Soil Survey Report

MATTAWOMAN WATERSHED

Charles County, Maryland

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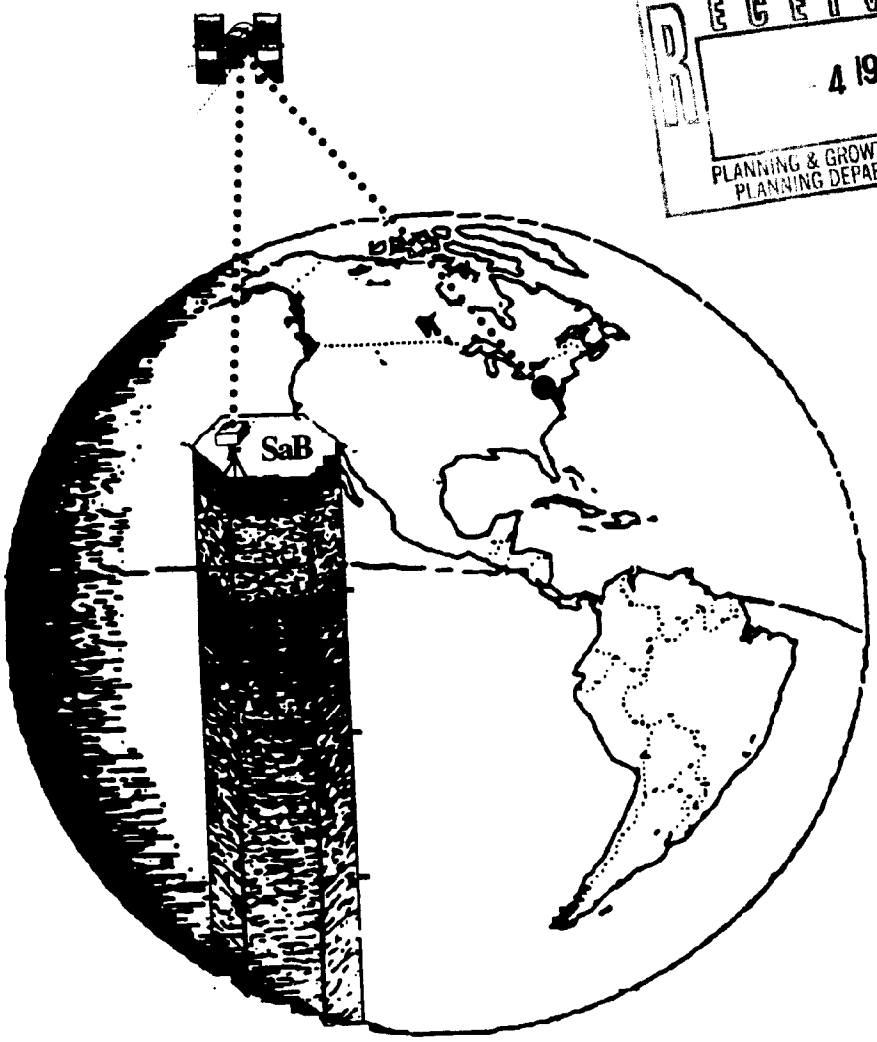

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Annapolis, Maryland

October 1991

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SOIL SURVEY REPORT

Mattawoman Watershed,

Charles County, Maryland

S599.M3D4 1991 c.1

Maps, text and interpretations prepared by the
USDA-Soil Conservation Service

October 1991

FOREWORD

This soil survey report contains information that can be used in land-planning programs in the Mattawoman Watershed in Charles County, Maryland. It contains predictions of soil behavior for selected land uses. The report also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information is available at the local office of the Soil Conservation Service.

Robert J. Klumpe
State Conservationist
Soil Conservation Service

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This Interim Report is an advance copy and is subject to change and/or revision.

SOIL SURVEY OF MATTAWOMAN WATERSHED
CHARLES COUNTY, MARYLAND

By George P. Demas
and
The Maryland State Office Staff
Soil Conservation Service

INTRODUCTION

Mattawoman Creek, a tributary of the Potomac River, is approximately 24 miles long, of which 11 miles comprise the boundary between Charles and Prince Georges Counties. Old Woman's Run and Piney Branch are the two main tributaries of Mattawoman Creek. The watershed takes up about one-fifth of the land area of Charles County, or about 46,900 acres. It is located entirely within the mid-Atlantic Coastal Plain province.

The landscapes within the watershed are extremely dissected and are characterized by rolling uplands between very steep and deep stream cuts. In the eastern section of the watershed near Waldorf, the elevations are above 200 feet, while at the western end near the outlet to the Potomac, elevations range from 0 to 40 feet. The higher elevations are dominated by soils that developed in a relatively thin mantle of loamy or sandy material overlying extensive gravel beds. These gravel beds are believed to be ancient remnants of Potomac River deposits. The lower elevations are located on terraces of the Potomac River, such as those along the Indian Head and Stump Neck area and are characterized by more silty and poorly drained soils. The main floodplain along Mattawoman Creek is, at places, from 3/4 to one mile wide. This area is dominated by alluvial soils varying in texture, but dominantly poorly and somewhat poorly drained. This area is also subject to flooding. In some locations, the waterway becomes extremeley braided and does not not have a definable main channel.

Mattawoman Creek was at one time a significant waterway for both Native Americans and European settlers in terms of transportation and food supply. At present, due to sedimentation, Mattawoman Creek is no longer navigable. The main concern now is prevention of further environmental degradation. Development within the watershed continues at a great pace and is expected to do so for quite some time. The Waldorf/St. Charles area has experienced the greatest amount of growth due to its proximatey to Washington, DC.

This report serves as an update to the 1974 Soil Survey of Charles County of approximately 28,148 acres of the Mattawoman Creek watershed.

HOW THIS SURVEY WAS MADE

Major field work for this soil survey was performed during May, June and July of 1991. The text and maps were prepared during July 1991.

This survey was made to provide information about the soils of the Mattawoman Watershed located in Charles County, Maryland. The information includes soil maps, soil interpretation tables, soil descriptions and an explanation of the tables. A soil scientist observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of native plants growing on the soils; and the kinds of geologic material. He dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The soil profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Since the soil scientist can observe only a limited number of holes, this model enables them to predict with considerable accuracy the kind of soil at a specific location on the landscape.

The soil scientist recorded the characteristics of the soil profiles that they studied. Features such as soil color, texture, gravel content, acidity, and organic matter content enable the soil scientist to distinguish one kind of soil from another. Comparisons were made among the profiles studied and with profiles from nearby counties and from places more distant. The soils were classified and named according to nationwide, uniform procedures. The soil series and soil phase are the categories of soil classification most used in a local survey such as the one presented here.

Soils that have almost alike profiles make up a soil series. Except for different textures in the surface layer, all the soils in one series have major horizons that are similar in thickness, texture, and other characteristics. All the soil series in the United States with the same name are essentially alike in those

characteristics that affect their behavior in an undisturbed condition. For example, the Beltsville series mapped here would be very similar to the Beltsville series mapped in St. Mary's county.

Soils of one series can differ in texture of the surface layer and in slope, or some other characteristic that affects the use of the soils by man. On the basis of such a difference, the soil series is divided into soil phases. Beltsville silt loam, 2 to 5 percent slopes is an example of a soil phase. After a guide for classifying and naming the soils has been worked out, the soil scientist drew the boundaries of the individual soils on aerial photographs. The areas shown on the soil map are called map units. In most situations, the map unit is almost equivalent to the soil phase.

