described by soil scientists as dark red and given the same Munsell color designation (2.5YR 3/6). The visible portion of the reflectance curves reveal similar spectral characteristics. However, in the near and middle infrared there are great differences in both the shapes of the curves and the intensity of reflectance.

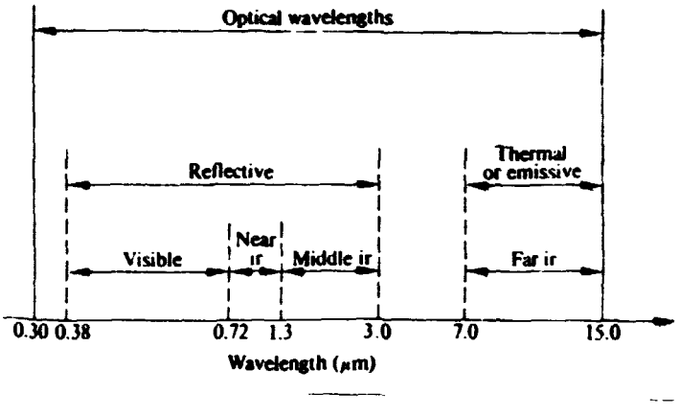
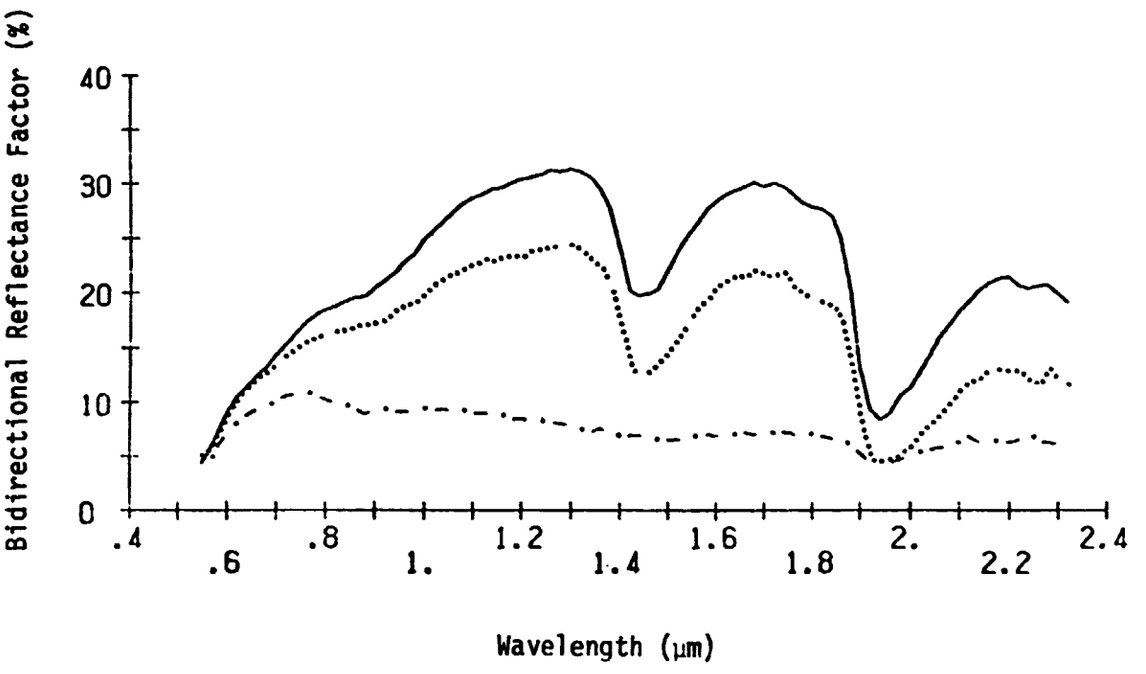



Figure 1. Electromagnetic spectrum.




Key to Soils Data

| Soil | Curve | % Organic Matter | % $Fe_2O_3$ |
|---|---|---|---|
| Dill (Oklahoma, USA) | —— | 0.6 | 0.87 |
| Arroyo (Spain) | •••• | 1.28 | 2.00 |
| Londrina (Brazil) | -·-· | 2.28 | 25.6 |

Figure 2. Reflectance curve for three dark red surface soils having moist Munsell color notations 2.5 YR 3/6. (Stoner, 1979).

## Purpose

The purpose of this atlas is to present for the first time a compendium of laboratory-measured soil parameters and soil site characteristics together with reflectance measurements of soils. Only those soil parameters and site characteristics known to influence soil reflectance properties are included, with the recognition that even more detailed soil mineralogical and organic constituent investigations are needed to understand soil reflectance differences.

The 251 soils shown here represent a wide range of soil forming factors characteristic of soils in the continental United States and Brazil. Selection of 247 of these soils based on stratification of the continental United States by soil temperature regime and climatic moisture zone provides a statistical sampling of soils in proportion to the geographic extent of each climatic region (Figure 3). Information about the soils in this atlas can be extended to many of those soils closely related in classification and geography.

This atlas is intended to promote an appreciation of the diversity of soil reflectance properties as those soils might be viewed by remote sensing devices. The well-ordered physical and chemical relationships that impart diverse spectral character to soils become apparent here. The need for a quantitative, reliable laboratory procedure for measuring soil spectral properties should also become evident.

## Collection of Soil Samples

The Soil Survey Investigations Division of the Soil Conservation Service (USDA) cooperated with the Laboratory for Applications of Remote Sensing/ Purdue University by taking responsibility for field collection of almost 500 individual soil samples from 190 counties within 39 states. Two separate soil samples were collected for each soil series, one at a site near the type location for the current official series, and another at a site from one to twenty miles distant from the first site in a different mapping delineation of the same series. Samples were forwarded to Purdue University complete with additional site information regarding exact sampling location, physiographic position, slope, drainage, vegetation, and parent material. Brazilian soils were sampled in connection with a soil survey of Paraná State, Brazil (Fasolo, 1978).

## Measurement of Soil Reflectance Properties

The sieved soil fraction less than 2 mm diameter was used for reflectance measurements in an attempt to standardize this procedure in line with the use of this same size fraction for most laboratory determinations of soil properties. All measurements were made on uniformly-moist soils which were equilibrated for 24 hours at a one-tenth bar moisture tension on asbestos tension tables. Specially constructed 10 cm diameter by 2 cm rings with 60 mesh wire bottoms held the soil in place through the stages of saturation, equilibration, and spectral reading (Figure 4).

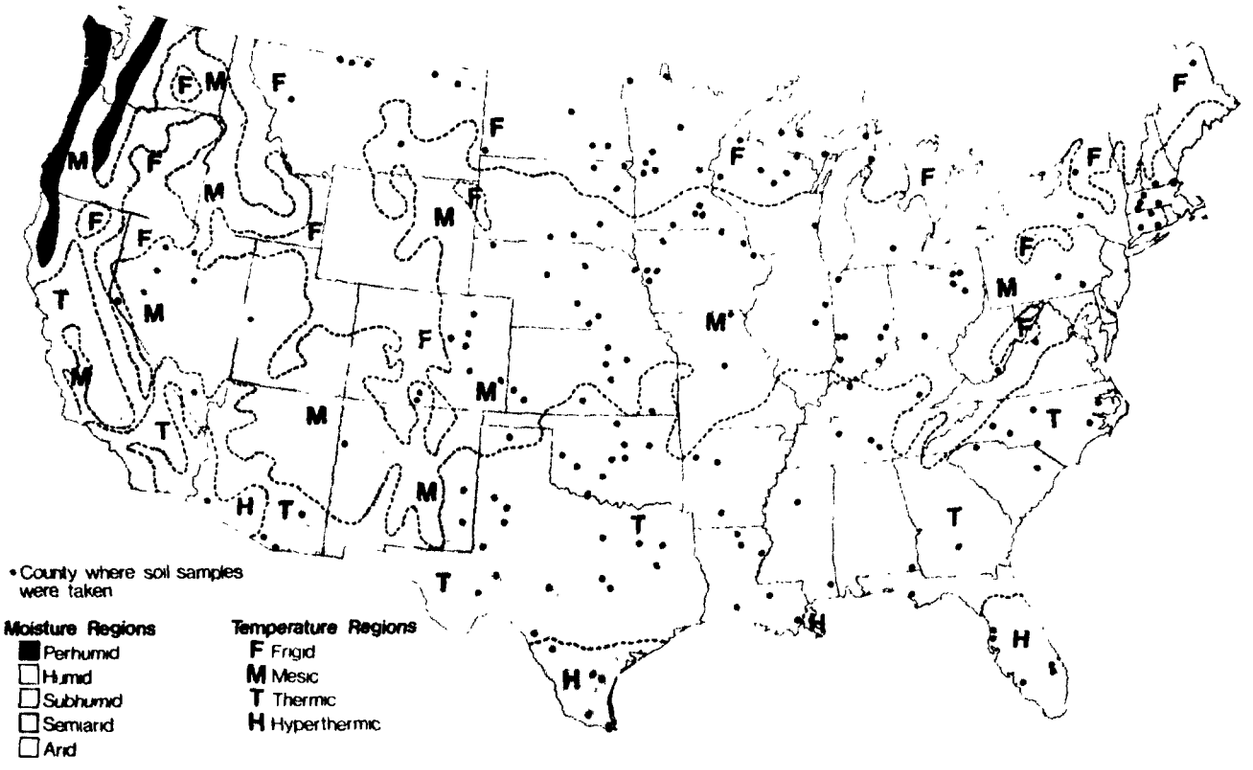
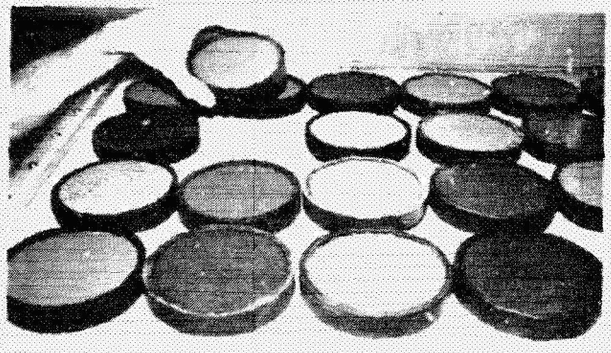


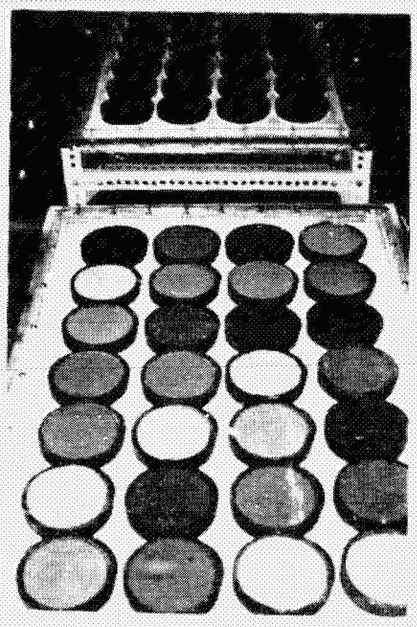

Figure 3. Climatic zones in the continental United States as identified by soil temperature regime (Soil Survey Staff, 1975; FAO-UNESCO, 1975) and the Thornthwaite (1948) moisture index.

a. Soil sample and 10 cm diameter sample holder.



b. Saturated sample being placed on asbestos tension table.

*Figure 4. Setup for laboratory spectral measurements of soils.*



c. Fifty-six soil samples ready for spectral measurement after 24 hours equilibration at 100 cm $H_2O$ tension.

d. BRF reflectometer positioned for soil sample detection by the Exotech 20C spectro-radiometer.

Figure 4. (Cont.)

Soil reflectance was measured using an Exotech Model 20C spectroradiometer adapted for indoor use with a reflectometer equipped with an artificial illumination source, transfer optics, and sample stage. Spectral readings were taken in 0.01 μm increments over the 0.52-2.32 μm wavelength range. A 1000 watt tungsten iodine coiled filament lamp provided incident irradiation similar to that of solar illumination. Pressed barium sulfate was used as a calibration standard, with measurements being taken after every fifth soil sample to account for possible changes in the intensity of the illumination source. A more detailed explanation of the instrumentation is found in Silva, et al. (1971), Leamer, et al. (1973) and DeWitt and Robinson (1976), while the sample preparation procedure is described by Stoner (1979).

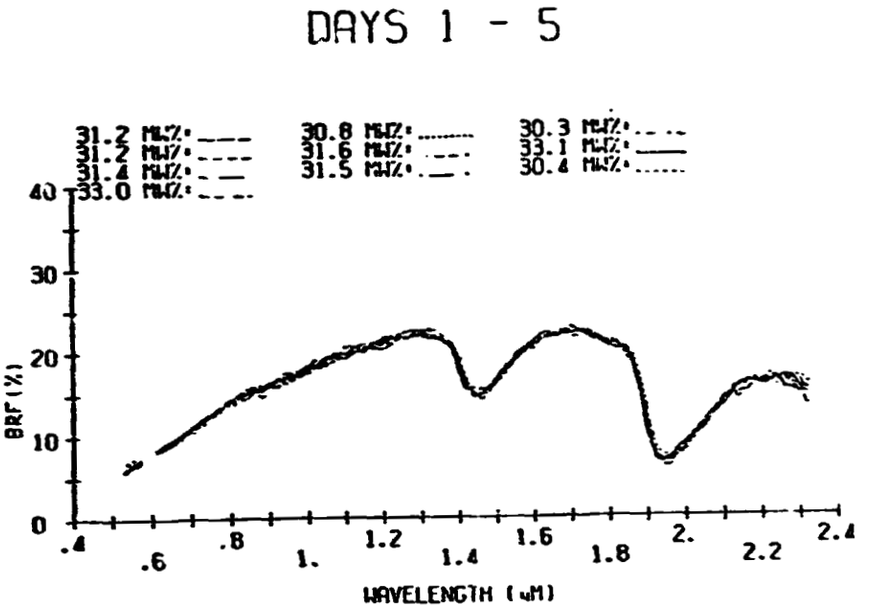
The repeatable quantitative nature of reflectance measurements made using this procedure is evident from spectral curves of check samples measured on each of the ten days needed to run over 500 individual soil samples (Figure 5). Random soil reflectance readings of twenty separately prepared Fincastle silt loam soil samples (a fine-silty mixed mesic Aeric Ochraqualf) gave very similar results.

## Soil Reflectance Properties Data Base

An identification record containing 100 items of information including complete soil taxonomic classification along with site characteristics and laboratory analyses is available in computer tape format for all of the soils in this atlas. This information together with digitized soil reflectance data is accessible for editing and rapid retrieval of all soils information by means of the LARSPEC software package (Simmons, et al., 1975). Graphical display of soil reflectance curves as shown in this atlas is accomplished by one of the LARSPEC processors while another processor permits selection of specific soil analyses, site characteristics, and taxonomic data in the abbreviated format used here.

## Organization of Soil Atlas

Soils are arranged in this atlas by alphabetical order of the 39 states in which they were sampled. Four soils from Paraná State, Brazil follow at the end. Four soils are displayed on each page, while information specific to one of two field samples is given in separate columns under each soil series name. A few soils are represented by only one field sample. Two indices are included, arranged by state and by soil series name. A narrative key follows, with each numbered item of soil information identified in Figure 6 described in detail as it appears in the atlas.



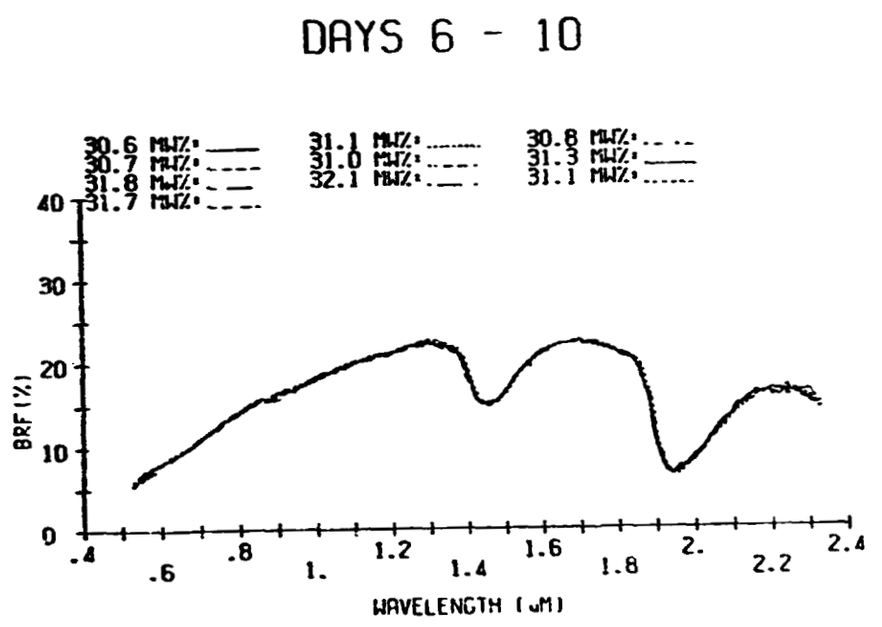




Figure 5. Soil reflectance curves and moisture percentages by weight (MW%) for 20 check samples of Fincastle sil, a fine-silty mixed mesic Aeric Ochraqualf, from ten different setups of the tension table apparatus.

1) ONTONAGON(MI)

2) Glossic Eutroboralf
3) very fine, mixed
4) humid zone
5) glacial lake plain sediments
6) Ontonagon Co.

| | ——— | ---- |
|---|---|---|
| 7) | Ap horizon | Ap horizon |
| 8) | B slope | B slope |
| 9) | mod. well drained | mod. well drained |
| 10) | clay | clay |
| 11) | 7%S 22%Si 70%C | 6%S 29%Si 66%C |
| 12) | 2.5YR 3/6 (moist) 5YR 6/4 (dry) | 2.5YR 4/4 (moist) 5YR 6/4 (dry) |
| 13) | 4.88% O.M. | 3.95% O.M. |
| 14) | 38.0 meq/100g CEC | 31.6 meq/100g CEC |
| 15) | 1.73% $Fe_2O_3$ | 2.76% $Fe_2O_3$ |

16) 47.5 MW%:____ 43.2 MW%:----

17)

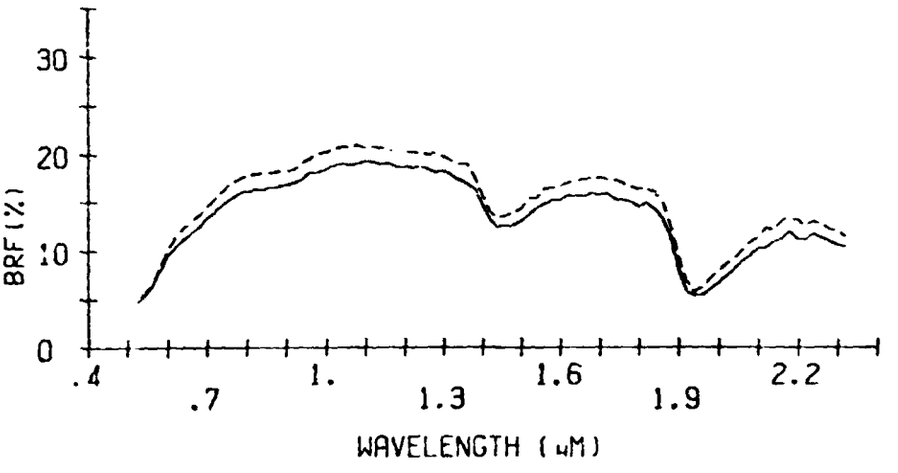



Figure 6. Numbered guide corresponding to narrative key to soil information.

## Narrative Key to Soil Information

### 1) soil series name with two-letter state abbreviation

The series is the lowest category in the soil taxonomic system. Names of series as a rule are abstract place names with no connotation regarding soil diagnostic properties. This atlas contains soil information for 247 of the more than 10,000 soil series recognized in the United States. These 247 soil series were selected from a list of over 1,300 benchmark soils whose large geographic extent renders them an important part of a state or resource area. Soil samples were taken from sites within states having the responsibility for maintaining the standard series description for that soil series. Data from these soils are widely applicable to soils occurring in the continental United States.

### 2) soil subgroup name

Subgroup names consist of the name of a great group modified by one or more adjectives. About 970 subgroups are currently recognized in the United States. The name of a great group consists of the name of a suborder and a prefix that consists of one or two formative elements suggesting something of the diagnostic properties. There are about 225 great groups in the U.S. soil taxonomy (Soil Survey Staff, 1975). Names of suborders have exactly two syllables. The first syllable connotes some information about the diagnostic properties of the soils while the second is the formative element from the name of the order. Forty-seven suborders are recognized, while there are only ten soil orders.

It has been observed that high organic content surface soils of the Mollisol and Histosol soil order frequently have a concave-shaped reflectance curve in the 0.5 to 1.3 μm wavelength region. Lower organic content surface soils of the Alfisol soil order frequently have convex-shaped reflectance curves in the same wavelength region. Reflectance curves for surface soils of the Ultisol soil order often resemble those for Alfisols except for the presence of slight dips in the curve at 0.7 and 0.9 μm caused by iron absorption. It should be understood that these generalizations about soil reflectance of certain soil orders are only an aid to facilitate the appreciation of differences in spectral properties among surface soils. Soil orders distinguished primarily by subsoil horizon properties cannot always be expected to show characteristic reflectance in the surface horizon.

### 3) soil family modifiers

Names of soil families are polynomial, consisting of the name of a subgroup and adjectives. These adjectives describe the particle-size class (11 classes plus others if strongly contrasting), the mineralogy (20 classes and a few subclasses), the temperature regime (8 classes), and, in some families, depth of soil (3 classes), consistence (2 classes), moisture equivalent (2 classes) and other properties. Names of most families have three adjectives modifying the subgroup name but some have only one or two and others have four or more. Soil properties are used in this category without regard to their significance as marks of processes or lack of them. About 4,500 families are presently recognized in the United States.

Redundancy is avoided in naming families, thus, for example, the modifier frigid is left out of families in which the formative element bor in the suborder name indicates soils having a frigid temperature regime. Particle-size distribution and mineralogy are specified for only those horizons of major biologic activity below plow depth.

Soils have been observed to increase in reflectance with increasing soil temperature. This is most likely explained by decreased organic matter contents in warmer regions. Lower organic content soils reflect more than those with elevated levels of organic matter.

Soil mineralogy appears to influence soil reflectance in various manners. While soils with gypsic mineralogy reflect highly because of the inherent reflectance properties of gypsum, montmorillonitic soils, often associated with higher organic matter levels, show low reflectance attributable to this high organic matter content.

4) moisture zone

Although the soil moisture regime is an important property of a soil, the moisture regimes defined in the U.S. soil taxonomy are not always included in the taxonomic name, and are defined not necessarily by climatic moisture zone, but rather in terms of the ground-water level and the presence or absence of water held at a tension less than 15 bars throughout the year. Moisture zones in this atlas are defined in terms of climatic moisture zones as described by the Thornthwaite (1948) moisture index. Five main moisture zones are defined on this basis in the continental United States.

Soils from wetter climates generally reflect less than those from dry climates because of organic matter accumulation under higher rainfall conditions. Exceptions to this rule occur when soils are formed under prairie grass vegetation in drier climates.

5) parent material

Parent material, as the initial geologic material from which soils are formed, can be expected to demonstrate an eventual influence on soil reflectance. Certain soils referred to as lithochromic are even known to owe their spectral colors to inheritance from the parent material rather than from soil-forming processes. Parent material types listed in this atlas were obtained from the established series profile descriptions for each soil.

6) county

The county within the state where soils were collected is listed in order to specify the sampling location for each of two sets of samples whose analyses follow.

7) horizon designation

All soil samples represented only the surface soil, containing material from 0 to 15 cm (0 to 6 inches) if depth to a B horizon permitted. Those surface soils under cultivation or which still show the marks of cultivation are designated by the symbol "p" following the capital letter symbol for the horizon. Undisturbed soils are represented by horizon designations such as A1, A11, A1-A2, A1-A21 and A11-A12.

8) slope class

Relief, as expressed by slope class grouping, is an important soil-forming factor that is characteristic of each site in the soil landscape. Slope classes in this atlas follow the convention of capital letter symbols designating slope percentages as follows: A, 0-2%; B, 2-6%; C, 6-12%; D, 12-18%; E, 18-25%; F, 25-35%; G, greater than 35%.

9) internal drainage

All soil series have a specific internal drainage which is indicative of the local landscape position and broader climatic conditions under which they formed. Drainage classes used in this atlas are as follows: v. (very) poorly drained, poorly drained, s. (somewhat) poorly drained, mod. (moderately) well drained, well drained, s. excess. (somewhat excessively) drained, and excess. (excessively) drained.

Soils have been seen to show overall decreased reflectance with increasingly poorer drainage. Very poorly drained soils reflect considerably less than any of the other drainage classes at all wavelengths. As a site characteristic integrating the effects of climate, local relief, and accumulated organic matter, soil drainage characteristics are closely associated with reflectance properties of surface soils.

10) textural class name

Twenty-one textural class names have been defined in terms of size distribution of five sand size fractions plus silt and clay as determined by mechanical analysis in the laboratory (Soil Survey Staff, 1975). Organic soils are identified by using the term muck in place of the textural class name.

Because textural class names are defined wholly in terms of size distribution, the actual consistence or structure of the crushed, sieved soil samples may not necessarily be conveyed by this name. Highly aggregated clays may in some cases present surface structures similar to that of coarse sands. Use of the textural class name, however, is still the best available convention for expressing the size relationships among soil separates.

11) percent sand, silt, and clay

Particle size analysis was performed on organic matter-free soil portions (SCS-USDA, 1972). Clay and silt contents were determined by sedimentation-pipetting while five sand size fractions (here summed to give one sand amount) were separated by passing through a nest of sieves.

Decreasing particle size has been seen to increase soil reflectance among sand textured soils, possibly by forming a smoother surface with fewer voids to trap incoming light. The inverse appears to be true with medium to fine textured soils, however, possibly because increased moisture content and organic matter content associated with higher clay contents lead to lower reflectance.

12) Munsell color designations

Color standard comparisons were obtained at two soil moisture levels: air dry and field capacity. Moist soil colors were obtained by moistening samples and reading the color at a point in which visible moisture films were not present. Dry soil colors were obtained on the air dry sieved samples. All soil colors were determined by comparison to standard color chips of the Munsell Soil Color Charts.

Munsell designations for color consist of separate notations for hue, value, and chroma, which are combined in that order to form the color designation. The symbol for hue is the letter abbreviation of the color of the rainbow preceded by numbers from zero to ten. The notation for value, or relative lightness of color ranges from zero, for absolute black to ten, for absolute white. Chroma, or saturation, is the relative purity or strength of the spectral color and increases in number with decreasing grayness.

It is important to remember in comparisons between soil reflectance data and soil colors that the wavelength region of human physiological perception of visible reflectance extends only from about 0.4 to 0.7 μm, while reflectance data presented here extend from about 0.5 to 2.3 μm. While the color imparted to a soil may be due to specific absorptions in the visible region, it may also be caused by intense absorptions outside the visible wavelengths in either the ultraviolet or near infrared, the influence of which may extend into the visible. This points out the importance of having a full range of reflectance data from the visible to the middle infrared for thorough characterization of soil spectral properties.

13) organic matter content

Organic matter contents were determined by the modified Walkley-Black procedure of acid dichromate digestion with ferrous ammonium sulfate titration (Franzmeier, et al., 1977). Organic matter appears to be one of the dominant soil parameters responsible for imparting spectral properties to soils. Increased organic matter contents as a rule lead to decreased reflectance throughout the reflective spectrum. Many cases can be seen in this atlas where duplicate soil samples with otherwise similar properties exhibit

different reflectance curves because of slight differences in organic matter content.

Although increased organic matter content has been seen to decrease soil reflectance in mineral soils, the form or decomposition stage of organic material is more important in understanding reflectance properties of organic soils. Less decomposed organic materials have higher reflectance in the near infrared region because of enhanced reflectance attributable to remnant cell structure of well preserved fibers. In contrast, very highly decomposed organic materials show very low reflectance throughout the 0.5 to 2.3 μm range.

14) cation exchange capacity (CEC)

Cation exchange capacity (CEC) was measured for each soil sample as the sum of extractable cations of Ca, Mg, K, Na, plus extractable acidity, all expressed in terms of milliequivalents per 100 g of soil (SCS-USDA, 1972).

Cation exchange capacity is frequently seen to have a high negative correlation with reflectance, especially in the 2.08-2.32 μm middle infrared region. Although there is no direct physical basis for this relationship, it seems that cation exchange capacity is acting as a natural integrating factor for clay type and content as well as organic matter content, soil parameters which exhibit inherent spectral behavior.

15) iron oxide content

Free iron was measured by the so-called CBD procedure (Franzmeier, et al., 1977). Ferric iron absorption bands can be seen in certain soil reflectance curves in the 0.7 and 0.9 μm wavelength regions. Broad bands at these wavelengths frequently occur in high iron content soils; while a sharp, narrow absorption band at 0.9 μm is evident in many soils of relatively low or even negligible iron content.

Different forms of iron oxides are known to impart red and yellow colors to soils. Reflectance data in this atlas indicate that near infrared absorption may be partly responsible for coloring in high iron content soils.

16) moisture percentage by weight (MW%)

Soil moisture content by weight was determined gravimetrically on the soil samples used to obtain reflectance measurements. All soil samples were equilibrated at a one-tenth bar moisture tension, so resulting moisture differences are closely related to clay type, soil texture, and organic matter content. All other properties being equal, an increase in soil moisture content decreases soil reflectance at all wavelengths.

Strong water absorption bands at 1.45 and 1.95 μm are present in all of the spectral curves of these uniformly-moist soils. Weak water absorption bands at 1.2 and 1.77 μm are seen in some low organic content fine

sandy soils. Actual soil moisture content has been seen to be most highly correlated with soil reflectance in the 2.08-2.32 μm region.

17) plot of bidirectional reflectance factor (BRF%) versus wavelength (μm)

A convenient standard measure of reflectance that closely simulates the directional characteristics of illumination and viewing in an airborne remote sensor is the bidirectional reflectance factor. Bidirectional reflectance factor can be described as the ratio of the flux reflected by an object under specified conditions of negligibly small solid angles of irradiation and viewing to that reflected by the ideal, completely reflecting, perfectly diffusing surface, identically irradiated and viewed (Nicodemus, et al., 1977).

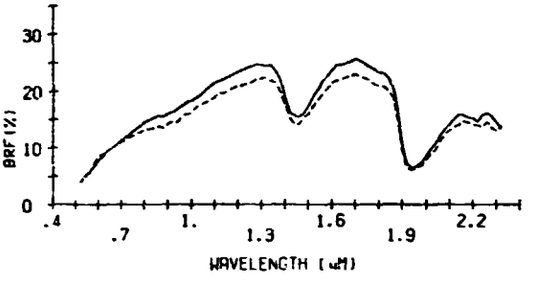
Wavelength, expressed in micrometer (μm) units, denotes the portion of the electromagnetic spectrum under consideration. Wavelength regions frequently referred to are the visible (0.38-0.72 μm), near infrared (0.72-1.3 μm), and middle infrared (1.3-3.0 μm).

## RED BAY(AL)

Rhodic Paleudult
fine-loamy, siliceous, thermic
humid zone
marine sediments
Houston Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| loamy sand | sandy loam |
| 83%S 7%Si 10%C | 76%S 11%Si 13%C |
| 5YR 3/4 (moist) | 5YR 3/4 (moist) |
| 7.5YR 5/6 (dry) | 7.5YR 5/6 (dry) |
| 0.58% O.M. | 0.91% O.M. |
| 10.8 meq/100g CEC | 7.1meq/100g CEC |
| 0.80% $Fe_2O_3$ | 1.32% $Fe_2O_3$ |

12.8 MW%·____ 15.2 MW%·____

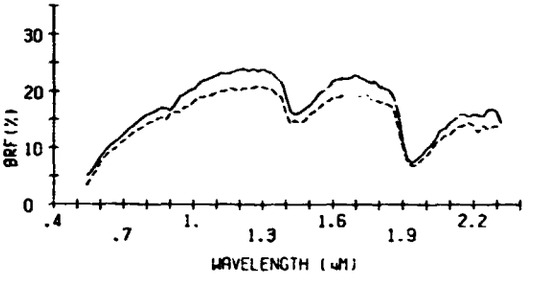



## CONTINENTAL(AZ)

Typic Haplargid
fine, mixed, thermic
arid zone
acid rock alluvium
Santa Cruz Co.

| ____ | ____ |
|---|---|
| All horizon | All horizon |
| A slope | A slope |
| well drained | well drained |
| coarse sandy loam | fine sandy loam |
| 70%S 20%Si 9%C | 53%S 35%Si 11%C |
| 5YR 3/4 (moist) | 5YR 3/3 (moist) |
| 7.5YR 4/6 (dry) | 7.5YR 4/6 (dry) |
| 0.48% O.M. | 0.71% O.M. |
| 6.0 meq/100g CEC | 15.7 meq/100g CEC |
| 0.74% $Fe_2O_3$ | 1.55% $Fe_2O_3$ |

12.6 MW%·____ 17.2 MW%·____

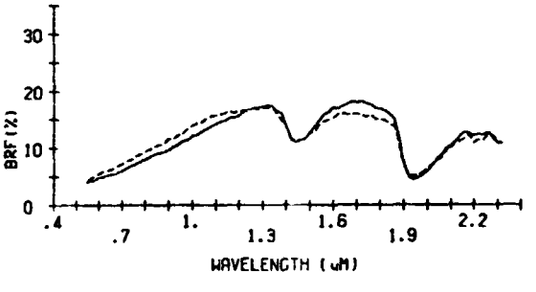



## PIMA(AZ)

Cumulic Haplustoll
fine-silty, mixed, thermic
arid zone
mixed alluvium
Santa Cruz Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silty clay | silty clay loam |
| 8%S 48%Si 44%C | 9%S 52%Si 39%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/2 (dry) |
| 3.66% O.M. | 1.86% O.M. |
| 52.6 meq/100g CEC | 44.8 meq/100g CEC |
| 0.94% $Fe_2O_3$ | 1.25% $Fe_2O_3$ |

50.9 MW%·____ 55.9 MW%·____

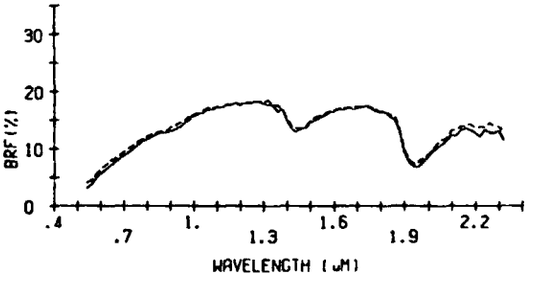



## WHITE HOUSE(AZ)

Ustollic Haplargid
fine, mixed, thermic
arid zone
mixed alluvium
Santa Cruz Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| A slope | B slope |
| well drained | well drained |
| fine sandy loam | sandy loam |
| 52%S 34%Si 14%C | 62%S 26%Si 12%C |
| 5YR 3/3 (moist) | 5YR 3/3 (moist) |
| 7.5YR 4/4 (dry) | 7.5YR 4/4 (dry) |
| 1.68% O.M. | 1.70% O.M. |
| 15.7 meq/100g CEC | 10.6 meq/100g CEC |
| 1.64% $Fe_2O_3$ | 1.85% $Fe_2O_3$ |

21.8 MW%·____ 18.8 MW%·____

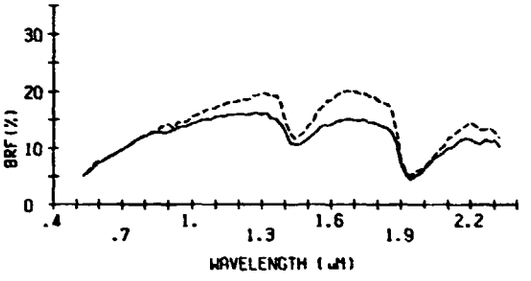


## GILA(AZ)

Typic Torrifluvent
coarse-loamy, mixed (calcareous),
thermic
arid zone
mixed alluvium
Graham Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | loam |
| 25%S 50%Si 25%C | 43%S 43%Si 14%C |
| 7.5YR 3/2 (moist) | 7.5YR 4/2 (moist) |
| 7.5YR 5/2 (dry) | 10YR 5/3 (dry) |
| 1.38% O.M. | 1.08% O.M. |
| 39.6 meq/100g CEC | 30.2 meq/100g CEC |
| 1.13% $Fe_2O_3$ | 0.69% $Fe_2O_3$ |

37.2 MWX•____ 34.0 MWX•____

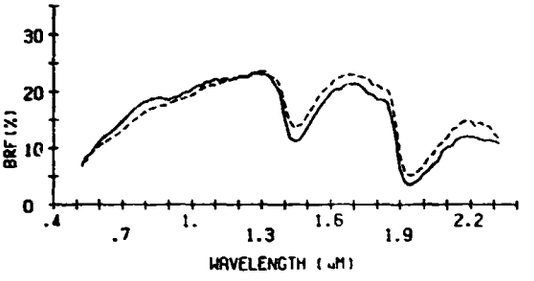



## GLENDALE(AZ)

Typic Torrifluvent
fine-silty, mixed (calcareous),
thermic
arid zone
mixed alluvium
Graham Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| well drained | well drained |
| silty clay loam | silty clay |
| 17%S 52%Si 31%C | 11%S 46%Si 43%C |
| 10YR 4/3 (moist) | 10YR 5/3 (moist) |
| 10YR 5/4 (dry) | 10YR 6/3 (dry) |
| 0.64% O.M. | 1.89% O.M. |
| 126.0 meq/100g CEC | 44.8 meq/100g CEC |
| 0.59% $Fe_2O_3$ | 0.78% $Fe_2O_3$ |

56.2 MWX•____ 42.0 MWX•____

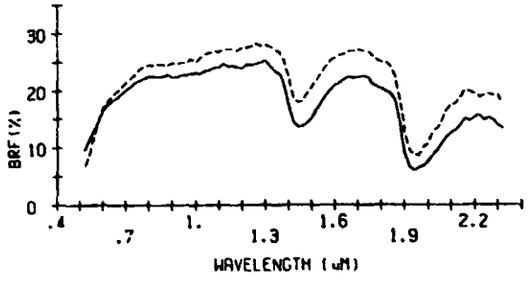



## SUPERSTITION(AZ)

Typic Calciorthid
sandy, mixed, hyperthermic
arid zone
mixed alluvium
Yuma Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| s. excess. drained | s. excess. drained |
| sand | sand |
| 96%S 3%Si 1%C | 93%S 1%Si 6%C |
| 7.5YR 5/4 (moist) | 5YR 5/6 (moist) |
| 7.5YR 7/4 (dry) | 7.5YR 7/4 (dry) |
| 0.09% O.M. | 0.10% O.M. |
| 8.9 meq/100g CEC | 10.9 meq/100g CEC |
| 0.23% $Fe_2O_3$ | 0.26% $Fe_2O_3$ |

13.5 MWX•____ 8.0 MWX•____

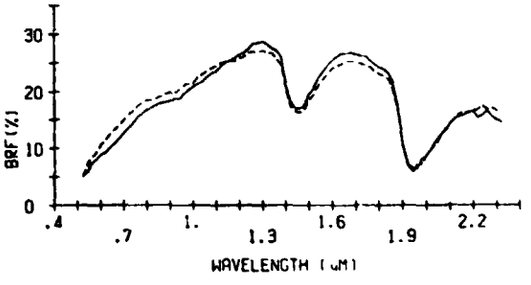



## ENDERS(AR)

Typic Hapludult
clayey, mixed, thermic
humid zone
residuum from shale and limestone
Franklin Co.

