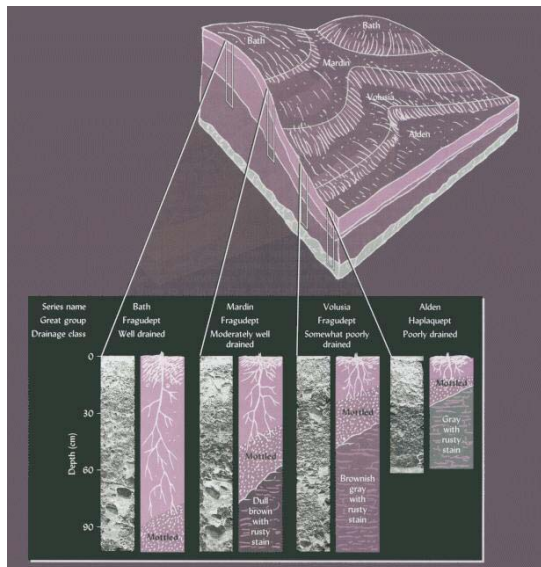


Soil Survey

Characterization of the spatial variability of soils. Variability exists at different scales of observation. There is small-scale variability that is of theoretical interest but too small to be useful for soil management. Field-scale variability, as delineated in detailed soils maps, however, is useful as in precision ag or simulations of effects of management practices. Medium-scale variability is represented in *general soils maps* that show *soil associations* in a county. General soils maps are useful for comparing the suitability of large areas for general land use. Each soil association is a group of different soils that tends to occur together. If differences in soils are due to drainage, as affected by topography, the group of related soils is a *catena*. Large-scale variability reflects soil patterns that result from differences in climate, vegetation and parent material.



Example of a catena.

Mapping Soils

There are three aspects: 1) define each soil to be mapped, 2) delineate boundaries across the landscape and 3) characterize each of the soils. Since soil properties grade

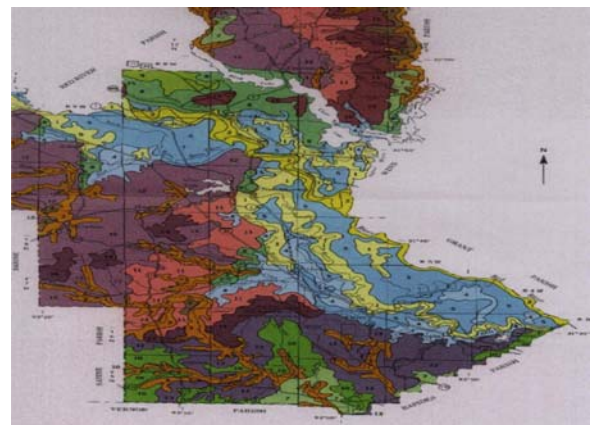
from one distinctive soil to another in the field, the objective of the delineation step is to approximate a boundary between two soils. Based on an understanding of where different soils are expected to occur in a landscape, specific locations are chosen for augur boring. Sample locations are within an area where a certain series is expected to occur to confirm its presence and to either side of an expected transition. Field sampling sites are then approximately located on aerial photographs and boundaries drawn based on field observations. Greater precision of location can be obtained if the mapper uses GPS. Other technical aids include ground penetrating radar and remote sensing.

Contents of Soil Surveys

A soil survey is a systematic examination, description, classification and mapping of the soils in a given county (parish). It includes general and detailed soils maps, descriptions of soil associations and mapping units, soil characterization data, tables on potential uses and limitations of mapping units and other information relevant to understanding the soils of a county.

General Soils Map

Small-scale (1:200,000) map of soil associations.



General soils map from Natchitoches Parish.

Detailed Soils Map

Aerial photographs with mapping units delineated. These are at a much larger scale (1:20,000).

Each sheet is linked to location within county from an [index map](#). The index includes legend of soil mapping units and structural and topographical features.

Mapping units may be [phases](#) or minor variations of soil series such as surface texture, slope, extent of erosion, and so forth. Mapping units may also be [consociations](#) or [complexes](#). If a particular area exhibits a complex pattern of recurring soil series, delineation of boundaries between the two or more specific series may be prohibitive. Therefore, two or more soils may be lumped together into a single mapping unit. If such a lumped mapping unit consists of very similar soil series or phases it is called a consociation. On the other hand, if dissimilar soils occur together, the mapping unit is a complex.



Portion of a detailed soils map.

Tables

Climate and growing season data
Suitability of soil associations for different purposes
Area of mapping units and fractional occurrence

Prime farmland

Soils best suited for meeting the Nation's short- and long-range needs for food and fiber. In order to qualify a soil must meet several criteria.

Land capability and yields per acre

Land capability classes run from I (negligible limitations to crop production) through IV (severe limitations) and V (not suitable for crop production) to VIII (suitable only for recreation and wildlife). Specific limitations are indicated by a trailing letter such as e (erodible) or w (wetness).

The example data below are excerpted from the soil survey for St. Helena Parish.

Soil	Land Capability	Soybeans	Bahiagrass
Bude	Ilw	25 Bu	7.0 AUM
Cypress	VIlw		
Ruston	Ile	30	9.5
Toula	Ile	25	10.0

Woodland management and productivity

Soil	Ordination Symbol	Trees	Site Index
Bude	10W	Loblolly	98
Cypress	6W	Baldcypress	100
Ruston	10A	Loblolly	96
Toula	13A	Slash	100

Ordination symbols give expected maximum annual yields in cubic meters per ha. The trailing letter indicates major limitation such as wetness (W) or none (A).

Recreational development

Soil	Camping	Golfing
Bude	Severe Wetness (0.5)	Severe Wetness (0.5)
Ruston	Slight	Slight

Ratings of slight, moderate or severe limitations are based on various soil properties relevant to the intended uses (see immediately below). For example, the above rating of severe limitation to use of the Bude soil for camp sites or a golf course is based on the fact that this soil has a seasonally high water table that is only ½ foot from the soil surface. On the other hand, the Ruston soil is neither flooded, awkwardly steep nor has a very shallow water table.

Limitation Ratings

<i>Property</i>	<i>Slight</i>	<i>Moderate</i>	<i>Severe</i>
Flooding	None	Occasional	Freq
Slope	< 8 %	8 – 15	> 15
Water table	> 2 ft	1 – 2	< 1

Wildlife habitat

Soil	Potential Wildlife Habitat		
	<i>Openland</i>	<i>Woodland</i>	<i>Wetland</i>
Bude	Good	Good	Fair
Cypress	Very poor	Very poor	Good
Good	Easy to establish and maintain habitat		
Fair	Moderately intensive management		
Poor	Very intensive management required		
Very poor	Impractical or impossible		

Various other tables including

Building site development
Sanitary facilities
Use for landfill
Construction materials
Water management
Engineering index properties
Physical and chemical properties
Soil fertility data
Soil classification

Narrative

Preceding tables and maps that describes

Soil associations of the general soils map
Soil mapping units of detailed maps
Use and management tables
Soil properties tables
Detailed profile descriptions of soil series are included
General discussion of formation of soils in county