Some map units are made up of two or more soils of different series. One kind of such a map unit is called a complex. An example of this kind of map unit is Bibb-Iuka complex.

Although the maps and their components are important, the soil scientist must also relate each soil to how it will behave under different conditions or use. As data is collected and tested for the key soils in a survey area, the soil scientist consults with engineers, biologists and others to ensure that the predictions of each soil's suitability or limitations for a specific use are accurate. Thus, the interpretations that finally evolved reflect the most up-to-date knowledge of the soils and their behavior under current methods of use and management.

HOW TO USE THIS INTERIM REPORT

This interim report contains information that can be applied in managing farms, ranches, and woodlands; help in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of this area are shown on the detailed map(s) at the back of this special report. Each map sheet is numbered to correspond with a number on the Index to Map Sheets. To locate the soil map sheet that includes the specific area in which you are interested, refer to the Index to Map Sheets.
On each map sheet soil areas are outlined and are identified by symbols. All areas marked with the same symbol in this survey area are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Using Interpretation Tables to Find Soil Information

All soil interpretations in this special report are in tabular form. To find the desired soil interpretation, first refer to the appropriate table that addresses the intended use. Second, use the numerically arranged map symbol and soil name to locate the soil interpretation. Say for example you are interested in finding out the Unified Classification of the surface layer in an area mapped as 2A (Beltsville silt loam, 0 to 2 percent slopes). First, you would go to the ENGINEERING INDEX PROPERTIES TABLE. Second, you would find soil symbol 2A and read that it has a classification of ML, ML-CL. An explanation of all table column headings may be found in the text of this report.

KINDS OF INTERPRETATIONS AND INFORMATION IN THIS REPORT

Before using the information listed in the interpretation tables read and become familiar with the explanations of the interpretation tables given in the section, "USE AND EXPLANATION OF SOIL INTERPRETATION TABLES."

The tables are the key source of information in this special report. The soils are rated as to their suitability as resource material, as to their degree of limitations for several selected uses, such as dwellings, septic tank filter fields, etc., and for recreation. The major features affecting the soil for these uses are also shown. Other information and interpretations given are the capability, soil loss factors, and potential yields for the soil, wildlife suitability, and woodland suitability.

PREPARING INTERPRETIVE MAPS FROM THE SOIL MAPS

Individual maps showing the relative limitations of soils for many specific purposes can be developed by using the soil map and the interpretations. Ratings can be shown visually by coloring soil maps or transparent overlays according to the traffic-light color connotations to point up the limitations for a particular use. A map or overlay can be made in this manner for septic tank filter fields, dwellings, or for any of the uses for which the soils are rated. For example, soil areas that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, those with a severe limitation colored red, and those with a very severe limitation colored brown or purple to contrast with the traffic light colors. Once the interpretive map is complete, the patterns of the soil limitations are readily apparent. The user can quickly select areas that have potential for a particular type of development and at the same time identify the areas of severe limitations.

USE AND EXPLANATION OF SOIL INTERPRETATION TABLES

Introduction

The interpretation tables should be used only with soil surveys of medium or detailed intensity, that have been prepared according to standard procedures of the National Cooperative Soil Survey. It is not intended that they be used with "Land-Type Surveys", low intensity surveys, or general soil maps. The interpretations are for soils in their natural state and not for disturbed areas that are altered by cut or fill operations, or by drainage.

The soil interpretations will not eliminate the need for on-site sampling, testing, and study of specific sites for design and construction of engineering works and various uses. The interpretation tables should be used primarily to plan more detailed field investigations to determine the conditions of the soil at the proposed site for the intended use.

When the interpretation tables are used in connection with delineated soil areas on soil maps, the information pertains to the dominant soil for which the soil is named. Other soils, too small an area to map out, may occur within the soil map area. The interpretations ordinarily do not apply to the included soils. More detailed studies are required if small, specific sites are to be developed or used within a given soil area. For example, a soil map bearing the name Mattapex also can include small, unmappable areas of other soil such as Keyport and Beltsville. The interpretations apply only to the Mattapex part of the delineated soil area and not to the entire soil area.

TABLE A: ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Explanation and Discussion of Items

This table shows, in numerical order, all of the soil map units in the survey area with their corresponding acreage. Also shown is the percentage that each map unit occupies in the survey area.

TABLE B: LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

Introduction

In this table the different phases of the soil series are rated into capability classes and subclasses. The potential yields

under high level management are estimated for important crops that the soil is suited for.

Explanation and Discussion of Items

Class Determining Phase--Soil series are divided into phases on the basis of difference in slope, texture of the surface layer, or some other characteristic that affects use of the soils by man.

Capability--In this column the different phases of the soil series are grouped according to capability classes and subclasses. Capability grouping shows in a general way, the suitability of soils for kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Capability Classes, the broadcast groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I	Soils have few limitations that restrict their use.
Class II	Soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
Class III	Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
Class IV	Soils have very severe limitations that reduce the choice of plants, require very careful management, or both.
Class V	Soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.
Class VI	Soils have very severe limitations that make them generally unsuited to cultivation and limit their

use largely to pasture, range, woodland or wildlife.

Class VII — Soils have very severe limitations that make them unsuited to cultivation and restrict their use largely to pasture, range, woodland, or wildlife.

Class VIII — Soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply or to aesthetic purposes.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, e, w, or s to the class numeral, for example, IIe. The letter e shows that the main limitation is risk of erosion unless close growing plant cover is maintained; w shows that water in or on the soil surface interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony.

In Class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclass indicated by w and s because the soils in Class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

Potential Yields--Predicted yields are for principal crops grown on the soil. The predictions are based on estimates made by farmers, county extension agents and on information taken from research data. The predicted yields are average yields per acre that can be expected by good commercial farmers at the level of management which tends to produce the highest economic returns.

TABLE C: WOODLAND MANAGEMENT AND PRODUCTIVITY

Introduction

In this table the soils are evaluated for their suitability for woodland. Each soil is given a woodland ordination symbol. The soils are evaluated for woodland management problems, and the potential productivity of important trees is estimated. Trees to plant are also given.

Ordination Symbol--The ordination symbol serves to group soils that are suited to about the same kinds of trees and that have about the same potential productivity.

Each woodland ordination symbol is identified by a 2-part symbol. The first part of the symbol indicates the potential productivity of the soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest. The second part of the symbol, a letter, indicates the important soil property that imposes a moderate or severe hazard or limitation in managing the soils for wood production. The letter X shows that the main limitation is stoniness or rockiness; W shows that excessive water in or on the soil is the chief limitation; T shows that toxic substances in the soil are the chief limitation; D shows that the rooting depth is restricted; C shows that clay in the upper part of the soil is a limitation; S shows the soils are sandy; F shows that the soils have large amounts of coarse fragments; R shows the soils have slopes; and A shows the soils have no significant restrictions or limitations for woodland use or management. If a soil has more than one limitation, the priority is as follows: W and S.

Management problems evaluated are (1) erosion hazard, (2) equipment limitations, (3) seedling mortality, (4) windthrow hazard, and (5) plant competition.

(1) Erosion hazard measures the risk of soil losses in well-managed woodland. Erosion hazard is slight if expected soil loss is small, moderate if some measures to control erosion are needed in logging and construction, and severe if intensive treatment or special equipment and methods are needed to prevent excessive soil losses.