| ____ | ____ |
|---|---|
| All-Al2 horizon | All-Al2 horizon |
| E slope | E slope |
| well drained | well drained |
| loam | loam |
| 37%S 37%Si 26%C | 43%S 41%Si 16%C |
| 10YR 4/6 (moist) | 7.5YR 4/6 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 7.98% O.M. | 4.70% O.M. |
| 28.1 meq/100 g CEC | 14.3 meq/100g CEC |
| 4.43% $Fe_2O_3$ | 2.87% $Fe_2O_3$ |

37.5 MWX•____ 33.4 MWX•____

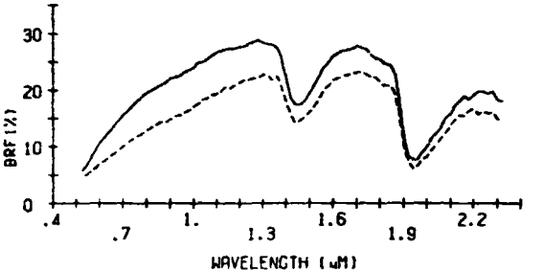


## SAFFELL(AR)

Typic Hapludult
loamy-skeletal, siliceous,
thermic
humid zone
marine sediments
Ouachita Co.

| ____ | ---- |
|---|---|
| Al horizon | Al horizon |
| B slope | A slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 66%S 29%Si 5%C | 54%S 38%Si 8%C |
| 7.5YR 4/4 (moist) | 10YR 3/3 (moist) |
| 7.5YR 6/4 (dry) | 10YR 5/4 (dry) |
| 0.58% O.M. | 2.29% O.M. |
| 4.1 meq/100g CEC | 9.9 meq/100g CEC |
| 0.49% $Fe_2O_3$ | 0.91% $Fe_2O_3$ |

18.0 MW%·____ 26.6 MW%·----

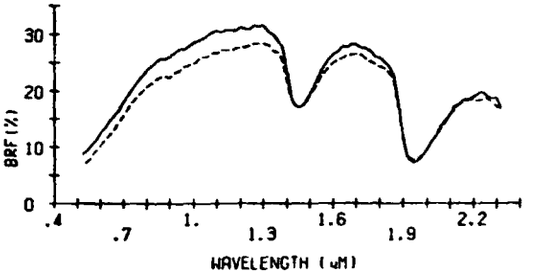



## LINKER(AR)

Typic Hapludult
fine-loamy, siliceous, thermic
humid zone
residuum from sandstone
Pope Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | sandy loam |
| 66%S 30%Si 5%C | 60%S 33%Si 7%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 7/3 (dry) | 10YR 7/3 (dry) |
| 1.56% O.M. | 1.93% O.M. |
| 5.3 meq/100g CEC | 6.4 meq/100g CEC |
| 0.32% $Fe_2O_3$ | 0.98% $Fe_2O_3$ |

21.9 MW%·____ 23.9 MW%·----

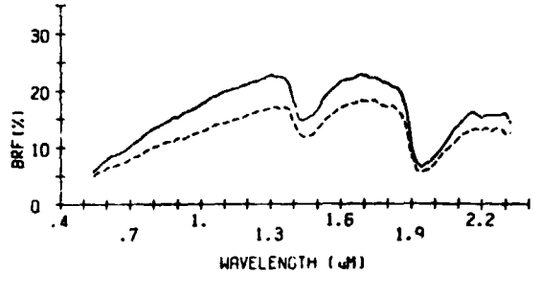



## GLENBERG(CO)

Typic Torrifluvent
coarse-loamy, mixed (calcareous),
mesic
semiarid zone
mixed alluvium
Crowley Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| coarse sandy loam | fine sandy loam |
| 71%S 14%Si 15%C | 64%S 25%Si 11%C |
| 10YR 4/3 (moist) | 10YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.12% O.M. | 2.53% O.M. |
| 22.6 meq/100g CEC | 19.8 meq/100g CEC |
| 0.66% $Fe_2O_3$ | 0.92% $Fe_2O_3$ |

13.7 MW%·____ 27.1 MW%·----

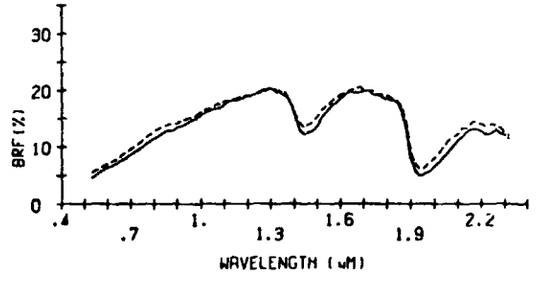



## KUTCH(CO)

Torrertic Argiustoll
fine, montmorillonitic, mesic
semiarid zone
clayey sedimentary residuum
Elbert Co.

| ____ | ---- |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| well drained | well drained |
| sandy clay loam | clay loam |
| 53%S 25%Si 22%C | 31%S 41%Si 28%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/3 (dry) |
| 1.79% O.M. | 4.10% O.M. |
| 22.9 meq/100g CEC | 27.7 meq/100g CEC |
| 0.63% $Fe_2O_3$ | 1.47% $Fe_2O_3$ |

33.2 MW%·____ 33.8 MW%·----

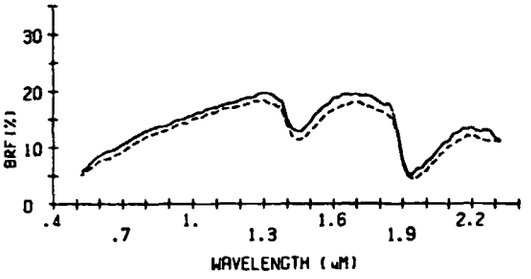


## APISHAPA(CO)

Vertic Fluvaquent
fine, montmorillonitic (calcareous), mesic
semiarid zone
mixed alluvium
Crowley Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| clay loam | clay loam |
| 20%S 48%Si 32%C | 30%S 36%Si 34%C |
| 10YR 3/3 (moist) | 10YR 4/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 2.58% O.M. | 2.52% O.M. |
| 32.6 meq/100g CEC | 52.7 meq/100g CEC |
| 1.24% $Fe_2O_3$ | 1.13% $Fe_2O_3$ |

34.4 MW%·____ 35.9 MW%·____

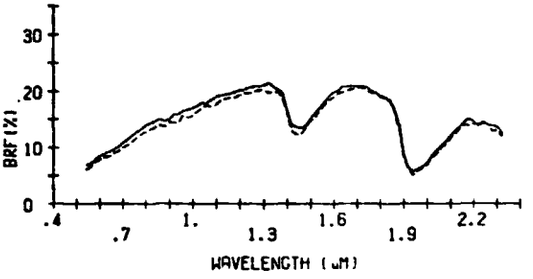



## HAVERSON(CO)

Ustic Torrifluvent
fine-loamy, mixed (calcareous), mesic
semiarid zone
mixed alluvium
Prowers Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 11%S 73%Si 16%C | 19%S 66%Si 14%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 2.56% O.M. | 3.26% O.M. |
| 32.6 meq/100g CEC | 27.3 meq/100g CEC |
| 1.14% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

40.9 MW%·____ 40.6 MW%·____

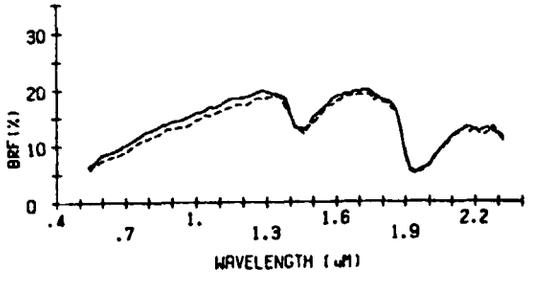



## KORNMAN(CO)

Ustic Torrifluvent
coarse-loamy, mixed (calcareous), mesic
semiarid zone
mixed alluvium
Prowers Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| clay loam | clay loam |
| 34%S 30%Si 36%C | 20%S 47%Si 33%C |
| 10YR 3/3 (moist) | 10YR 4/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.64% O.M. | 3.25% O.M. |
| 33.4 meq/100g CEC | 36.2 meq/100g CEC |
| 1.17% $Fe_2O_3$ | 1.31% $Fe_2O_3$ |

29.5 MW%·____ 35.5 MW%·____

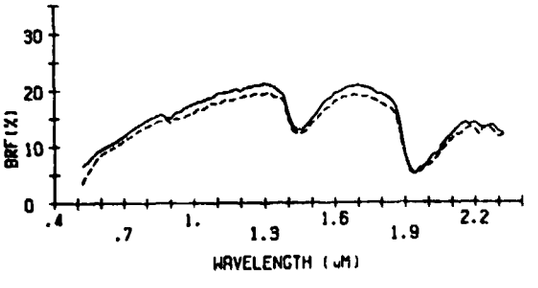



## MINNEQUA(CO)

Ustic Torriorthent
fine-silty, mixed (calcareous), mesic
semiarid zone
soft rock residuum
Prowers Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| well drained | well drained |
| loam | silt loam |
| 36%S 49%Si 15%C | 27%S 58%Si 15%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 1.63% O.M. | 1.90% O.M. |
| 28.5 meq/100g CEC | 29.2 meq/100g CEC |
| 0.73% $Fe_2O_3$ | 0.78% $Fe_2O_3$ |

28.9 MW%·____ 32.7 MW%·____

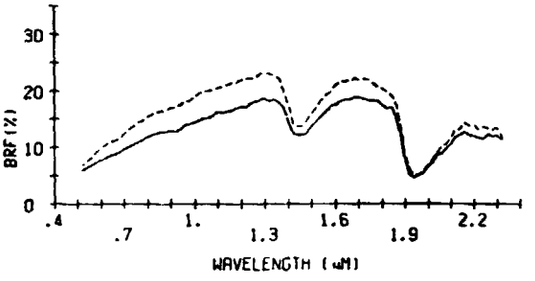


## ROCKY FORD(CO)

Ustic Torriorthent
fine-silty, mixed (calcareous),
mesic
semiarid zone
mixed alluvium
Prowers Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silty clay | clay loam |
| 4%S 50%Si 46%C | 24%S 39%Si 37%C |
| 10YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 3.70% O.M. | 2.44% O.M. |
| 47.3 meq/100g CEC | 38.1 meq/100g CEC |
| 1.39% $Fe_2O_3$ | 1.04% $Fe_2O_3$ |

37.8 MW%·—— 32.3 MW%·----

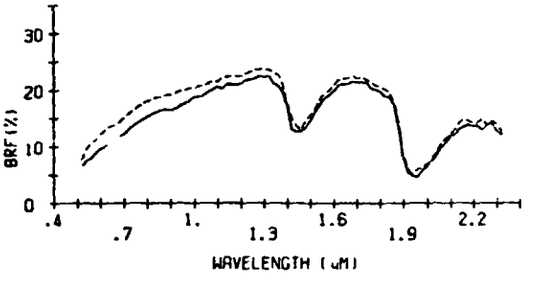



## WILEY(CO)

Ustollic Haplargid
fine-silty, mixed, mesic
semiarid zone
eolian sediments
Prowers Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 23%S 57%Si 20%C | 29%S 61%Si 10%C |
| 10YR 4/3 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 1.30% O.M. | 1.22% O.M. |
| 32.3 meq/100g CEC | 28.0 meq/100g CEC |
| 0.83% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

37.6 MW%·—— 34.5 MW%·----

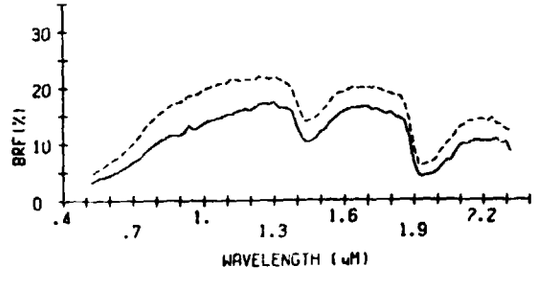



## LA JARA(CO)

Typic Haplaquoll
coarse-loamy, mixed (calcareous),
frigid
arid zone
alluvium from basalt

| Conejos Co. | Alamosa Co. |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| sandy loam | loam |
| 52%S 30%Si 18%C | 34%S 42%Si 24%C |
| 10YR 3/2 (moist) | 5YR 3/4 (moist) |
| 10YR 4/3 (dry) | 10YR 5/3 (dry) |
| 7.33% O.M. | 5.95% O.M. |
| 44.9 meq/100g CEC | 33.5 meq/100g CEC |
| 2.63% $Fe_2O_3$ | 1.93% $Fe_2O_3$ |

54.3 MW%·—— 36.4 MW%·----

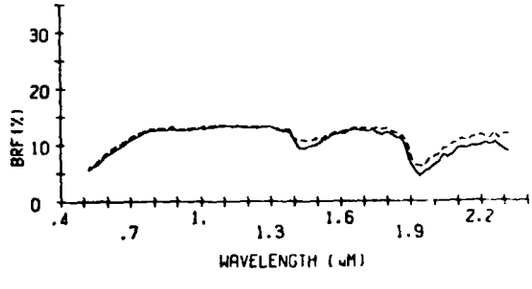



## MOSCA(CO)

Typic Natrargid
coarse-loamy, mixed, frigid
arid zone
alluvium from basalt
Alamosa Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy coarse sand | coarse sand |
| 84%S 10%Si 6%C | 88%S 9%Si 3%C |
| 7.5YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 5/3 (dry) | 10YR 6/3 (dry) |
| 0.11% O.M. | 0.0% O.M. |
| 20.5 meq/100g CEC | 4.6 meq/100g CEC |
| 0.54% $Fe_2O_3$ | 0.36% $Fe_2O_3$ |

17.8 MW%·—— 10.9 MW%·----

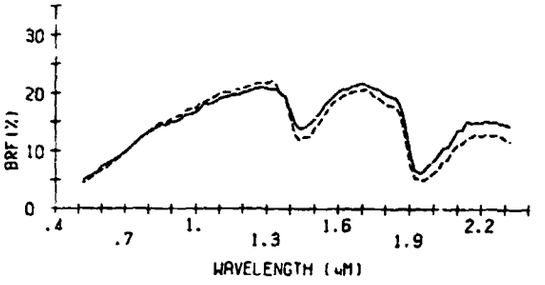


## BRESSER(CO)

Aridic Argiustoll
fine-loamy, mixed, mesic
semiarid zone
coarse textured alluvial materials
Arapahoe Co.

| Al horizon | Al horizon |
|---|---|
| C slope | B slope |
| well drained | well drained |
| coarse sandy loam | coarse sandy loam |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |

17.1 MW%·——  14.7 MW%·----

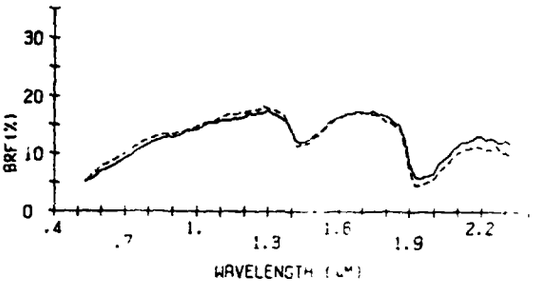



## FONDIS(CO)

Aridic Paleustoll
fine, montmorillonitic, mesic
semiarid zone
loess over coarse textured outwash
Arapahoe Co.

| Al horizon | Ap horizon |
|---|---|
| A slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |

39.2 MW%·——  36.5 MW%·----

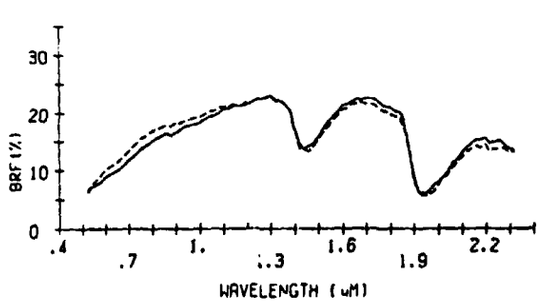



## VONA(CO)

Ustollic Haplargid
coarse-loamy, mixed, mesic
semiarid zone
eolian materials
Morgan Co.

| Al horizon | Al horizon |
|---|---|
| C slope | A slope |
| well drained | well drained |
| sandy loam | sandy loam |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/2 (dry) | 10YR 6/2 (dry) |

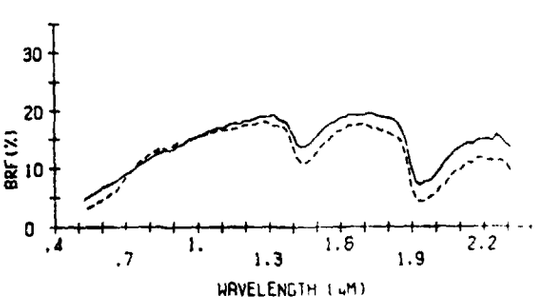
21.2 MW%·——  25.9 MW%·----




## BLAKELAND(CO) & VASQUEZ(CO)

| Torriorthentic Haplustoll | Humic Pergelic Cryaquept |
|---|---|
| sandy, mixed, mesic | coarse-loamy, mixed, |
| semiarid zone | acid |
| eolian sediments | humid zone |
| Douglas Co. | local acid alluvium |
| | Boulder Co. |
| Al horizon | Al horizon |
| C slope | A slope |
| s. excess. drained | poorly drained |
| loamy coarse sand | loam |
| 10YR 3/2 (moist) | 10YR 2/1 (moist) |
| 10YR 5/2 (dry) | 10YR 4/1 (dry) |

16.2 MW%·——  45.5 MW%·----

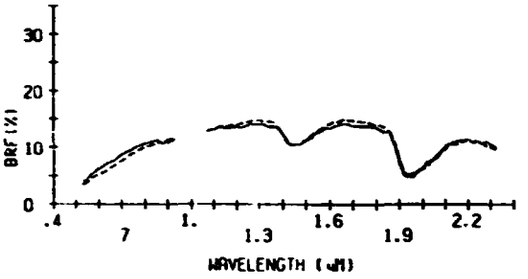


## CHARLTON(CT)

Typic Dystrochrept
coarse-loamy, mixed, mesic
humid zone
acid till
New Haven Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| well drained | well drained |
| loam | fine sandy loam |
| 41%S 48%Si 11%C | 58%S 34%Si 8%C |
| 10YR 3/4 (moist) | 10YR 3/3 (moist) |
| 10YR 4/4 (dry) | 10YR 4/3 (dry) |
| 5.77% O.M. | 6.99% O.M. |
| 19.1 meq/100g CEC | 21.0 meq/100g CEC |
| 1.85% $Fe_2O_3$ | 2.03% $Fe_2O_3$ |

34.7 MW%·____ 36.3 MW%·____

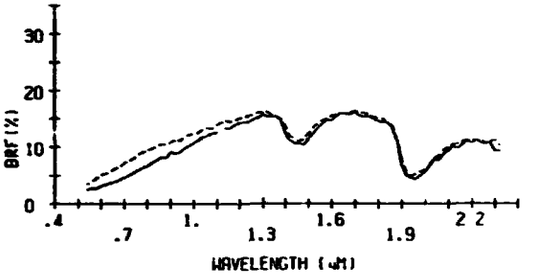



## NINIGRET(CT)

Aquic Dystrochrept
coarse-loamy over sandy or sandy-skeletal, mixed, mesic
humid zone
thin loamy over thick sandy deposits
New London Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| m. well drained | m. well drained |
| fine sandy loam | fine sandy loam |
| 61%S 36% Si 3% C | 55%S 39%Si 6%C |
| 10YR 2/2 (moist) | 10YR 3/4 (moist) |
| 10YR 4/2 (dry) | 10YR 5/4 (dry) |
| 8.20% O.M. | 6.85% O.M. |
| 23.5 meq/100g CEC | 21.8 meq/100g CEC |
| 1.32% $Fe_2O_3$ | 2.27% $Fe_2O_3$ |

38.5 MW%·____ 39.4 MW%·____

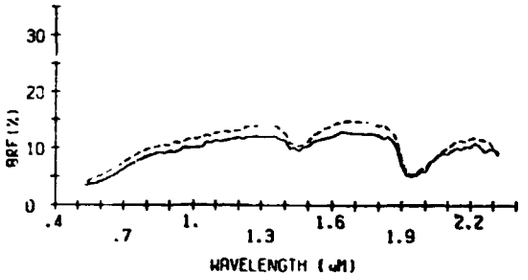



## HOLLIS(CT)

Lithic Dystrochrept
loamy, mixed, mesic
humid zone
acid till
Tollan Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| s. excess. drained | s. excess. drained |
| sand | sand |
| 92%S 4%Si 4%C | 96%S 2%Si 2%C |
| 5YR 2/2 (moist | 10YR 3/3 (moist) |
| 10YR 4/3 (dry) | 10YR 4/3 (dry) |
| 12.56% O.M. | 10.21% O.M. |
| 24.8 meq/100g CEC | 26.2 meq/100g CEC |
| 1.63 $Fe_2C_3$ | 2.03% $Fe_2O_3$ |

37.7 MW%·____ 43.0 MW%·____

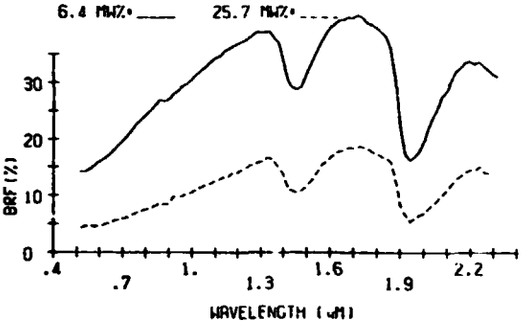



## MYAKKA(FL)

Aeric Haplaquod
sandy, siliceous, hyperthermic
humid zone
sandy marine deposits
Lee Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| fine sand | fine sand |
| 99%S 0%Si 1%C | 97%S 2%Si 1%C |
| 10YR 4/1 (moist) | 10YR 3/1 (moist |
| 10YR 7/1 (dry) | 10YR 6/1 (dry) |
| 1.08% O.M. | 1.85% O.M. |
| 2.4 meq/100g CEC | 4.8 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

6.4 MW%·____ 25.7 MW%·____

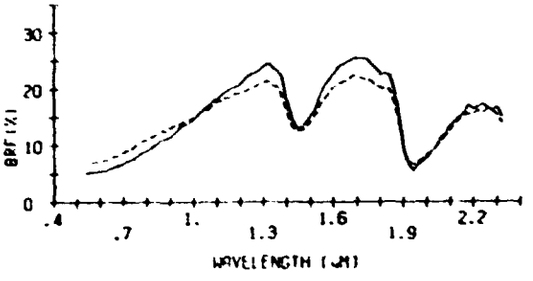


## BASINGER(FL)

Spodic Psammaquent
siliceous, hyperthermic
humid zone
marine sands
Pasco Co.

| A1-A2 horizon | A1-A2 horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| fine sand | fine sand |
| 98%S 2%Si 0%C | 98%S 2%Si 0%C |
| 7.5YR 3/2 (moist) | 2.5YR 3/0 (moist) |
| 10YR 6/1 (dry) | 10YR 6/1 (dry) |
| 1.39% O.M. | 1.71% O.M. |
| 4.8 meq/100g CEC | 4.4 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

24.5 MHz•____ 26.0 MHz•----

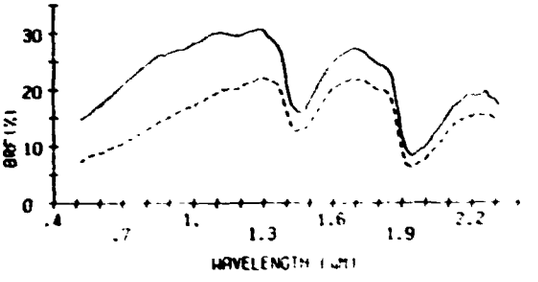



## POMPANO(FL)

Typic Psammaquent
siliceous, hyperthermic
humid zone
marine sands
Lee Co.

| A11 horizon | A11 horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| fine sand | fine sand |
| 100%S 0%Si 0%C | 97%S 2%Si 1%C |
| 10YR 5/1 (moist) | 10YR 4/1 (moist) |
| 10YR 7/1 (dry) | 10YR 7/1 (dry) |
| 0.51% O.M. | 0.57% O.M. |
| 0.0 meq/100g CEC | 1.3 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

20.9 MHz•____ 23.3 MHz•----

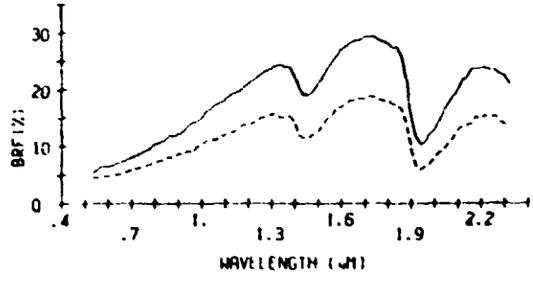



## WABASSO(FL)

Alfic Haplaquod
sandy, siliceous, hyperthermic
humid zone
marine sands over loamy materials
Hernanado Co.

| A1 horizon | A1 horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| fine sand | fine sand |
| 94%S 5%Si 1%C | 98%S 0%Si 2%C |
| 7.5YR 3/0 (moist) | 2.5YR 3/0 (moist) |
| 10YR 6/1 (dry) | 10YR 6/1 (dry) |
| 1.60% O M. | 3.25% O.M. |
| 6.3 meq/100g CEC | 9.3 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

10.5 MHz•____ 22.4 MHz•----

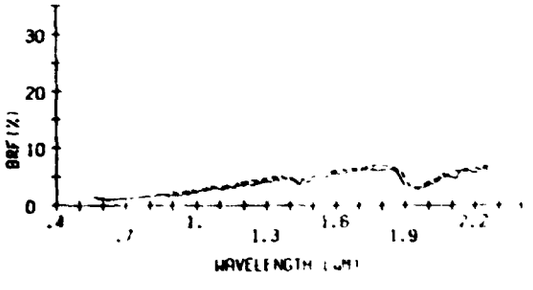



## TERRA CEIA(FL)

Typic Medisaprist
euic, hyperthermic
humid zone
hydrophytic plant remains
Palm Beach Co.

| Oap horizon | Oap horizon |
|---|---|
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| muck | muck |
| 2%S 81%Si 17%C | 15%S 68%Si 17%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 2/1 (dry) | 10YR 2/1 (dry) |
| 76.4% O.M. | 83.6% O.M. |
| 152.0 meq/100g CEC | 147.0 meq/100g CEC |
| 0.00% $Fe_2O_3$ | 0.00% $Fe_2O_3$ |

137. MHz• 113. MHz•

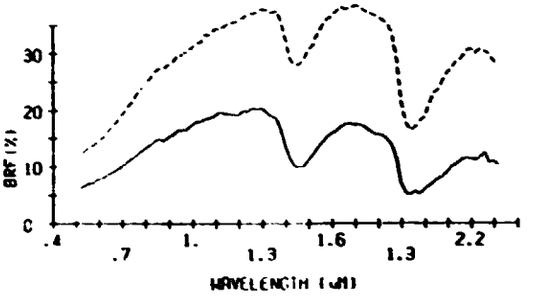


## PAOLA(FL)

Spodic Quartzipsamment
uncoated, hyperthermic
humid zone
marine sands
Martin Co.

| ——— | ---- |
|---|---|
| A1 horizon | A1 horizon |
| B slope | B slope |
| excess. drained | excess. drained |
| sand | sand |
| 100%S 0%Si 0%C | 100%S 0%Si 0%C |
| 10YR 5/1 (moist) | 10YR 5/1 (moist) |
| 10YR 7/1 (dry) | 10YR 7/1 (dry) |
| 1.94% O.M. | 1.16% O.M. |
| 4.5 meq/100g CEC | 5.9 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

18.8 MWZ•——  5.2 MWZ•----

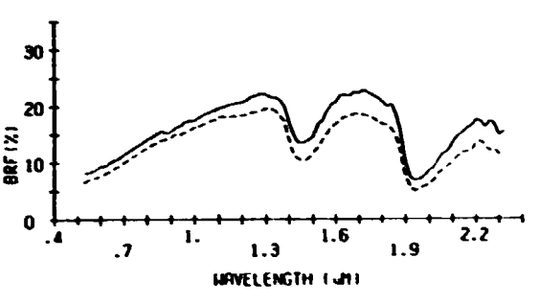



## LEON(FL)

Aeric Haplaquod
sandy, siliceous, thermic
humid zone
acid marine sands
Bay Co.

| ——— | ---- |
|---|---|
| A1-A21 horizon | A1-A21 horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| sand | sand |
| 97%S 2%Si 1%C | 99%S 0%Si 1%C |
| 7.5YR 4/1 (moist) | 10YR 5/1 (moist) |
| 10YR 7/1 (dry) | 10YR 6/1 (dry) |
| 0.85% O.M. | 1.07% O.M. |
| 2.1 meq/100g CEC | 3.4 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

12.1 MWZ•——  16.8 MWZ•----

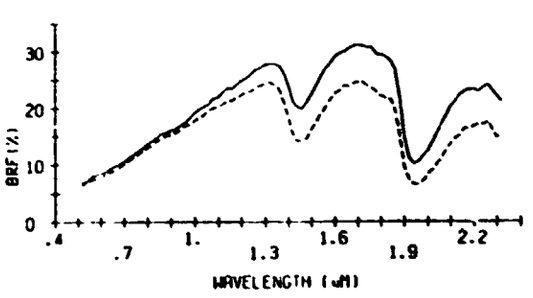



## OCILLA(GA)

Aquic Arenic Paleudult
loamy, siliceous, thermic
humid zone
sandy and loamy marine sediments
Irvin Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| loamy sand | sand |
| 82%S 17%Si 1%C | 91%S 8%Si 1%C |
| 10YR 4/1 (moist) | 10YR 4/1 (moist) |
| 10YR 6/2 (dry) | 10YR 6/2 (dry) |
| 1.10% O.M. | 0.94% O.M. |
| 5.6 meq/100g CEC | 4.5 meq/100g CEC |
| 0.10% $Fe_2O_3$ | 0.03% $Fe_2O_3$ |

9.1 MWZ•——  15.6 MWZ•----

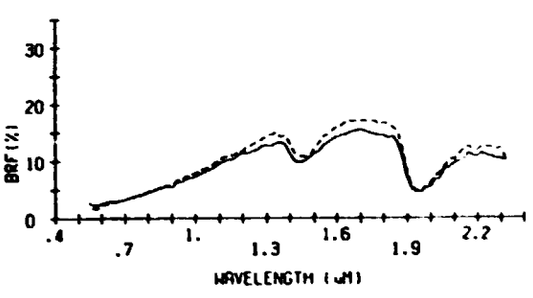



## DRUMMER(IL)

Typic Haplaquoll
fine-silty, mixed, mesic
humid zone
thick loess over outwash and drift
Champaign Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay loam | silty clay loam |
| 13%S 56%Si 32%C | 8%S 60%Si 32%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 5.61% O.M. | 6.09% O.M. |
| 40.3 meq/100g CEC | 41.7 meq/100g CEC |
| 0.76% $Fe_2O_3$ | 0.92% $Fe_2O_3$ |

41.1 MWZ•——  40.2 MWZ•----

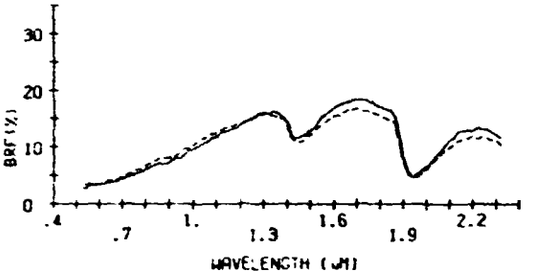


## FLANAGAN(IL)

Aquic Argiudoll
fine, montmorillonitic, mesic
humid zone
thick loess over calcareous till
Champaign Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silt loam | silt loam |
| 8%S 66%Si 26%C | 7%S 67%Si 26%C |
| 10YR 2/1 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.27% O.M. | 4.74% O.M. |
| 25.7 meq/100g CEC | 28.0 meq/100g CEC |
| 1.17% $Fe_2O_3$ | 1.29% $Fe_2O_3$ |

35.8 MW% ____ 38.5 MW% ----

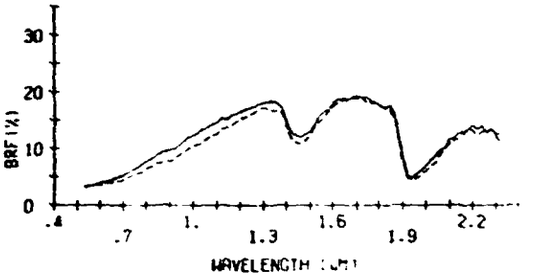



## RIDGEVILLE(IL)

Aquic Argiudoll
coarse-loamy, mixed, mesic
humid zone
stratified glacial alluvium
Iroquois Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| fine sandy loam | fine sandy loam |
| 66%S 23%Si 11%C | 70%S 19%Si 11% |
| 10YR 3/1 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 1.94% O.M. | 2.77% O.M. |
| 15.2 meq/100g CEC | 21.5 meq/100g CEC |
| 0.57% $Fe_2O_3$ | 0.50% $Fe_2O_3$ |

23.0 MW% ____ 28.4 MW% ----

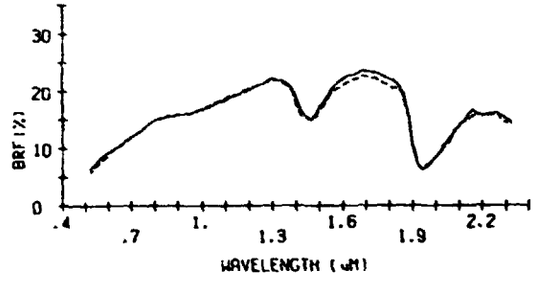



## HAYMOND(IN)

Typic Udifluvent
coarse-silty, mixed, nonacid. mesic
humid zone
silty alluvium
Clark Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 10%S 74%Si 16%C | 6%S 75%Si 19%C |
| 10YR 4/3 (moist) | 10YR 4/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 3.08% O.M. | 2.32% O.M. |
| 15.0 meq/100g CEC | 15.8 meq/100g CEC |
| 1.25% $Fe_2O_3$ | 2.91% $Fe_2O_3$ |

35.3 MW% ____ 34.5 MW% ----

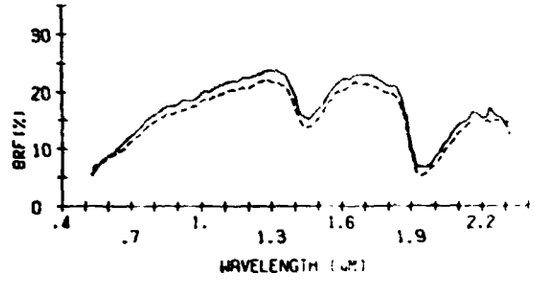



## RUSSELL(IN)

Typic Hapludalf
fine-silty, mixed, mesic
humid zone
mod. thick loess and calcareous loam till
Decatur Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 11%S 70%Si 19%C | 17%S 63%Si 20%C |
| 10YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/2 (dry) |
| 2.18% O.M. | 3.17% O.M. |
| 15.8 meq/100g CEC | 17.0 meq/100g CEC |
| 1.32% $Fe_2O_3$ | 1.28% $Fe_2O_3$ |

32.7 MW% ____ 36.7 MW% ----

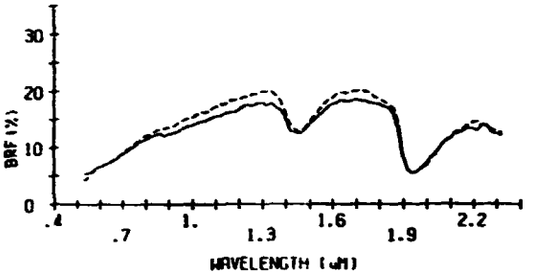


## GENESEE(IN)

Typic Udifluvent
fine-loamy, mixed, nonacid, mesic
humid zone
alluvium
Fayette Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 20%S 60%Si 20%C | 23%S 59%Si 18%C |
| 10YR 3/3 (moist) | 10YR 3/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 4.19% O.M. | 2.19% O.M. |
| 6.1 meq/100g CEC | 21.2 meq/100g CEC |
| 1.36% $Fe_2O_3$ | 1.27% $Fe_2O_3$ |

30.7 MWZ•____ 32.0 MWZ•----

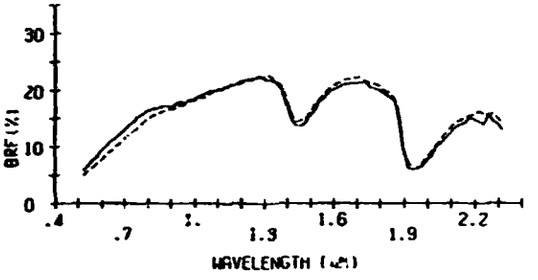



## ALFORD(IN)

Typic Hapludalf
fine-silty, mixed, mesic
humid zone
loess
Knox Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 2%S 76%Si 22%C | 2%S 80%Si 18%C |
| 10YR 4/4 (moist) | 10YR 4/4 (moist) |
| 10YR 5/4 (dry) | 10YR 5/4 (dry) |
| 2.03% O.M. | 1.44% O.M. |
| 19.6 meq/100g CEC | 14.8 meq/100g CEC |
| 1.52% $Fe_2O_3$ | 1.35% $Fe_2O_3$ |

32.6 MWZ•____ 31.3 MWZ•----

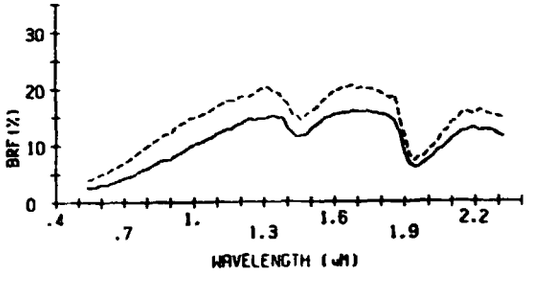



## DOOR(IN)

Ultic Hapludalf
fine-loamy, mixed, mesic
humid zone
loamy outwash
Porter Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | loam |
| 54%S 29%Si 17%C | 44%S 44%Si 12%C |
| 10YR 2/1 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/3 (dry) |
| 3.73% O.M. | 1.96% O.M. |
| 22.0 meq/100g CEC | 11.7 meq/100g CEC |
| 1.55% $Fe_2O_3$ | 1.36% $Fe_2O_3$ |

24.5 MWZ•____ 24.4 MWZ•----

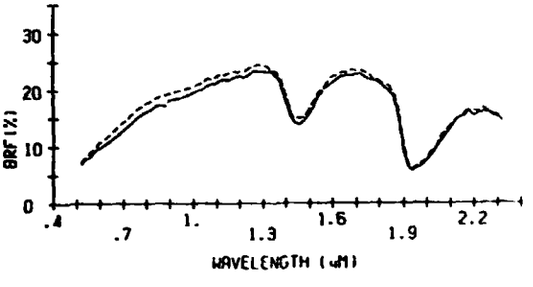



## IVA(IN)

Aeric Ochraqualf
fine-silty, mixed, mesic
humid zone
loess
Vigo Co. Clay Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silt loam | silt loam |
| 11%S 78%Si 11%C | 19%S 71%Si 10%C |
| 10YR 5/3 (moist) | 10YR 5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/3 (dry) |
| 1.24% O.M. | 1.56% O.M. |
| 13.1 meq/100g CEC | 11.5 meq/100g CEC |
| 0.96% $Fe_2O_3$ | 1.19% $Fe_2O_3$ |

