

## **Centre County Soil Survey Report Soil Use and Management**

### **Town and Country Planning**

This section provides information on properties of the soils and their effect on town and country planning. Community planners, developers, and individual landowners can use this information to help determine the most suitable use for a particular area. Other useful information can be found on the soil map and in other parts of the survey, particularly in the sections "Descriptions of the Soils" and "Engineering Uses of the Soils." Although the soil map and the data in this section serve as guides and can eliminate some sites from further consideration, they do not supplant direct detailed onsite investigation of planned development. Not considered in rating the soils are location of areas in relation to established business centers or transportation lines and other economic factors that are important in determining the ultimate use of an area.

Soil limitations for specified uses in town and country planning are given in table 5. The degrees of limitations are indicated by the ratings of slight, moderate, and severe. Slight means that soil properties are generally favorable for the rated use, or, in other words, limitations are minor and easily overcome. Moderate means that some soil properties are unfavorable but can be overcome or modified by special planning and design. Severe means that soil properties are so unfavorable and so difficult to correct or overcome as to require major soil reclamation, special designs, or intensive maintenance.

Following are explanations of the columns in table 5.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. The soil material between the depths of 18 inches and 6 feet is evaluated. The soil properties considered are those that affect both absorption effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope affects difficulty of layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rock or boulders increase construction costs.

Sewage lagoons are shallow ponds constructed to hold sewage within a depth of 2 to 5 feet long enough or bacteria to decompose the solids. A lagoon has a nearly level floor and sides, or embankments, of compacted soil material. The assumption is made that the embankment is compacted to medium density and the pond is protected from flooding. Properties are considered that affect the pond floor and the embankment. Those that affect the pond floor are permeability, color or organic matter, and slope, and if the floor needs to be leveled depth to and condition of bedrock becomes important. The soil properties that affect the embankment are the engineering properties of the embankment material as interpreted from the Unified soil classification and the amounts of stones, if any, that influence the ease of excavation and compaction of the embankment material.

Dwellings with basements as rated in table 5 are for homesites or other buildings of three stories or less in height that have no more than an 8 foot excavation for basements. Buildings with foundation loads in excess of those equal to three story dwellings and with more than an 8-foot excavation for basements are excluded from the ratings. Considered in rating the soils are the depth to water table, shrink-swell potential, the depth to and the kind of bedrock, soil texture, the percent of slope potential frost action, and the hazard of flooding.

For lawns and landscaping, it is assumed that enough lime and fertilizer are used for good growth of lawn grasses and ornamental plants. Suitable soil material is needed in sufficient quantities so desirable trees and other plants can survive and grow well. Among the important soil properties for lawns and landscaping are depth to bedrock or layers that restrict water and roots, texture, slope, depth to water table, and the presence of stones or rock fragments.

Local roads and streets, as rated in table 5, have an all-weather surface expected to carry automobile traffic all year. They have a subgrade of underlying soil material; a base consisting of gravel, crushed rock, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand and most cuts and fills are less than 6 feet deep.

Soil properties that most affect design and construction of roads and streets are the load supporting capacity and stability of the subgrade and the workability and quantity of cut and fill material available. The AASHTO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rock fragments, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

Sanitary landfill is a method of disposing of refuse. The waste is spread in thin layers, compacted, and covered with soil throughout the disposal period. Landfill areas are subject to heavy vehicular traffic. Some soil properties that affect suitability for landfill are ease of excavation, hazard of polluting ground water, and trafficability. The best soils have moderately slow permeability, withstand heavy traffic, and are friable and easy to excavate. Unless otherwise stated, the ratings in table 5 apply only to a depth of about 6 feet, and therefore limitation ratings of slight or moderate may not be valid if trenches are much deeper than that. Even though reliable predictions can be made to a depth of 10 or 15 feet for some soils, every site should be investigated before it is selected.

#### Recreational Development

Knowledge of soils is necessary in planning, developing, and maintaining areas used for recreation. In table 6 the soils of Centre County are rated according to limitations that affect their use for camp areas, service buildings and buildings without basements, paths and trails, picnic areas, playgrounds, and golf fairways.

In table 6 the soils are rated as having slight, moderate, or severe limitations for the specified uses. For all of these ratings, it is assumed that a good cover of vegetation can be established and maintained. A limitation of slight means that soil properties are generally favorable and limitations are so minor that they easily can be overcome. A moderate limitation can be overcome or modified by planning, by design, or by special maintenance. A severe limitation means that costly soil reclamation, special design, intense maintenance, or a combination of these is required.

Camp areas are used intensively for tents and small camp trailers and the accompanying activities of outdoor living. Little preparation of the site is required, other than shaping and leveling for tent and parking areas. Camp areas are subject to heavy foot traffic and limited vehicular traffic. The best soils have gentle slopes, good drainage, a surface free of rocks and coarse fragments, freedom from flooding during periods of heavy use, and a surface that is firm after rain but not dusty when dry.

Service buildings and dwellings, as rated in table 6, are without basements, are not more than three stories high, and are supported by foundation footings placed in undisturbed soil. The features that affect the rating of a soil for service buildings are those that relate to capacity to support load and resist settlement under load and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding, density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, depth to bedrock, content of stones, and outcrops of rock.

Paths and trails are used for local and cross-country travel by foot or on horseback. Design and layout should require little or no cutting and filling. The best soils are at least moderately well drained, are firm when wet but not dusty when dry, are flooded not more than once during the

season of use, have slopes of less than 15 percent, and have few or no rock fragments or stones on the surface.

Picnic areas are attractive natural or landscaped tracts used primarily for preparing meals and eating outdoors. These areas are subject to heavy foot traffic. Most of the vehicular traffic, however, is confined to access roads. The best soils are firm when wet but not dusty when dry; are free of flooding during the season of use; and do not have slopes or stoniness that greatly increases cost of leveling sites or of building access roads.

Playgrounds are used intensively for baseball, football, badminton, and similar organized games. Soils suitable for this use need to withstand intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrop, good drainage, freedom from flooding during periods of heavy use, and a surface that is firm after rain but not dusty when dry. If grading and leveling are required, depth to rock is important.

Golf fairways are used intensively and are subject to heavy foot traffic. Most of the vehicular traffic is confined to hard surface trails and roads. The best soils have good drainage, gentle slopes, a surface free of rock fragments and stones, and a surface that is firm after rain but not dusty when dry.