(2) Equipment limitations ratings reflect the soil conditions that restrict the use of equipment normally used in woodland management or harvesting. Slight ratings indicate equipment use is not limited to kind or time of year. A rating of moderate indicates a seasonal limitation or need for modification in methods of equipment. Severe limitations indicate the need for specialized equipment or operations.

(3) Seedling mortality ratings indicate the degree of expected mortality of planted seedlings when plant competition is not a limiting factor. Normal rainfall, good planting stock and proper planting are assumed. A slight rating indicates expected mortality is less than 25 percent. Moderate rating indicates a 25 to 50 percent loss; and severe indicates over 50 percent loss of seedling.

(4) Windthrow hazard ratings reflect the danger of trees being blown over by wind. A rating of slight indicates that normally there are no trees blown down by the wind, a rating

of moderate that some trees are expected to blow down during periods of excessive soil wetness and high wind, and a rating of severe that many trees are expected to blow down during periods of soil wetness with moderate or high winds.

(5) Plant competition refers to the invasion or growth of undesirable species on different kinds of soil when openings are made in the canopy. A rating of slight indicates that competition will not prevent adequate natural regeneration and early growth or interfere with adequate development of planted seedlings, a rating of moderate that competition will delay natural or artificial regeneration, both establishment and growth rate, but will not prevent the eventual development of fully stocked normal stands and a rating of severe that competition will prevent adequate natural or artificial regeneration without intensive site preparation and maintenance treatments such as weeding.

Common Trees--This is a list of some of the commercially important trees which are adapted to the soil. These are the trees which woodland managers will generally favor in intermediate or improvement cuttings.

Site Index--This is the average height of dominant trees at age 50.

Productivity Class represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. It can be converted to board feet by multiplying by a factor of about 71; or to convert cubic feet per acre to cords per acre, divide the cubic feet by 85. For example, a productivity class of 8 means the soil can be expected to produce 114 cubic feet per year at the point where mean annual increment culminates, which is about 568 board feet per acre per year; or about 1.3 cords per acre per year.

Trees to Plant-- This is a list of trees suitable to plant for commercial wood production.

TABLE D: WILDLIFE HABITAT

Introduction

Soils directly influence kinds and amounts of vegetation and amounts of water available, and in this way indirectly influence the kinds of wildlife that can live in an area. Soil properties that affect the growth of wildlife habitat are: (1) thickness of soil useful to crops, (2) surface texture, (3) available water capacity to a 40-inch depth, (4) wetness, (5) surface stoniness

or rockiness, (6) flood hazard, (7) slope, and (8) permeability of the soil to air and water.

In this table, soils are rated for producing eight elements of wildlife habitat and for three groups, or kinds, of wildlife. The ratings indicate relative suitability for various elements. A rating of good means the element or kind of habitat generally is easily created, improved, and maintained. Few or no limitations affect management in this category and satisfactory results are expected when the soil is used for the prescribed purpose.

A rating of fair means the element or kind of habitat can be improved, maintained, or created in most places. Moderate intensity of management and fairly frequent attention may be required for satisfactory results, however.

A rating of poor means the element of wildlife and limitations for the designated use are rather severe. Habitats can be improved, maintained, or created in most places, but management is difficult and requires intensive effort.

A rating of very poor means the elements of wildlife habitat are very severe and that unsatisfactory results are to be expected. It is either impossible or impractical to improve, maintain, or create habitats on soils in this category.

Explanation of Items

Potential for habitat elements--Each soil is rated according to its suitability for producing various kinds of plants and other elements that make up wildlife habitats. The ratings take into account mainly the characteristics of the soils and closely related natural factors of the environment. They do not take into account climate, present use of soils, or present distribution of wildlife and people. For this reason, selection of a site for development as a habitat for wildlife requires inspection at the site.

Grain and seed are annual grain-producing plants such as corn, wheat, and soybeans.

Grass and legumes--Making up the group are domestic grasses and legumes that are established by planting. They provide food and cover for wildlife. Grasses include fescue, timothy, and bromegrass; legumes include annual lespedeza, clover, and alfalfa.

Wild herbaceous--This group consists of native or introduced perennial grasses, forbs, and weeds that provide food and cover

for upland wildlife. Examples of wild herbaceous plants are bluestem, goldenrod, beggar-ticks, quackgrass, and ragweed.

Hardwood trees are nonconiferous trees, shrubs, and woody vines that produce wildlife food in the form of fruits, nuts, buds, catkins, or browse. Such plants commonly grow in their natural environment, but they may be planted and developed through wildlife management programs. Typical species in this category are oak, birch, cherry, maple, apple, hawthorn, dogwood, hickory, blackberry, and blueberry.

Coniferous plants are cone-bearing trees and shrubs that provide cover and frequently furnish food in the form of browse, seeds, or fruitlike cones. They commonly grow in their natural environment, but they may be planted and managed. Typical plants in this category are pines, spruce, yew, cedar, and hemlock.

Shrubs--This column is not applicable to soils in Maryland and a dash is used to indicate this.

Wetland plants are annual and perennial herbaceous plants that grow wild on moist and wet sites. They furnish food and cover mostly for wetland wildlife. Typical examples of wetland plants are smartweed, arrowhead, burrweed, pickerel weed, cordgrass, rushes, sedges, and reeds. Submerged and floating aquatics are not included in this category.

Shallow water--This includes impoundments or excavations for controlling water, generally not more than five feet deep, to create habitats that are suitable for waterfowl. Some are designed to be drained, planted, and then flooded; others are permanent impoundments that grow submerged aquatics.

Potential as habitat for--The soils are rated according to their suitability as habitat for (1) openland wildlife, (2) woodland wildlife, and (3) wetland wildlife. These ratings are related to ratings made for elements of habitat. For example, soils rated unsuited for shallow water developments are rated unsuited for wetland wildlife.

(1) Openland wildlife are birds and mammals that normally live in meadows, pastures, and open areas where grasses, herbs, and shrubby plants grow. Quail, doves, meadowlarks, field sparrows, cottontail rabbits, and foxes are typical examples of openland wildlife.

(2) Woodland wildlife are birds and mammals that normally live in wooded areas of hardwood trees, coniferous trees, and shrubs. Thrushes, wild turkeys, deer, squirrels, and raccoons are typical examples of woodland wildlife.

(3) Wetland wildlife are birds and mammals that normally live in wet areas, marshes, and swamps. Ducks, geese, rails, shore birds, and herons are typical examples of wetland wildlife.

Rangeland wildlife is not rated in Maryland since woodland wildlife
is rated and is applicable to Maryland conditions and soils.

TABLE E: RECREATIONAL DEVELOPMENT

Soils are rated according to limitations that affect their suitability for camp areas, picnic area, playground, and paths and trails and golf fairways. Not considered in this rating, but important in evaluation of a site are location, accessibility of the areas, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public service lines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding and the season when it occurs are important considerations. Onsite assessment of duration and frequency of flooding is essential in planning recreational facilities.

(a) Camp Areas are tracts of land used intensively for tents, trailers and campers, and the accompanying activities of outdoor living. Camp areas require such site preparation as shaping and leveling, areas for tent and parking area, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The soils are rated on the basis of soil properties that influence the ease of developing camping areas and the performance of the camping area after development. Soil properties that influence trafficability and promote the growth of vegetation after heavy use are important.