33.5 MWZ•____ 30.6 MWZ•----

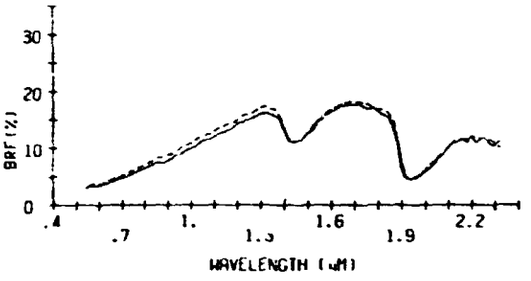


## SAC(IA)

Typic Hapludoll
fine-silty, mixed, mesic
subhumid zone
loess and glacial till
Clay Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silty clay loam | silty clay loam |
| 5%S 59%Si 36%C | 6%S 62%Si 32%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 5.37% O.M. | 5.06% O.M. |
| 37.0 meq/100g CEC | 36.0 meq/100g CEC |
| 1.43% $Fe_2O_3$ | 1.42% $Fe_2O_3$ |

40.8 MW%·____ 42.2 MW%·____

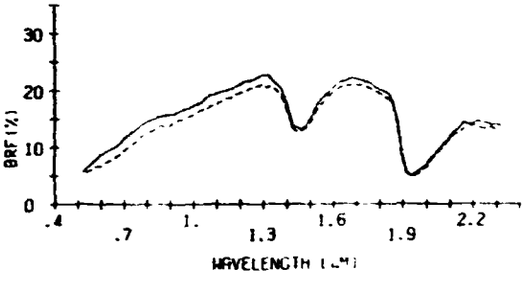



## IDA(IA)

Typic Udorthent
fine-silty, mixed, calcareous, mesic
subhumid zone
loess
Crawford Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 3%S 74%Si 23%C | 3%S 73%Si 24%C |
| 10YR 3/3 (moist) | 10YR 4/3 (moist) |
| 10YR 5/4 (dry) | 10YR 5/4 (dry) |
| 1.18% O.M. | 3.00% O.M. |
| 26.7 meq/100g CEC | 28.7 meq/100g CEC |
| 1.33% $Fe_2O_3$ | 1.33% $Fe_2O_3$ |

37.5 MW%·____ 40.9 MW%·____

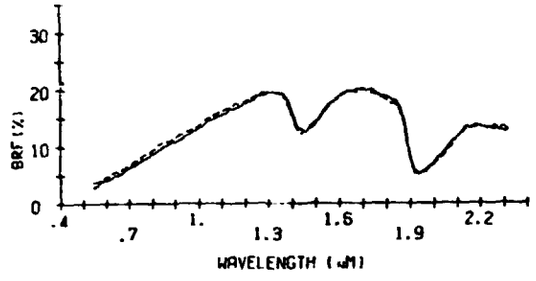



## MONONA(IA)

Typic Hapludoll
fine-silty, mixed, mesic
subhumid zone
loess
Harrison Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 3%S 76%Si 21%C | 2%S 72%Si 26%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 4/3 (dry) |
| 3.58% O.M. | 2.92% O.M. |
| 25.1 meq/100g CEC | 21.0 meq/100g CEC |
| 1.46% $Fe_2O_3$ | 1.35% $Fe_2O_3$ |

37.3 MW%·____ 38.5 MW%·____

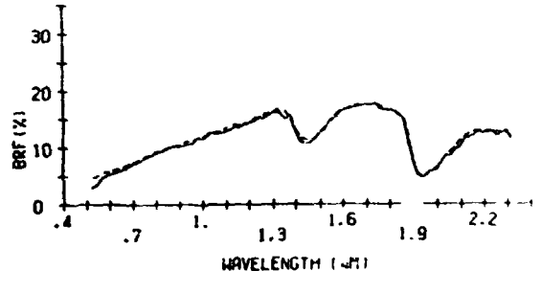



## HAYNIE(IA)

Mollic Udifluvent
coarse-silty, mixed, calcareous, mesic
subhumid zone
recent alluvium
Monona Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 9%S 77%Si 14%C | 10%S 76%Si 14%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 2.38% O.M. | 2.56% O.M. |
| 20.2 meq/100g CEC | 21.5 meq/100g CEC |
| 1.02% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

36.0 MW%·____ 36.8 MW%·____

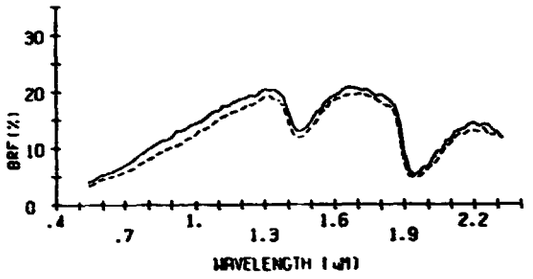


## DOWNS(IA)

Mollic Hapludalf
fine-silty, mixed, mesic
humid zone
loess
Clayton Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 3%S 76%Si 21%C | 2%S 72%Si 26%C |
| 10YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 2.84% O.M. | 3.82% O.M. |
| 21.1 meq/100g CEC | 25.4 meq/100g CEC |
| 1.15% $Fe_2O_3$ | 1.29% $Fe_2O_3$ |

33.0 MWX•____ 35.0 MWX•----

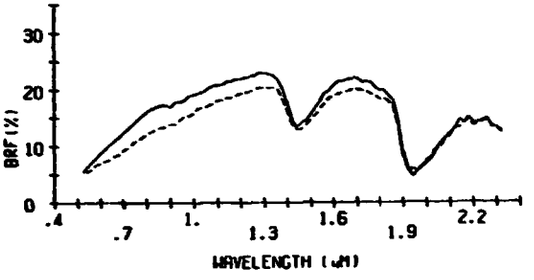



## DUBUQUE(IA)

Typic Hapludalf
fine-silty, mixed, mesic
humid zone
loess
Dubuque Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silt loam | silt loam |
| 3%S 78%Si 19%C | 10%S 68%Si 22%C |
| 10YR 4/3 (moist) | 10YR 3/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 2.08% O.M. | 2.80% O.M. |
| 17.3 meq/100g CEC | 16.4 meq/100g CEC |
| 0.19% $Fe_2O_3$ | 0.21% $Fe_2O_3$ |

32.9 MWX•____ 36.2 MWX•----

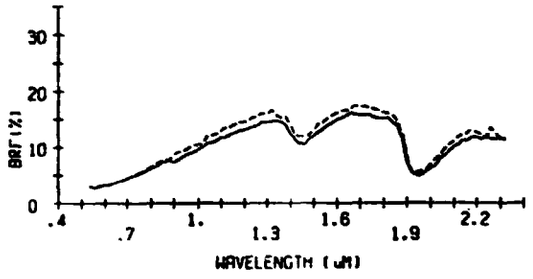



## WAUKEE(IA)

Typic Hapludoll
fine-loamy over sandy or sandy-
skeletal, mixed mesic
humid zone
stratified loamy alluvium over sand
Howard Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 47%S 49%Si 24%C | 32%S 48%Si 20%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 4.09% O.M. | 3.93% O.M. |
| 25.1 meq/100g CEC | 22.2 meq/100g CEC |
| 1.22% $Fe_2O_3$ | 1.11% $Fe_2O_3$ |

32.4 MWX•____ 29.9 MWX•----

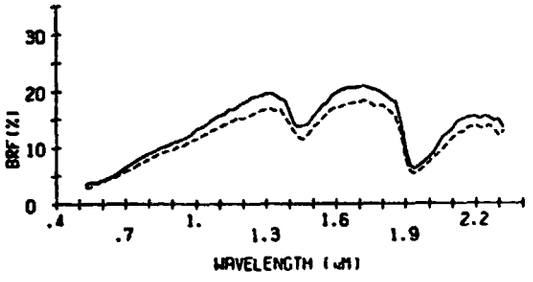



## HEDVILLE(KS)

Lithic Haplustoll
loamy, mixed, mesic
subhumid zone
sandstone residuum
Cloud Co.

| All horizon | All horizon |
|---|---|
| C slope | C slope |
| s. excess. drained | s. excess. drained |
| loam | silt loam |
| 49%S 39%Si 12%C | 25%S 60%Si 15%C |
| 7.5YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 3/3 (dry) |
| 3.61% O.M. | 3.86% O.M. |
| 16.0 meq/100g CEC | 20.2 meq/100g CEC |
| 1.67% $Fe_2O_3$ | 0.51% $Fe_2O_3$ |

23.7 MWX•____ 33.0 MWX•----

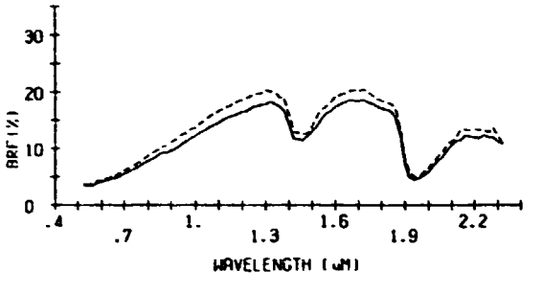


## IRWIN(KS)

Pachic Argiustoll
fine, mixed, mesic
subhumid zone
pedisediments from clay shales
Geary Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| m. well drained | m. well drained |
| silty clay loam | silty clay loam |
| 3%S 67%Si 30%C | 3%S 70%Si 27%C |
| 7.5YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.15% O.M. | 2.26% O.M. |
| 29.1 meq/100g CEC | 23.9 meq/100g CEC |
| 0.99% $Fe_2O_3$ | 1.01% $Fe_2O_3$ |

36.5 MW%·____ 37.8 MW%·----

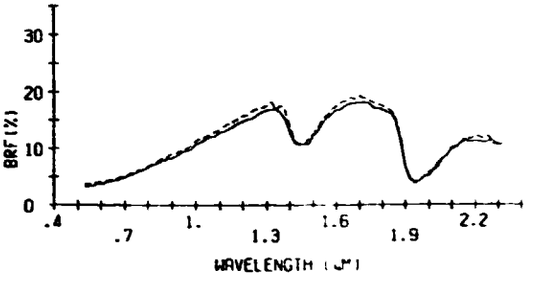



## GOESSEL(KS)

Udic Pellustert
fine, montmorillonitic, mesic
subhumid zone
clayey alluvium
McPherson Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| m. well drained | m. well drained |
| silty clay loam | silty clay loam |
| 6%S 54%Si 40%C | 10%S 53%Si 37%C |
| 10YR 2/1 (moist) | 10YR 3/1 (moist) |
| 10YR 3/1 (dry) | 10YR 4/1 (dry) |
| 2.83% O.M. | 2.77% O.M. |
| 36.1 meq/100g CEC | 32.6 meq/100g CEC |
| 0.59% $Fe_2O_3$ | 0.41% $Fe_2O_3$ |

35.5 MW%·____ 37.3 MW%·----

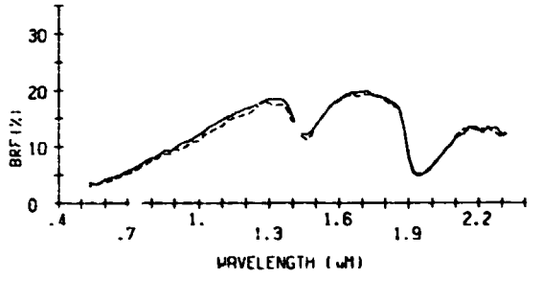



## LANCASTER(KS)

Udic Argiustoll
fine-loamy, mixed, mesic
subhumid zone
sandstone and sandy shale residuum
Saline Co.

| ____ | ---- |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 23%S 55%Si 22%C | 32%S 51%Si 17%C |
| 7.5YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.97% O.M. | 3.37% O.M. |
| 16.3 meq/100g CEC | 15.4 meq/100g CEC |
| 1.26% $Fe_2O_3$ | 1.22% $Fe_2O_3$ |

31.2 MW%·____ 29.4 MW%·----

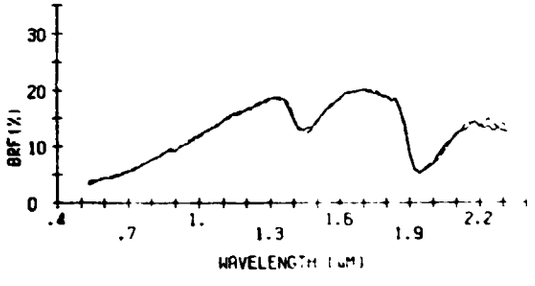



## VERDIGRIS(KS)

Cumuli Hapludoll
fine-silty, mixed, thermic
humid zone
silty alluvium
Montgomery Co.

| ___ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt | silt loam |
| 9%S 90%Si 1%C | 16%S 60%Si 24%C |
| 10YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 2.88% O.M. | 1.84% O.M. |
| 24.1 meq/100g CEC | 23.0 meq/100g CEC |
| 1.26% $Fe_2O_3$ | 1.13% $Fe_2O_3$ |

32.1 MW%·____ 34.1 MW%·----

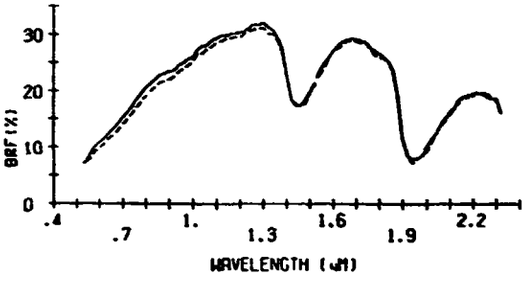


## PRATT(KS)

Psammentic Haplustalf
sandy, mixed, thermic
subhumid zone
sandy eolian deposits
Pratt Co.

| ——— | ——— |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 73%S 24%Si 3%C | 61%S 37%Si 2%C |
| 10YR 3/3 (moist) | 10YR 4/3 (moist) |
| 7.5YR 6/4 (dry) | 7.5YR 6/2 (dry) |
| 0.55% O.M. | 0.44% O.M. |
| 2.8 meq/100g CEC | 1.9 meq/100g CEC |
| 0.31% $Fe_2O_3$ | 0.25% $Fe_2O_3$ |

11.0 MWZ•——  13.4 MWZ•----

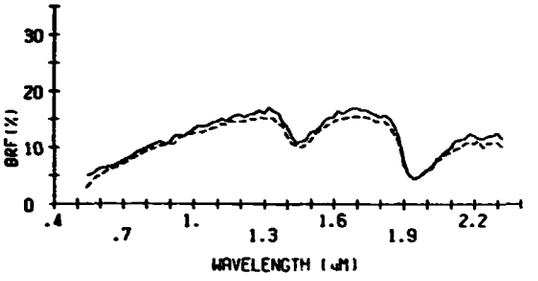



## RICHFIELD(KS)

Aridic Argiustoll
fine, montmorillonitic mesic
semiarid zone
silty eolian sediments
Grant Co.

| ——— | ——— |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 8%S 72%Si 20%C | 12%S 70%Si 18%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/2 (dry) |
| 2.14% O.M. | 1.78% O.M. |
| 21.4 meq/100g CEC | 21.3 meq/100g CEC |
| 0.79% $Fe_2O_3$ | 0.86% $Fe_2O_3$ |

37.3 MWZ•——  35.6 MWZ•----

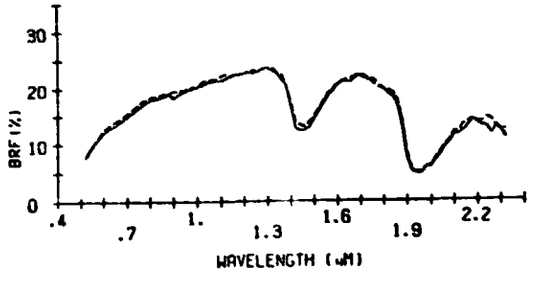



## COLBY(KS)

Ustic Torriorthent
fine-silty, mixed, calcareous, mesic
semiarid zone
calcareous silty material
Hamilton Co.

| ——— | ——— |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 22%S 54%Si 24%C | 15%S 62%Si 24%C |
| 10YR 5/3 (moist) | 10YR 5/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 1.24% O.M. | 0.85% O.M. |
| 30.3 meq/100g CEC | 30.2 meq/100g CEC |
| 0.69% $Fe_2O_3$ | 0.68% $Fe_2O_3$ |

37.3 MWZ•——  36.6 MWZ•----

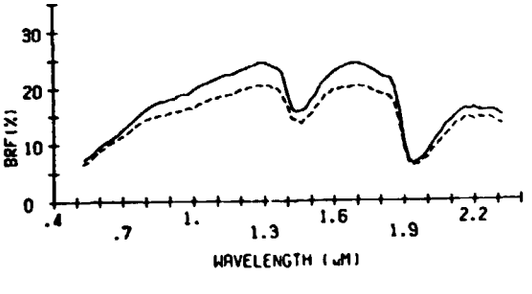



## NEWARK(KY)

Aeric Fluventic Haplaquept
fine-silty, mixed, nonacid, mesic
humid zone
mixed alluvium
Daviess Co.

| ——— | ——— |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silt loam | silt loam |
| 25%S 57%Si 18%C | 4%S 79%Si 18%C |
| 10YR 4/2 (moist) | 10YR 4/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/4 (dry) |
| 1.83% O.M. | 2.84% O.M. |
| 15.7 meq/100g CEC | 17.0 meq/100g CEC |
| 1.05% $Fe_2O_3$ | 1.93% $Fe_2O_3$ |

29.0 MWZ•——  34.1 MWZ•----

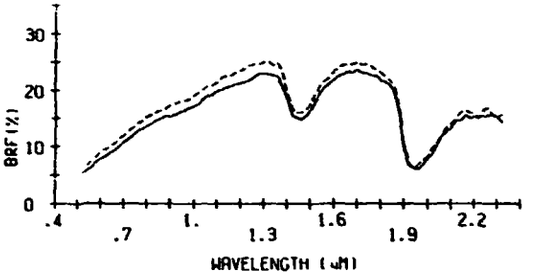


## WHITLEY(KY)

Typic Hapludult
fine-silty, mixed, mesic
humid zone
part alluvium, part acid residuum
Laurel Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| E slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 23%S 57%Si 20%C | 16%S 65%Si 19%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 3.50% O.M. | 2.57% O.M. |
| 12.7 meq/100g CEC | 14.2 meq/100g CEC |
| 1.55% $Fe_2O_3$ | 2.11% $Fe_2O_3$ |

18.5 MW%•____ 35.9 MW%•----

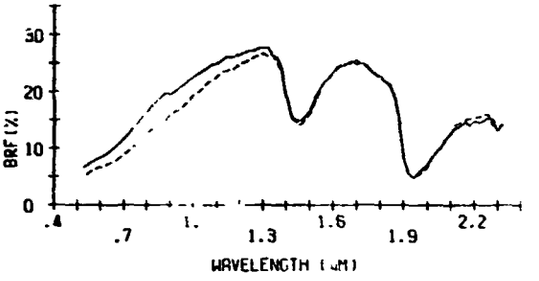



## MIDLAND(LA)

Typic Ochraqualf
fine, montmorillonitic, thermic
humid zone
clayey sediments
Acadia Parish

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay loam | silty clay loam |
| 5%S 57%Si 38%C | 3%S 65%Si 32%C |
| 10YR 4/2 (moist) | 10YR 3/1 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 2.42% O.M. | 2.32% O.M. |
| 25.1% meq/100g CEC | 27.3 meq/100g CEC |
| 0.88% $Fe_2O_3$ | 0.62% $Fe_2O_3$ |

37.7 MW%•____ 41.2 MW%•----

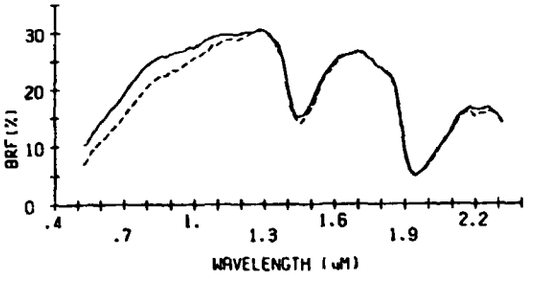



## CALHOUN(LA)

Typic Glossaqualf
fine-silty, mixed, thermic
humid zone
loess
East Baton Rouge Parish

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silt loam |
| 15%S 71%Si 14%C | 20%S 69%Si 10%C |
| 10YR 5/3 (moist) | 10YR 5/3 (moist) |
| 10YR 7/3 (dry) | 10YR 6/4 (dry) |
| 1.74% O.M. | 2.40% O.M. |
| 7.1 meq/100g CEC | 11.4 meq/100g CEC |
| 0.60% $Fe_2O_3$ | 0.72 $Fe_2O_3$ |

34.6 MW%•____ 33.7 MW%•----

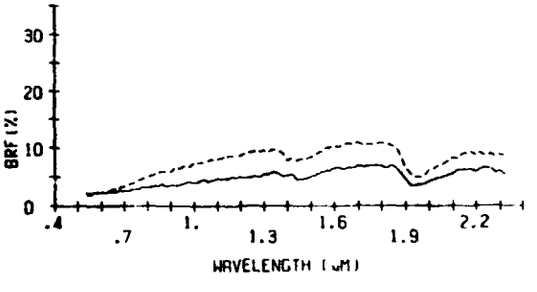



## KENNER(LA)

Fluvaquentic Medisaprist
euic, thermic
humid zone
herbaceous plant remains with clayey
alluvium
Jefferson Parish

| ____ | ____ |
|---|---|
| Oel horizon | Oel horizon |
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| muck | muck |
| 4%S 40%Si 56%C | 3%S 31%Si 66%C |
| 7.5YR 2/0 (moist) | 10YR 2/1 (moist) |
| 10YR 2/1 (dry) | 10YR 2/1 (dry) |
| 55.14% O.M. | 54.39% O.M. |
| 73.6 meq/100g CEC | 82.1 meq/100g CEC |
| 0.00% $Fe_2O_3$ | 0.00% $Fe_2O_3$ |

77.2 MW%•____ 73.1 MW%•----

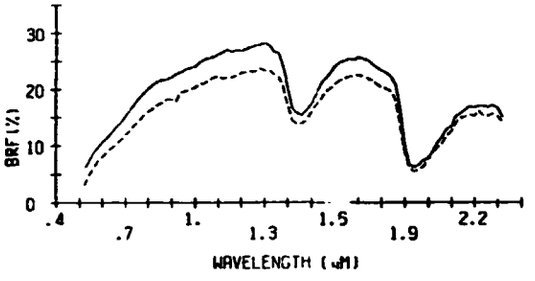


## RILLA(LA)

Typic Hapludalf
fine-silty, mixed, thermic
humid zone
mixed silty alluvium
Ouachita Parish

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 20%S 70%Si 10%C | 17%S 76%Si 7%C |
| 10YR 5/4 (moist) | 10YR 4/3 (moist) |
| 10YR 7/4 (dry) | 10YR 6/4 (dry) |
| 1.46% O.M. | 0.83% O.M. |
| 10.0 meq/100g CEC | 8.9 meq/100g CEC |
| 0.45% $Fe_2O_3$ | 0.50% $Fe_2O_3$ |

33.5 MW% ____ 31.2 MW% ----

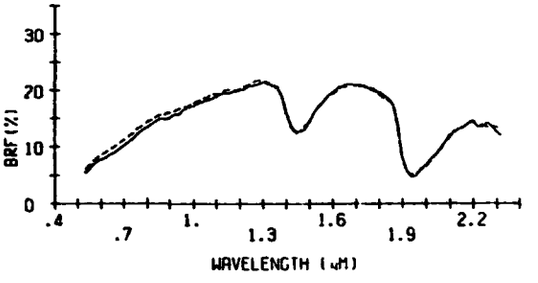



## COMMERCE(LA)

Aeric Fluvaquent
fine-silty, mixed, nonacid, thermic
humid zone
loamy alluvium
Tensas Parish

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silt loam | silt loam |
| 14%S 68%Si 18%C | 5%S 71%Si 24%C |
| 10YR 4/2 (moist) | 10YR 4/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/4 (dry) |
| 1.60% O.M. | 1.33% O.M. |
| 24.8 meq/100g CEC | 25.4 meq/100g CEC |
| 0.60% $Fe_2O_3$ | 0.88% $Fe_2O_3$ |

33.4 MW% ____ 34.1 MW% ----

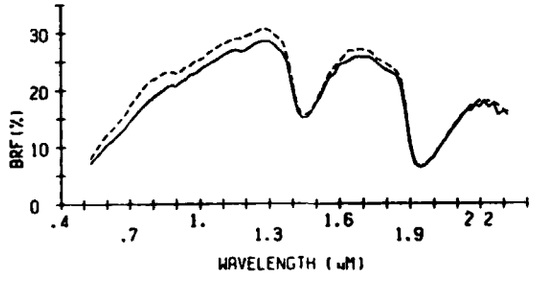



## RUSTON(LA)

Typic Paleudult
fine-loamy, siliceous, thermic
humid zone
loamy marine deposits
Union Parish

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| loamy fine sand | loamy fine sand |
| 76%S 21%Si 3%C | 78%S 19%Si 3%C |
| 10YR 5/3 (moist) | 7.5YR 4/4 (moist) |
| 10YR 6/3 (dry) | 10YR 6/4 (dry) |
| 1.10% O.M. | 0.69% O.M. |
| 4.6 meq/100g CEC | 3.5 meq/100g CEC |
| 0.35% $Fe_2O_3$ | 0.58% $Fe_2O_3$ |

21.5 MW% ____ 22.7 MW% ----

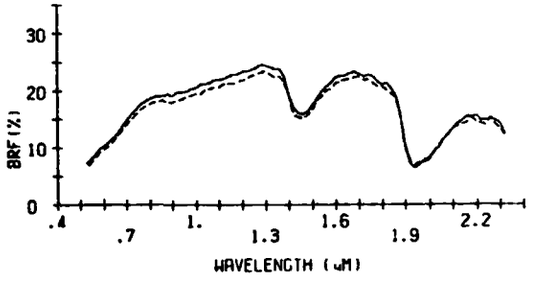



## CARIBOU(ME)

Typic Haplorthod
sandy-skeletal, mixed, frigid
humid zone
calcareous loam till
Aroostook Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silt loam | loam |
| 29%S 59%Si 12%C | 37%S 48%Si 15%C |
| 2.5Y 5/4 (moist) | 10YR 5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 3.84% O.M. | 3.82% O.M. |
| 24.5 meq/100g CEC | 25.5 meq/100g CEC |
| 2.31% $Fe_2O_3$ | 2.18% $Fe_2O_3$ |

33.4 MW% ____ 31.1 MW% ----

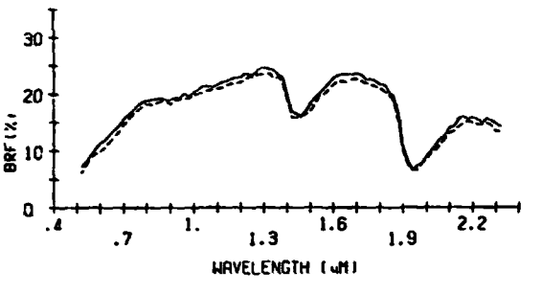


## PLAISTED(ME)

Typic Fragiorthod
coarse-loamy, mixed, frigid
humid zone
glacial till
Aroostook Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| loam | silt loam |
| 37%S 50%Si 13%C | 37%S 58%Si 5%C |
| 10YR 5/4 (moist) | 10YR 5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/3 (dry) |
| 4.28% O.M. | 4.40% O.M. |
| 23.4 meq/100g CEC | 25.8 meq/100g CEC |
| 2.21% $Fe_2O_3$ | 2.19% $Fe_2O_3$ |

33.0 MW% ____ 31.2 MW% ----

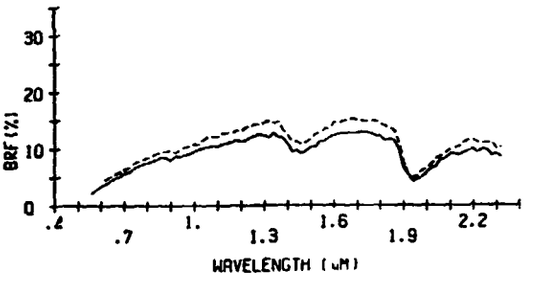



## SUDBURY(MA)

Aquic Dystrochrept
sandy, mixed, mesic
humid zone
mixed alluvium
Essex Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| sandy loam | coarse sandy loam |
| 56%S 37%Si 7%C | 72%S 23%Si 5%C |
| 10YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 3/3 (dry) |
| 6.07% O.M. | 4.38% O.M. |
| 25.1 meq/100g CEC | 22.7 meq/100g CEC |
| 1.46% $Fe_2O_3$ | 1.37% $Fe_2O_3$ |

27.9 MW% ____ 25.1 MW% ----

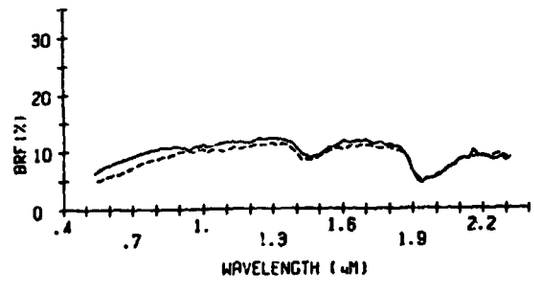



## WINOOSKI(MA)

Aquic Udifluvent
coarse-silty, mixed, non-acid, mesic
humid zone
fine sand and silt alluvium
Franklin Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 30%S 67%Si 3%C | 17%S 80%Si 3%C |
| 2.5Y 4/2 (moist) | 10YR 4/1 (moist) |
| 5Y 6/3 (dry) | 2.5Y 6/2 (dry) |
| 1.96% O.M. | 3.30% O.M. |
| 14.7 meq/100g CEC | 20.8 meq/100g CEC |
| 1.12% $Fe_2O_3$ | 0.27% $Fe_2O_3$ |

39.7 MW% ____ 39.0 MW% ----

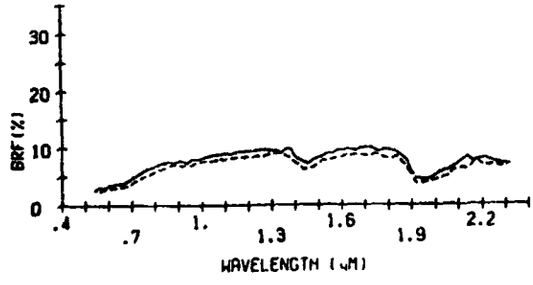



## BERKSHIRE(MA)

Typic Haplorthod
coarse-loamy, mixed, frigid
humid zone
glacial till
Franklin Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| sandy loam | loam |
| 65%S 25%Si 10%C | 43%S 50%Si 7%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 11.52% O.M. | 19.95% O.M. |
| 33.0 meq/100g CEC | 43.4 meq/100g CEC |
| 1.52% $Fe_2O_3$ | 0.89% $Fe_2O_3$ |

42.5 MW% ____ 69.8 MW% ----

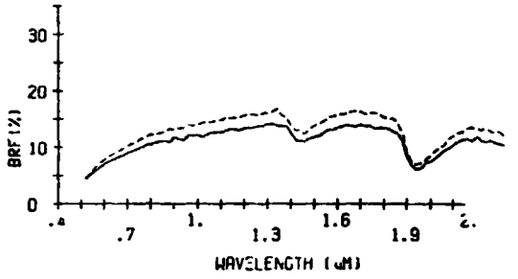


## AGAWAM(MA)

Typic Dystrochrept
coarse-loamy over sandy or sandy-skeletal, mixed, mesic
humid zone
sandy alluvium
Hampden Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 73%S 23%Si 4%C | 74%S 21%Si 5%C |
| 10YR 3/3 (moist) | 10YR 3/3 (moist) |
| 10YR 5/4 (dry) | 10YR 5/4 (dry) |
| 1.46% O.M. | 1.28% O.M. |
| 9.7 meq/100g CEC | 5.2 meq/100g CEC |
| 0.98% $Fe_2O_3$ | 2.17% $Fe_2O_3$ |

17.8 MW%·____ 15.2 MW%·____

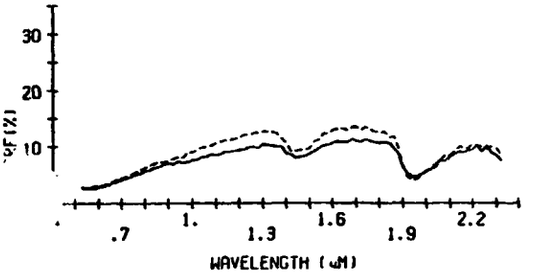



## RIDGEBURY(MA)

Aeric Fragiaquept
coarse-loamy, mixed, mesic
humid zone
sandy and stony glacial till
Hampden Co.

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| sandy loam | loam |
| 64%S 33%Si 3%C | 48%S 43%Si 9%C |
| 10YR 2/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 8.49% O.M. | 7.78% O.M. |
| 27.7 meq/100g CEC | 28.3 meq/100g CEC |
| 0.84% $Fe_2O_3$ | 1.14% $Fe_2O_3$ |

31.1 MW%·____ 49.9 MW%·____

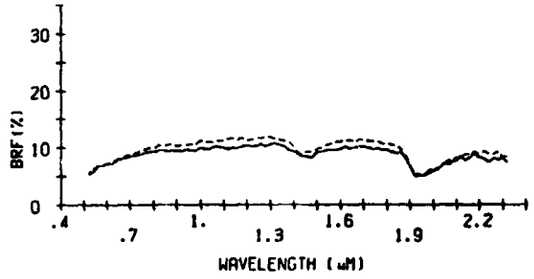



## HADLEY(MA)

Typic Udifluvent
coarse-silty, mixed, nonacid, mesic
humid zone
fine sand and silt alluvium
Hampshire Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 24%S 71%Si 5%C | 20%S 75%Si 5%C |
| 10YR 3/2 (moist) | 2.5Y 4/2 (moist) |
| 2.5Y 5/2 (dry) | 2.5YR 5/2 (dry) |
| 1.16% O.M. | 1.61% O.M. |
| 12.8 meq/100g CEC | 13.1 meq/100g CEC |
| 1.13% $Fe_2O_3$ | 1.16% $Fe_2O_3$ |

35.0 MW%·____ 36.2 MW%·____

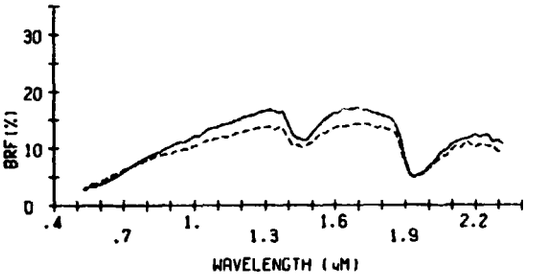



## HINCKLEY(MA)

Typic Udorthent
sandy-skeletal, mixed, mesic
humid zone
sandy alluvium
Worcester Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| s. excess. drained | s. excess. drained |
| loamy coarse sand | loamy coarse sand |
| 81%S 16%Si 3%C | 75%S 20%Si 5%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 4/3 (dry) |
| 4.20% O.M. | 6.80% O.M. |
| 17.5 meq/100g CEC | 26.1 meq/100g CEC |
| 0.95% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

30.2 MW%·____ 22.4 MW%·____

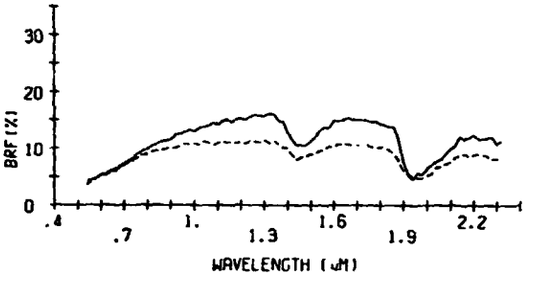


## IRON RIVER(MI)

Alfic Fragiorthod
coarse-loamy, mixed, frigid
humid zone
glacial till
Baraga Co.

| Al-A2 horizon | Al-A2 horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 14%S 77%. 9%C | 27%S 61%Si 13%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 6.38% O.M. | 10.75% O.M. |
| 20.4 meq/100g CEC | 26.3 meq/100g CEC |
| 1.06% $Fe_2O_3$ | 1.73% $Fe_2O_3$ |

52.2 MW%·___ 48.5 MW%·----

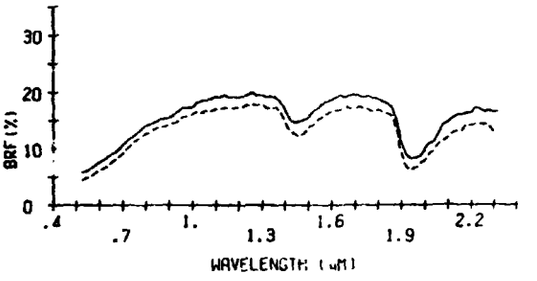



## MUNISING(MI)

Alfic Fragiorthod
coarse-loamy, mixed, frigid
humid zone
glacial till
Baraga Co.

| Al-A2 horizon | Al-A2 horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| loamy sand | sandy loam |
| 78%S 19%Si 3%C | 74%S 22%Si 4%C |
| 5YR 3/2 (moist) | 5YR 3/1 (moist) |
| 5YR 6/2 (dry) | 5YR 6/2 (dry) |
| 2.61% O.M. | 4.79% O.M. |
| 9.5 meq/100g CEC | 14.2 meq/100g CEC |
| 0.55% $Fe_2O_3$ | 0.54% $Fe_2O_3$ |

17.5 MW%·___ 24.5 MW%·----

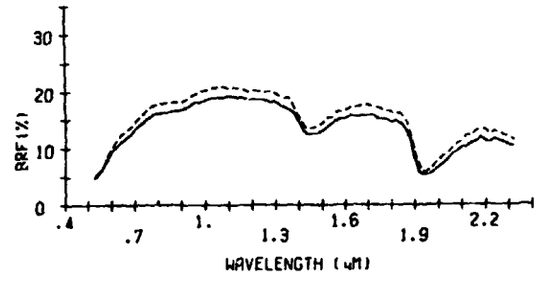



## ONTONAGON(MI)

Glossic Eutroboralf
very fine, mixed
humid zone
glacial lake plain sediments
Ontonagon Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| clay | clay |
| 7%S 22%Si 70%C | 6%S 29%Si 66%C |
| 2.5YR 3/6 (moist) | 2.5YR 4/4 (moist) |
| 5YR 6/4 (dry) | 5YR 6/4 (dry) |
| 4.88% O.M. | 3.95% O.M. |
| 38.0 meq/100g CEC | 31.6 meq/100g CEC |
| 1.73% $Fe_2O_3$ | 2.76% $Fe_2O_3$ |

47.5 MW%·___ 43.2 MW%·----

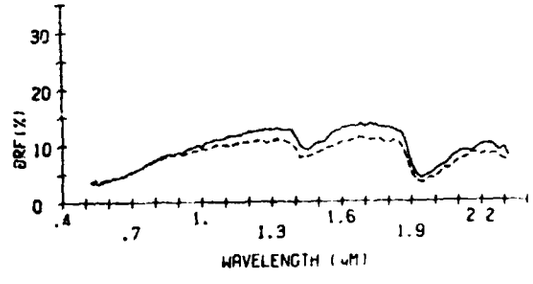



## PICKFORD(MI)

Aeric Haplaquept
fine, mixed, nonacid, frigid
humid zone
clayey glacial till or
lacustrine material
Chippewa Co.

| A11-A12 horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay | clay |
| 5%S 48%Si 47%C | 7%S 29%Si 64%C |
| 5YR 2.5/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/2 (dry) |
| 14.57% O.M. | 15.16% O.M. |
| 51.6 meq/100g CEC | 50.8 meq/100g CEC |
| 3.71% $Fe_2O_3$ | 0.64% $Fe_2O_3$ |

60.8 MW%·___ 62.3 MW%·. .

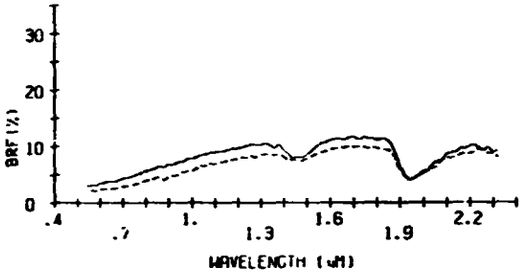


## ANGELICA(...)

Aeric Haplaquept
fine-loamy, mixed, nonacid, frigid
humid zone
glacial till
Delta Co.