Slope, stoniness, and depth to bedrock or cemented pan are the main concerns in development camp areas. For good trafficability, the surface of the picnic areas should absorb rainfall readily, remain firm to heavy foot traffic, and not be dusty when dry. Soil properties that influence trafficability are texture of the surface layer, wetness, permeability and large stones. Slow permeability and clayey surface texture are not as severe a limitation in dry regions of the country, however, silty soils may be more of a problem because they are dusty. Soil properties that influence the growth of plants are depth to bedrock, permeability, and the presence of toxic materials.

(b) Picnic areas are natural or landscape tracts used primarily for preparing meals and eating outdoors. These areas are

subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking lots. Soils are rated on the basis of properties that influence development costs of shaping sites, trafficability, and growth of vegetation after development.

Slope and stoniness are the main concerns in developing picnic area. For good trafficiability, the surface of picnic areas should absorb rainfall readily, remain firm to heavy foot traffic, and not be dusty when dry. Soil properties that influence trafficability are texture of the surface layer, wetness, permeability, and large stones. Slow permeability and clayey surface texture are not as severe a limitation in dry regions of the country; however, the silty soils may be more of a problem because they are dusty. Soil properties that influence the growth of plants are depth to bedrock, permeability, and the presence of toxic materials.

(c) Playgrounds are areas used intensively for games such as baseball, football, and similar activities. Playgrounds require a nearly level soil that is free of stones and that can withstand heavy foot traffic and still maintain adequate vegetation. Soils are rated on the basis of properties that influence cost of shaping, trafficability, and growth of vegetation.

(d) Paths and Trails are used for walking, horseback riding, and other uses and require little or no cutting or filling. The soils are rated on the properties that influence trafficability and erodibility.

These are stoniness, wetness, texture of the surface layer, slope, flooding, erodibility, and in dry regions, dustiness.

(e) Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tree or greens is not considered in rating the soils.

TABLE F1/F2 ENGINEERING INDEX PROPERTIES

Introduction

This table gives estimates of the engineering classification and of the range of index properties for major layers of each soil in

the survey area. Although the soils bearing the same name are similar between counties and states, the physical and chemical properties of these soils may vary somewhat from one county to another and one state to another; however, the properties of the soil at any location should fall within the range of the estimates given for the soil series on the interpretation table. For some soils, some of the physical and chemical properties are based on test data; in others, these are best estimates based on test data on similar soils.

Explanation of Items

Depth (In.)--The depth in inches of the major soil horizons that have similar properties are given in this column.

USDA Texture--The USDA texture is based on the relative amounts of sand, silt, and clay in a soil, giving rise to textural classes such as sand, sandy loam, loam, clay loam, and clay. (USDA Handbook No. 18, SOIL SURVEY MANUAL)

Unified Classification--In the Unified System, soils are classified according to particle size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as PT. Soils on the borderline between two classes are designated by symbols for both classes; for example, SP-SM.

AASHTO Classification--The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. The A-1, A-2, and A-7 groups can be further divided as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6.

Fraction Greater than 3 inches (Pct.)--Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage of Material Less than 3 inches Passing Sieve No.--The measured or estimated percentages of materials passing the numbers 4, 10, 40, and 200 sieves are given for each major

horizon. The percent passing the 200 sieve approximates the amount of silt and clay, but does include some very fine sand. A range is listed because of variability for a given soil.

Liquid Limit and Plasticity Index--These indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from the semisolid to plastic state; and the liquid limit from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range for moisture content within which a soil material is plastic.

TABLE G: PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

This table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for major layers of each soil in the survey area.

Explanation of Items

Clay (Pct.)--The measured or estimated percentages of a mineral soil separate consisting of particles less than 0.002 millimeter in diameter. A range is given because of the variability for a given soil.

Moist Bulk Density--The mass (weight) of a unit volume of moist soil. This volume includes both soil and pores. Soils that are loose and porous will have low bulk densities and those that are more compact will have high values. A range is listed because of the variability for a given soil.

Permeability (In./Hr.)--That quality of a soil that enables it to transmit water or air. Values listed are estimates of the range in rate and time it takes for downward movement of water in the major soil layers when saturated, but allowed to drain freely. The estimates are based on soil texture, soil structure, available data on permeability and infiltration tests, and drainage observations of the water movement through soils. On a given soil, percolation through the surface layer varies according to land use and management as well as with initial moisture content. The permeability is shown in inches per hour. For example, in a soil that has a permeability rate of 6.0 inches per hour in 3 hours free water would move downward a distance of (3 x 6") 18 inches.

Available Water Capacity (In./In.)--The ability of soils to hold water for use by most plants. The available water capacity is

given in inches per inch of soil for major horizons. The water retention of the soil is related to the particle size, organic matter content, and to the arrangement and size of soil pores. Fine-texture soils tend to have higher water retention due to small pores than do sandy soils with large pores. Estimates of the available water capacity for soils with normally high water tables may appear meaningless until one considers the possibility of artificial drainage or the natural lowering of the water table during dry seasons. Soils of the same series vary from place to place. Therefore, values can deviate considerably from those listed. It is commonly defined as the difference between field capacity (1/3 atmosphere for loamy and clayey materials or 1/10 atmosphere for sand) and the wilting percentage (15 atmospheres) times bulk density times the thickness in inches of the soil. The formula for AWC is:

AWC (in/in) = 1/3 (or 1/10) bar % - 15 bar % x bulk density, moist/100

For example, in a soil that has an available water capacity of 0.10 in/in of soil, there would be 0.1 inch of water available for plant growth for each inch of soil, and in 24 inches of soil (0.1 x 24") 2.4 inches available.

Soil Reaction--The degree of acidity or alkalinity of a soil. It is expressed in pH - the logarithm of the reciprocal of the H-ion concentration. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. In words, the degrees of acidity or alkalinity are expressed thus:

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Salinity (mmhos/cm)--The salinity is expressed in terms of the electrical conductivity of a saturation extract in millimhos per centimeter at 25 degrees centigrade. The following shows the response of plants associated with different ranges for electrical conductivity of saturation extracts of soils.

Electrical Conductivity of Saturation Extract mmhos/cm at 25 C	Plant Response
0-2	Salinity effects usually negligible
2-4	Yield of very salt-sensitive crops may be restricted
4-8	Yield of salt-sensitive crops restricted
8-16	Only salt-tolerant crops yield satisfactory
16	Only a few very salt-tolerant crops yield satisfactory

If salinity is zero or no problem for growing crops, a dash is shown on the interpretation sheet. Except for areas of tidal marsh or tidal swamp along the coasts, salinity is of little to no importance in most Maryland soils.

Shrink-Swell Potential--The relative change in volume to be expected of soil material with changes in moisture content; that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils cause much damage to building foundations, roads, and other structures. A high shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating.

Erosion Factors, (K and T)--A soil erodibility factor (K) and the soil-loss tolerance (T) are used in an equation that predicts the amount of soil loss resulting from rainfall erosion of cropland. The soil erodibility factor "K" is measure of the rate at which a soil will erode. Values are expressed as tons of soil loss per acre per unit of R (rainfall factor) from continuous fallow (three years or more) on a 9 percent slope, 73 feet long. Thus, the K factor reflects the rate that soil erodes when other factors affecting erosion are constant. Soil properties that influence erodibility by water are: those that affect infiltration rate, movement of water through the soil, and water storage capacity; and those that resist dispersion, splashing, abrasion, and transporting forces from rainfall and runoff. Some of the soil properties that are most important are texture and organic matter of the surface layer, size and stability of

structural aggregates in the surface layer, permeability of the subsoil, and depth to slowly permeable layers.

The soil-loss tolerance "T" sometimes called permissible soil loss, is the maximum rate of soil erosion that will permit a high level of crop productivity to be sustained economically and indefinitely. These rates are expressed in tons of soil loss per acre per year. Rates of 1 through 5 tons are used in the south, depending upon soil depth and prior erosion.

Wind Erodibility Groups--Soils that are subject to wind erosion are grouped into 8 groups according to their susceptibility to soil blowing. Sandy soils are most susceptible to soil blowing, especially during dry periods when wind velocities are high. Organic soils are normally wet, but they are also subject to soil blowing when drained and cultivated if the soil surface is left bare during extreme dry periods and wind velocities are high.

Organic Matter (Pct.)--The measurement of estimated percentage of the organic fraction of the soil that includes plant and animal residues at various stages of decomposition, cell and tissues of soil organisms, and substances synthesized by the soil population. It is commonly determined as the amount of organic material contained in a soil sample passed through a 2-millimeter sieve. Estimates of organic matter are given only for the surface layer.

TABLE H: WATER FEATURES

This table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Explanation of Items

Hydrologic Groups--Soils are grouped into four hydrologic soil groups, A through D. These groups are used mostly in watershed planning to estimate runoff from rainfall. Soil properties were considered that influence the minimum rate of infiltration obtained for a bare soil after prolonged wetting. These properties are: depth to seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a layer or layers that slow or impede water movement.

Dual hydrologic groups are given for wet soils rated D in their natural condition that can be adequately drained. It is considered that drainage is feasible and practical and that drainage improves the hydrologic group by at least two classes (from D to A or B). The first letter applies to the drained condition.

Hydrologic Group A--(Low runoff potential) Soils that have high infiltration rates even when thoroughly wetted and a high rate of water transmission.

Hydrologic Group B--(Moderately low runoff potential). Soils that have moderate infiltration rates when thoroughly wetted and a moderate rate of water transmission.

Hydrologic Group C--(Moderately high runoff potential) Soils that have slow infiltration rates when thoroughly wetted and a slow rate of water transmission.

Hydrologic Group D--(High runoff potential) Soils having very slowinfiltration rates when thoroughly wetted and a very slow rate of water transmission.

Flooding--Flooding is defined as temporary covering of soil surface by water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from high tides, or combinations of these. Shallow water standing during or shortly following a rain is excluded from the definition of flooding. Marshes and swamps are excluded from the definition of flooding because water is more than a temporary covering.

Flooding hazard may be expressed by one of three general flood frequency classes - none, rare, or common. Duration and time of year that the flooding occurs is given for those soils with common flood hazards. Not considered here, but nevertheless important, are velocity and depth of flood waters. The classes of flooding are defined as follows:

None — No reasonable possibility of flooding.

Rare — Flooding unlikely but possible under unusual weather conditions. No evidence of recent water deposited sediments on surface or within the pedon. Pedogenic horizons have developed within most soils. Flooding probability is so low that it imposes no more than slight or moderate soil limitation ratings for soil uses except those with high per-acre investments, such as residential developments.

Common — Flooding is likely under usual weather conditions. Most pedons show evidence of

recent water deposited sediments or scouring. The probability of recurring floods is great enough to impose severe limitations on many uses of soils, such as sanitary facilities and community development. Restrictions on farming may be slight to severe depending on duration and season of flooding.

Where a finer breakdown of common flooding is made, the following classes under common flooding are used:

Occasional — Less often than once in 2 years on the average. Most pedons show evidence of past deposition or scouring. The probability of floods is not great enough to interfere seriously with farming operations although some crop damage is likely.

Frequent — More often than once in 2 years on the average. The pedon shows evidence of yearly deposition or scouring. In addition, debris or other recent flood water marks are easily observable on the ground, on trees, fences, or bridges. The probability of floods is great enough to restrict the choice of crops, cause severe crop damage, or prevent the production of crops.

Duration refers to the length of time that the soils are flooded. Only duration classes for common frequency classes are given. These classes are as follows:

Very brief — Less than 2 days. Soils have sufficient surface drainage so that flood waters run off, and damage, if any, to crops results mainly from scouring or sedimentation.

Brief — 2 to 7 days. Relatively permeable soils on level or depressional landscapes or soils with restricted permeability on nearly level landscapes. Most cultivated crops are severely affected by flooding; most pasture plants and tree species are slightly or moderately affected.

Long — 7 days to 1 month. Soils on nearly level or depressional landscapes with restricted surface drainage or restricted permeability, or both. Only water tolerant plants can survive.

Very Long	More than 1 month. Soils on nearly level or depressional landscapes with highly restricted surface drainage and restricted permeability. Only water tolerant plants survive.

The time of year that flooding normally occurs is expressed in months, for example, December-May.

The economic and social consequences of improper land use of flood prone areas are serious. Problems begin when structures are located in flood prone areas. The initial development encourages additional construction and the installation of streets and utilities. The capacity of the floodway may be reduced by these kinds of developments increasing the flood hazard. When flooding occurs, losses are not borne only by the property owner but by the community as well. The public is usually called upon to bear the cost of flood fighting, rehabilitation, and flood protection.

Dwellings, commercial buildings, and other high cost developments that are easily damaged by floods shouldn't be located on flood prone soils. Sanitary facilities such as septic tank filter fields, sewage lagoons, and sanitary landfills built on flood prone soils present a health hazard. Roads and streets built on flood prone soils are likely to be closed during floods and may require extensive maintenance or restoration after floods.

In agricultural areas the consequences of flooding are much less expensive, but nevertheless, may present a hazard to the production of crops. The frequency, duration, and time of year the flooding occurs influences whether trees, pasture, or crops can be grown.

Trees and pastures can withstand more flooding than crops. Certain short season crops, however, can be grown successfully if the growing season is relatively flood free.

High Water Table--A high water table is defined as a zone of saturation at the highest average depth during the wettest season. It persists in the soil for more than a few days and occurs within 80 inches of the soil surface.

Most water tables occur within the soil and are measured from the surface of the soil down to the free-water level. In swamps and marshes, however, the water table is above the surface of the soil much of the time and water table is measured from the surface of the water down to the soil surface.

Soils that have seasonal high water tables are classified according to depth to the water table, kind of water table, and time of year that the water table is highest.

The depth of the high water table from the soil surface is given in feet or half feet. The range in depth reflects the year-to-year variation in average highest depth. Depth to water table within the soil is recorded with the small number first, e.g., 2-3. Water table above the soil surface is recorded with a +, e.g., +2; if the water table varies such that the average highest depth can be above or below the surface, it is recorded as follows: +1-.5, with the first number indicating 1 foot above the soil surface, and the second number 1/2 foot below the soil surface. Where a water table is below 6 feet or exists for less than one month, 6.0 is shown under depth.

Three kinds of seasonal high water tables are recognized within the soil: apparent, perched, and artesian.