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silt loam |
| 44%S 51%Si 5%C | 18%S 70%Si 11%C |
| 10YR 3/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 5/1 (dry) | 10YR 3/1 (dry) |
| 8.86% O.M. | 25.23% O.M. |
| 23.4 meq/100g CEC | 63.1 meq/100g CEC |
| 0.28% $Fe_2O_3$ | 0.44% $Fe_2O_3$ |

46.7 MW%·____ 42.9 MW%·----

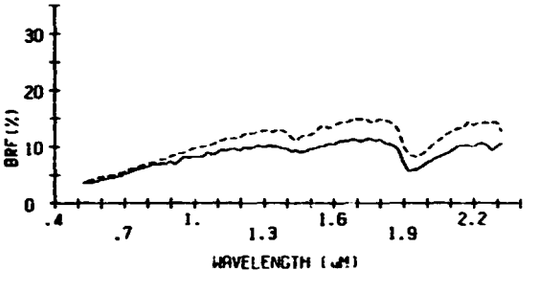



## GRAYLING(MI)

Typic Udipsamment
mixed, frigid
humid zone
sandy glaciofluvial sediments
Delta Co.

| ____ | ____ |
|---|---|
| A1-A2 horizon | A1-A2 horizon |
| A slope | A slope |
| excessively drained | excessively drained |
| sand | loamy sand |
| 93%S 5%Si 2%C | 84%S 14%Si 2%C |
| 5YR 2/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 4.47% O.M. | 3.57% O.M. |
| 15.0 meq/100g CEC | 12.9 meq/100g CEC |
| 0.21% $Fe_2O_3$ | 0.22% $Fe_2O_3$ |

15.3 MW%·____ 12.0 MW%·----

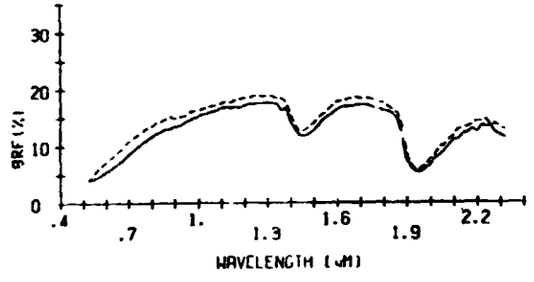



## ONAWAY(MI)

Alfic Haplorthod
fine-loamy, mixed, frigid
humid zone
glacial drift
Delta Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | loam |
| 61%S 34%Si 6%C | 44%S 47%Si 9%C |
| 7.5YR 3/2 (moist) | 10YR 3/4 (moist) |
| 10YR 5/2 (dry) | 10YR 6/3 (dry) |
| 3.32% O.M. | 2.78% O.M. |
| 13.2 meq/100g CEC | 13.7 meq/100g CEC |
| 0.81% $Fe_2O_3$ | 0.92% $Fe_2O_3$ |

27.3 MW%·____ 27.5 MW%·----

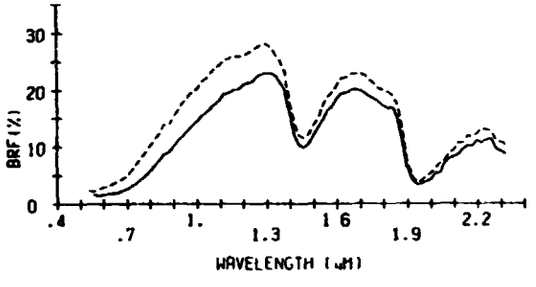



## RIFLE(MI)

Typic Borohemist
euic
humid zone
organic material
Delta Co.

| ____ | ____ |
|---|---|
| Oil horizon | Oil horizon |
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| muck | muck |
| 38%S 43%Si 20%C | 5%S 94%Si 1%C |
| 10YR 2/1 (moist) | 7.5YR 3/2 (moist) |
| 10YR 2/2 (dry) | 10YR 3/2 (dry) |
| 75.11% O.M. | 84.79% O.M. |
| 240.0 meq/100g CEC | 151.0 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

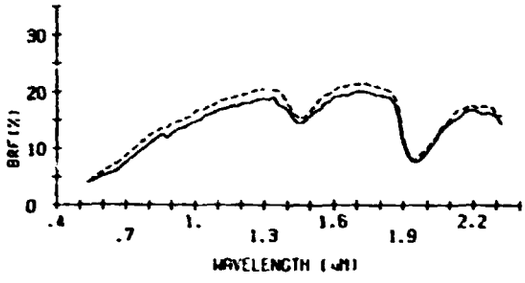
176. MW%·____ 217. MW%·----



## EMMET(MI)

Alfic Haplorthod
coarse-loamy, mixed, frigid
humid zone
glacial till
Delta Co.

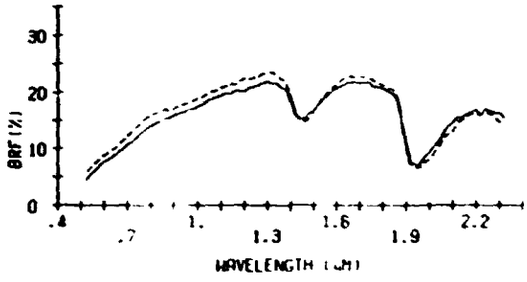
| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| loamy sand | loamy sand |
| 79%S 19%Si 2%C | 78%S 15%Si 7%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 2.46% O.M. | 2.98% O.M. |
| 7.7 meq/100g CEC | 10.2 meq/100g CEC |
| 0.42% $Fe_2O_3$ | 0.54% $Fe_2O_3$ |
| 12.7 MWX* | 12.2 MWX* |




## HILLSDALE(MI)

Typic Hapludalf
coarse-loamy, mixed, mesic
humid zone
glacial till and drift
Jackson Co.

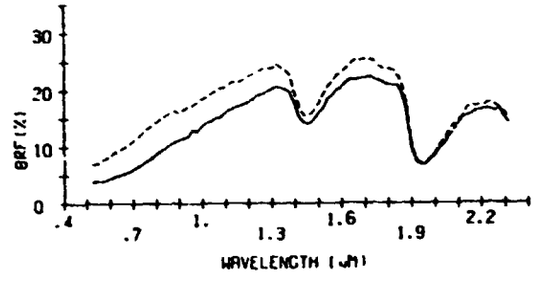
| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 57%S 35%Si 8%C | 75%S 17%Si 8%C |
| 10YR 3/3 (moist) | 7.5YR 4/4 (moist) |
| 10YR 6/3 (dry) | 10YR 6/4 (dry) |
| 1.69% O.M. | 2.02% O.M. |
| 9.2 meq/100g CEC | 9.6 meq/100g CEC |
| 1.11% $Fe_2O_3$ | 0.99% $Fe_2O_3$ |
| 20.0 MWX* | 19.7 MWX* |




## TAYLOR(MN)

Typic Eutroboralf
fine, mixed
subhumid zone
silty clay loam till and
lacustrine silts
Lake-of-the-Woods Co.

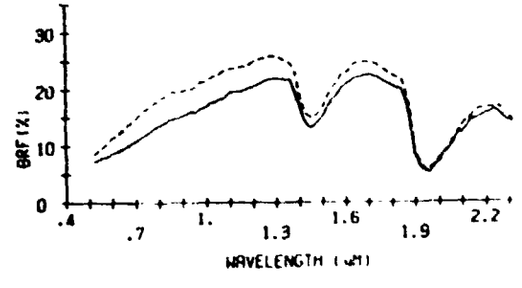
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| loamy sand | fine sandy loam |
| 78%S 16%Si 6%C | 73%S 21%Si 6%C |
| 5YR 2.5/1 (moist) | 10YR 3/2 (moist) |
| 10YR 5/1 (dry) | 10YR 6/1 (dry) |
| 3.72% O.M. | 2.21% O.M. |
| 13.6 meq/100g CEC | 9.2 meq/100g CEC |
| 0.31% $Fe_2O_3$ | 0.23% $Fe_2O_3$ |
| 20.0 MWX* | 23.9 MWX* |




## WARBA(MN)

Typic Glossoboralf
fine, mixed
subhumid zone
calcareous clay loam materials
Cass Co.

| A1-A21 horizon | A1-A21 horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 26%S 68%Si 6%C | 22%S 73%Si 5%C |
| 10YR 4/1 (moist) | 10YR 5/3 (moist) |
| 10YR 7/1 (dry) | 10YR 7/2 (dry) |
| 1.71% O.M. | 1.61% O.M. |
| 9.6 meq/100g CEC | 9.3 meq/100g CEC |
| 0.41% $Fe_2O_3$ | 0.45% $Fe_2O_3$ |
| 32.7 MWX* | 29.3 MWX* |

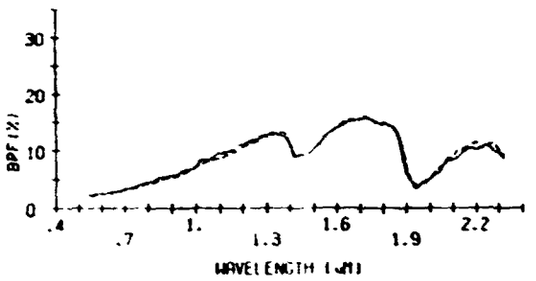


## ROLISS(MN)

Typic Haplaquoll
fine-loamy, mixed, calcareous, frigid
subhumid zone
calcareous glacial till
Grant Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| clay loam | loam |
| 37%S 34%Si 29%C | 46%S 30%Si 24%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 4.03% O.M. | 4.79% O.M. |
| 45.7 meq/100g CEC | 37.6 meq/100g CEC |
| 0.21% $Fe_2O_3$ | 0.32% $Fe_2O_3$ |

39.0 MW%• ___ 38.3 MW%• ---

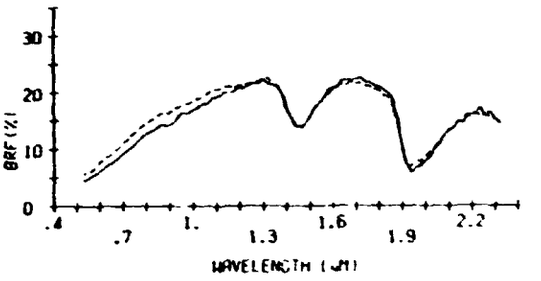



## ANOKA(MN)

Eutric Glossoboralf
coarse-loamy, mixed
subhumid zone
sandy outwash
Isanti Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy fine sand | silt |
| 87%S 7%Si 6%C | 15%S 80%Si 4%C |
| 10YR 3/2 (moist) | 10YR 3/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 0.76% O.M. | 0.71% O.M. |
| 5.2 meq/100g CEC | 3.0 meq/100g CEC |
| 0.42% $Fe_2O_3$ | 0.21% $Fe_2O_3$ |

22.3 MW%• ___ 16.8 MW%• ---

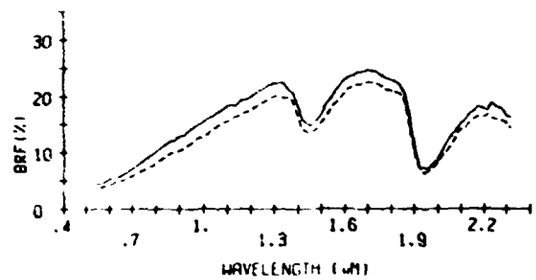



## GRYGLA(MN)

Mollic Haplaquent
sandy over loamy, mixed, nonacid,
frigid
subhumid zone
lacustrine sediments over till
Kittson Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| fine sand | fine sand |
| 90%S 6%Si 4%C | 89%S 7%Si 5%C |
| 10YR 3/1 (moist) | 10YR 3/1 (moist) |
| 10YR 5/1 (dry) | 10YR 5/1 (dry) |
| 2.09% O.M. | 2.83% O.M. |
| 8.1 meq/100g CEC | 9.4 meq/100g CEC |
| 0.13% $Fe_2O_3$ | 0.09% $Fe_2O_3$ |

17.5 MW%• ___ 27.8 MW%• ---

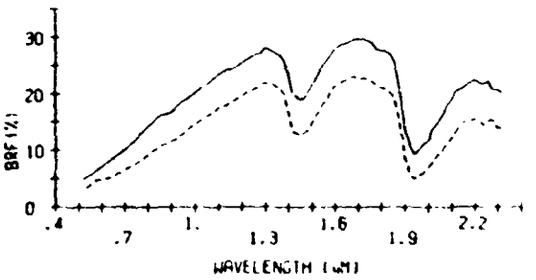



## REDBY(MN)

Aquic Udipsamment
mixed, frigid
subhumid zone
sands of glacial origin
Kittson Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| fine sand | fine sand |
| 94%S 3%Si 3%C | 88%S 8%Si 5%C |
| 10YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 5/2 (dry) | 10YR 4/2 (dry) |
| 0.90% O.M. | 1.37% O.M. |
| 5.4 meq/100g CEC | 11.1 meq/100g CEC |
| 0.14% $Fe_2O_3$ | 0.10% $Fe_2O_3$ |

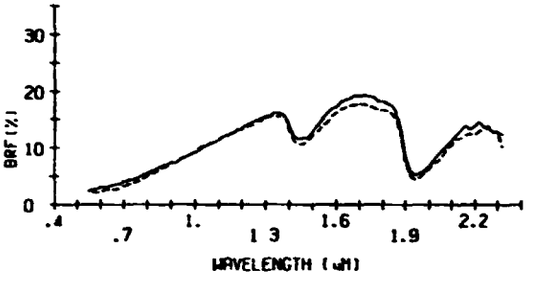
10.0 MW%• ___ 19.3 MW%• ---



## CORMANT(MN)

Mollic Psammaquent
mixed, frigid
subhumid zone
sandy sediments
Lake-of-the-Woods Co.

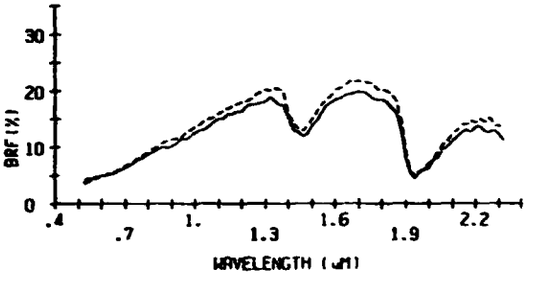
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| loamy fine sand | loamy fine sand |
| 82%S 11%Si 7%C | 83%S 10%Si 7%C |
| 10YR 2/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/2 (dry) | 10YR 4/1 (dry) |
| 4.38% O.M. | 8.93% O.M. |
| 23.2 meq/100g CEC | 52.7 meq/100g CEC |
| 0.39% $Fe_2O_3$ | 0.08% $Fe_2O_3$ |
| 28.7 MWX•____ | 38.5 MWX•____ |




## BUSE(MN)

Udorthentic Haploboroll
fine-loamy, mixed
subhumid zone
glacial till
Ottertail Co.

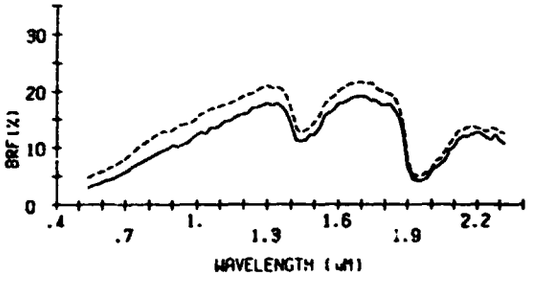
| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| loam | loam |
| 43%S 33%Si 24%C | 36%S 41%Si 25%C |
| 10YR 3/1 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 3.51% O.M. | 3.92% O.M. |
| 29.3 meq/100g CEC | 30.0 meq/100g CEC |
| 0.91% $Fe_2O_3$ | 1.01% $Fe_2O_3$ |
| 30.0 MWX•____ | 33.9 MWX•____ |




## LANGHEI(MN)

Typic Udorthent
fine-loamy, mixed, calcareous, frigid
subhumid zone
calcareous glacial till
Pope Co.

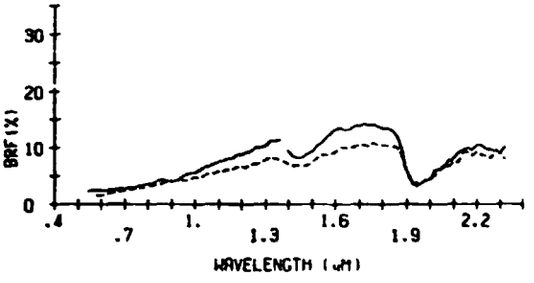
| Ap horizon | Ap horizon |
|---|---|
| D slope | C slope |
| s. excess. drained | s. excess. drained |
| loam | loam |
| 29%S 48%Si 23%C | 38%S 44%Si 18%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/3 (dry) |
| 3.00% O.M. | 2.52% O.M. |
| 25.1 meq/100g CEC | 25.3 meq/100g CEC |
| 0.71% $Fe_2O_3$ | 0.77% $Fe_2O_3$ |
| 35.0 MWX•____ | 29.7 MWX•____ |




## FLOM(MN)

Typic Haplaquoll
fine-loamy, mixed, frigid
subhumid zone
glacial till
Stevens Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silty clay loam | silty clay loam |
| 18%S 47%Si 35%C | 11%S 52%Si 37%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 6.06% O.M. | 7.76% O.M. |
| 53.6 meq/100g CEC | 63.6 meq/100g CEC |
| 0.30% $Fe_2O_3$ | 0.45% $Fe_2O_3$ |
| 47.4 MWX•____ | 50.7 MWX•____ |

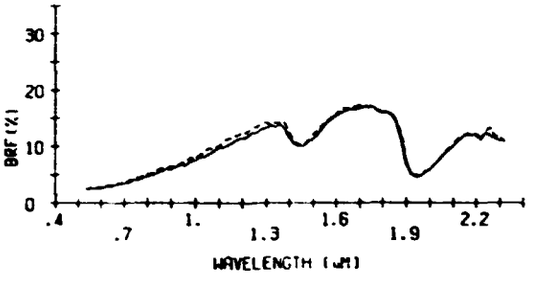


## NICOLLET(MN)

Aquic Hapludoll
fine-loamy, mixed, mesic
subhumid zone
calcareous loam till
Martin Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| loam | loam |
| 46%S 29%Si 25%C | 43%S 31%Si 26%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 4.13% O.M. | 4.14% O.M. |
| 30.2 meq/100g CEC | 27.2 meq/100g CEC |
| 0.89% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

31.7 MW%•____ 29.8 MW%•----

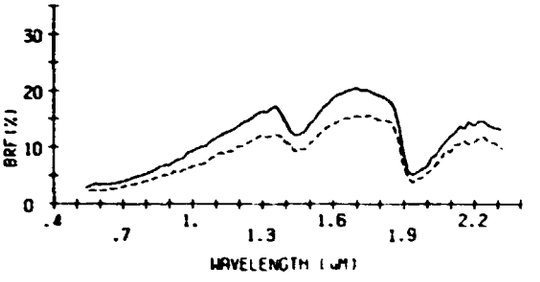



## CANISTEO(MN)

Typic Haplaquoll
fine-loamy, mixed, calcareous, mesic
subhumid zone
glacial till
Steele Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| loam | loam |
| 39%S 38%Si 22%C | 35%S 38%Si 27%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 3/1 (dry) |
| 4.98% O.M. | 8.94% O.M. |
| 33.7 meq/100g CEC | 42.0 meq/100g CEC |
| 0.30% $Fe_2O_3$ | 0.33% $Fe_2O_3$ |

36.3 MW%•____ 40.8 MW%•----

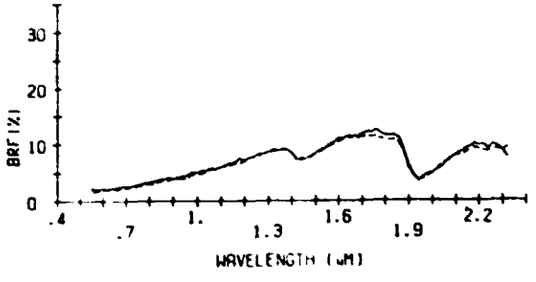



## GLENCOE(MN)

Cumulic Haplaquoll
fine-loamy, mixed, mesic
subhumid zone
loamy sediments and till
Steele Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| clay loam | silty clay loam |
| 35%S 37%Si 28%C | 15%S 38%Si 37%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 8.41% O.M. | 9.93% O.M. |
| 43.5 meq/100g CEC | 50.7 meq/100g CEC |
| 0.30% $Fe_2O_3$ | 0.59% $Fe_2O_3$ |

41.0 MW%•____ 43.7 MW%•----

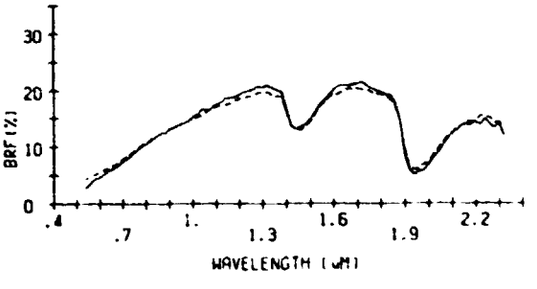



## HAYDEN(MN)

Typic Hapludalf
fine-loamy, mixed, mesic
subhumid zone
calcareous loam till
Rice Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| loam | loam |
| 40%S 40%Si 20%C | 47%S 43%Si 10%C |
| 10YR 3/2 (moist) | 10YR 4/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 2.16% O.M. | 2.02% O.M. |
| 20.0 meq/100g CEC | 12.5 meq/100g CEC |
| 0.84% $Fe_2O_3$ | 0.67% $Fe_2O_3$ |

28.0 MW%•____ 27.1 MW%•----

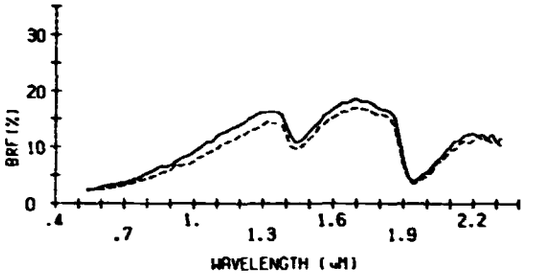


## CORDOVA(MN)

Typic Argiaquoll
fine-loamy, mixed, mesic
subhumid zone
calcareous loamy till
Waseca Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| clay loam | clay loam |
| 26%S 41%Si 33%C | 34%S 34%Si 32%C |
| 10YR 2/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/2 (dry) | 10YR 3/1 (dry) |
| 4.37% O.M. | 4.32% O.M. |
| 35.8 meq/100g CEC | 40.4 meq/100g CEC |
| 0.69% $Fe_2O_3$ | 0.49% $Fe_2O_3$ |

39.3 MW%•____ 37.1 MW%•----

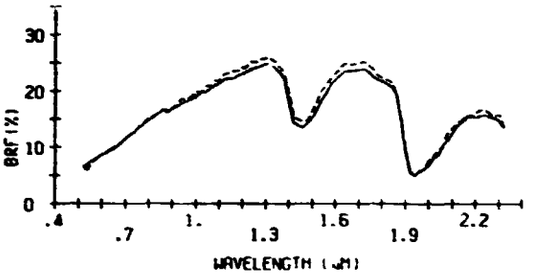



## SUSQUEHANNA(MS)

Vertic Paleudalf
fine, montmorillonitic, thermic
humid zone
coastal plain clays
George Co.

| ____ | ____ |
|---|---|
| Al horizon | Al horizon |
| C slope | C slope |
| s. poorly drained | s. poorly drained |
| fine sandy loam | silt loam |
| 51%S 42%Si 7%C | 39%S 50%Si 11%C |
| 10YR 4/2 (moist) | 10YR 4/3 (moist) |
| 10YR 7/2 (dry) | 10YR 6/3 (dry) |
| 1.96% O.M. | 2.12% O.M. |
| 8.5 meq/100g CEC | 11.6 meq/100g CEC |
| 0.73% $Fe_2O_3$ | 0.97% $Fe_2O_3$ |

29.8 MW%•____ 33.9 MW%•----

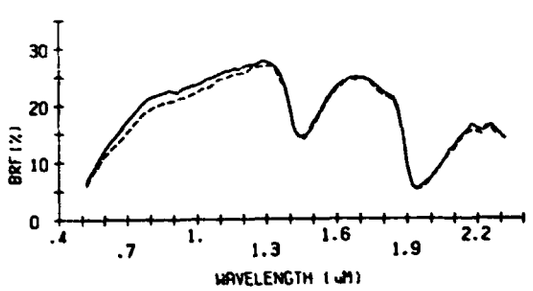



## GRENADA(MS)

Glossic Fragiudalf
fine-silty, mixed, thermic
humid zone
loess
Grenada Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 2%S 84%Si 14%C | 6%S 80%Si 14%C |
| 10YR 5/6 (moist) | 10YR 5/6 (moist) |
| 10YR 6/6 (drv) | 10YR 6/6 (dry) |
| 0.60% O.M. | 1.55% O.M. |
| 11.3 meq/100g CEC | 13.2 meq/100g CEC |
| 1.26% $Fe_2O_3$ | 1.44% $Fe_2O_3$ |

33.0 MW%•____ 34.6 MW%•----

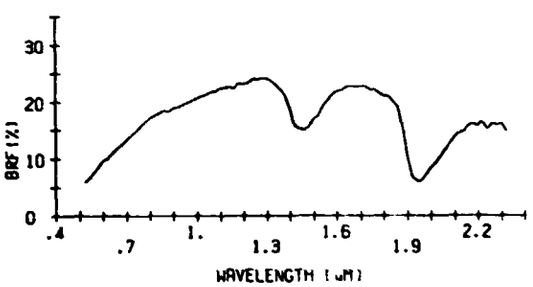



## UNION(MO)

Typic Hapludalf
very-fine, mixed, mesic
humid zone
limestone and shale residuum
Moniteau Co.

| ____ |
|---|
| Ap horizon |
| C slope |
| well drained |
| silt loam |
| 1%S 83%Si 16%C |
| 10YR 4/4 (moist) |
| 10YR 6/4 (dry) |
| 1.45% O.M. |
| 12.0 meq/100g CEC |
| 0.98% $Fe_2O_3$ |

33.4 MW%•____

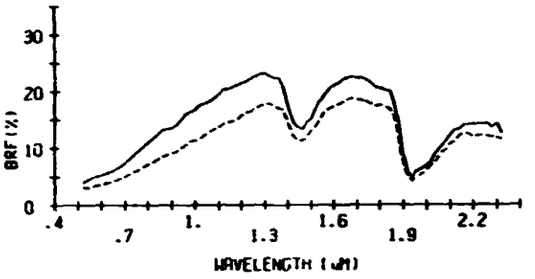


## KILWINNING(MO)

Vertic Ochraqualf
fine, montmorillonitic, mesic
humid zone
thick loess over till
Scotland Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| s. poorly drained | s. poorly drained |
| silt loam | silt loam |
| 5%S 70%Si 25%C | 12%S 70%Si 21%C |
| 10YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 5/2 (dry) | 10YR 4/2 (dry) |
| 2.54% O.M. | 3.57% O.M. |
| 25.8 meq/100g CEC | 31.3 meq/100g CEC |
| 1.63% $Fe_2O_3$ | 1.17% $Fe_2O_3$ |

39.5 MW%•____ 42.4 MW%•----

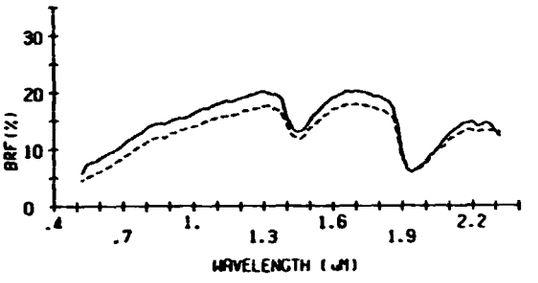



## CHINOOK(MT)

Aridic Haploboroll
coarse-loamy, mixed
semiarid zone
fine sandy loam alluvium
Hill Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| v. fine sandy loam | fine sandy loam |
| 52%S 41%Si 6%C | 67%S 26%Si 7%C |
| 2.5YR 4/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.52% O.M. | 2.67% O.M. |
| 14.4 meq/100g CEC | 10.3 meq/100g CEC |
| 0.50% $Fe_2O_3$ | 0.67% $Fe_2O_3$ |

26.6 MW%•____ 25.1 MW%•----

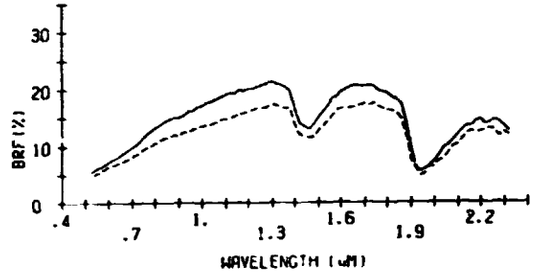



## ELLOAM(MT)

Borollic Natrargid
fine, montmorillonitic
semiarid zone
calcareous loam till
Hill Co.

| A2 horizon | A2 horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| loam | silt loam |
| 28%S 48%Si 24%C | 32%S 53%Si 15%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 5/3 (dry) |
| 4.36% O.M. | 3.56% O.M. |
| 22.4 meq/100g CEC | 18.4 meq/100g CEC |
| 0.72% $Fe_2O_3$ | 0.61% $Fe_2O_3$ |

42.2 MW%•____ 37.0 MW%•----

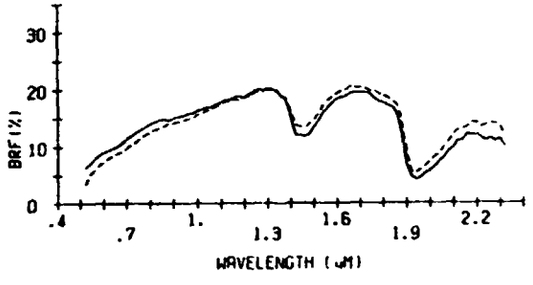



## ETHRIDGE(MT)

Aridic Argiboroll
fine, montmorillonitic
semiarid zone
lacustrine sediments
Liberty Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| clay loam | silty clay loam |
| 29%S 34%Si 37%C | 16%S 50%Si 34%C |
| 2.5Y 4/2 (moist) | 10YR 3/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.77% O.M. | 3.48% O.M. |
| 23.3 meq/100g CEC | 28.0 meq/100g CEC |
| 0.46% $Fe_2O_3$ | 0.98% $Fe_2O_3$ |

36.0 MW%•____ 38.0 MW%•----

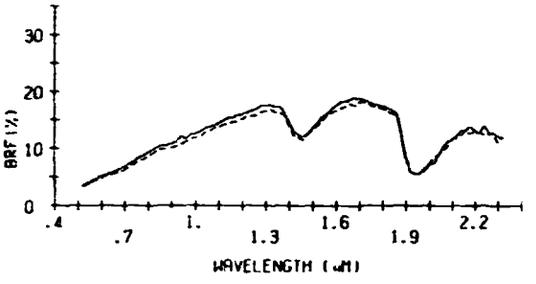


## LIHEN(MT)

Entic Haploboroll
sandy, mixed
semiarid zone
wind or water deposited sands
Roosevelt Co.

| Ap horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy sand | sandy loam |
| 86%S 9%Si 5%C | 74%S 16%Si 10%C |
| 10YR 4/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 1.25% O.M. | 1.45% O.M. |
| 7.2 meq/100g CEC | 9.2 meq/100g CEC |
| 0.64% $Fe_2O_3$ | 0.80% $Fe_2O_3$ |

20.4 MW%·____ 16.0 MW%·----

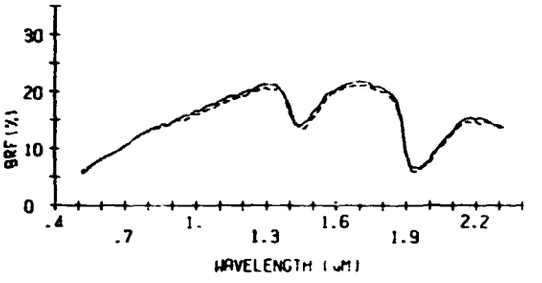



## JOPLIN(MT)

Aridic Argiboroll
fine-loamy, mixed
semiarid zone
loamy glacial till
Toole Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 31%S 50%Si 19%C | 35%S 46%Si 19%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 1.94% O.M. | 2.06% O.M. |
| 18.4 meq/100g CEC | 17.7 meq/100g CEC |
| 1.00% $Fe_2O_3$ | 1.17% $Fe_2O_3$ |

27.8 MW%·____ 28.6 MW%·----

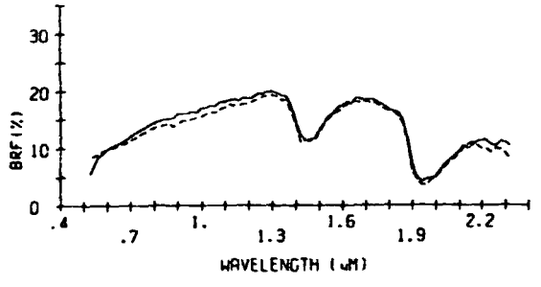



## MARIAS(MT)

Ustertic Torriorthent
fine, montmorillonitic, calcareous,
frigid
semiarid zone
clay residuum
Valley Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| clay | clay |
| 14%S 37%Si 49%C | 3%S 34%Si 63%C |
| 10YR 5/2 (moist) | 2.5Y 4/2 (moist) |
| 2.5Y 6/2 (dry) | 2.5Y 5/2 (dry) |
| 2.08% O.M. | 1.60% O.M. |
| 40.7 meq/100g CEC | 46.3 meq/100g CEC |
| 1.05% $Fe_2O_3$ | 0.98% $Fe_2O_3$ |

43.4 MW%·____ 43.8 MW%·----

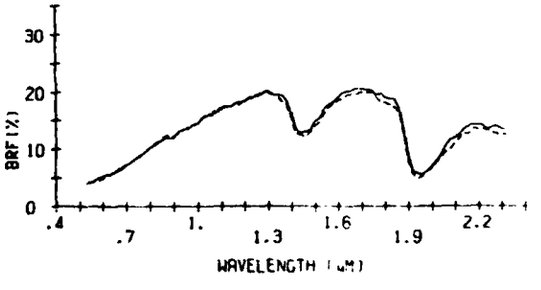



## ABSAROKEE(MT)

Typic Argiboroll
fine, montmorillonitic
semiarid zone
calcareous clay loam residuum
Yellowstone Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| v. fine sandy loam | silt loam |
| 54%S 33%Si 14%C | 26%S 54%Si 20%C |
| 10YR 3/1 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 5.42% O.M. | 5.69% O.M. |
| 15.0 meq/100g CEC | 22.3 meq/100g CEC |
| 0.84% $Fe_2O_3$ | 0.79% $Fe_2O_3$ |

39.2 MW%·____ 49.2 MW%·----

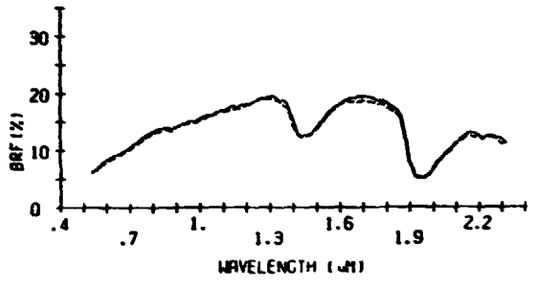


## KEISER(MT)

Ustollic Haplargid
fine-silty, mixed, mesic
semiarid zone
calcareous silt loam material
Yellowstone Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 38%S 37%Si 25%C | 34%S 42%Si 24%C |
| 10YR 4/3 (moist) | 10YR 4/2 (moist) |
| 10YR 4/3 (dry) | 10YR 5/3 (dry) |
| 1.14% O.M. | 1.23% O.M. |
| 28.0 meq/100g CEC | 21.1 meq/100g CEC |
| 0.81% $Fe_2O_3$ | 0.89% $Fe_2O_3$ |

26.8 MWZ•____ 29.6 MWZ•____

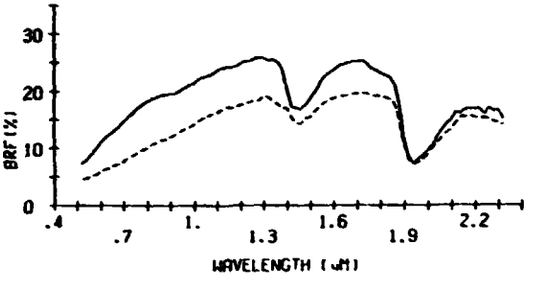



## GREENOUGH(MT)

Typic Eutroboralf
fine-silty, mixed
subhumid zone
thin glacial till over bedrock
Missoula Co.

| ____ | ____ |
|---|---|
| A2 horizon | A2 horizon |
| B slope | B slope |
| well drained | well drained |
| loamy sand | silty clay |
| 84%S 9%Si 7%C | 1%S 52%Si 47%C |
| 10YR 5/4 (moist) | 5YR 3/1 (moist) |
| 10YR 6/3 (dry) | 10YR 5/1 (dry) |
| 1.13% O.M. | 5.37% O.M. |
| 10.1 meq/100g CEC | 27.2 meq/100g CEC |
| 1.23% $Fe_2O_3$ | 1.16% $Fe_2O_3$ |

25.3 MWZ•____ 42.8 MWZ•____

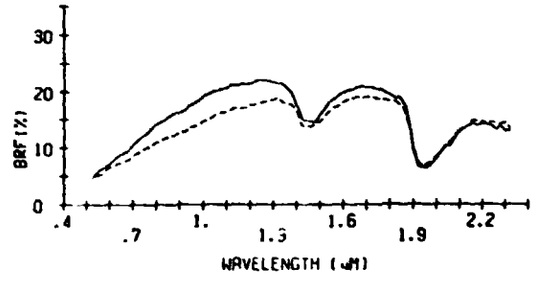



## TARKIO(MT)

Typic Eutroboralf
very-fine, mixed
subhumid zone
glacial lake terrace deposits
Missoula Co.