<u>Apparent Water Table</u> is the level at which water stands in a dug unlined borehole. It is influenced by the hydrostatic pressure of soil water and by pressure at greater depths penetrated by the borehole, water relations across impermeable layers, and other factors; in the absence of evidence that would permit greater specificity, therefore, the term <u>apparent water table</u> is used for the level at which water stands in an uncased borehole after adequate time of adjustment in the surrounding soil.

<u>Perched Water Table</u> is one that exists in the soil above an unsaturated zone. A water table may be inferred to be perched on the basis of general knowledge To prove that a water table is perched, it is necessary to observe the water level in cased wells placed above, in, and below the less permeable layer. If the water in the well above the less permeable layer is consistently higher than the other two, the water table is perched.

<u>Artesian Water Table</u> is one that esists under hydrostatic head beneath an impermeable layer. When this impermeable layer is penetrated by a cased borehole, the water rises. The final level of the water in the cased

borehole may then be characterized as an artesian water table.

Areas with water tables above the surface of the soil much of the time are characterized as marsh or swamp - marsh having herbaceous vegetation and swamps having woody vegetation.

The months that the water table normally persists at the average highest depth range is shown, for example, December through April.

A seasonal high water table is an important criterion in a number of engineering and biological uses of soils. Its depth and duration influences the use of soils for septic tank absorption fields, shallow excavations, sanitary landfills, dwellings, and local roads and streets, and ease of excavation for roadfill and topsoil.

The water table also influences the growth of crops - a water table that is near the surface during the growing season is detrimental to most plants. Growing plants, however, tend to lower the water table through transpiration. A change in land use may drastically change the wetness of an area. For example, a change from trees to soybeans changes the transpiration rate and may cause a wetter soil condition. Changing land use from cropland, pasture, or forest to urban areas with streets and houses covering a much larger area not only decreases the transpiration by vegetation but also causes increased runoff. A wetter soil may result.

Table I--Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involve engineering considerations.

Explanation of Items

Depth Bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Cemented Pan--Cemented pans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is

less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Subsidence--This refers to the lowering of the level of the soil surface. When water is removed and the water table is lowered in organic soils and some mineral soils with low strength in tidal marshes, the soil will subside. Initially, or in the first few years, the subsidence is most pronounced or greatest. After initial subsidence, organic soils in Maryland subside or oxidize at the rate of about 1 inch per year. Total subsidence is estimated in inches.

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

Corrosivity, Steel--This refers to the potential for corrosion of uncoated steel pipe buried in the soil. The soils are rated as follows: LOW (slightly corrosive), MODERATE (moderately corrosive), and HIGH (severely corrosive). Corrosion of uncoated steel pipe is a physical-biochemical process converting iron into its ions. Soil moisture is needed to form solutions with soluble salts before the process can operate. The corrosivity is estimated by electrical resistivity or resistance to flow of current, total acidity, soil drainage, and soil texture.

Corrosivity, Concrete--This refers to the potential for deterioration of concrete placed in soil materials. Deterioration is caused by a chemical reaction between the concrete (a base) and the soil solution (potential weak acid). Special cements and methods of manufacturing may be used to reduce rate of deterioration in soils of high corrosivity. Some of the soil properties that affect the rate of deterioration are soil texture and acidity, the amount of sodium or magnesium

present in the soil singly or in combination, and amount of sodium chloride in the soil. The presence of sodium chloride in the soil indicates the presence of sea water. Sea water contains sulphates which are one of the principal corrosive agents.

EXPLANATION OF LIMITATIONS AND RESTRICTIVE FEATURES USED IN RATING SOILS FOR TABLES E,J,K,L, and M.

Rating Soils for Selected Uses

Soils are rated for the uses expected to be important or potentially important to users of soil survey information. Ratings for proposed uses are given in terms of limitations and restrictive features, suitability and restrictive features, or only restrictive features. Only the most restrictive features are listed, therefore, a soil rated severe gives those soil features that cause the soil to be rated severe. There may be other features that need to be treated to overcome soil limitations for a specific purpose. The definition of the ratings are as follows:

Limitation Ratings

Soils are rated in their "natural" state, that is, no modification of the soil site or material is made. Only the most restrictive features are listed.

Slight is the rating given soils that have properties favorable for the use. The degree of limitation is minor and can be overcome easily. Good performance and low maintenance can be expected.

Moderate is the rating given soils that have properties moderately favorable for the use. This degree of limitation can be overcome or modified by special planning, design, or maintenance. During some part of the year, the expected performance of the structure or other planned use is somewhat less desirable than for soils rated slight. Some soils rated moderate require treatment such as artificial drainage, control of runoff to reduce erosion, extended septic tank absorption fields, extra excavation, or some modification of certain features through manipulation of the soil. For these soils, modification is needed for those construction plans generally used for soils of slight limitation. Modification may include specially designed foundations, extra reinforcement of structures, sump pumps, and the like.

Severe is the rating given soils that have one or more properties unfavorable for the rated use, such as steep slopes, bedrock near the surface, flooding, high shrink-swell potential, a seasonal high water table, or low strength. This degree of limitation

generally requires major soil reclamation, special design, or intensive maintenance. Some of these soils, however, can be improved by reducing or removing the soil feature that limits use, but in most situations, it is difficult and costly to alter the soil or to design a structure so as to compensate for a severe degree of limitation.

THE INTERPRETATIONS WILL NOT ELIMINATE THE NEED FOR ON-SITE STUDY, TESTING AND PLANNING OF SPECIFIC SITES FOR THE DESIGN AND CONSTRUCTION FOR SPECIFIC USES. The interpretations can be used as a guide to planning more detailed investigations and for avoiding undesirable sites for an intended use. By using the soil map and interpretations, it is possible to select sites that have the least limitations for an intended use.

Many soils that have a high water table have severe limitations in their natural condition. These same soils, when drained artificially, may only have a slight limitation. Modern equipment and knowledge make it possible to overcome most of the limitations of soils for many urban and recreational uses. The degree of the limitation and the location of the soil will determine the practicability of developing the soil for the intended use. No consideration was given in these interpretations to the size and shape of soil areas, nor to the pattern they form with other soils on the landscape. For example, some very desirable soil areas are too small in size or too irregular in shape, or their concurrence with less desirable soils forms a pattern too complex to be utilized for the intended use. Although not considered in the interpretations, these items should influence the final selection of a site.

In rating soils for nonfarm uses, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The owner must be willing to live with a few limitations, providing the use does not violate community codes or regulations. The final decision in selecting a site for a particular use is a personal one and generally involves weighing the costs for site preparation and maintenance.

Suitability Ratings

Soils are rated in their "natural" state, that is, no modification of the soil site or materials is made. A rating of good means the soils have properties favorable for the use. Good performance and low maintenance can be expected.

A rating of fair means the soil is moderately favorable for the use. One or more soil properties make these soils less desirable than those rated good.

A rating of poor means the soil has one or more properties unfavorable for the use. Overcoming the unfavorable property requires special design, extra maintenance, or costly alteration.

The limitations or restrictive features and the features affecting a particular use are shown on the tables through the use of "Key Phrases." A list of the key phrases with explanation or definition follows:

KEY PHRASE	EXPLANATION
AREA RECLAIM	Borrow areas are difficult to reclaim, and revegetation and erosion control on these areas are extremely difficult.
CEMENTED PAN	Cemented pan too close to surface.
CUTBANKS CAVE	Walls of cuts are not stable. The soil sloughs easily.
DEEP TO WATER	Deep to permanent water table during dry season.
DEPTH TO ROCK	Bedrock is so near the surface that it affects specified use of the soil.
DROUGHTY	Soil holds too little water for plants during dry periods.
DUSTY	Soil particles detach easily and cause dust.
ERODES EASILY	Water erodes soil easily.
EXCESS FINES	The soil contains too much silt and clay for use as gravel or sand in construction.
EXCESS HUMUS	Too much organic matter.
EXCESS LIME	The amount of carbonates in the soil is so high that it restricts the growth of most plants.
EXCESS SALT	The amount of soluble salt in the soil is so high that it restricts the growth of most plants.
FAST INTAKE	Water infiltrates rapidly into the soil.
FAVORABLE*	Features of the soil are favorable for theintended use.
FLOODS	Soil flooded by moving water from stream overflow, runoff, or high tides.
FRAGILE	Soil easily damaged by use of disturbance.
HARD TO PACK	Difficult to compact.
LARGE STONES	Rock fragments greater than 3 inches across affect the specified use.
LOW STRENGTH	The soil has inadequate strength to support loads.
NO WATER	Too deep to ground water.
PERCS SLOWLY	Water moves through the soil slowly,

	affecting the specified use.
PIPING	The soil is susceptible to the formation of tunnels or pipelike cavities by moving water.
PONDING	Soil in closed depressions inundated by standing water that is removed only by percolation or evapotranspiration.
ROOTING DEPTHS	A layer that greatly restricts the downward rooting of plants that occurs at a shallow depth.
SALTY WATER	Water too salty for livestock consumption.
SEEPAGE	Water moves through the soil so quickly that it affects the specified use.
SHRINK-SWELL	The soil expands on wetting and shrinks on drying, which may cause damage to roads, dams, building foundations, or other structures.
SLIPPAGE	Soil mass is susceptible to movement downslope when loaded, excavated or wet.
SLOPE	Slope too great.
SLOW INTAKE	Water infiltrates slowly into the soil.
SLOW REFILL	Ponds fill slowly because the permeability of the soil is restricted.
SMALL STONES	Rock fragments that are 3 inches or less across may affect the specified use.
SOIL BLOWING	Soil easily moved and deposited by wind.
SUBSIDES	Settlement of organic soils or of soils containing semifluid layers.
THIN LAYER	Suitable soil material is not thick enough for use as borrow material or topsoil.
TOO ACID	The soil is so acid that growth of plants is restricted.
TOO CLAYEY	Soil slippery and sticky when wet and slow to dry.
TOO SANDY	Soil soft and loose; droughty and low in fertility.
WETNESS	Soil wet during period of use.

*Used only under "features affecting" in Water Management where other entries were not appropriate.

TABLE J: SANITARY FACILITIES 1/

The nature of the soil is important in selecting sites for septic tank absorption fields, sewage lagoons, and sanitary landfills, and in identifying limiting soil properties and site features to be considered in planning, design, and installation of these facilities.

Soil limitations ratings of slight, moderate, or severe are given for septic tank absorption fields, sewage lagoons and trench and area type sanitary landfills. Soil suitability ratings of good, fair, and poor are given for daily cover for landfill.

(a) Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. The centerline depth of the tile is assumed to be at a depth of 24 inches. Only the soil between depths of 24 and 72 inches is considered in making the ratings. The soil properties and site features considered are those that affect the absorption of the effluent, those that affect the construction of the system, and those that may affect public health.

Properties and features that affect the absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and a shallow depth to bedrock, ice, or cemented pan interfere with installations. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas. Also soil erosion and soil slippage are hazards where absorption fields are installed in sloping soils.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, and as a result ground water supplies in the area may be contaminated.

Percolation tests are used by some regulatory agencies to evaluate the soil's suitability for septic tank absorption fields. These tests should be performed during the season when the water table is highest and the soil is at minimum absorptive capacity. The percolation rates do not correspond to the permeability rates because they are measured by different methods. Experience indicates that soils having percolation rates (1) faster than 43 minutes per inch function satisfactorily, (2) between 45 and 60 minutes per inch have moderate limitations, and (3) slower than 60 minutes per inch have severe limitations (USDHEW 1969).

In many of the soils that have moderate or severe limitations for septic tank absorption fields, it may be possible to install special systems that lower the seasonal water table or to increase the size of the absorption fields so that satisfactory performance is achieved (Bouma, 1974). However, such considerations are not considered in this report.

1/Ratings based on NATIONAL SOILS HANDBOOK, Part II, Section 403, 3-78.

(b) Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor surrounded by cut slopes or embankments of compacted, relatively impervious soil material. Aerobic lagoons generally are designed so that depth of the sewage is 2 to 5 feet. Relatively impervious soil for the lagoon floor and sides is desirable to minimize seepage and contamination of local ground water.

Soil permeability is a critical property in evaluating a soil for sewage lagoons. Most porous soils will eventually seal when being used as a sewage lagoon, however, until they do, the hazard of pollution is great and it is difficult to maintain the constant water depth required for proper operation. Soils with a permeability exceeding 2 inches per hour are generally too porous for proper operation of sewage lagoons and may cause contamination of shallow wells. Fractured bedrock within 40 inches may create a pollution hazard. Bedrock and cemented pans create construction problems.

The slope limits are based on the specification that the effluent be 2 to 5 feet deep. If shallower than this, weeds grow, if deeper, it is more difficult to maintain an aerobic environment. Slope must be gentle enough and the soil material thick enough over bedrock or cemented pan to make smoothing for uniformity of lagoon depth practical.

If floodwater overtops the lagoon, it interferes with the functioning of the lagoon and carries away polluting sewage before sufficient decomposition has taken place. Ordinarily, therefore, soils susceptible to flooding have a severe limitation for sewage lagoons. If, however, flood waters are slow flooding and are rarely if ever more than 5 feet deep--not deep enough to overtop the lagoon embankment--the limitation rating is not severe because of susceptibility to flooding.

Soil containing large amounts of organic matter are unsuitable for the floor of the lagoon. The organic matter promotes anaerobic rather than aerobic environment and is detrimental to the proper functioning of the lagoon.

Depth to water table is important if it influences the water level in the lagoon. If it does, then a pollution hazard also exists. Depth to water table is disregarded if the lagoon floor has slowly permeable soil material at least 4

feet thick. Soils that contain rock fragments are undesirable sites because the fragments interfere with the manipulation and compaction needed to prepare the lagoon floor.

(c) Sanitary landfill (trench) is a method of disposing of solid waste by placing refuse in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil that is excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill.

Ratings are based on properties to a depth normally observed during soil mapping. However, because trenches may be as deep as 15 feet or more, geologic investigations are needed to determine the potential for pollution of ground water as well as examination of stratification, rock formations, and geologic conditions that might lead to the conducting of leachates to aquifers, wells, water courses, and other water sources. The presence of hard nonripple bedrock, creviced bedrock, or highly permeable strata in or immediately underlying the proposed trench bottom is undesirable from the standpoints of excavation and potential pollution of underground water.

Properties that influence risk of pollution, ease of excavation, trafficability, and revegetation are major considerations. Soils that flood or have a water table within the depth of excavation present a potential pollution hazard and cause difficulty in excavating.

Soil slope is an important consideration because it affects the work involved in road construction, the performance of the roads and the control of surface water around the landfill. Soil slope may also cause difficulty in construction of the trenches where the trench bottoms must be kept level and oriented to follow the contour.