| ____ | ____ |
|---|---|
| A2 horizon | A2 horizon |
| A slope | A slope |
| well drained | well drained |
| clay loam | silty clay loam |
| 34%S 33%Si 33%C | 2%S 58%Si 39%C |
| 5YR 4/2 (moist) | 7.5YR 4/2 (moist) |
| 7.5YR 6/2 (dry) | 10YR 6/2 (dry) |
| 3.00% O.M. | 4.43% O.M. |
| 20.7 meq/100g CEC | 25.7 meq/100g CEC |
| 0.86% $Fe_2O_3$ | 1.20% $Fe_2O_3$ |

36.6 MWZ•____ 47.7 MWZ•____

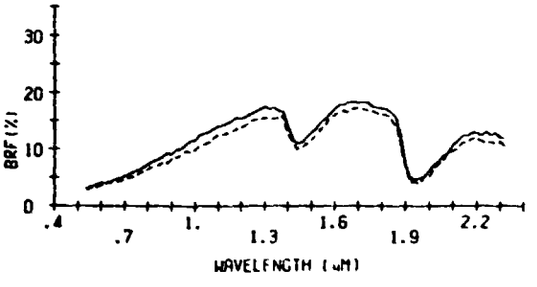



## HORD(NE)

Pachic Haplustoll
fine-silty, mixed, mesic
subhumid zone
calcareous silt loam
Buffalo Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 21%S 59%Si 20%C | 15%S 64%Si 21%C |
| 10YR 3/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 2.37% O.M. | 2.85% O.M. |
| 23.8 meq/100g CEC | 26.4 meq/100g CEC |
| 0.49% $Fe_2O_3$ | 0.41% $Fe_2O_3$ |

36.2 MWZ•____ 37.9 MWZ•____

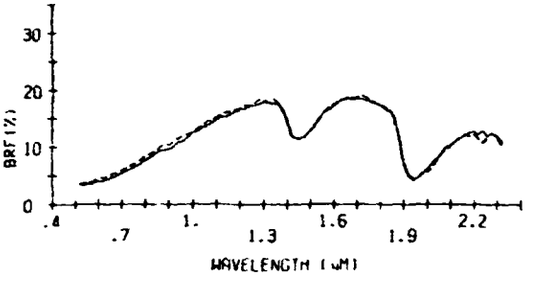


## HASTINGS(NE)

Udic Argiustoll
fine, montmorillonitic, mesic
subhumid zone
loess
Clay Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 5%S 74%Si 22%C | 10%S 65%Si 25%C |
| 5YR 3/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.05% O.M. | 2.58% O.M. |
| 22.1 meq/100g CEC | 20.8 meq/100g CEC |
| 0.67% $Fe_2O_3$ | 0.55% $Fe_2O_3$ |

38.7 MW%•____ 37.0 MW%•----

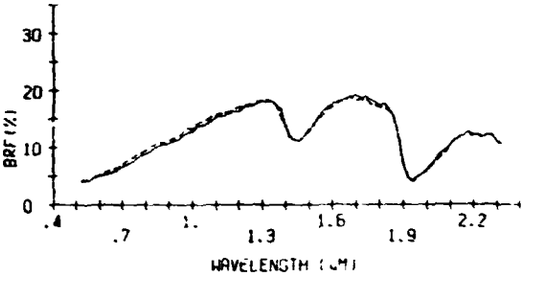



## ALLIANCE(NE)

Aridic Argiustoll
fine-silty, mixed, mesic
semiarid zone
loess and calcareous residuum
Dawes Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 38%S 45%Si 17%C | 38%S 47%Si 15%C |
| 7.5YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 5/2 (dry) |
| 1.94% O.M. | 1.75% O.M. |
| 22.9 meq/100g CEC | 19.5 meq/100g CEC |
| 0.35% $Fe_2O_3$ | 0.42% $Fe_2O_3$ |

30.6 MW%•____ 39.5 MW%•----

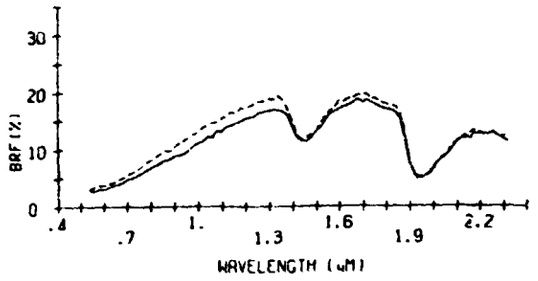



## JANSEN(NE)

Typic Argiustoll
fine-loamy over sandy or sandy-
skeletal, mixed, mesic
subhumid zone
loamy alluvium or loess over sand
Holt Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 38%S 34%Si 19%C | 44%S 42%Si 14%C |
| 10YR 2/1 (moist) | 5YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.31% O.M. | 2.12% O.M. |
| 17.8 meq/100g CEC | 19.9 meq/100g CEC |
| 0.57% $Fe_2O_3$ | 0.46% $Fe_2O_3$ |

31.5 MW%•____ 39.9 MW%•----

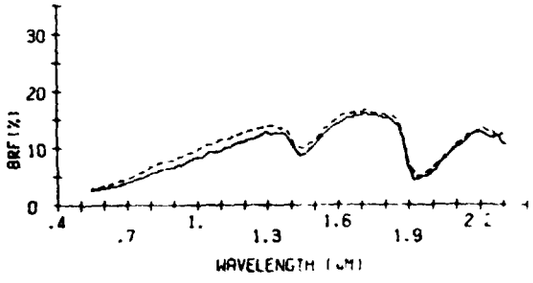



## LOUP(NE)

Typic Haplaquoll
sandy, mixed, mesic
subhumid zone
sandy alluvium
Thomas Co.

| All horizon | All horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| loamy fine sand | fine sandy loam |
| 78%S 14%Si 8%C | 72%S 18%Si 10%C |
| 7.5Y 2/0 (moist) | 10YR 2/1 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 5.51% O.M. | 9.51% O.M. |
| 30.5 meq/100g CEC | 35.2 meq/100g CEC |
| 0.07% $Fe_2O_3$ | 0.07% $Fe_2O_3$ |

31.8 MW%•---- 39.0 MW%•

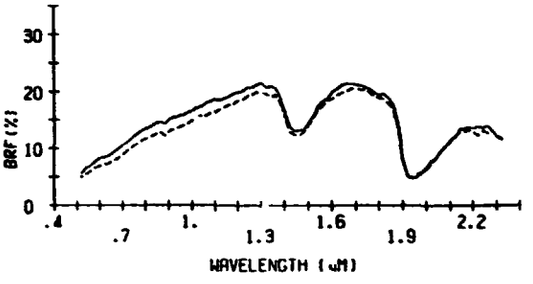


## CROFTON(NE)

Typic Ustorthent
fine-silty, mixed, calcareous, mesic
subhumid zone
silty loess
Thurston Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| D slope | D slope |
| well drained | well drained |
| silt loam | silt loam |
| 2%S 71%Si 27%C | 4%S 70%Si 26%C |
| 10YR 4/3 (moist) | 7.5YR 4/2 (moist) |
| 10YR 5/4 (dry) | 10YR 5/3 (dry) |
| 1.98% O.M. | 2.75% O.M. |
| 39.2 meq/100g CEC | 40.6 meq/100g CEC |
| 1.17% $Fe_2O_2$ | 1.01% $Fe_2O_3$ |

38.7 MW%•——  36.8 MW%•----

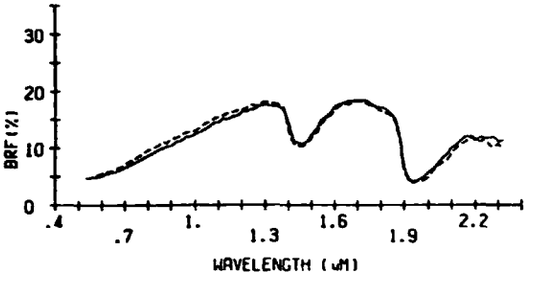



## GIBBON(NE)

Fluvaquentic Haplaquoll
fine-silty, mixed, calcareous, mesic
subhumid zone
calcareous alluvium
Webster Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silty clay loam | silty clay loam |
| 12%S 55%Si 33%C | 7%S 65%Si 28%C |
| 10YR 3/1 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 2.73% O.M. | 3.00% O.M. |
| 42.2 meq/100g CEC | 32.5 meq/100g CEC |
| 0.41% $Fe_2O_3$ | 0.54% $Fe_2O_3$ |

46.4 MW%•——  43.2 MW%•----

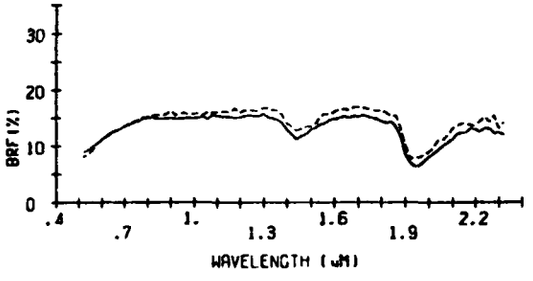



## APPIAN(NV)

Typic Natrargid
fine-loamy over sandy or sandy-
skeletal, mixed, mesic
arid zone
loamy alluvium over lacustrine sands
Churchill Co.

| ——— | ---- |
|---|---|
| A11-A12 horizon | A11-A12 horizon |
| A slope | A slope |
| well drained | well drained |
| sandy loam | loamy sand |
| 76%S 18%Si 7%C | 35%S 9%Si 5%C |
| 10YR 5/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 0.13% O.M. | 0.0% O.M. |
| 8.5 meq/100g CEC | 10.5 meq/100g CEC |
| 0.34% $Fe_2O_3$ | 0.26% $Fe_2O_3$ |

16.1 MW%•——  9.3 MW%•----

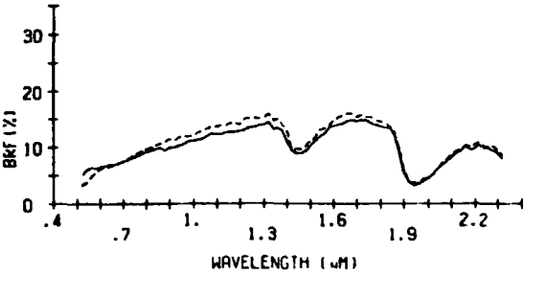



## CARSON(NV)

Vertic Haplaquoll
very-fine, montmorillonitic, mesic
arid zone
clayey mixed alluvium
Churchill Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| clay | clay |
| 10%S 24%Si 65%C | 15%S 27%Si 58%C |
| 10YR 4/1 (moist) | 10YR 4/1 (moist) |
| 10YR 5/1 (dry) | 10YR 4/1 (dry) |
| 1.93% O.M. | 1.88% O.M. |
| 54.4 meq/100g CEC | 52.1 meq/100g CEC |
| 0.48% $Fe_2O_3$ | 0.43% $Fe_2O_3$ |

56.7 MW%•——  51.6 MW%•----

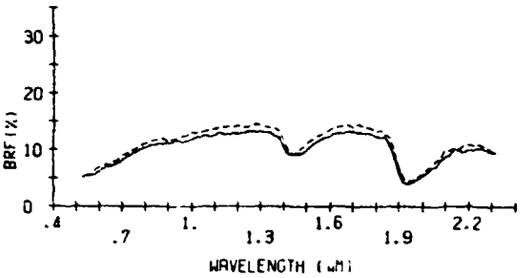


## DIA(NV)

Fluvaquentic Haploxeroll
fine-loamy over sandy-skeletal, mixed, mesic
arid zone
loamy over sandy alluvium
Churchill Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| loam | fine sandy loam |
| 50%S 32%Si 18%C | 59%S 24%Si 16%C |
| 10YR 4/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 2.16% O.M. | 1.18% O.M. |
| 23.1 meq/100g CEC | 26.7 meq/100g CEC |
| 0.67% $Fe_2O_3$ | 0.51% $Fe_2O_3$ |

30.9 MW%·____ 29.2 MW%·----

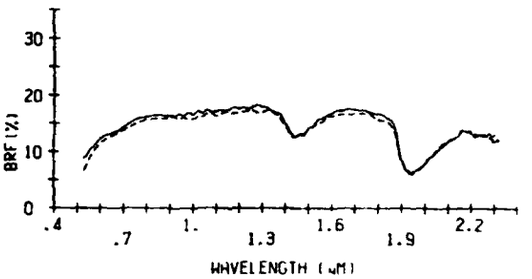



## PIROUETTE(NV)

Typic Nadurargid
loamy-skeletal, mixed, mesic
arid zone
residuum from tuffs and basalts
Churchill Co.

| ____ | ---- |
|---|---|
| A1 horizon | A1 horizon |
| B slope | B slope |
| well drained | well drained |
| loam | fine sandy loam |
| 49%S 35%Si 15%C | 65%S 26%Si 9%C |
| 10YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 7/2 (dry) | 10YR 7/2 (dry) |
| 0.90% O.M. | 0.64% O.M. |
| 32.4 meq/100g CEC | 30.4 meq/100g CEC |
| 0.49% $Fe_2O_3$ | 0.42% $Fe_2O_3$ |

21.2 MW%·____ 3.1 MW%·----

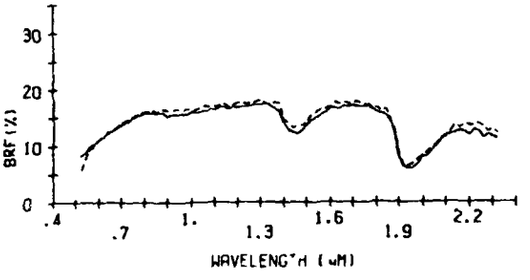



## BLACKHAWK(NV)

Entic Durorthid
loamy, mixed, mesic, shallow
arid zone
loess over mixed alluvium
Pershing Co.

| ____ | ---- |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 33%S 58%Si 9%C | 31%S 59%Si 10%C |
| 10YR 5/4 (moist) | 10YR 4/2 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 0.74% O.M. | 0.40% O.M. |
| 17.3 meq/100g CEC | 20.0 meq/100g CEC |
| 0.44% $Fe_2O_3$ | 0.51% $Fe_2O_3$ |

26.8 MW%·____ 26.2 MW%·----

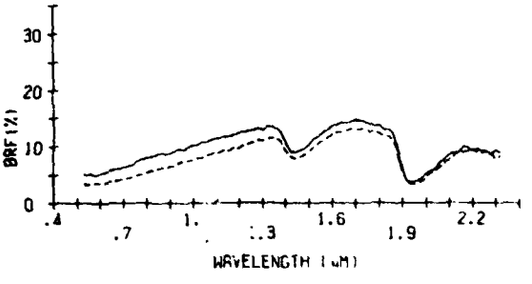



## HUMBOLDT(NV)

Fluvaquentic Haplaquoll
fine, montmorillonitic, calcareous, mesic
arid zone
silty mixed alluvium wit' volcanic ash
Pershing Co.

| ___ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay | clay |
| 3%S 47%Si 50%C | 6%S 38%Si 56%C |
| 10YR 3/1 (moist) | 10YR 3/1 (moist) |
| 10YR 5/1 (dry) | 10YR 4/1 (dry) |
| 4.48% O.M. | 4.83% O.M. |
| 47.8 meq/100g CEC | 72.4 meq/100g CEC |
| 0.25% $Fe_2O_3$ | 0.26% $Fe_2O_3$ |

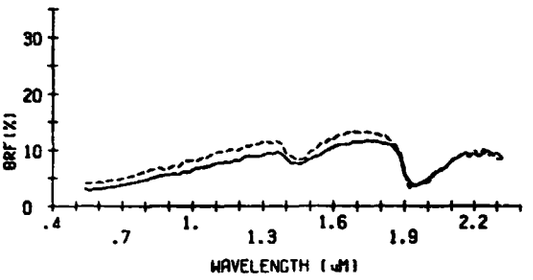
56.0 MW%·____ 66.0 MW%·----



## LOVELOCK( NV )

Aquic Natrixeroll
fine, montmorillonitic, calcareous, mesic
arid zone
calcareous loamy alluvium
Pershing Co.

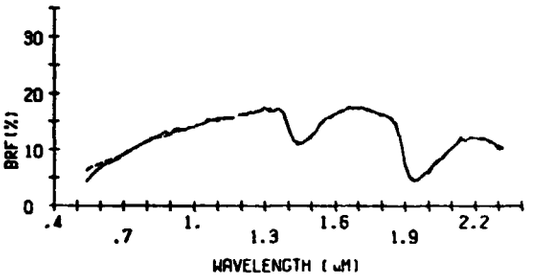
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay | silty clay |
| 12%S 42%Si 46%C | 14%S 42%Si 44%C |
| 10YR 2/1 (moist) | 10YR 3/1 (moist) |
| 10YR 4/1 (dry) | 10YR 5/1 (dry) |
| 7.91% O.M. | 6.96% O.M. |
| 88.0 meq/100g CEC | 72.9 meq/100g CEC |
| 0.30% $Fe_2O_3$ | 0.25% $Fe_2O_3$ |
| 86.6 MW%·____ | 71.1 MW%·____ |




## PLACERITOS( NV )

Aquic Xerofluvent
fine-silty, mixed, calcareous, mesic
arid zone
mixed alluvium
Pershing Co.

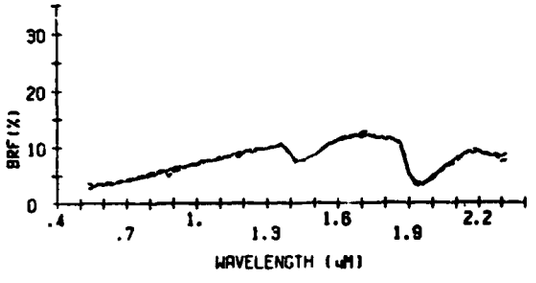
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silt loam | sandy clay loam |
| 26%S 54%Si 20%C | 49%S 27%Si 24%C |
| 10YR 4/2 (moist) | 10YR 4/1 (moist) |
| 10YR 6/2 (dry) | 10YR 6/2 (dry) |
| 1.36% O.M. | 1.13% O.M. |
| 34.9 meq/100g CEC | 28.9 meq/100g CEC |
| 0.22% $Fe_2O_3$ | 0.19% $Fe_2O_3$ |
| 37.6 MW%·____ | 32.4 MW%·____ |




## RYEPATCH( NV )

Vertic Haplaquoll
very-fine, montmorillonitic, calcareous, mesic
arid zone
calcareous mixed alluvium
Pershing Co.

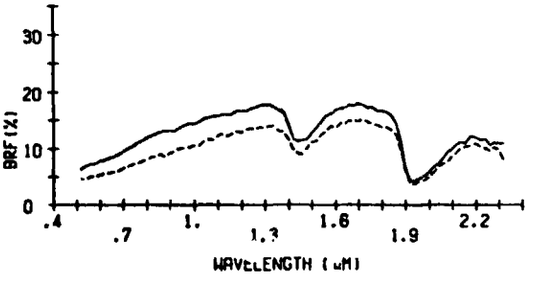
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| clay | silty clay |
| 7%S 31%Si 62%C | 3%S 45%Si 52%C |
| 10YR 3/1 (moist) | 7.5YR 3/0 (moist) |
| 10YR 5/1 (dry) | 10YR 5/1 (dry) |
| 4.99% O.M. | 6.40% O.M. |
| 77.3 meq/100g CEC | 66.2 meq/100g CEC |
| 0.27% $Fe_2O_3$ | 0.26% $Fe_2O_3$ |
| 59.9 MW%·____ | 58.6 MW%·____ |




## SONOMA( NV )

Aeric Fluvaquent
fine-silty, mixed, calcareous
arid zone
calcareous mixed alluvium
Pershing Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| clay loam | silty clay |
| 20%S 43%Si 36%C | 9%S 46%Si 45%C |
| 10YR 4/1 (moist) | 10YR 4/1 (moist) |
| 10YR 6/1 (dry) | 10YR 5/1 (dry) |
| 2.80% O.M. | 2.70% O.M. |
| 44.9 meq/100g CEC | 53.9 meq/100g CEC |
| 0.23% $Fe_2O_3$ | 0.26% $Fe_2O_3$ |
| 42.0 MW%·____ | 52.8 MW%·____ |

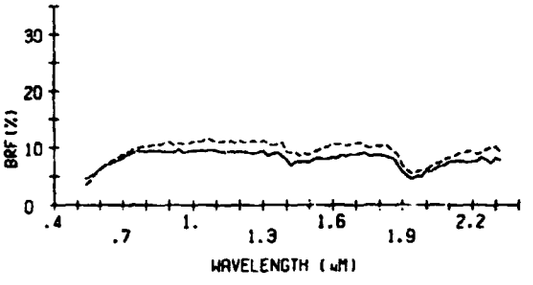


## INDIAN CREEK(NV)

Xerollic Durargid
clayey, montmorillonitic, mesic,
shallow
semiarid zone
mixed alluvium
Douglass Co.

| ——— | ---- |
|---|---|
| A11-A12 horizon | A11-A12 horizon |
| B slope | B slope |
| well drained | well drained |
| loam | sandy loam |
| 27%S 46%Si 26%C | 55%S 38%Si 7%C |
| 7.5YR 3/2 (moist) | 5YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 2.45% O.M. | 0.87% O.M. |
| 20.3 meq/100g CEC | 8.9 meq/100g CEC |
| 1.37% $Fe_2O_3$ | 1.19% $Fe_2O_3$ |

33.6 MW%·——  18.8 MW%·----

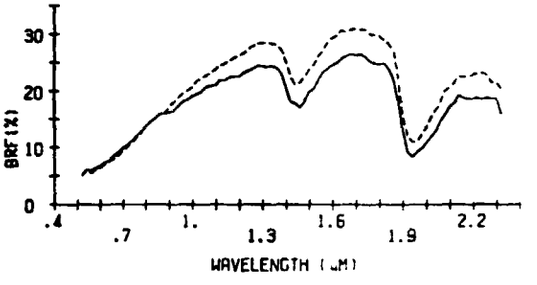



## MOTTSVILLE(NV)

Torripsammentic Haploxeroll
sandy, mixed, mesic
semiarid zone
sandy alluvium from granitic sources
Douglass Co.

| ——— | ---- |
|---|---|
| All horizon | All horizon |
| C slope | C slope |
| excessively drained | excessively drained |
| coarse sand | coarse sand |
| 90%S 8%Si 2%C | 89%S 10%Si 1%C |
| 10YR 4/2 (moist) | 10YR 4/1 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.59% O.M. | 2.87% O.M. |
| 6.6 meq/100g CEC | 6.5 meq/100g CEC |
| 0.37% $Fe_2O_3$ | 0.32% $Fe_2O_3$ |

12.1 MW%·——  10.0 MW%·----

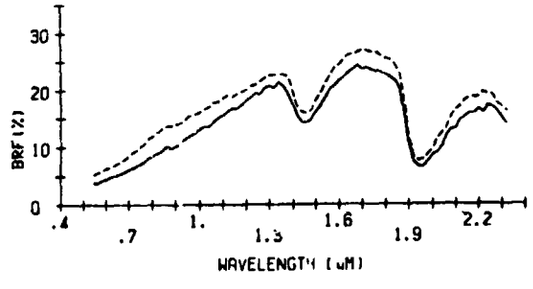



## OPHIR(NV)

Typic Haplaquoll
sandy, mixed, mesic
semiarid zone
mixed alluvium
Douglass Co.

| ——— | - -- |
|---|---|
| A1p-A12 horizon | A1p-A12 horizon |
| B slope | B slope |
| poorly drained | poorly drained |
| sand | loamy coarse sand |
| 89%S 8%Si 3%C | 83%S 14%Si 4%C |
| 7.5YR 3/0 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/3 (dry) |
| 3.72% O.M. | 1.33% O.M. |
| 11.9 meq/100g CEC | 9.7 meq/100g CEC |
| 0.34% $Fe_2O_3$ | 0.74% $Fe_2O_3$ |

21.6 MW%·——  17.0 MW%·----

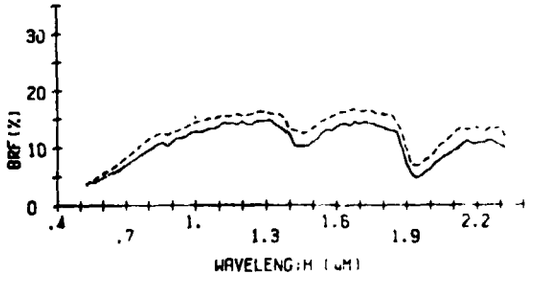



## ORMSBY(NV)

Aquic Durorthidic Xeropsamment
mixed, mesic
semiarid zone
mixed sandy alluvium
Douglass Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| sandy loam | loamy sand |
| 66%S 28%Si 6%C | 82%S 13%Si 5%C |
| 5YR 2.5/2 (moist) | 10YR 3/3 (moist) |
| 10YR 5/2 (dry) | 10YR 4/2 (dry) |
| 2.25% O.M. | 0.65% O.M. |
| 11.6 meq/100g CEC | 7.7 meq/100g CEC |
| 0.77% $Fe_2O_3$ | 0.67% $Fe_2O_3$ |

20.4 MW%·——  9.5 MW%·----

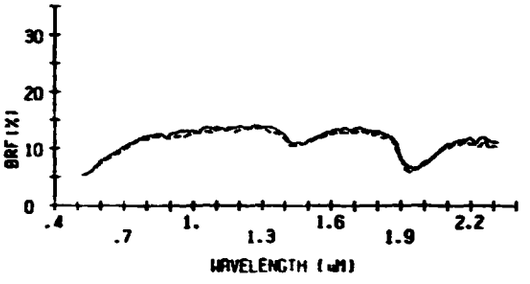


## RENO(NV)

Abruptic Xerollic Durargid
fine, montmorillonitic, mesic
semiarid zone
mixed pediesediments and
fluvial sediments
Douglass Co.

| ____ | ____ |
|---|---|
| A1-A2 horizon | A1-A2 horizon |
| B slope | B slope |
| well drained | well drained |
| sandy loam | sandy loam |
| 75%S 19%Si 6%C | 70%S 24%Si 7%C |
| 7.5YR 4/2 (moist) | 10YR 3/3 (moist) |
| 10YR 6/2 (dry) | 10YR 6/3 (dry) |
| 0.54% O.M. | 1.26% O.M. |
| 9.1 meq/100g CEC | 10.4 meq/100g CEC |
| 1.08% $Fe_2O_3$ | 1.41% $Fe_2O_3$ |

15.9 MWZ•____ 20.7 MWZ•----

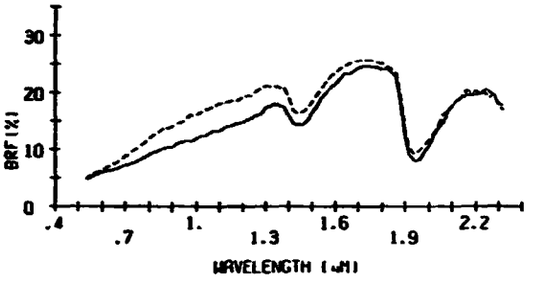



## TOIYABE(NV)

Typic Xeropsamment
mixed, frigid, shallow
subhumid zone
residuum from granite and granodiorite
Douglass Co.

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| E slope | E slope |
| excessively drained | excessively drained |
| loamy sand | loamy coarse sand |
| 76%S 21%Si 3%C | 82%S 16%Si 2%C |
| 10YR 3/1 (moist) | 10YR 3/2 (moist) |
| 10YR 5/1 (dry) | 10YR 4/2 (dry) |
| 1.57% O.M. | 2.85% O.M. |
| 10.7 meq/100g CEC | 7.3 meq/100g CEC |
| 0.26% $Fe_2O_3$ | 0.22% $Fe_2O_3$ |

13.4 MWZ•____ 13.2 MWZ•----

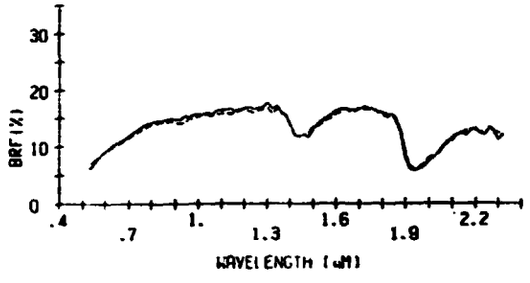



## TURRIA(NV)

Xerollic Haplargid
fine-loamy, mixed, mesic
semiarid zone
mixed alluvium
Douglass Co.

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | v. fine sandy loam |
| 59%S 26%Si 15%C | 56%S 30%Si 14%C |
| 10YR 5/3 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 10YR 7/2 (dry) |
| 0.52% O.M. | 0.42% O.M. |
| 13.7 meq/100g CEC | 12.6 meq/100g CEC |
| 0.75% $Fe_2O_3$ | 0.79% $Fe_2O_3$ |

25.2 MWZ•____ 23.5 MWZ•----

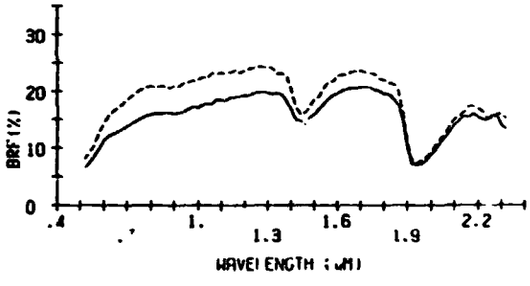



## BITTER SPRING(NV)

Typic Haplargid
loamy-skeletal, mixed, thermic
arid zone
mixed alluvium
Clark Co.

| ____ | ____ |
|---|---|
| A1 horizon | A1 horizon |
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | loam |
| 57%S 37%Si 5%C | 29%S 48%Si 23%C |
| 7.5YR 4/4 (moist) | 7.5YR 4/6 (moist) |
| 7.5YR 6/4 (dry) | 7.5YR 6/4 (dry) |
| 0.44% O.M. | 0.10% O.M. |
| 15.9 meq/100g CEC | 27.4 meq/100g CEC |
| 0.72% $Fe_2O_3$ | 0.97% $Fe_2O_3$ |

17.4 MWZ•____ 19.6 MWZ•----

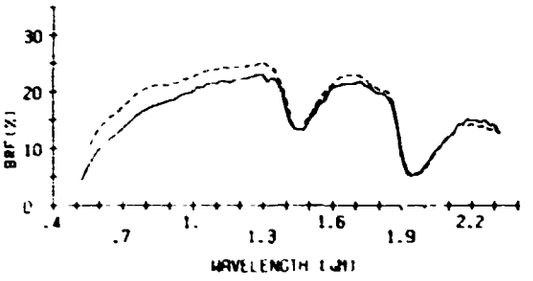


## CALICO(NV)

Aquic Xerofluvent
coarse-loamy over clayey, mixed,
calcareous, thermic
arid zone
alluvium
Clark Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| v. fine sandy loam | fine sandy loam |
| 54%S 34%Si 12%C | 54%S 32%Si 14%C |
| 7.5YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 7.5YR 6/4 (dry) |
| 1.10% O.M. | 1.25% O.M. |
| 25.0 meq/100g CEC | 169.0 meq/100g CEC |
| 0.55% $Fe_2O_3$ | 0.39% $Fe_2O_3$ |

31.9 MW% ___ 31.8 MW% ----

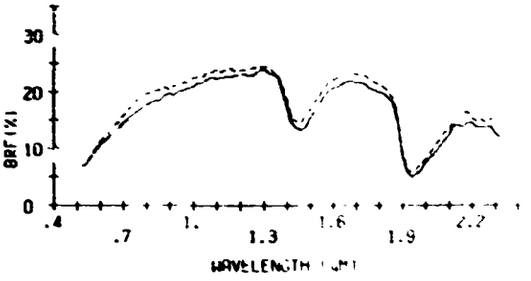



## LAND(NV)

Typic Salorthid
fine-loamy, gypsic, thermic
arid zone
alluvium
Clark Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| fine sandy loam | loam |
| 66%S 20%Si 15%C | 42%S 36%Si 22%C |
| 10YR 7/3 (moist) | 7.5YR 4/2 (moist) |
| 7.5YR 7/4 (dry) | 7.5YR 7/4 (dry) |
| 1.21% O.M. | 0.40% O.M. |
| 99.2 meq/100g CEC | 55.6 meq/100g CEC |
| 0.46% $Fe_2O_3$ | 0.56% $Fe_2O_3$ |

27.4 MW% ___ 29.3 MW% ----

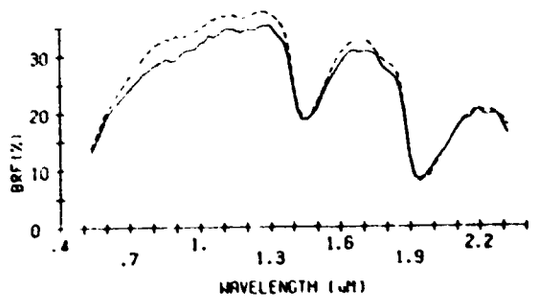



## MC CARRAN(NV)

Typic Salorthid
coarse-loamy, gypsic, thermic
arid zone
gypsiferous, calcareous valley fill
Clark Co.

| A11-A12 horizon | A11-A12 horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| fine sand | fine sand |
| 93%S 5%Si 2%C | 91%S 6%Si 3%C |
| 10YR 6/4 (moist) | 7.5YR 5/4 (moist) |
| 7.5YR 7/4 (dry) | 7.5YR 7/4 (dry) |
| 0.16% O.M. | 0.30% O.M. |
| 12.9 meq/100g CEC | 30.1 meq/100g CEC |
| 0.10% $Fe_2O_3$ | 0.09% $Fe_2O_3$ |

14.4 MW% ___ 17.8 MW% ----

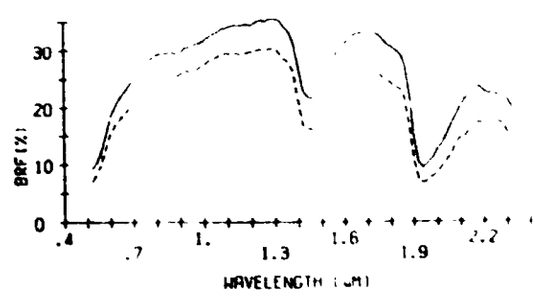



## MORMAN MESA(NV)

Typic Paleorthid
loamy, carbonatic, thermic, shallow
arid zone
limestone valley fill
Clark Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy fine sand | loam fine sand |
| 87%S 9%Si 4%C | 84%S 10%Si 6%C |
| 7.5YR 4/6 (moist) | 5YR 5/8 (moist) |
| 7.5YR 7/6 (dry) | 7.5YR 7/6 (dry) |
| 0.23% O.M. | 0.08% O.M. |
| 18.2 meq/100g CEC | 15.9 meq/100g CEC |
| 0.32% $Fe_2O_3$ | 0.32% $Fe_2O_3$ |

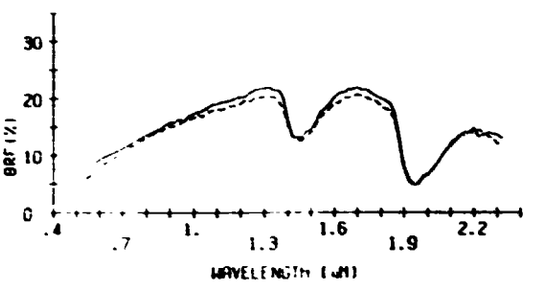
12.1 MW% ___ 17.4 MW% ----



## OVERTON(NV)

Aeric Haplaquept
fine, montmorillonitic, calcareous, thermic
arid zone
clayey alluvium
Clark Co.

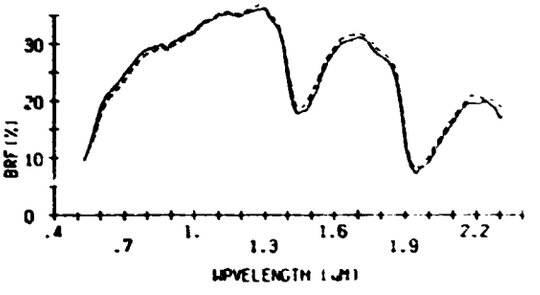
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| silty clay | loam |
| 10%S 43%Si 47%C | 33%S 48%Si 19%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/2 (dry) | 10YR 6/3 (dry) |
| 2.58% O.M. | 2.21% O.M. |
| 51.0 meq/100g CEC | 34.4 meq/100g CEC |
| 0.66% $Fe_2O_3$ | 0.52% $Fe_2O_3$ |
| 45.9 MWP ____ | 38.5 MWP ---- |




## TOQUOP(NV)

Typic Torripsamment
mixed, thermic
arid zone
deep sandy alluvium
Clark Co.

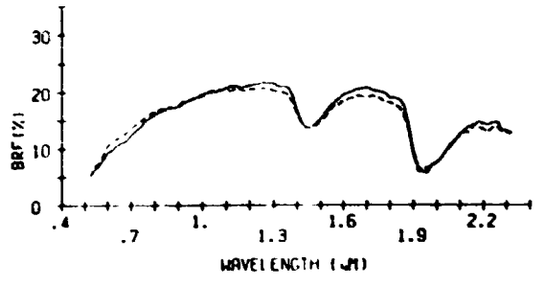
| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| excessively drained | excessively drained |
| fine sand | fine sand |
| 92%S 5%Si 3%C | 94%S 3%Si 3%C |
| 5YR 6/6 (moist) | 7.5YR 5/6 (moist) |
| 7.5YR 7/6 (dry) | 7.5YR 7/6 (dry) |
| 0.0% O.M. | 0.23% O.M. |
| 9.0 meq/100g CEC | 4.9 meq/100g CEC |
| 0.20% $Fe_2O_3$ | 0.36% $Fe_2O_3$ |
| 11.9 MWP ____ | 14.5 MWP ---- |




## VIRGIN RIVER(NV)

Aquic Xerorthent
fine, mixed, calcareous, thermic
arid zone
clayey alluvium
Clark Co.

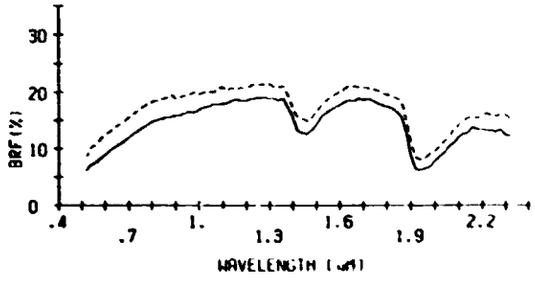
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silty clay loam | silty clay |
| 19%S 54%Si 28%C | 8%S 49%Si 43%C |
| 7.5YR 4/6 (moist) | 5YR 3/4 (moist) |
| 7.5YR 5/4 (dry) | 7.5YR 6/4 (dry) |
| 4.04% O.M. | 2.16% O.M. |
| 31.1 meq/100g CEC | 35.8 meq/100g CEC |
| 1.19% $Fe_2O_3$ | 1.50% $Fe_2O_3$ |
| 36.6 MWP ____ | 36.8 MWP ---- |




## CORTEZ(NV)

Xerollic Nadurargid
fine, montmorillonitic, mesic
arid zone
thin loess high in volcanic ash over alluvium

| Eureka Co. | Elko Co. |
|---|---|
| A11-A12 horizon | A11-A12 horizon |
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 17%S 72%Si 11%C | 18%S 74%Si 9%C |
| 10YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 10YR 7/3 (dry) |
| 1.24% O.M. | 1.08% O.M. |
| 14.6 meq/100g CEC | 14.4 meq/100g CEC |
| 0.74% $Fe_2O_3$ | 0.70% $Fe_2O_3$ |
| 35.4 MWP ____ | 31.1 MWP ---- |

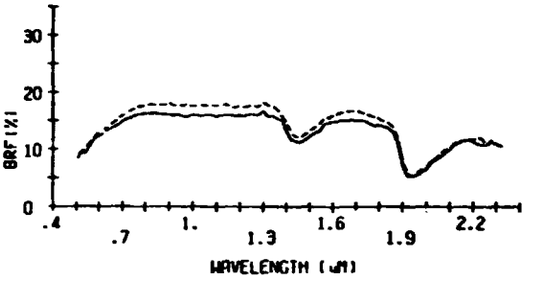


## BLOOR(NV)

Typic Natrargid
fine-loamy, micaceous, mesic
arid zone
lacustrine sediments
Humboldt Co.

| A2 horizon | A2 horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 22%S 65%Si 13%C | 19%S 63%Si 18%C |
| 10YR 5/3 (moist) | 10YR 6/3 (moist) |
| 10YR 7/2 (dry) | 10YR 7/2 (dry) |
| 0.81% O.M. | 1.95% O.M. |
| 30.5 meq/100g CEC | 32.8 meq/100g CEC |
| 0.33% $Fe_2O_3$ | 0.29% $Fe_2O_3$ |

35.6 MWZ•____ 35.3 MWZ•----

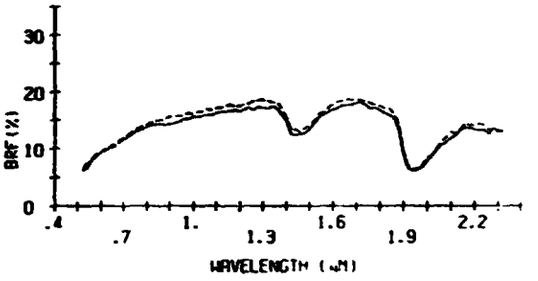



## NINCH(NV)

Xeric Torrifluvent
sandy, mixed, mesic
arid zone
sandy eolian materials
Humboldt Co.

| A1 horizon | A1 horizon |
|---|---|
| C slope | C slope |
| s. excess. drained | s. excess. drained |
| fine sand | loamy fine sand |
| 90%S 5%Si 5%C | 86%S 7%Si 6%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 0.45% O.M. | 0.34% O.M. |
| 9.2 meq/100g CEC | 11.1 meq/100g CEC |
| 0.26% $Fe_2O_3$ | 0.20% $Fe_2O_3$ |

19.3 MWZ•____ 16.6 MWZ•----

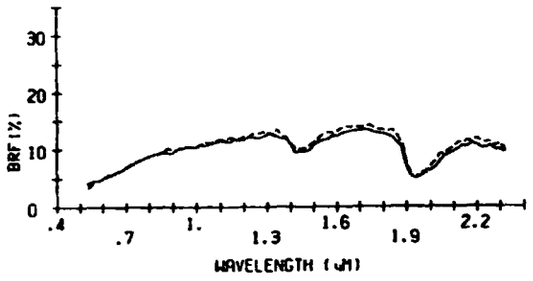



## RIO KING(NV)

Entic Haplustoll
coarse-loamy, micaceous, mesic
semiarid zone
alluvium from granite, rhyolite, basalt
Humboldt Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| sandy loam | sandy loam |
| 52%S 38%Si 9%C | 61%S 29%Si 10%C |
| 10YR 3/2 (moist) | 10YR 3/1 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 0.90% O.M. | 1.05% O.M. |
| 19.5 meq/100g CEC | 18.8 meq/100g CEC |
| 0.95% $Fe_2O_3$ | 1.00% $Fe_2O_3$ |

18.6 MWZ•____ 18.2 MWZ•----

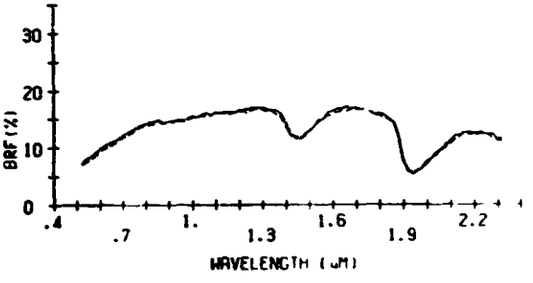



## VALMY(NV)

Durorthidic Torriorthent
coarse-loamy, mixed, calcareous, mesic
arid zone
thin loess over loamy alluvium
Humboldt Co.

| A1 horizon | A1 horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| sandy loam | fine sandy loam |
| 46%S 48%Si 6%C | 54%S 40%Si 6%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 7/2 (dry) | 10YR 7/2 (dry) |
| 0.53% O.M. | 0.87% O.M. |
| 16.2 meq/100g CEC | 14.6 meq/100g CEC |
| 0.36% $Fe_2O_3$ | 0.36% $Fe_2O_3$ |

29.2 MWZ•____ 28.5 MWZ•----

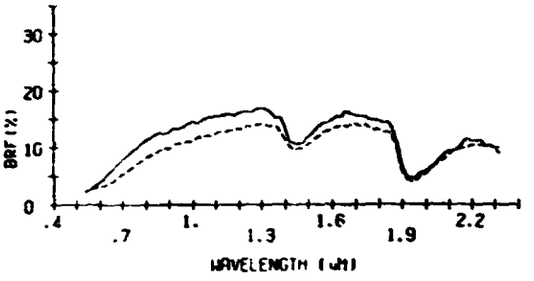


## ACTON(NH)

Entic Haplorthod
coarse-loamy, mixed, mesic
humid zone
sandy granitic till
Hillsboro Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| sandy loam | fine sandy loam |
| 70%S 25%Si 5%C | 59%S 36%Si 5%C |
| 10YR 2/2 (moist) | 10YR 2/2 (moist) |
| 10YR 3/3 (dry) | 10YR 4/3 (dry) |
| 8.30% O.M. | 14.98% O.M. |
| 30.6 meq/100g CEC | 37.9 meq/100g CEC |
| 0.97% $Fe_2O_3$ | 1.00% $Fe_2O_3$ |

42.6 MW%•____ 61.8 MW%•----

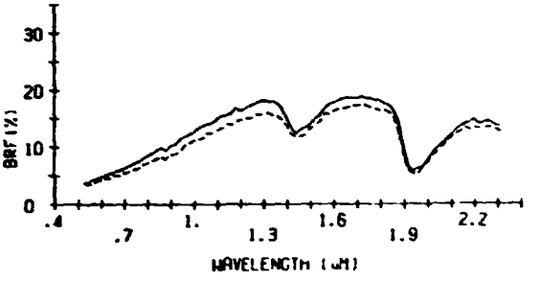



## FORTWINGATE(NM)

Typic Eutroboralf
fine, montmorillonitic, frigid
semiarid zone
residuum from sandstone
McKinley Co.

| Al horizon | Al horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| loam | silt loam |
| 46%S 40%Si 14%C | 25%S 56%Si 20%C |
| 10YR 3/1 (moist) | 5YR 2.5/2 (moist) |
| 10YR 4/2 (dry) | 7.5YR 4/2 (dry) |
| 2.93% O.M. | 3.14% O.M. |
| 15.6 meq/100g CEC | 33.9 meq/100g CEC |
| 0.70% $Fe_2O_3$ | 1.03% $Fe_2O_3$ |

33.1 MW%•____ 35.1 MW%•----

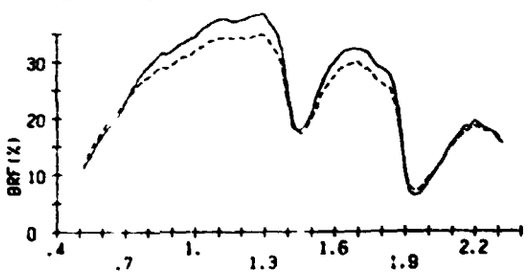



## JAL(NM)

Typic Calciorthid
fine-loamy, carbonatic, thermic
semiarid zone
alluvial or lacustrine fine
textured material
Lea Co.

| All horizon | All horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | loamy fine sand |
| 68%S 18%Si 13%C | 81%S 10%Si 9%C |
| 10YR 5/3 (moist) | 10YR 5/3 (moist) |
| 10YR 7/3 (dry) | 7.5YR 7/2 (dry) |
| 1.02% O.M. | 0.59% O.M. |
| 25.1 meq/100g CEC | 17.1 meq/100g CEC |
| 0.06% $Fe_2O_3$ | 0.03% $Fe_2O_3$ |

28.0 MW%•____ 17.0 MW%•----

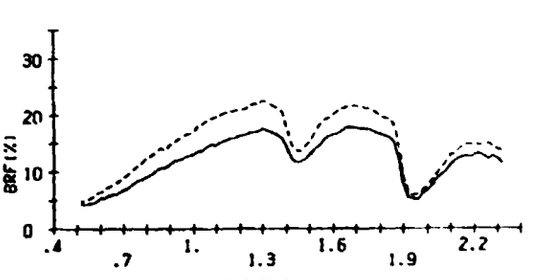



## KIMBROUGH(NM)

Petrocalcic Calciustoll
loamy, mixed, thermic, shallow
semiarid zone
coarse textured material over an
indurated layer
Lea Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 56%S 25%Si 19%C | 62%S 25%Si 13%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 5/3 (dry) |
| 3.14% O.M. | 3.28% O.M. |
| 29.4 meq/100g CEC | 26.7 meq/100g CEC |
| 0.46% $Fe_2O_3$ | 0.32% $Fe_2O_3$ |

32.3 MW%•____ 34.4 MW%•----

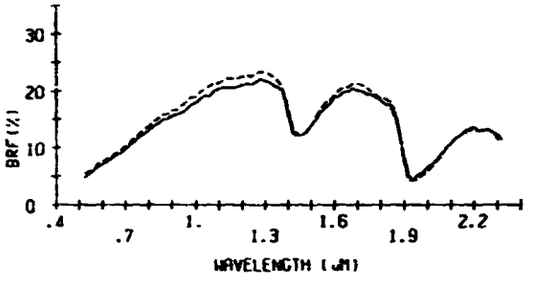


## PORTALES(NM)

Aridic Calciustoll
fine-loamy, mixed thermic
semiarid zone
mixed sediments
Roosevelt Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | sandy clay loam |
| 69%S 16%Si 14%C | 55%S 23%Si 22%C |
| 7.5YR 3/2 (moist) | 7.5YR 4/2 (moist) |
| 7.5YR 4/2 (dry) | 10YR 5/3 (dry) |
| 0.74% O.M. | 0.93% O.M. |
| 24.9 meq/100g CEC | 29.7 meq/100g CEC |
| 0.33% $Fe_2O_3$ | 0.32% $Fe_2O_3$ |

28.2 MW%·___ 35.0 MW%·____

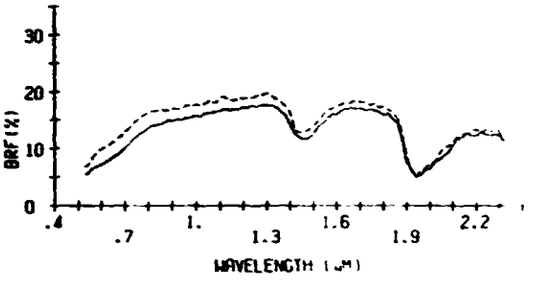



## NORWICH(NY)

Typic Fragiaquept
fine-loamy, mixed, mesic
humid zone
glacial till
Chenango Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silt loam |
| 27%S 59%Si 14%C | 22%S 61%Si 18%C |
| 10YR 4/2 (moist) | 10YR 3/3 (moist) |
| 10YR 6/2 (dry) | 10YR 6/3 (dry) |
| 5.41% O.M. | 4.90% O.M. |
| 13.1 meq/100g CEC | 15.9 meq/100g CEC |
| 1.03% $Fe_2O_3$ | 1.48% $Fe_2O_3$ |

49.0 MW%·___ 50.1 MW%·____

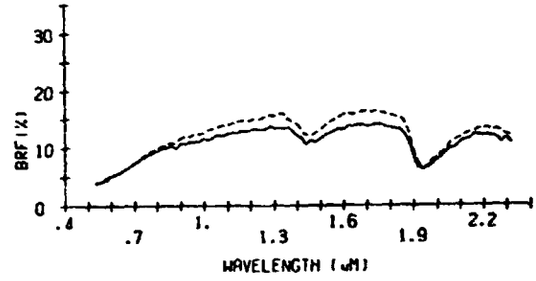



## ADAMS(NY)

Typic Haplorthod
sandy, mixed, frigid
humid zone
outwash sand
Lewis Co.

| A2 horizon | A2 horizon |
|---|---|
| A slope | A slope |
| excessively drained | excessively drained |
| sand | loamy sand |
| 90%S 9%Si 1%C | 86%S 13%Si 2%C |
| 10YR 3/3 (moist) | 7.5YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 4/3 (dry) |
| 2.20% O.M. | 2.88% O.M. |
| 10.3 meq/100g CEC | 13.7 meq/100g CEC |
| 0.54% $Fe_2O_3$ | 0.53% $Fe_2O_3$ |

11.3 MW%·___ 17.1 MW%·____

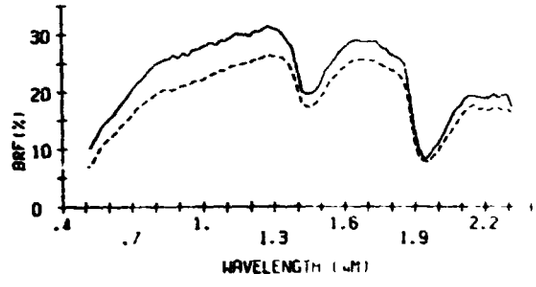



## APPLING(NC)

Typic Hapludult
clayey, kaolinitic, thermic
humid zone
residuum from acid igneous rocks
Alamance Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| sandy loam | coarse sandy loam |
| 52%S 42%Si 7%C | 68%S 23%Si 9%C |
| 2.5Y 5/4 (moist) | 2.5Y 5/4 (moist) |
| 10YR 7/3 (dry) | 10YR 7/4 (dry) |
| 0.86% O.M. | 0.87% O.M. |
| 2.6 meq/100g CEC | 4.6 meq/100g CEC |
| 0.39% $Fe_2O_3$ | 0.35% $Fe_2O_3$ |

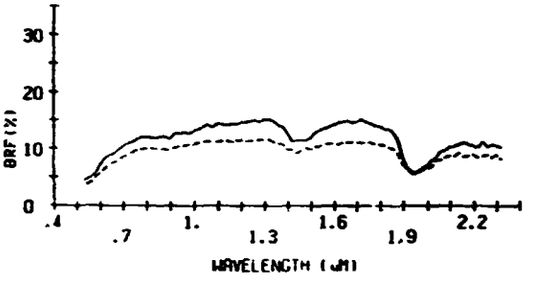
11.1 MW%·___ 15.3 MW%·



## MECKLENBURG(NC)

Ultic Hapludalf
fine, mixed, thermic
humid zone
moderately fine basic rock residuum
Cabarrus Co.

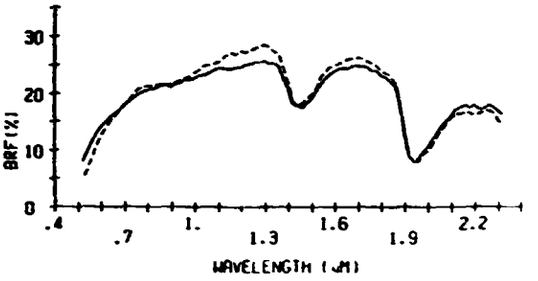
| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| clay loam | fine sandy loam |
| 36%S 34%Si 30%C | 53%S 27%Si 20%C |
| 5YR 3/4 (moist) | 5YR 3/3 (moist) |
| 7.5YR 4/4 (dry) | 7.5YR 4/4 (dry) |
| 2.71% O.M. | 1.11% O.M. |
| 14.3 meq/100g CEC | 13.4 meq/100g CEC |
| 3.92% $Fe_2O_3$ | 5.27% $Fe_2O_3$ |
| 28.2 MWZ•___ | 19.9 MWZ•---- |




## CECIL(NC)

Typic Hapludult
clayey, kaolinitic, thermic
humid zone
acid igneous and metamorphic rocks
Catawba Co.

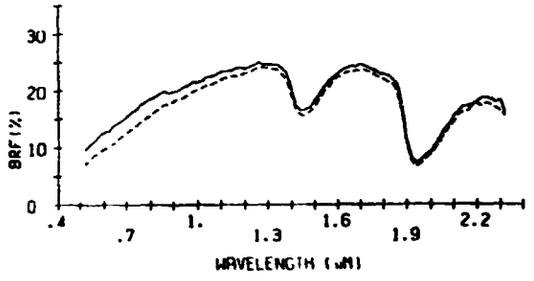
| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| sandy loam | loam |
| 70%S 23%Si 7%C | 51%S 28%Si 21%C |
| 10YR 5/4 (moist) | 10YR 4/6 (moist) |
| 10YR 6/4 (dry) | 7.5YR 6/6 (dry) |
| 2.12% O.M. | 2.24% O.M. |
| 8.8 meq/100g CEC | 10.0 meq/100g CEC |
| 0.64% $Fe_2O_3$ | 2.64% $Fe_2O_3$ |
| 15.9 MWZ•___ | 11.2 MWZ•---- |




## CRAVEN(NC)

Aquic Hapludult
clayey, mixed, thermic
humid zone
clayey coastal plain sediments
Craven Co.

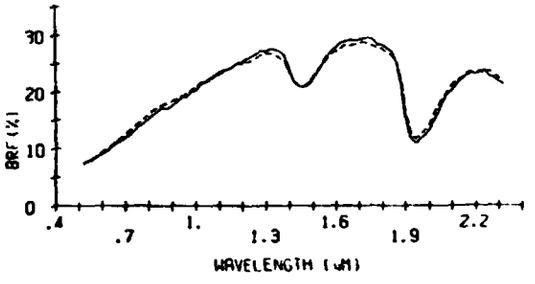
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 23%S 71%Si 6%C | 18%S 76%Si 6%C |
| 10YR 5/2 (moist) | 10YR 5/3 (moist) |
| 10YR 7/2 (dry) | 10YR 7/1 (dry) |
| 2.26% O.M. | 1.60% O.M. |
| 9.8 meq/100g CEC | 8.8 meq/100g CEC |
| 0.56% $Fe_2O_3$ | 0.35% $Fe_2O_3$ |
| 29.5 MWZ•___ | 33.6 MWZ•---- |




## WAGRAM(NC)

Arenic Paleudult
loamy, siliceous, thermic
humid zone
loamy coastal plain sediments
Scotland Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy sand | loamy sand |
| 84%S 13%Si 3%C | 88%S 10%Si 2%C |
| 10YR 4/2 (moist) | 10YR 5/3 (moist) |
| 10YR 7/2 (dry) | 10YR 7/2 (dry) |
| 0.87% O.M. | 0.95% O.M. |
| 3.4 meq/100g CEC | 4.4 meq/100g CEC |
| 0.20% $Fe_2O_3$ | 0.18% $Fe_2O_3$ |
| 8.2 MWZ•___ | 5.6 MWZ•---- |

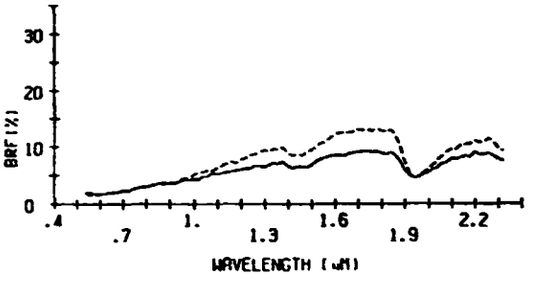


## PONZER(NC)

Terric Mediosaprist
loamy, mixed, dysic, thermic
humid zone
loamy mineral material
Washington Co. Hyde Co.

| Oap horizon | Oa$_2$ horizon |
|---|---|
| A slope | A slope |
| v. poorly drained | v. poorly drained |
| muck | muck |
| 12%S 67%Si 21%C | 1%S 91%Si 8%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 36.18% O.M. | 38.58% O.M. |
| 49.0 meq/100g CEC | 61.8 meq/100g CEC |
| 0.80% $Fe_2O_3$ | 0.75% $Fe_2O_3$ |

76.4 MW%·____ 95.3 MW%·----

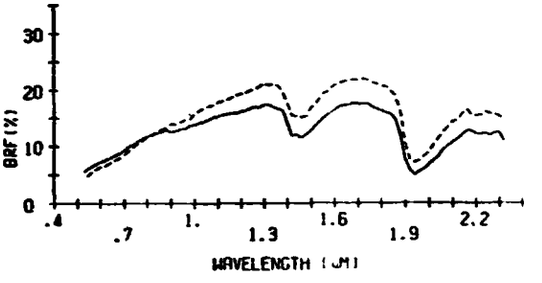



## EKALAKA-DESART(ND)

Typic Natriboroll
coarse-loamy, mixed
semiarid zone
stratified alkaline alluvium or
soft sandstone
Bowman Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | fine sandy loam |
| 36%S 56%Si 8%C | 70%S 20%Si 11%C |
| 10YR 4/2 (moist) | 10YR 3/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.42% O.M. | 0.64% O.M. |
| 9.9 meq/100g CEC | 10.3 meq/100g CEC |
| 0.99% $Fe_2O_3$ | 1.05% $Fe_2O_3$ |

27.6 MW%·____ 15.3 MW%·----

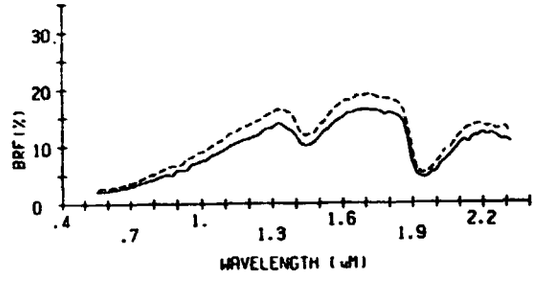



## SVEA(ND)

Pachic Udic Haploboroll
fine-loamy, mixed
subhumid zone
calcareous glacial till
LaMoure Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| clay loam | clay loam |
| 28%S 45%Si 27%C | 25%S 48%Si 28%C |
| 10YR 3/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 4.33% O.M. | 5.20% O.M. |
| 33.0 meq/100g CEC | 32.0 meq/100g CEC |
| 0.46% $Fe_2O_3$ | 0.78% $Fe_2O_3$ |

36.2 MW%·____ 37.5 MW%·----

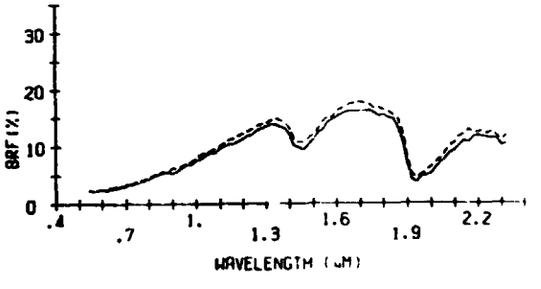



## TONKA(ND)

Argiaquic Argialboll
fine, montmorillonitic, frigid
subhumid zone
local alluvium over glacial till
Ransom Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silty clay loam |
| 16%S 59%Si 25%C | 15%S 54%Si 31%C |
| 7.5YR 2/0 (moist) | 2.5 YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 4/2 (dry) |
| 6.67% O.M. | 6.11% O.M. |
| 34.9 meq/100g CEC | 44.8 meq/100g CEC |
| 0.32% $Fe_2O_3$ | 0.60% $Fe_2O_3$ |

51.8 MW%·____ 42.8 MW%·-

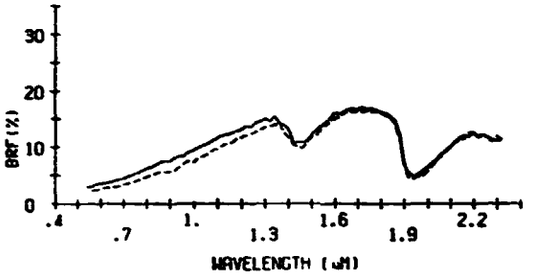


## DIVIDE(ND)

Aeric Calciaquoll
fine-loamy over sandy or sandy-skeletal, frigid
subhumid zone
loamy sediment over sand and gravel
Wells Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| coarse sandy loam | sandy loam |
| 64%S 22%Si 14%C | 55%S 27%Si 18%C |
| 10YR 2/1 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 3/1 (dry) |
| 2.21% O.M. | 2.84% O.M. |
| 24.4 meq/100g CEC | 28.2 meq/100g CEC |
| 0.14% $Fe_2O_3$ | 0.27% $Fe_2O_3$ |

23.4 MWZ•____ 26.8 MWZ•----

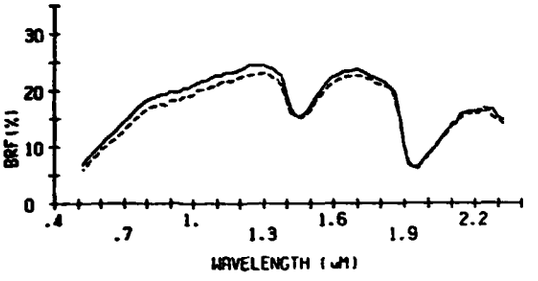



## CINCINNATI(OH)

Typic Fragiudalf
fine-silty, mixed, mesic
humid zone
loess over till
Highland Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 8%S 75%Si 17%C | 11%S 68%Si 21%C |
| 10YR 4/4 (moist) | 10YR 4/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 2.33% O.M. | 2.44% O.M. |
| 12.8 meq/100g CEC | 14.2 meq/100g CEC |
| 1.48% $Fe_2O_3$ | 1.58% $Fe_2O_3$ |

37.6 MWZ•____ 33.6 MWZ•----

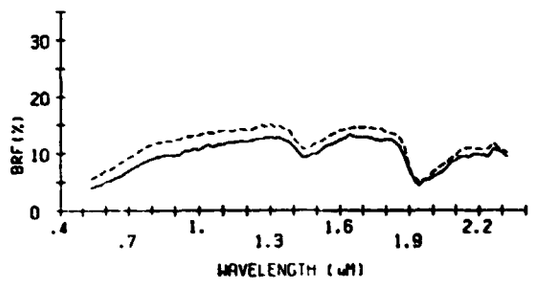



## HOLLY(OH)

Typic Fluvaquent
fine-loamy, mixed, nonacid, mesic
humid zone
alluvium from glacial drift, sandstone and shale

| Summit Co. | Medina Co. |
|---|---|
| Al horizon | Al horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| loam | silty clay loam |
| 40%S 38%Si 22%C | 9%S 60%Si 31%C |
| 10YR 3/2 (moist) | 10YR 4/3 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 7.56% O.M. | 6.87% O.M. |
| 29.9 meq/100g CEC | 33.6 meq/100g CEC |
| 2.27% $Fe_2O_3$ | 2.33% $Fe_2O_3$ |

40.3 MWZ•____ 44.6 MWZ•----

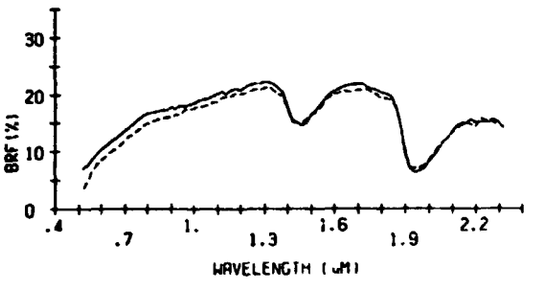



## KEENE(OH)

Aquic Hapludalf
fine-silty, mixed, mesic
humid zone
silty residuum from sedimentary rock
Tuscarawas Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 6%S 75%Si 20%C | 10%S 76%Si 14%C |
| 10YR 5/4 (moist) | 10YR 4/3 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 1.49% O.M. | 2.46% O.M. |
| 15.9 meq/100g CEC | 15.4 meq/100g CEC |
| 2.19% $Fe_2O_3$ | 2.21% $Fe_2O_3$ |

34.8 MWZ•____ 34.1 MWZ•----

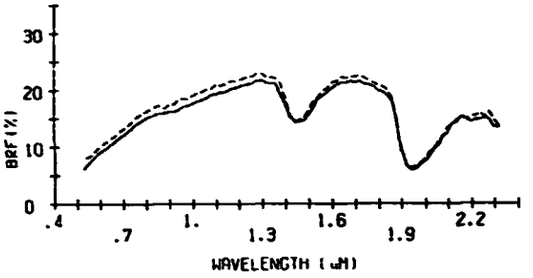


## CANFIELD(OH)

Aquic Fragiudalf
fine-loamy, mixed, mesic
humid zone
glacial till with thin loess cap
Wayne Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 18%S 64%Si 17%C | 12%S 75%Si 13%C |
| 10YR 4/3 (moist) | 10YR 4.5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 2.93% O.M. | 2.58% O.M. |
| 11.5 meq/100g CEC | 10.5 meq/100g CEC |
| 2.33% $Fe_2O_3$ | 1.56% $Fe_2O_3$ |

34.8 MW%•____ 38.4 MW%•----

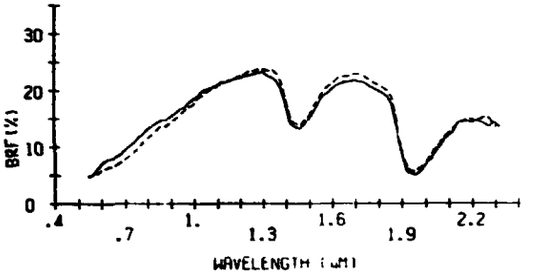



## FOARD(OK)

Typic Natrustoll
fine, montmorillonitic, thermic
subhumid zone
old alluvium or red bed material
Cotton Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 22%S 61%Si 17%C | 21%S 59%Si 20%C |
| 5YR 3/4 (moist) | 7.5YR 3/2 (moist) |
| 7.5YR 5/6 (dry) | 7.5YR 5/4 (dry) |
| 0.89% O.M. | 1.90% O.M. |
| 14.8 meq/100g CEC | 10.5 meq/100g CEC |
| 0.69% $Fe_2O_3$ | 0.79% $Fe_2O_3$ |

27.6 MW%•____ 30.4 MW%•----

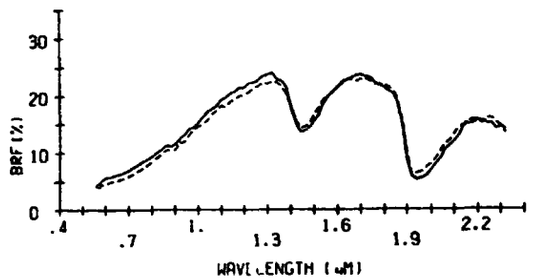



## PORT(OK)

Cumulic Haplustoll
fine-silty, mixed, thermic
subhumid zone
loamy alluvial sediments
Grady Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | silt loam |
| 41%S 44%Si 15%C | 21%S 61%Si 19%C |
| 5YR 3/3 (moist) | 7.5YR 3/2 (moist) |
| 5YR 4/4 (dry) | 7.5YR 3/2 (dry) |
| 0.77% O.M. | 2.11% O.M. |
| 11.5 meq/100g CEC | 8.3 meq/100g CEC |
| 0.80% $Fe_2O_3$ | 0.75% $Fe_2O_3$ |

30.4 MW%•____ 29.3 MW%•----

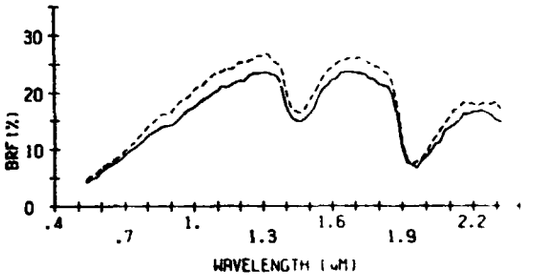



## DARNELL(OK)

Udic Ustochrept
loamy, siliceous, thermic, shallow
subhumid zone
sandstone residuum
Lincoln Co. Payne Co.

| A horizon | A horizon |
|---|---|
| B slope | B slope |
| s. excess. drained | s. excess. drained |
| loamy fine sand | fine sandy loam |
| 83%S 13%Si 4%C | 74%S 19%Si 7%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/4 (moist) |
| 7.5YR 5/4 (dry) | 7.5YR 5/4 (dry) |
| 2.23% O.M. | 1.89% O.M. |
| 7.7 meq/100g CEC | 5.4 meq/100g CEC |
| 0.34% $Fe_2O_3$ | 0.51% $Fe_2O_3$ |

28.2 MW%•____ 18.2 MW%•----

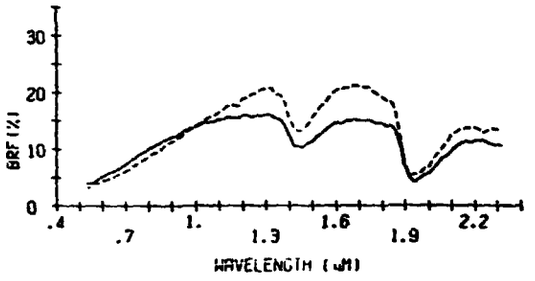


## RENFROW(OK)

Udertic Paleustoll
fine, mixed, thermic
subhumid zone
clay and shale residuum
Kay Co.

| A1 horizon | A1 horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 11%S 66%Si 23%C | 22%S 58%Si 20%C |
| 7.5YR 3/2 (moist) | 10YR 2/2 (moist) |
| 10YR 4/3 (dry) | 10YR 4/2 (dry) |
| 4.18% O.M. | 3.22% O.M. |
| 21.9 meq/100g CEC | 17.4 meq/100g CEC |
| 1.20% $Fe_2O_3$ | 0.84% $Fe_2O_3$ |

36.5 MW%•____ 29.8 MW%•----

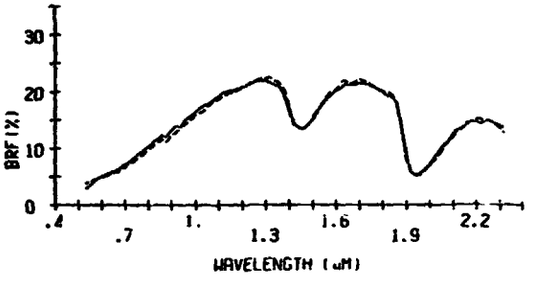



## BETHANY(OK)

Pachic Paleustoll
fine, mixed, thermic
subhumid zone
loess, alluvium, and red bed residuum
Oklahoma Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 16%S 67%Si 17%C | 14%S 68%Si 18%C |
| 7.5YR 3/2 (moist) | 5YR 2.5/2 (moist) |
| 7.5YR 4/2 (dry) | 7.5YR 4/2 (dry) |
| 0.69% O.M. | 1.85% O.M. |
| 12.1 meq/100g CEC | 16.8 meq/100g CEC |
| 0.68% $Fe_2O_3$ | 0.61% $Fe_2O_3$ |

33.3 MW%•____ 32.4 MW%•----

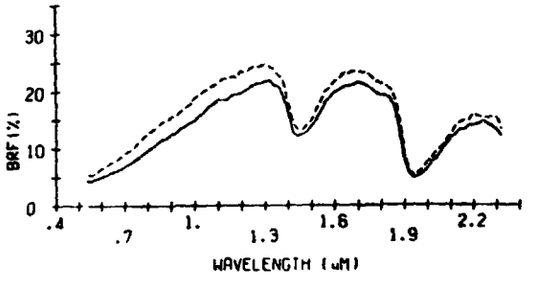



## CANADIAN(OK)

Udic Haplustoll
coarse-loamy, mixed, thermic
subhumid zone
loamy sediments
Oklahoma Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| v. fine sandy loam | v. fine sandy loam |
| 69%S 24%Si 8%C | 52%S 41%Si 7%C |
| 7.5YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/3 (dry) | 10YR 5/3 (dry) |
| 1.05% O.M. | 0.82% O.M. |
| 5.9 meq/100g CEC | 7.1 meq/100g CEC |
| 0.36% $Fe_2O_3$ | 0.23% $Fe_2O_3$ |

30.1 MW%•____ 27.0 MW%•----

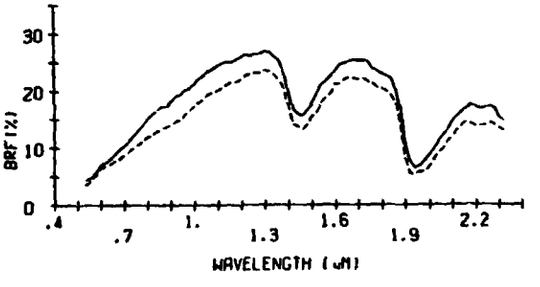



## ZANEIS(OK)

Udic Argiustoll
fine-loamy, mixed, thermic
subhumid zone
residuum from sandstone and shale
Oklahoma Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | loam |
| 54%S 32%Si 14%C | 37%S 44%Si 20%C |
| 5YR 3/4 (moist) | 5YR 3/3 (moist) |
| 7.5YR 4/4 (dry) | 7.5YR 4/6 (dry) |
| 1.02% O.M. | 2.19% O.M. |
| 6.9 meq/100g CEC | 15.7 meq/100g CEC |
| 0.83% $Fe_2O_3$ | 1.09% $Fe_2O_3$ |

25.4 MW%•____ 30.3 MW%•----

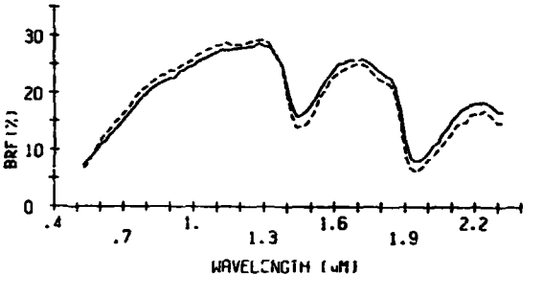


## DOUGHERTY(OK)

Arenic Haplustalf
loamy, mixed, thermic
subhumid zone
sandy or loamy sediments
Payne Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| loamy fine sand | fine sand |
| 85%S 12%Si 3%C | 88%S 8%Si 3%C |
| 10YR 5/4 (moist) | 5YR 5/6 (moist) |
| 7.5YR 6/4 (dry) | 7.5YR 6/4 (dry) |
| 0.84% O.M. | 0.26% O.M. |
| 3.0 meq/100g CEC | 3.2 meq/100g CEC |
| 0.17% $Fe_2O_3$ | 0.21% $Fe_2O_3$ |

15.9 MW%·___ 19.0 MW%·----

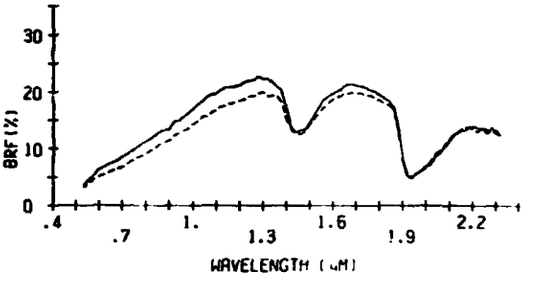



## ST.PAUL(OK)

Pachic Argiustoll
fine-silty, mixed, thermic
subhumid zone
silty red bed sediments
Roger Mills Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 19%S 56%Si 26%C | 16%S 59%Si 25%C |
| 10YR 3/3 (moist) | 5YR 3/2 (moist) |
| 5YR 4/4 (dry) | 7.5YR 4/4 (dry) |
| 1.39% O.M. | 2.12% O.M. |
| 14.2 meq/100g CEC | 21.0 meq/100g CEC |
| 1.07% $Fe_2O_3$ | 1.03% $Fe_2O_3$ |

33.5 MW%·___ 33.2 MW%·----

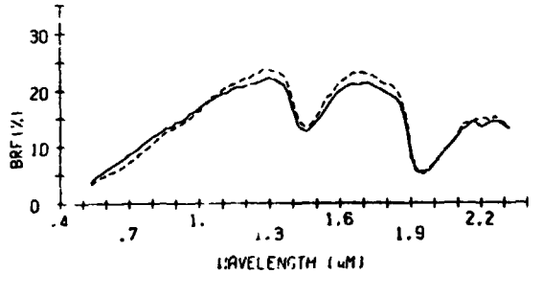



## NEWTONIA(OK)

Typic Paleudoll
fine-silty, mixed, thermic
humid zone
limestone residuum
Tulsa Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 13%S 72%Si 14%C | 31%S 58%Si 11%C |
| 5YR 3/3 (moist) | 7.5YR 3/2 (moist) |
| 7.5YR 5/4 (dry) | 10YR 4/3 (dry) |
| 2.15% O.M. | 2.10% O.M. |
| 9.9 meq/100g CEC | 10.5 meq/100g CEC |
| 0.91% $Fe_2O_3$ | 0.76% $Fe_2O_3$ |

30.8 MW%·___ 28.8 MW%·----

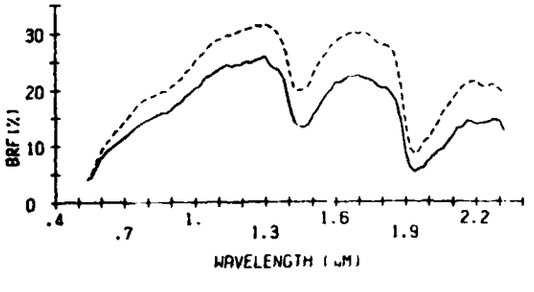



## DILL(OK)

Udic Ustochrept
coarse-loamy, mixed, thermic
subhumid zone
red sandstone
Washita Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| v. fine sandy loam | loamy fine sand |
| 73%S 16%Si 11%C | 83%S 7%Si 9%C |
| 10YR 3/4 (moist) | 2.5YR 3/6 (moist) |
| 2.5YR 4/6 (dry) | 2.5YR 4/6 (dry) |
| 0.0% O.M. | 0.60% O.M. |
| 6.5 meq/100g CEC | 6.5 meq/100g CEC |
| 1.00% $Fe_2O_3$ | 0.85% $Fe_2O_3$ |

26.0 MW%·___ 11.9 MW%·- -

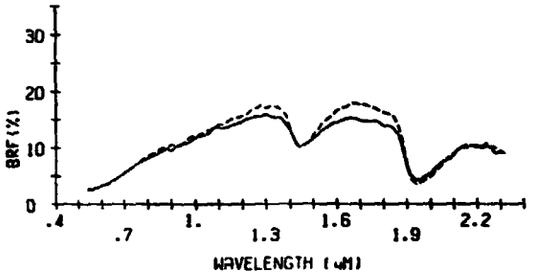


## ASTORIA(OR)

Andic Haplumbrept
medial, mesic
perhumid zone
residuum from fine grained sediments
Tillamook Co.

| ____ | ____ |
|---|---|
| All horizon | All horizon |
| D slope | D slope |
| well drained | well drained |
| clay | silty clay |
| 20%S 39%Si 41%C | 14%S 52%Si 35%C |
| 5YR 2/2 (moist) | 10YR 3/2 (moist) |
| 10YR 3/3 (dry) | 10YR 3/3 (dry) |
| 26.47% O.M. | 21.18% O.M. |
| 46.7 meq/100g CEC | 57.4 meq/100g CEC |
| 5.35% $Fe_2O_3$ | 2.84% $Fe_2O_3$ |

71.4 MW%·____ 67.4 MW%·____

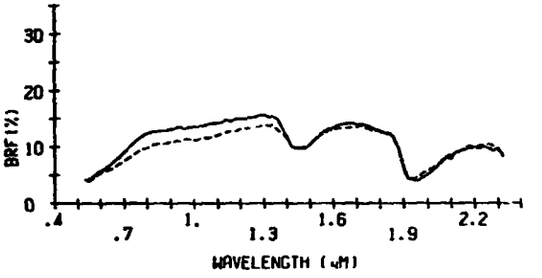



## BRENNER(OR)

Fluvaquentic Humaquept
fine, mixed, acid, mesic
perhumid zone
fine mixed alluvium
Tillamook Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silt loam |
| 27%S 58%Si 15%C | 3%S 80%Si 17%C |
| 10YR 3/4 (moist) | 7.5YR 3/4 (moist) |
| 10YR 5/4 (dry) | 10YR 5/4 (dry) |
| 10.62% O.M. | 11.15% O.M. |
| 53.1 meq/100g CEC | 58.3 meq/100g CEC |
| 3.80% $Fe_2O_3$ | 2.88% $Fe_2O_3$ |

77.1 MW%·____ 73.4 MW%·____

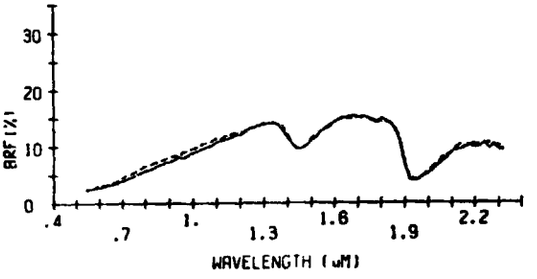



## HEBO(OR)

Typic Humaquept
very-fine, mixed, mesic
perhumid zone
silty and clayey alluvium
Tillamook Co.

| ____ | ____ |
|---|---|
| Apg horizon | Apg horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay | silty clay |
| 6%S 39%Si 55%C | 6%S 43%Si 51%C |
| 2.5Y 2/0 (moist) | 10YR 2/2 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 11.40% O.M. | 12.28% O.M. |
| 42.1 meq/100g CEC | 43.9 meq/100g CEC |
| 2.46% $Fe_2O_3$ | 2.84% $Fe_2O_3$ |

56.4 MW%·____ 60.4 MW%·____

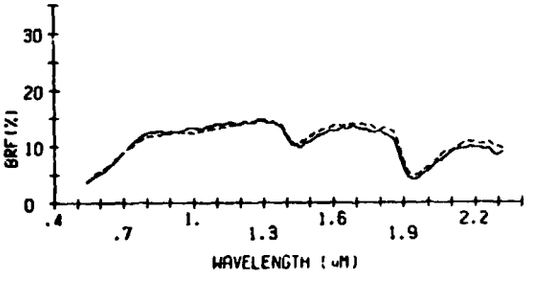



## NEHALEM(OR)

Fluventic Haplumbrept
fine-silty, mixed, mesic
perhumid zone
medium textured recent alluvium
Tillamook Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 18%S 60%Si 22%C | 17%S 62%Si 21%C |
| 5YR 3/3 (moist) | 7.5YR 4/4 (moist) |
| 10YR 4/4 (dry) | 10YR 5/4 (dry) |
| 10.66% O.M. | 6.41% O.M. |
| 60.0 meq/100g CEC | 58.3 meq/100g CEC |
| 4.03% $Fe_2O_3$ | 3.38% $Fe_2O_3$ |

58.3 MW%·____ 46.9 MW%·____

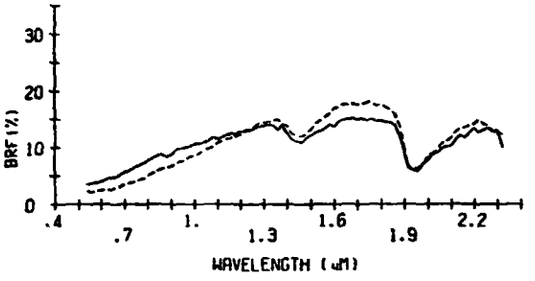


## BLACKLOCK(OR)

Typic Sideraquod
sandy, mixed, mesic, ortstein
perhumid zone
sandy marine terrace
Curry Co.

| ——— | ---- |
|---|---|
| Al horizon | Al horizon |
| B slope | B slope |
| poorly drained | poorly drained |
| fine sandy loam | loam |
| 44%S 50%Si 6%C | 44%S 40%Si 17%C |
| 2.5YR 2.5/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 4/1 (dry) | 10YR 3/1 (dry) |
| 13.34% O.M. | 18.05% O.M. |
| 24.3 meq/100g CEC | 42.2 meq/100g CEC |
| trace $Fe_2O_3$ | trace $Fe_2O_3$ |

35.6 MW%·——  47.7 MW%·----

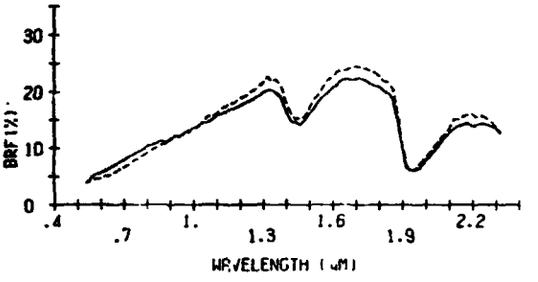



## ORFORD(OR)

Typic Haplohumult
clayey, mixed, mesic
perhumid zone
residuum from arkose sandstones and siltstones
Curry Co.

| ——— | ---- |
|---|---|
| Al horizon | Al horizon |
| E slope | E slope |
| well drained | well drained |
| silty clay | silty clay loam |
| 11%S 47%Si 42%C | 17%S 50%Si 33%C |
| 10YR 3/3 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 4/3 (dry) |
| 6.34% O.M. | 5.94% O.M. |
| 37.6 meq/100g CEC | 36.4 meq/100g CEC |
| 3.30% $Fe_2O_3$ | 2.44% $Fe_2O_3$ |

42.2 MW%·——  39.8 MW%·----

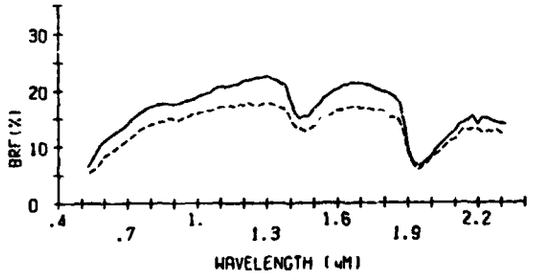



## DUFFIELD(PA)

Ultic Hapludalf
fine-loamy, mixed, mesic
humid zone
residuum from impure limestone
Lancaster Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 13%S 64%Si 23%C | 17%S 65%Si 19%C |
| 10YR 5/6 (moist) | 7.5YR 4/4 (moist) |
| 10YR 6/4 (dry) | 10YR 5/4 (dry) |
| 2.97% O.M. | 2.45% O.M. |
| 17.0 meq/100g CEC | 13.8 meq/100g CEC |
| 2.89% $Fe_2O_3$ | 2.06% $Fe_2O_3$ |

37.2 MW%·——  30.0 MW%·----

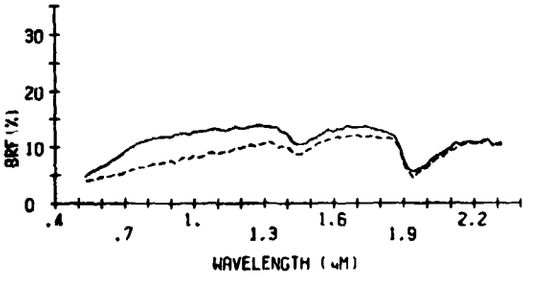



## EDGEMONT(PA)

Typic Hapludult
fine-loamy, mixed, mesic
humid zone
quartzite, quartz schist conglomerate
Lancaster Co.

| ——— | -- |
|---|---|
| A1-A2 horizon | A1-A2 horizon |
| D slope | D slope |
| well drained | well drained |
| fine sandy loam | loam |
| 50%S 44%Si 6%C | 44%S 45%Si 11%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 4/2 (dry) |
| 3.12% O.M. | 4.98% O.M. |
| 13.5 meq/100g CEC | 22.4 meq/100g CEC |
| 0.52% $Fe_2O_3$ | 0.93% $Fe_2O_3$ |

26.4 MW%·——  23.2 MW%·----

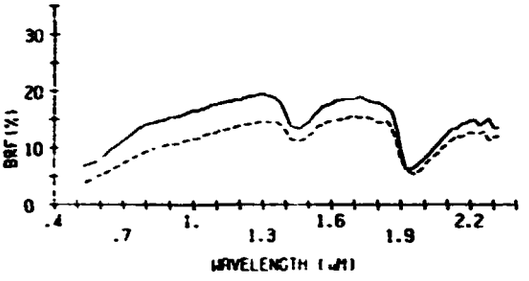


## ELLIBER(PA)

Typic Hapludult
loamy-skeletal, mixed, mesic
humid zone
loamy material from cherty limestone
Perry Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silt loam | loam |
| 38%S 52%Si 10%C | 44%S 45%Si 11%C |
| 10YR 4/2 (moist) | 10YR 3/3 (moist) |
| 10YR 6/3 (dry) | 10YR 5/3 (dry) |
| 3.17% O.M. | 4.97% O.M. |
| 12.7 meq/100g CEC | 18.1 meq/100g CEC |
| 0.96% $Fe_2O_3$ | 1.18% $Fe_2O_3$ |

41.5 MW% ____ 40.4 MW% ----

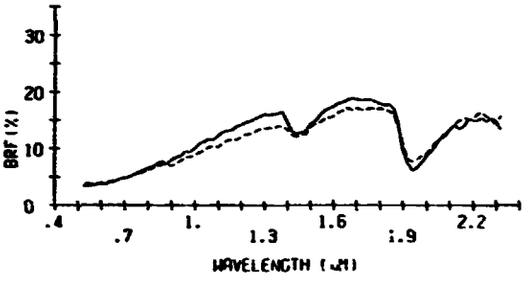



## RAINS(SC)

Typic Paleaquult
fine-loamy, siliceous, thermic
humid zone
loamy coastal plain sediments
Florence Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| loamy coarse sand | loamy fine sand |
| 78%S 18%Si 4%C | 78%S 15%Si 7%C |
| 7.5YR 2/0 (moist) | 7.5YR 2/0 (moist) |
| 10YR 5/1 (dry) | 10YR 5/1 (dry) |
| 4.51% O.M. | 6.3% O.M. |
| 16.9 meq/100g CEC | 20.0 meq/100g CEC |
| 0.00% $Fe_2O_3$ | 0.16% $Fe_2O_3$ |

19.5 MW% ____ 21.0 MW% ----

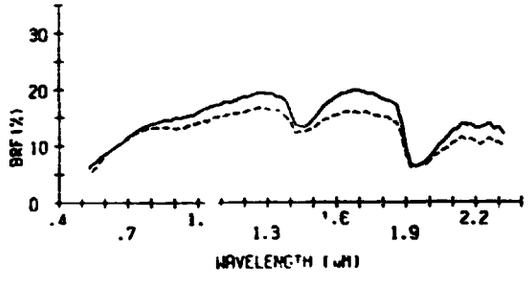



## PACOLET(SC)

Typic Hapludult
clayey, kaolinitic, thermic
humid zone
residuum from acid crystaline rock
Spartanburg Co.

| Al-A2 horizon | Al-A2 horizon |
|---|---|
| D slope | D slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 71%S 19%Si 10%C | 53%S 28%Si 19%C |
| 10YR 4/3 (moist) | 7.5YR 4/4 (moist) |
| 10YR 6/3 (dry) | 7.5YR 5/4 (dry) |
| 2.44% O.M. | 4.77% O.M. |
| 9.9 meq/100g CEC | 14.8 meq/100g CEC |
| 0.77% $Fe_2O_3$ | 1.62% $Fe_2O_3$ |

20.1 MW% ____ 27.0 MW% ----

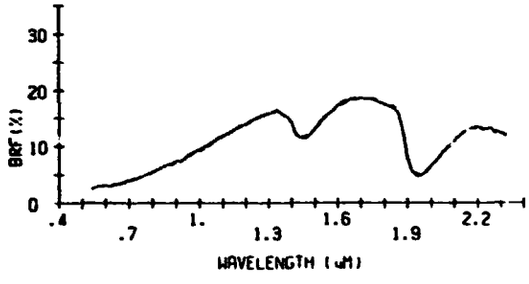



## BEOTIA(SD)

Pachic Udic Haplo roll
fine-silty, mixed
subhumid zone
glaciolacustrine stratified deposits
Brown Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 9%S 66%Si 25%C | 8%S 66%Si 26%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 4.64% O.M. | 5.63% O.M. |
| 31.4 meq/100g CEC | 31.5 meq/100g CEC |
| 0.73% $Fe_2O_3$ | 0.65% $Fe_2O_3$ |

44.5 MW% ____ 42.5 MW% ----

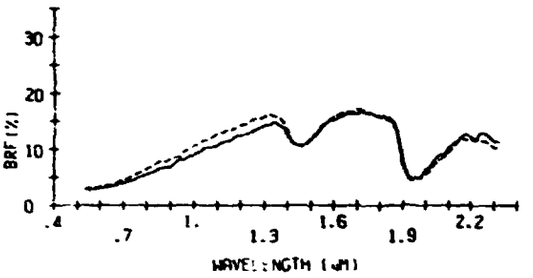


## EXLINE(SD)

Laptic Natriboroll
fine, montmorillonitic
subhumid zone
calcareous lacustrine deposits
Brown Co.

| Al-A2 horizon | A2 horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silty clay loam | silty clay loam |
| 7%S 66%Si 28%C | 10%S 62%Si 29%C |
| 7.5YR 2/0 (moist) | 10YR 2/1 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 7.50% O.M. | 10.12% O.M. |
| 30.7 meq/100g CEC | 37.6 meq/100g CEC |
| 0.37% $Fe_2O_3$ | 0.43% $Fe_2O_3$ |

57.7 MWX·____ 64.4 MWX·____

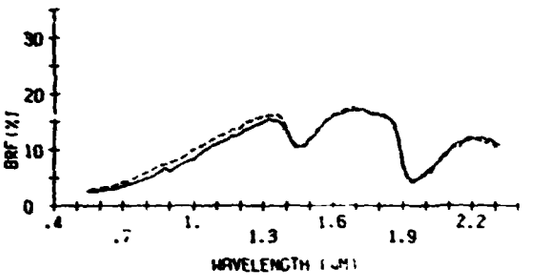



## FORDVILLE(SD)

Pachic Udic Haploboroll
fine-loamy over sandy or sandy-skeletal, mixed
subhumid zone
loamy alluvium over stratified sand and gravel
Codington Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 31%S 50%Si 20%C | 44%S 37%Si 18%C |
| 7.5YR 2/0 (moist) | 10YR 2/1 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 5.16% O.M. | 4.56% O.M. |
| 27.1 meq/100g CEC | 23.8 meq/100g CEC |
| 0.70% $Fe_2O_3$ | 0.72% $Fe_2O_3$ |

38.5 MWX·____ 37.6 MWX·____

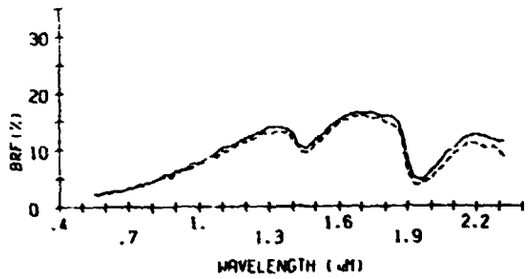



## RENSHAW(SD)

Udic Haploboroll
fine-loamy over sandy or sandy-skeletal, mixed
subhumid zone
loamy alluvium over thick sand and gravel
Codington Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | A slope |
| s. excess. drained | s. excess. drained |
| loam | loam |
| 40%S 46%Si 14%C | 42%S 37%Si 21%C |
| 10YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 5.32% O.M. | 5.05% O.M. |
| 28.5 meq/100g CEC | 30.5 meq/100g CEC |
| 0.81% $Fe_2O_3$ | 0.64% $Fe_2O_3$ |

40.3 MWX·____ 39.8 MWX·____

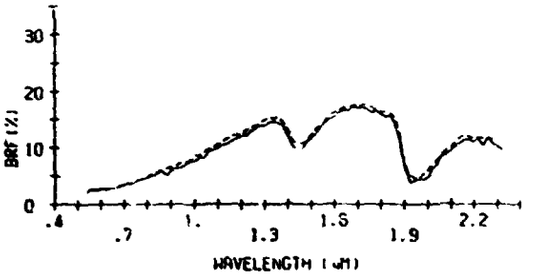



## PEEVER(SD)

Udic Argiboroll
fine, montmorillonitic
subhumid zone
clay loam glacial till
Roberts Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| clay loam | clay loam |
| 22%S 38%Si 40%C | 28%S 39%Si 32%C |
| 7YR 2/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 7.31% O.M. | 5.33% O.M. |
| 38.7 meq/100g CEC | 35.4 meq/100g CEC |
| 1.27% $Fe_2O_3$ | 1.15% $Fe_2O_3$ |

45.4 MWX·____ 36.3 MWX·

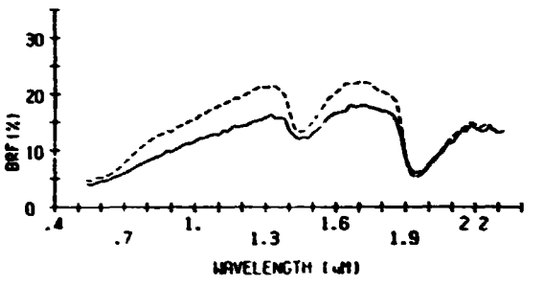


## BETTS(SD)

Typic Ustorthent
fine-loamy, mixed, calcareous, mesic
subhumid zone
glacial till
Davison Co.

| A1 horizon | A1 horizon |
|---|---|
| E slope | E slope |
| excess. drained | excess. drained |
| loam | loam |
| 45%S 34%Si 21%C | 43%S 34%Si 23%C |
| 10YR 3/1 (moist) | 10YR 4/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 4.53% O.M. | 3.78% O.M. |
| 27.0 meq/100g CEC | 26.8 meq/100g CEC |
| 0.86% $Fe_2O_3$ | 1.01% $Fe_2O_3$ |

30.2 MWD•____ 32.7 MWD•----

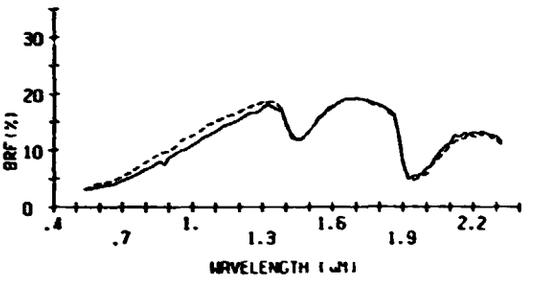



## STICKNEY(SD)

Glossic Natrustoll
fine, montmorillonitic, mesic
subhumid zone
calcareous clay loam glacial till
Davison Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| loam | loam |
| 30%S 47%Si 23%C | 27%S 48%Si 25%C |
| 10YR 2/1 (moist) | 5YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 2.85% O.M. | 2.70% O.M. |
| 22.6 meq/100g CEC | 25.7 meq/100g CEC |
| 0.72% $Fe_2O_3$ | 0.68% $Fe_2O_3$ |

32.3 MWD•____ 34.4 MWD•----

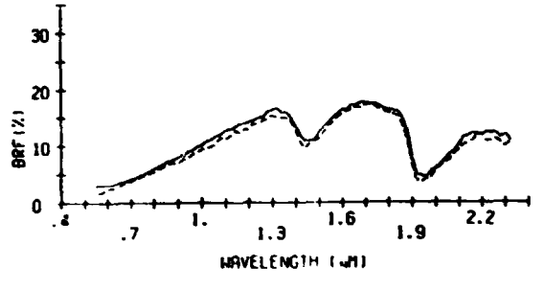



## TETONKA(SD)

Argiaquic Argialboll
fine, montmorillonitic, mesic
subhumid zone
local alluvial deposits over
glacial till
Davison Co.

| A1 horizon | A1 horizon |
|---|---|
| A slope | A slope |
| poorly drained | poorly drained |
| silt loam | silty clay loam |
| 12%S 61%Si 27%C | 12%S 57%Si 31%C |
| 10YR 3/1 (moist) | 10YR 3/1 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 5.11% O.M. | 6.47% O.M. |
| 30.8 meq/100g CEC | 38.8 meq/100g CEC |
| 0.42% $Fe_2O_3$ | 0.43% $Fe_2O_3$ |

47.4 MWD•____ 52.5 MWD•----

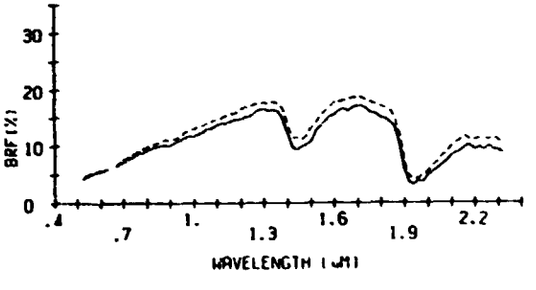



## BOYD(SD)

Vertic Haplustoll
fine, montmorillonitic, mesic
subhumid zone
residuum from clay shales
Gregory Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| clay | silty clay |
| 2%S 30%Si 68%C | 4%S 42%Si 54%C |
| 10YR 4/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 3.12% O.M. | 2.69% O.M. |
| 63.8 meq/100g CEC | >6.8 meq/100g CEC |
| 1.66% $Fe_2O_3$ | 1.85% $Fe_2O_3$ |

49.6 MWD•____ 41.6 MWD•----

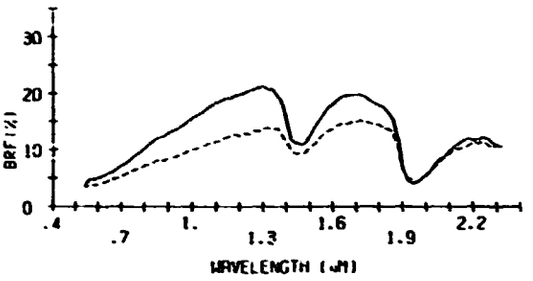


## TUTHILL(SD)

Aridic Argiustoll
fine-loamy over sandy or sandy-skeletal, mixed, mesic
semiarid zone
mixed sandy and loamy materials
Todd Co.

| Ap horizon | A1 horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 75%S 15%Si 10%C | 63%S 23%Si 14%C |
| 10YR 3/1 (moist) | 10YR 2/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 1.18% O.M. | 3.88% O.M. |
| 11.3 meq/100g CEC | 18.5 meq/100g CEC |
| 0.26% $Fe_2O_3$ | 0.33% $Fe_2O_3$ |

28.6 MW% ____ 39.3 MW% ____

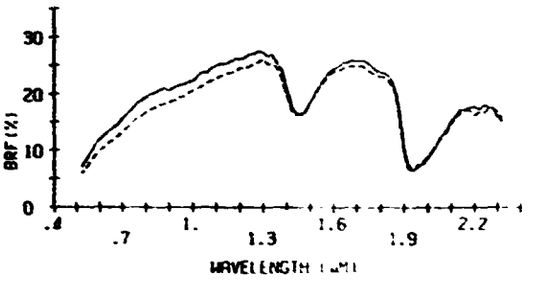



## DICKSON(IN)

Glossic Fragiudult
fine-silty, siliceous, thermic
humid zone
thick silt over limestone residuum
Coffee Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| mod. well drained | mod. well drained |
| silt loam | silt loam |
| 19%S 67%Si 14%C | 9%S 73%Si 18%C |
| 10YR 5/6 (moist) | 10YR 5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 1.36% O.M. | 2.17% O.M. |
| 10.7 meq/100g CEC | 14.2 meq/100g CEC |
| 1.63% $Fe_2O_3$ | 1.86% $Fe_2O_3$ |

27.3 MW% ____ 33.9 MW% ____

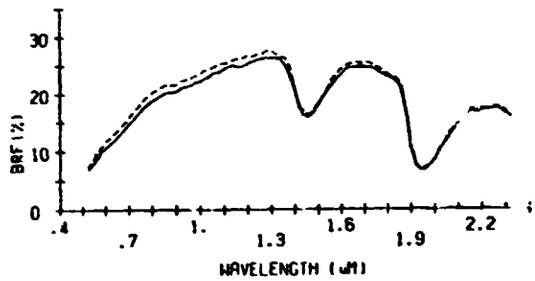



## MOUNTVIEW(TN)

Typic Paleudult
fine-silty, siliceous, thermic
humid zone
loess over limestone residuum
Coffee Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silt loam | silt loam |
| 27%S 60%Si 13%C | 8%S 75%Si 17%C |
| 10YR 4/4 (moist) | 10YR 5/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/4 (dry) |
| 2.23% O.M. | 2.33% O.M. |
| 9.2 meq/100g CEC | 13.5 meq/100g CEC |
| 1.45% $Fe_2O_3$ | 1.51% $Fe_2O_3$ |

33.9 MW% ____ 35.0 MW% ____

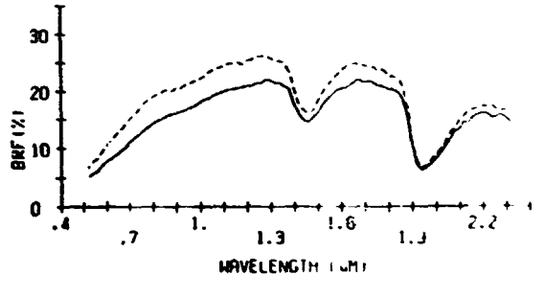



## BODINE(IN)

Typic Paleudult
loamy-skeletal, siliceous, thermic
humid zone
residuum from cherty limestone
Humphreys Co.

| Ap horizon | Ap horizon |
|---|---|
| E slope | E slope |
| s. excess. drained | s. excess. drained |
| silt loam | silt loam |
| 8%S 76%Si 16%C | 15%S 73%Si 12%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/4 (dry) |
| 4.42% O.M. | 2.49% O.M. |
| 17.1 meq/100g CEC | 10.0 meq/100g CEC |
| 0.99% $Fe_2O_3$ | 0.99% $Fe_2O_3$ |

38.3 MW% ____ 34.8 MW% ____

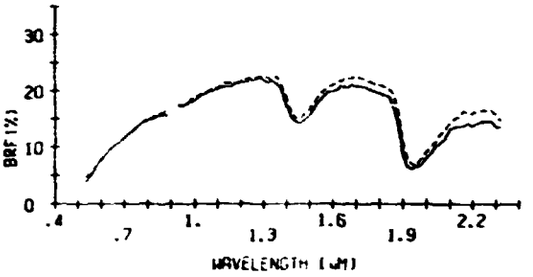


## CUMBERLAND( TN )

Rhodic Paleudalf
fine, mixed, thermic
humid zone
old alluvium over limestone residuum
Rutherford Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silty clay loam | silt loam |
| 7%S 66%Si 28%C | 3%S 77%Si 20%C |
| 2.5YR 3/4 (moist) | 7.5YR 4/6 (moist) |
| 7.5YR 4/6 (dry) | 7.5YR 5/6 (dry) |
| 1.74% O.M. | 1.91% O.M. |
| 15.4 meq/100g CEC | 10.6 meq/100g CEC |
| 3.25% $Fe_2O_3$ | 2.27% $Fe_2O_3$ |

29.6 MW% ____ 31.9 MW% ----

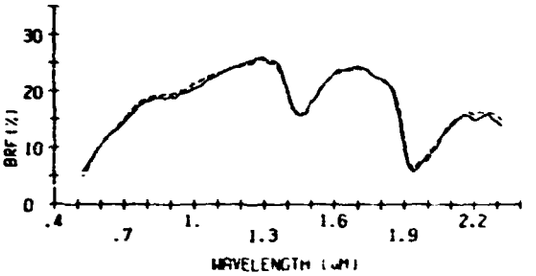



## TALBOTT( TN )

Typic Hapludalf
fine, mixed, thermic
humid zone
clayey limestone residuum
Rutherford Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silty clay loam | silt loam |
| 14%S 58%Si 28%C | 11%S 67%Si 23%C |
| 7.5YR 4/6 (moist) | 7.5YR 4/6 (moist) |
| 10YR 6/6 (dry) | 10YR 6/6 (dry) |
| 1.84% O.M. | 2.50% O.M. |
| 15.6 meq/100g CEC | 13.8 meq/100g CEC |
| 3.68% $Fe_2O_3$ | 3.34% $Fe_2O_3$ |

28.2 MW% ____ 30.2 MW% ----

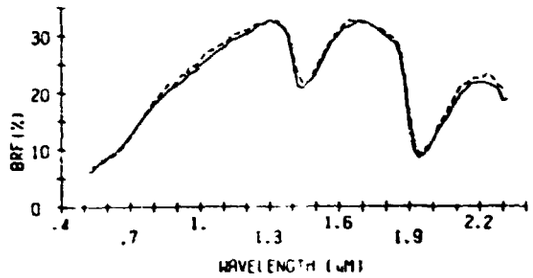



## BRACKETT( TX )

Typic Ustrochrept
loamy, carbonatic, thermic, shallow
subhumid zone
interbedded soft limestones and
marly earth
Bell Co.

| A1 horizon | horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| loam | clay loam |
| 40%S 39%Si 21%C | 26%S 46%Si 28%C |
| 10YR 4/2 (moist) | 10YR 4/2 (moist) |
| 10YR 6/2 (dry) | 10YR 6/2 (dry) |
| 3.20% O.M. | 6.61% O.M. |
| 23.7 meq/100g CEC | 26.7 meq/100g CEC |
| 1.02% $Fe_2O_3$ | 0.49% $Fe_2O_3$ |

22.6 MW% ____ 32.0 MW% ----

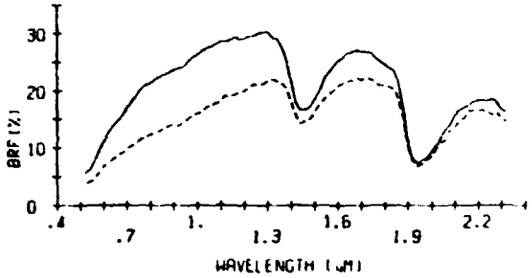



## ELROSE( TX )

Typic Paleudalf
fine-loamy, siliceous, thermic
subhumid zone
stratified marine sediments
Anderson Co.

| Ap horizon | A11 horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | v. fine sandy loam |
| 62%S 32%Si 6%C | 67%S 28%Si 5%C |
| 7.5YR 4/6 (moist) | 5YR 3/4 (moist) |
| 7.5YR 6/6 (dry) | 5YR 5/4 (dry) |
| 0.91% O.M. | 2.57% O.M. |
| 4.4 meq/100g CEC | 8.6 meq/100g CEC |
| 0.65% $Fe_2O_3$ | 2.59% $Fe_2O_3$ |

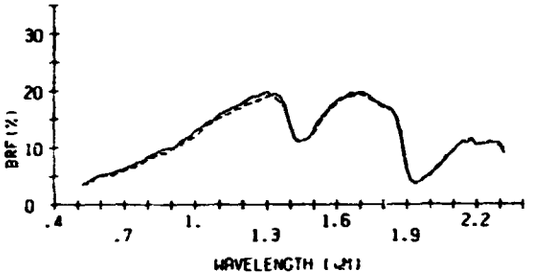
20.2 MW% ____ 25.3 MW% ----



## DENTON(TX)

Vertic Calciustoll
fine, montmorillonitic, thermic
subhumid zone
clayey materials over limestones and marls
Coryell Co.

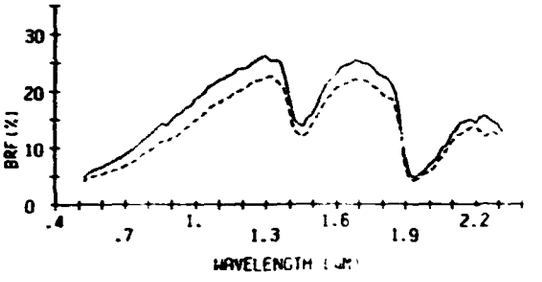
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silty clay | clay |
| 4%S 41%Si 56%C | 3%S 36%Si 60%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 3.21% O.M. | 2.91% O.M. |
| 60.9 meq/100g CEC | 57.2 meq/100g CEC |
| 1.81% $Fe_2O_3$ | 1.86% $Fe_2O_3$ |
| 48.0 MW% | 45.7 MW% |




## FRIO(TX)

Cumulic Haplustoll
fine, mixed, thermic
subhumid zone
calcareous silty clay loam alluvium
Coryell Co.

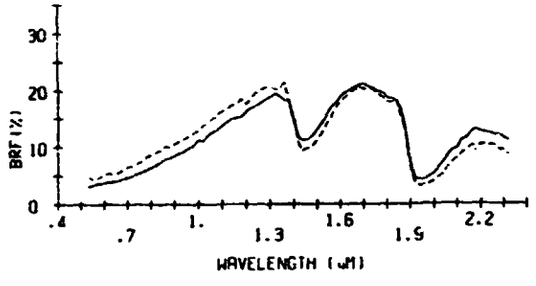
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| clay loam | silty clay loam |
| 29%S 40%Si 31%C | 18%S 44%Si 37%C |
| 10YR 4/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 2.16% O.M. | 2.20% O.M. |
| 29.7 meq/100g CEC | 35.4 meq/100g CEC |
| 0.66% $Fe_2O_3$ | 0.82% $Fe_2O_3$ |
| 36.1 MW% | 41.9 MW% |




## TRINITY(TX)

Typic Pelludert
very-fine, montmorillonitic, thermic
subhumid zone
calcareous clayey alluvium
Kaufman Co.

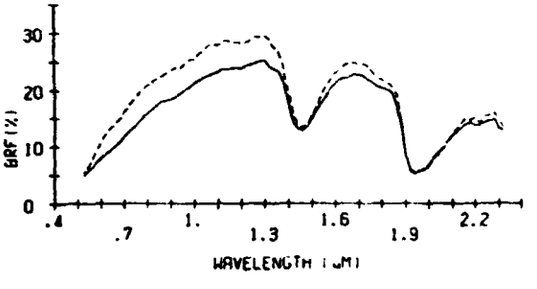
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| silty clay loam | clay |
| 18%S 46%Si 35%C | 1%S 29%Si 70%C |
| 7.5YR 3/0 (moist) | 10YR 3/1 (moist) |
| 10YR 4/1 (dry) | 10YR 4/1 (dry) |
| 3.53% O.M. | 3.17% O.M. |
| 38.9 meq/100g CEC | 92.8 meq/100g CEC |
| 0.47% $Fe_2O_3$ | 0.77% $Fe_2O_3$ |
| 43.1 MW% | 62.9 MW% |




## WINDTHORST(TX)

Udic Paleustalf
fine, mixed, thermic
subhumid zone
stratified clay and loamy materials
Parker Co.

| Al horizon | Al horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| v. fine sandy loam | v. fine sandy loam |
| 59%S 32%Si 10%C | 68%S 25%Si 7%C |
| 7.5YR 4/4 (moist) | 7.5YR 4/6 (moist) |
| 7.5YR 5/4 (dry) | 7.5YR 6/6 (dry) |
| 1.77% O.M. | 1.09% O.M. |
| 12.2 meq/100g CEC | 8.1 meq/100g CEC |
| 0.34% $Fe_2O_3$ | 0.45% $Fe_2O_3$ |
| 29.2 MW% | 29.4 MW% |

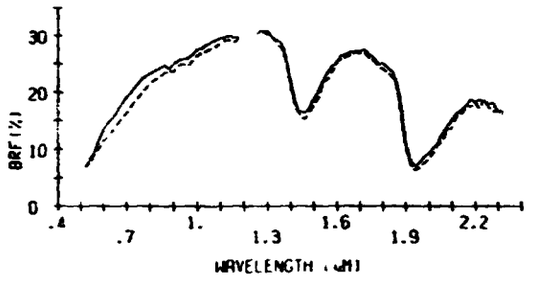


## KIRVIN(TX)

Typic Hapludalt
clayey, mixed, thermic
humid zone
acid sandstone and loamy and clayey sediments
Smith Co.

| Al horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| v. fine sandy loam | silt loam |
| 64%S 30%Si 5%C | 45%S 51%Si 3%C |
| 7.5YR 5/4 (moist) | 7.5YR 5/4 (moist) |
| 7.5YR 6/4 (dry) | 7.5YR 7/4 (dry) |
| 0.41% O.M. | 0.95% O.M. |
| 2.7 meq/100g CEC | 4.6 meq/100g CEC |
| 0.57% $Fe_2O_3$ | 0.85% $Fe_2O_3$ |

26.6 MW%•____ 28.8 MW%•----

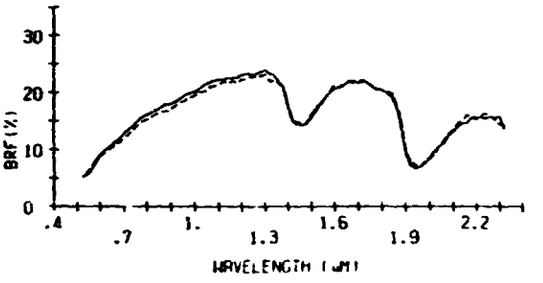



## TRIOMAS(TX)

Ustalfic Haplargid
fine-loamy, mixed, thermic
semiarid zone
sandy eolian materials
Andrews Co.

| All horizon | All horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy fine sand | loamy fine sand |
| 85%S 10%Si 4%C | 87%S 6%Si 7%C |
| 7.5YR 4/4 (moist) | 7.5YR 3/4 (moist) |
| 7.5YR 5/6 (dry) | 7.5YR 5/4 (dry) |
| 0.94% O.M. | 0.28% O M. |
| 5.2 meq/100g CEC | 9.3 meq/100g CEC |
| 0.32% $Fe_2O_3$ | 0.28% $Fe_2O_3$ |

21.2 MW%•____ 17.7 MW%•----

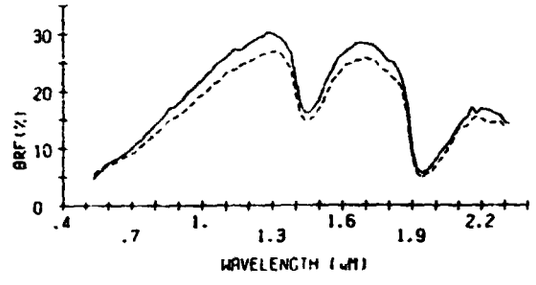



## MONTELL(TX)

Entic Pellustert
fine, montmorillonitic, hyperthermic
semiarid zone
calcareous, clayey alluvium
Kinney Co.

| All horizon | All horizon |
|---|---|
| A slope | A slope |
| mod. well drained | mod. well drained |
| clay | clay loam |
| 20%S 39%Si 41%C | 21%S 43%Si 36%C |
| 10YR 4/1 (moist) | 10YR 4/1 (moist) |
| 10YR 5/1 (dry) | 10YR 5/1 (dry) |
| 2.58% O.M. | 2.18% O.M. |
| 41.4 meq/100g CEC | 45.2 meq/100g CEC |
| 0.19% $Fe_2O_3$ | 0.18% $Fe_2O_3$ |

40.9 MW%•____ 42.7 MW%•----

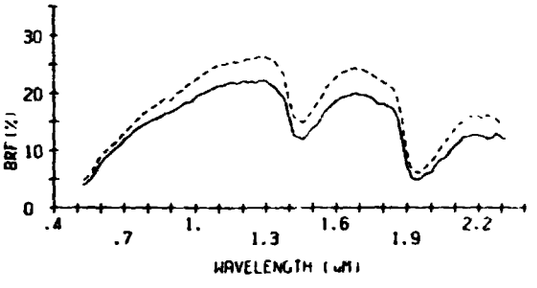



## AMARILLO(TX)

Aridic Paleustalf
fine-loamy, mixed, thermic
semiarid zone
old eolian deposits or alluvium
Lamb Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | fine sandy loam |
| 43%S 44%Si 14%C | 77%S 10%Si 13%C |
| 5YR 3/4 (moist) | 7.5YR 4/6 (moist) |
| 5YR 5/6 (dry) | 7.5YR 4/o (dry) |
| 0.73% O.M. | 0.56% O.M. |
| 10.5 meq/100g CEC | 13.6 meq/100g CEC |
| 0.80% $Fe_2O_3$ | 0.51% $Fe_2O_3$ |

26.1 MW%•____ 20.3 MW%•----

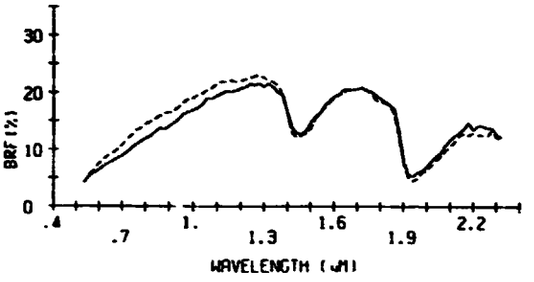


## ACUFF(TX)

Aridic Paleustoll
fine-loamy, mixed, thermic
semiarid zone
sandy outwash or old alluvium
Lubbock Co.

| ____ | ____ |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| fine sandy loam | fine sandy loam |
| 61%S 22%Si 16%C | 65%S 20%Si 15%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/4 (moist) |
| 7.5YR 4/4 (dry) | 7.5YR 4/6 (dry) |
| 1.12% O.M. | 0.75% O.M. |
| 16.2 meq/100g CEC | 12.0 meq/100g CEC |
| 0.58% $Fe_2O_3$ | 0.59% $Fe_2O_3$ |

26.4 MW%·____ 27.4 MW%·----

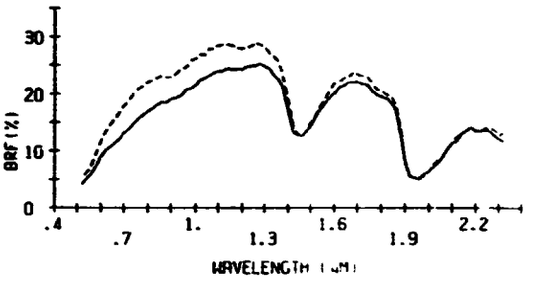



## PATRICIA(TX)

Aridic Paleustalf
fine-loamy, mixed, thermic
semiarid zone
sandy eolian sediments
Lynn Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| B slope | B slope |
| well drained | well drained |
| loamy fine sand | fine sand |
| 80%S 11%Si 9%C | 89%S 4%Si 7%C |
| 5YR 4/4 (moist) | 5YR 4/4 (moist) |
| 7.5YR 5/6 (dry) | 7.5YR 5/6 (dry) |
| 0.56% O.M. | 0.11% O.M. |
| 6.4 meq/100g CEC | 6.3 meq/100g CEC |
| 0.40% $Fe_2O_3$ | 0.33% $Fe_2O_3$ |

24.5 MW%·____ 20.4 MW%·----

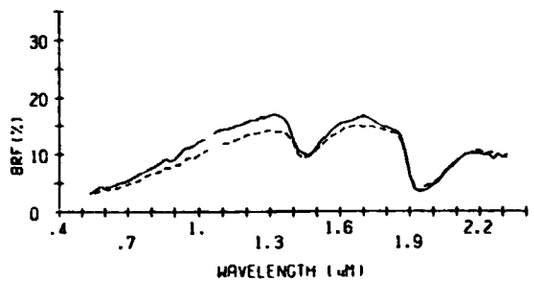



## TARRANT(TX)

Lithic Calciustoll
clayey-skeletal, montmorillonitic,
thermic
subhumid zone
residuum from limestone
Menard Co.

| ____ | ---- |
|---|---|
| All horizon | All horizon |
| A slope | A slope |
| well drained | well drained |
| silty clay | silty clay |
| 2%S 41%Si 57%C | 4%S 46%Si 49%C |
| 5YR 3/1 (moist) | 10YR 2/1 (moist) |
| 10YR 3/2 (dry) | 10YR 3/2 (dry) |
| 4.61% O.M. | 5.62% O.M. |
| 59.0 meq/100g CEC | 50.4 meq/100g CEC |
| 0.94% $Fe_2O_3$ | 0.87% $Fe_2O_3$ |

51.9 MW%·____ 50.1 MW%·----

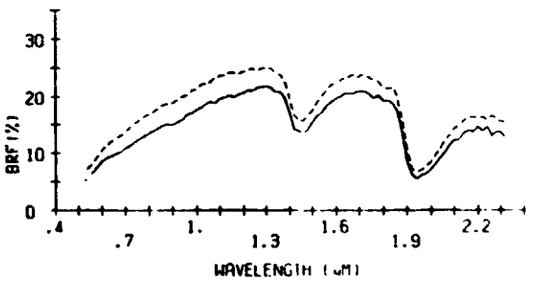



## REAGAN(TX)

Ustollic Calciorthid
fine-silty, mixed, thermic
semiarid zone
eolian material
Upton Co.

| ____ | ---- |
|---|---|
| All horizon | All horizon |
| A slope | A slope |
| well drained | well drained |
| loam | loam |
| 38%S 47%Si 15%C | 44%S 41%Si 16%C |
| 10YR 3/3 (moist) | 10YR 4/4 (moist) |
| 7.5YR 6/4 (dry) | 7.5YR 6/4 (dry) |
| 0.82% O.M. | 0.90% O.M. |
| 31.8 meq/100g CEC | 29.3 meq/100g CEC |
| 0.69% $Fe_2O_3$ | 0.58% $Fe_2O_3$ |

28.9 MW%·____ 26.2 MW%·----

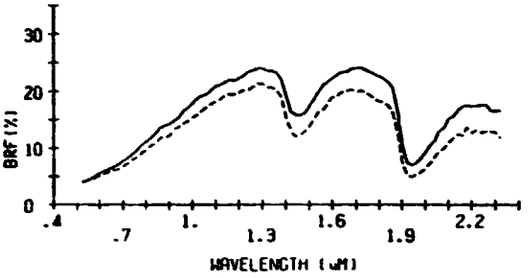


## WILLACY(TX)

Udic Argiustoll
fine-loamy, mixed, hyperthermic
subhumid zone
alkaline loamy sediments
Cameron Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loamy fine sand | fine sandy loam |
| 82%S 10%Si 8%C | 76%S 12%Si 12%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 0.55% O.M. | 0.80% O.M. |
| 5.4 meq/100g CEC | 7.8 meq/100g CEC |
| 0.25% $Fe_2O_3$ | 0.29% $Fe_2O_3$ |

16.0 MW%·____ 27.3 MW%·____

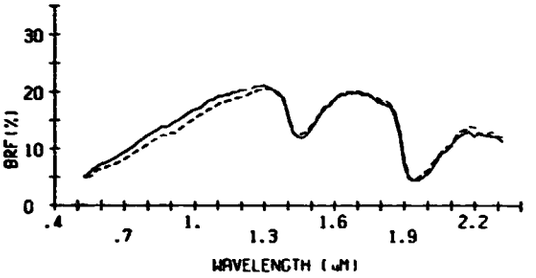



## HIDALGO(TX)

Typic Haplustoll
fine-loamy, mixed, hyperthermic
semiarid zone
fine textured calcareous sediments
Hidalgo Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| sandy clay loam | clay loam |
| 50%S 22%Si 28%C | 42%S 24%Si 34%C |
| 7.5YR 4/2 (moist) | 10YR 3/1 (moist) |
| 10YR 4/2 (dry) | 10YR 4/2 (dry) |
| 1.48% O.M. | 2.46% O.M. |
| 26.4 meq/100g CEC | 31.5 meq/100g CEC |
| 0.33% $Fe_2O_3$ | 0.16% $Fe_2O_3$ |

33.2 MW%·____ 35.0 MW%·____

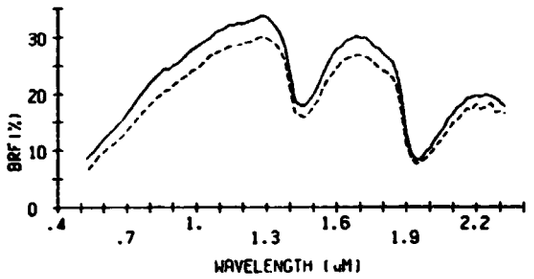



## SARITA(TX)

..ossaremic Paleustalf
loamy, mixed, hyperthermic
semiarid zone
sandy and loamy deposits
Hidalgo Co.

| Al horizon | Al horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| fine sand | fine sand |
| 95%S 3%Si 2%C | 96%S 2%Si 2%C |
| 10YR 4/3 (moist) | 10YR 4/3 (moist) |
| 10YR 6/3 (dry) | 10YR 7/3 (dry) |
| 0.52% O.M. | 0.19% O.M. |
| 4.3 meq/100g CEC | 3.0 meq/100g CEC |
| 0.07% $Fe_2O_3$ | 0.06% $Fe_2O_3$ |

14.5 MW%·____ 18.6 MW%·____

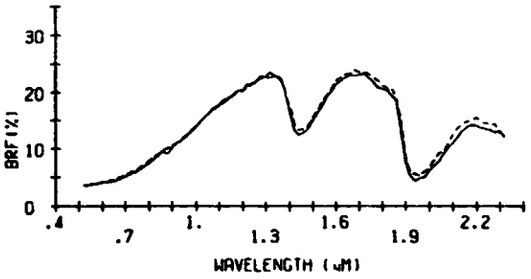



## CLAREVILLE(TX)

Pachic Argiustoll
fine, montmorillonitic, hyperthermic
semiarid zone
calcareous clayey marine sediments
Jim Wells Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| loam | sandy clay loam |
| 48%S 28%Si 24%C | 56%S 19%Si 24%C |
| 10YR 3/1 (moist) | 10YR 3/1 (moist) |
| 10YR 3/1 (dry) | 10YR 3/1 (dry) |
| 2.09% O.M. | 1.66% O.M. |
| 30.5 meq/100g CEC | 36.6 meq/100g CEC |
| 0.18% $Fe_2O_3$ | 0.18% $Fe_2O_3$ |

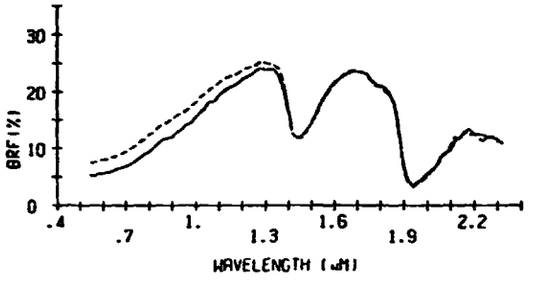
38.2 MW%·____ 30.9 MW%·____



## VICTORIA(TX)

Udic Pellustert
fine, montmorillonitic, hyperthermic
subhumid zone
calcareous clayey marine sediments
Nueces Co.

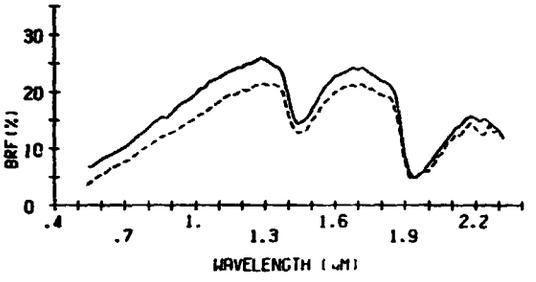
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| s. poorly drained | s. poorly drained |
| clay | clay |
| 20%S 27%Si 54%C | 16%S 27%Si 57%C |
| 7.5YR 3/0 (moist) | 7.5YR 4/0 (moist) |
| 10YR 4/1 (dry) | 10YR 5/1 (dry) |
| 2.07% O.M. | 1.76% O.M. |
| 59.2 meq/100g CEC | 61.3 meq/100g CEC |
| 0.23% $Fe_2O_3$ | 0.61% $Fe_2O_3$ |
| 45.4 MW% | 47.3 MW% |




## UVALDE(TX)

Aridic Calciustoll
fine-silty, mixed, hyperthermic
semiarid zone
alluvium from limestone
Zavala Co.

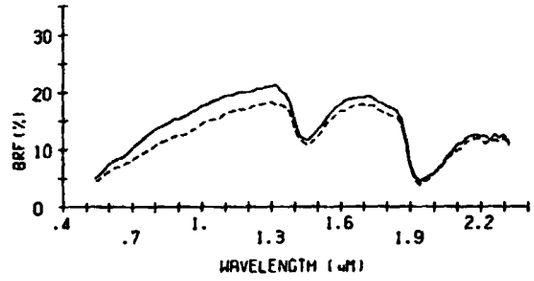
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| clay loam | clay loam |
| 27%S 42%Si 31%C | 38%S 30%Si 32%C |
| 10YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 4/2 (dry) |
| 1.50% O.M. | 2.91% O.M. |
| 38.7 meq/100g CEC | 36.6 meq/100g CEC |
| 0.60% $Fe_2O_3$ | 0.68% $Fe_2O_3$ |
| 37.2 MW% | 39.1 MW% |




## SHERM(TX)

Torrertic Paleustoll
fine, mixed, mesic
semiarid zone
eolian sediments
Sherman Co.

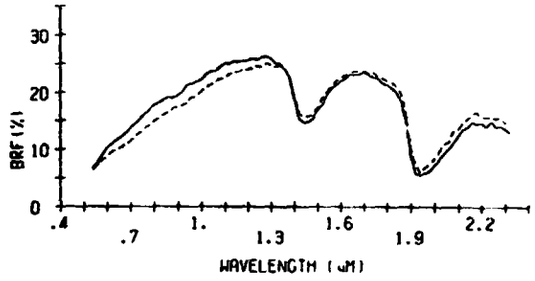
| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| loam | clay loam |
| 39%S 36%Si 25%C | 22%S 46%Si 32%C |
| 7.5YR 3/4 (moist) | 10YR 3/3 (moist) |
| 7.5YR 5/4 (dry) | 10YR 4/3 (dry) |
| 1.65% O.M. | 1.89% O.M. |
| 18.1 meq/100g CEC | 28.7 meq/100g CEC |
| 0.76% $Fe_2O_3$ | 0.84% $Fe_2O_3$ |
| 36.6 MW% | 39.0 MW% |




## HODGINS(TX)

Ustollic Camborthid
fine-silty, mixed, thermic
arid zone
calcareous loamy alluvium
Pecos Co.

| A11-A12 horizon | A11-A12 horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silty clay | silty clay loam |
| 7%S 49%Si 44%C | 6%S 66%Si 28%C |
| 10YR 4/3 (moist) | 10YR 4/2 (moist) |
| 7.5YR 6/4 (dry) | 10YR 5/3 (dry) |
| 2.09% O.M. | 2.82% O.M. |
| 48.1 meq/100g CEC | 48.5 meq/100g CEC |
| 0.78% $Fe_2O_3$ | 0.77% $Fe_2O_3$ |
| 44.8 MW% | 41.7 MW% |

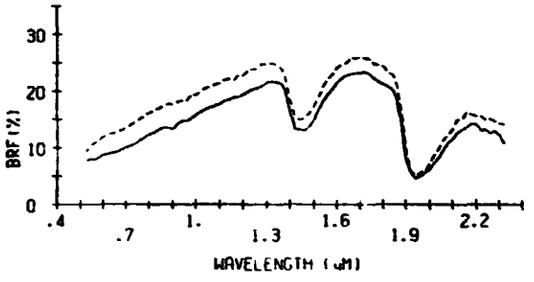


## ABBOTT(UT)

Vertic Fluvaquent
fine, montmorillonitic, calcareous, mesic
arid zone
mixed alluvium
Millard Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| poorly drained | poorly drained |
| silty clay | clay |
| 2%S 41%Si 57%C | 3%S 37%Si 61%C |
| 5YR 4/1 (moist) | 10YR 6/1 (moist) |
| 10YR 5/1 (dry) | 10YR 5/1 (dry) |
| 1.79% O.M. | 0.74% O.M. |
| 49.8 meq/100g CEC | 44.4 meq/100g CEC |
| 0.30% $Fe_2O_3$ | 0.36% $Fe_2O_3$ |

49.2 MW%·____ 34.8 MW%·----

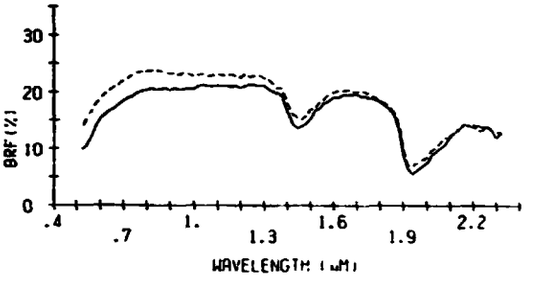



## HARDING(UT)

Xerollic Natrargid
fine, mixed, mesic
arid zone
mixed sediments
Millard Co.

| ____ | ---- |
|---|---|
| A2 horizon | A2 horizon |
| A slope | A slope |
| well drained | well drained |
| loam | sandy clay loam |
| 41%S 34%Si 25%C | 54%S 22%Si 24%C |
| 10YR 6/4 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 10YR 7/2 (dry) |
| 0.13% O.M. | 0.61% O.M. |
| 33.0 meq/100g CEC | 28.0 meq/100g CEC |
| 0.51% $Fe_2O_3$ | 0.46% $Fe_2O_3$ |

26.1 MW%·____ 19.4 MW%·----

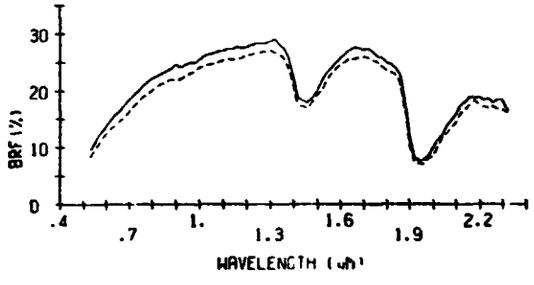



## PALISADE(UT)

Typic Calciorthid
coarse-loamy, mixed, mesic
semiarid zone
calcareous glacial outwash
Millard Co.

| ____ | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| v. fine sandy loam | silt loam |
| 66%S 25%Si 9%C | 26%S 56%Si 18%C |
| 10YR 5/4 (moist) | 10YR 5/3 (moist) |
| 10YR 6/3 (dry) | 10YR 6/3 (dry) |
| 0.75% O.M. | 1.99% O.M. |
| 26.8 meq/100g CEC | 30.7 meq/100g CEC |
| 0.41% $Fe_2O_3$ | 0.58% $Fe_2O_3$ |

23.5 MW%·____ 33.9 MW%·----

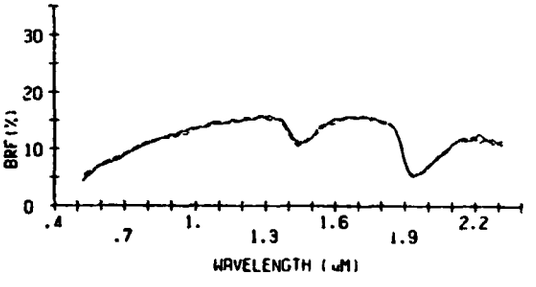



## PHARO(UT)

Aridic Calcixeroll
loamy-skeletal, carbonatic, mesic
semiarid zone
gravelly alluvium
Millard Co.

| ____ | ---- |
|---|---|
| A11-A12 horizon | A11-A12 horizon |
| B slope | B slope |
| s. excess. drained | s. excess. drained |
| loam | sandy loam |
| 52%S 35%Si 13%C | 54%S 34%Si 12%C |
| 10YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 1.42% O.M. | 1.29% O.M. |
| 25.9 meq/100g CEC | 25.8 meq/100g CEC |
| 0.48% $Fe_2O_3$ | 0.48% $Fe_2O_3$ |

23.2 MW%·____ 22.4 MW%·----

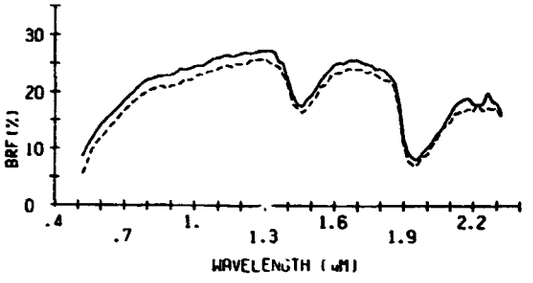


## FREDERICK(VA)

Typic Paleudult
clayey, mixed, mesic
humid zone
clayey residuum from dolomitic limestone
Rockingham Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| C slope | C slope |
| well drained | well drained |
| silt loam | silt loam |
| 21%S 62%Si 17%C | 20%S 65%Si 15%C |
| 10YR 4/4 (moist) | 10YR 5/4 (moist) |
| 10YR 7/4 (dry) | 10YR 7/4 (dry) |
| 1.16% O.M. | 2.47% O.M. |
| 7.2 meq/100g CEC | 10.1 meq/100g CEC |
| 1.30% $Fe_2O_3$ | 1.23% $Fe_2O_3$ |

27.1 MW%·——  33.6 MW%·----

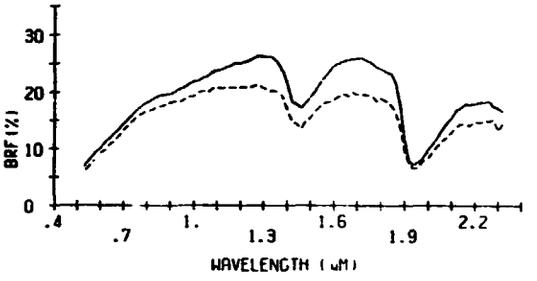



## MURRILL(WV)

Typic Hapludult
fine-loamy, mixed, mesic
humid zone
colluvial acid material
Monroe Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| C slope | D slope |
| well drained | well drained |
| silt loam | loam |
| 28%S 56%Si 17%C | 48%S 41%Si 11%C |
| 10YR 5/4 (moist) | 7.5YR 4/4 (moist) |
| 10YR 6/4 (dry) | 10YR 6/3 (dry) |
| 2.24% O.M. | 2.58% O.M. |
| 10.3 meq/100g CEC | 9.2 meq/100g CEC |
| 1.48% $Fe_2O_3$ | 1.23% $Fe_2O_3$ |

27.3 MW%·——  29.6 MW%·----

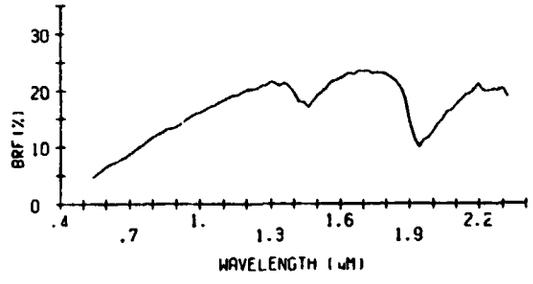



## VILAS(WI)

Entic Haplorthod
sandy, mixed, frigid
humid zone
alluvium or outwash
Bayfield Co.

| ——— |
|---|
| A1-A2 horizon |
| A slope |
| excess. drained |
| sand |
| 91%S 8%Si 1%C |
| 7.5YR 3/2 (moist) |
| 7.5YR 5/2 (dry) |
| 1.95% O.M. |
| 8.7 meq/100g CEC |
| 0.29% $Fe_2O_3$ |

8.8 MW%·——

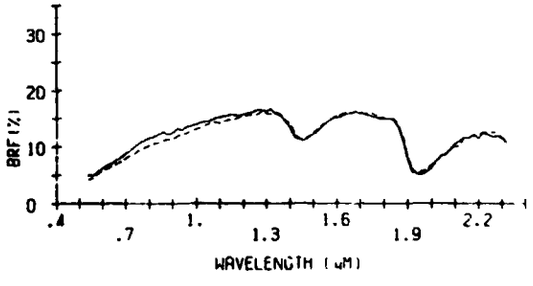



## PENCE(WI)

Typic Haplorthod
coarse-loamy, mixed, frigid
humid zone
sandy loam drift over acid sand outwash
Florence Co.

| ——— | ---- |
|---|---|
| Ap horizon | Ap horizon |
| A slope | A slope |
| well drained | well drained |
| sandy loam | silt loam |
| 53%S 40%Si 7%C | 31%S 63%Si 6%C |
| 10YR 3/3 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 2.56% O.M. | 2.79% O.M. |
| 13.1 meq/100g CEC | 12.3 meq/100g CEC |
| 1.05% $Fe_2O_3$ | 1.08% $Fe_2O_3$ |

28.1 MW%·——  25.7 MW%·----

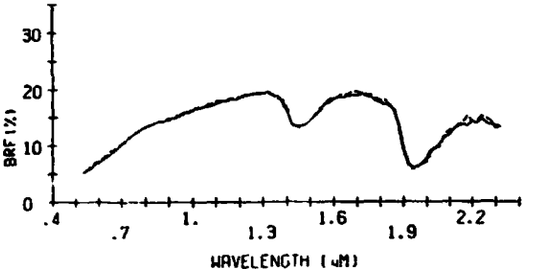


## ANTIGO(WI)

Typic Glossoboralf
fine-silty over sandy or sandy-skeletal, mixed
humid zone
silty sediments over glacial sand
Langlade Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 18%S 71%Si 11%C | 18%S 73%Si 9%C |
| 10YR 4/3 (moist) | 10YR 3/3 (moist) |
| 10YR 6/3 (dry) | 10YR 7/4 (dry) |
| 3.28% O.M. | 2.86% O.M. |
| 12.9 meq/100g CEC | 16.3 meq/100g CEC |
| 1.24% $Fe_2O_3$ | 1.12% $Fe_2O_3$ |

33.1 MW%·____ 31.2 MW%·----

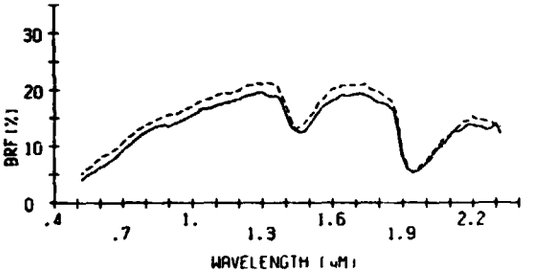



## FENWOOD(WI)

Typic Glossoboralf
fine-loamy, mixed
humid zone
silty sediments and residuum from granitic rocks
Marathon Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| well drained | well drained |
| silt loam | silt loam |
| 30%S 61%Si 9%C | 27%S 68%Si 5%C |
| 10YR 3/2 (moist) | 10YR 4/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 2.82% O.M. | 2.96% O.M. |
| 17.6 meq/100g CEC | 18.6 meq/100g CEC |
| 1.35% $Fe_2O_3$ | 1.16% $Fe_2O_3$ |

36.2 MW%·____ 37.2 MW%·----

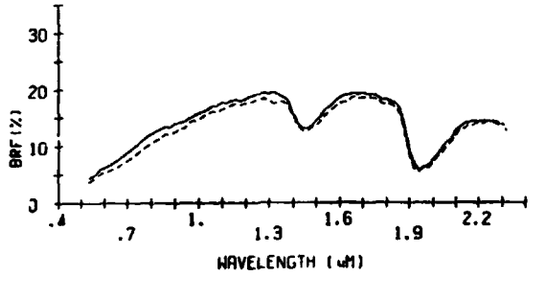



## CAMPIA(WI)

Typic Glossoboralf
fine-silty, mixed
humid zone
silty eolian or lacustrine deposits
Polk Co.

| Ap horizon | Ap horizon |
|---|---|
| A slope | A slope |
| well drained | well drained |
| silt loam | silt loam |
| 13%S 76%Si 10%C | 31%S 59%Si 10%C |
| 7.5YR 3/2 (moist) | 10YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/3 (dry) |
| 3.58% O.M. | 2.28% O.M. |
| 16.8 meq/100g CEC | 15.3 meq/100g CEC |
| 0.73% $Fe_2O_3$ | 0.85% $Fe_2O_3$ |

52.0 MW%·____ 39.9 MW%·----

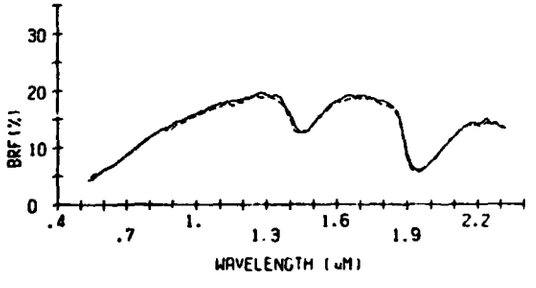



## CUSHING(WI)

Glossic Eutroboralf
fine-loamy, mixed
humid zone
loam till with a silty mantle
Polk Co.

| Ap horizon | Ap horizon |
|---|---|
| B slope | B slope |
| mod. well drained | mod. well drained |
| fine sandy loam | fine sandy loam |
| 54%S 40%Si 7%C | 54%S 39%Si 7%C |
| 7.5YR 3/2 (moist) | 7.5YR 3/2 (moist) |
| 10YR 5/2 (dry) | 10YR 5/2 (dry) |
| 1.96% O.M. | 2.55% O.M. |
| 11.0 meq/100g CEC | 12.7 meq/100g CEC |
| 0.55% $Fe_2O_3$ | 0.59% $Fe_2O_3$ |

28.7 MW%·____ 29.1 MW%·----

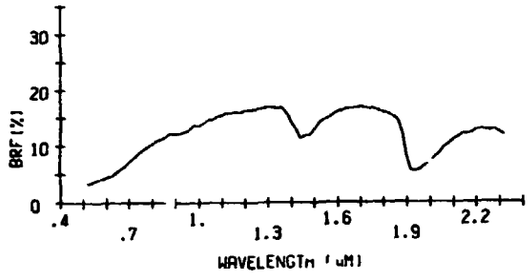


## GOODMAN(WI)

Alfic Haplorthod
coarse-silty, mixed, frigid
humid zone
silty sediments over acid till
Price Co.

Al horizon
A slope
mod. well drained
silt loam
6%S 82%Si 12%C
7.5YR 3/2 (moist)
10YR 6/2 (dry)
7.44% O.M.
30.0 meq/100g CEC
1.04% $Fe_2O_3$

41.5 MW%·——

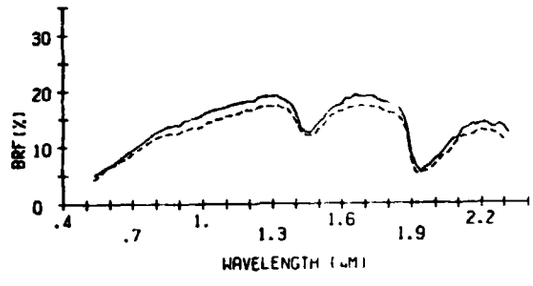



## FOX(WI)

Typic Hapludalf
fine-loamy over sandy or sandy-skeletal, mixed, mesic
humid zone
loamy outwash over calcareous sand
Ozaukee Co.

| Ap horizon | Ap horizon |
|---|---|
| C slope | C slope |
| well drained | well drained |
| silt loam | loam |
| 28%S 61%Si 12%C | 50%S 35%Si 15%C |
| 10YR 3/3 (moist) | 10YR 3/3 (moist) |
| 10YR 5/3 (dry) | 10YR 5/3 (dry) |
| 2.78% O.M. | 3.75% O.M. |
| 17.0 meq/100g CEC | 17.9 meq/100g CEC |
| 1.05% $Fe_2O_3$ | 2.01% $Fe_2O_3$ |

32.0 MW%·—— 28.4 MW%·----



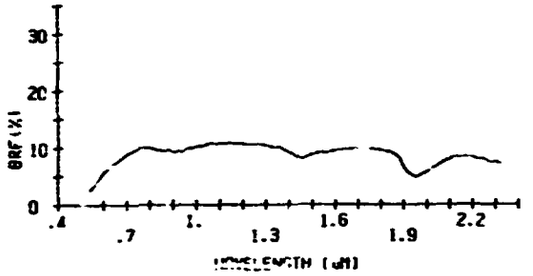
## CASCAVEL (PR. BRASIL)

Haplic Acrorthox
very-fine, oxidic, thermic
humid zone
basalt
Municipio of Cascavel

---

A1 horizon
B slope
excess. drained
clay
15ES 18ZSi 67ZC
2.5YR 3/3 (moist)
2.5YR 3/6 (dry)
3.55% O.M.
19.8 meq/100g CEC
23.3% $Fe_2O_3$

ORTHOX • ___



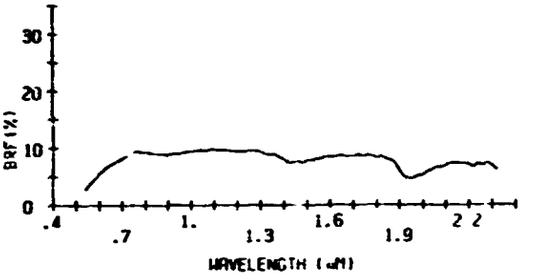

## PATO BRANCO (PR. BRASIL)

Haplic Acrorthox
very-fine, kaolinitic, thermic
humid zone
basalt
Municipio of Pato Branco

---

Ap horizon
B slope
excess. drained
clay
9ES 23ZSi 68ZC
5YR 3/2 (moist)
5YR 4/4 (dry)
3.70% O.M.
20.2 meq/100g CEC
11.2% $Fe_2O_3$

ORTHOX • ___



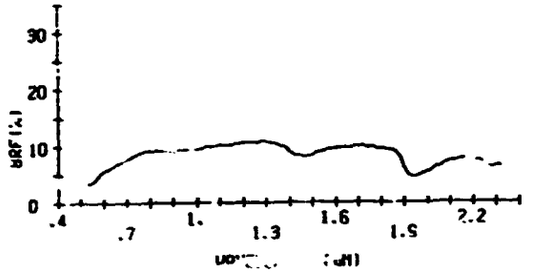

## GUARAPUAVA (PR. BRASIL)

Typic Acrohumox
very-fine, oxidic, thermic
humid zone
andesite
Municipio of Guarapuava

---

A1 horizon
B slope
excess. drained
clay
6ES 46ZSi 48ZC
7.5YR 3/2 (moist)
7.5YR 4/4 (dry)
9.2% O.M.
41.6 meq/100g CEC
14.0% $Fe_2O_3$

HUMOX • ___



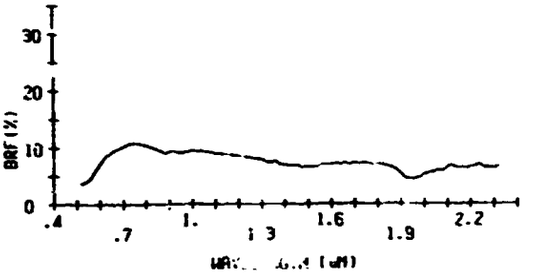

## LONDRINA (PR. BRASIL)

Typic Haplorthox
very-fine, kaolinitic, hyperthermic
humid zone
basalt
Municipio of Londrina

---

A1p horizon
C slope
excess. drained
clay
9ES 14ZSi 77ZC
2.5YR 3/6 (moist)
2.5YR 4/6 (dry)
2.28% O.M.
22.1 meq/100g CEC
25.6% $Fe_2O_3$

ORTHOX • ___



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