Soil slippage may be a problem on certain sloping soils.

The ease with which the trench is dug and with which a soil can be used as daily and final cover is based largely on texture and consistence of the soil. The texture and consistence of a soil determines the degrees of workability of the soil both when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and to place in a uniformly thick cover over a layer of refuse.

The uppermost part of the final cover should be soil material that is favorable for the growth of plants. It

should not contain excess sodium or salt and should not be too acid. In comparison with other horizons, the A horizon in most soils has the best workability and highest content of organic matter. Thus, for a trench-type landfill operation it may be desirable to stockpile the surface layer for use in final blanketing of the fill.

(d) Sanitary landfill (area) is a method of disposing of solid waste by placing refuse in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil that is imported from a source away from the site. A final cover of soil at least 2 feet thick is placed over the landfill when it is completed. Properties that influence trafficability and risk of pollution are the only considerations for area sanitary landfills.

Flooding is a serious problem because of the risk of washouts and pollution downstream and the difficulty of moving trucks in and out of flooded areas.

Permeability of the soil is an important consideration. If permeability is too rapid, or if fractured bedrock or fractured cemented pan are close to the surface, the risk of the leachate contaminating water supplies is great. A high water table may also transmit pollutants to water supplies and is likely to restrict truck movement during the wet parts of the year.

Slope is a consideration because of the extra grading required to maintain roads on sloping soils. Furthermore, leachate may flow along the soil surface on sloping soils and cause difficult seepage problems in completed fills.

Soil slippage may be a problem on certain sloping soils.

(e) Daily cover for landfill is the soil material that is applied daily to compacted solid waste in an area type sanitary landfill. The cover material is obtained offsite, transported, and spread on the area. The required soil characteristics relative to both daily and final cover material are nearly enough alike for one rating to serve.

Suitability of a soil for use as cover is based on properties that reflect workability, ease of digging, and moving and spreading the material over the refuse daily during both wet and dry periods. Soils that are loamy or silty and free of stones are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soil must be thick enough over bedrock, cemented pan or water table so that material can be removed efficiently and yet leave a borrow area that can be revegetated. Some damage to the borrow area is expected, but if revegetation and erosion could be serious problems, then the soil is rated severe.

Slope affects the ease of excavation and moving of the cover material. Slope also may affect the final configuration of the borrow area and hence runoff, erosion, and reclamation.

In addition to these features, the soils selected for daily cover of landfill should be suitable for growing plants. They should not contain significant amounts of substances toxic to plants such as a high content of sodium or salts.

TABLE K: BUILDING SITE DEVELOPMENT

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, and after construction, performance, and maintenance.

Soil limitation ratings of slight, moderate, and severe are given for shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

(a) Shallow excavations are trenches or holes dug in the soil to a maximum depth of 5 or 6 feet. They are used for pipelines, sewerlines, telephone and power transmission lines, basements, open ditches, grave sites, and the like. The excavations are most commonly made by trenching machines or backhoes.

The ratings are based on the soil properties that influence ease of digging and the resistance to sloughing. Depth and hardness of bedrock or cemented pan, the bulk density of the soil and the amount of large stones influences the ease of digging, filling, and compacting. Depth to the seasonal high water table and flooding may restrict the time that the excavations can be made. Slope influences the ease of using digging machines. Soil texture and depth to water table influence the resistance to sloughing. Soil slippage may be a problem on certain sloping soils.

(b) Dwellings without basements are single-family houses of three stories or less without basements. The foundation is assumed to be spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet.

The ratings are based on properties affecting soil strength and settlement under a load, and those that affect excavation and construction costs. The properties affecting soil strength and settlement are presence of a high water table and flooding, and the shrink-swell behavior and compressibility of the soils. Compressibility is inferred from the Unified classification. Properties influencing the ease and amount of excavation are flooding, high water table, slope, depth to bedrock or cemented pan, and the amount of coarse fragments. Soil slippage may be a problem on certain sloping soils.

(c) Dwellings with basements are single-family houses of three stories or less with basements. The foundation is assumed to be spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings are based on properties affecting soil strength and settlement under load and those that affect excavation and construction costs. The properties affecting soil strength and settlement are the presence of a high water table and flooding, and the shrink-swell behavior and compressibility of the soil. Compressibility is inferred from the Unified classification. Properties influencing the ease and amount of excavation are flooding, high water table, slope, depth to bedrock or cemented pan, and the amount of coarse fragments. Soil slippage may be a problem on certain sloping soils.

(d) Small commercial buildings are less than 3 stories without basements. The foundation is assumed to be spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet.

The ratings are based on properties affecting soil strength and the settlement under a load and those that affect excavation and construction costs. The properties affecting soil strength and settlement are presence of a high water table and flooding, and the shrink-swell behavior and compressibility of the soil. Compressibility is inferred from the Unified classification. Properties influencing the ease and amount of excavation are flooding, high water table, slope, depth to bedrock or cemented pan, and the amount of rock fragments. Soil slippage may be a problem on certain sloping soils.

(e) Local Roads and Streets--Limitation ratings are given for the use of soils for construction of improved local roads and streets that have all-weather surfacing--commonly of asphalt or concrete--and that are expected to carry

automobile traffic all year. The roads and streets consist of (1) the underlying local soil material, whether cut or fill, that is called "the subgrade," (2) the base material, lime-stabilized soil, soil-cement stabilized soil, gravel or crushed road, and (3) the actual road surface or street pavement that is either flexible (asphalt), rigid (concrete), or gravel with binder in it. These roads and streets are graded to shed water and conventional drainage measures are provided. With probable exception of the hard surface, the roads and streets are built mainly from the soil at hand.

The properties that affect local roads and streets are those that influence the ease of excavation and grading, and traffic supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or cemented pan, depth to water table, flooding, the amount of large stones, and slope. The properties that affect traffic supporting capacity are soil strength as inferred from ASSHTO group index and the Unified classification, shrink-swell behavior, potential frost action, and depth to high water table. Soil slippage may be a problem on certain sloping soils.

(f) Lawns and Landscaping--The soils are rated for their use in establishing and maintaining turf for lawns, and ornamental trees and shrubs for residential type landscaping. The ratings are based on the use of soil material at the location with some land smoothing. Irrigation may or may not be needed and is not a criteria for rating.

The properties considered are those that affect plant growth and trafficability after establishing vegetation. The propeties that affect plant growth are the content of salt, sodium and sulfidic materials, soil reaction, depth to water table, depth to bedrock or cemented pan, and the available water capacity of the upper 40 inches of soil. The properties that affect trafficability after vegetation is established are flooding, wetness, slope, stoniness, and the amount of clay, sand or organic matter in the surface layer.

TABLE L: CONSTRUCTION MATERIALS

Suitability ratings of good, fair, or poor are given for soils used as a source of roadfill and topsoil. Ratings of probable and improbable are given for sand and gravel.

A rating of probable means that on the basis of the available evidence, the source material is likely to occur in or below the soil. A rating of improbable means that the source material is unlikely to occur within or below the soil. This rating does not

consider the quality of the source material because quality depends on how the source material will be used.

(a) Roadfill--Roadfill consists of soil material that is excavated from its original position and used in road embankments elsewhere. The evaluations for roadfill are for low embankments generally less than 6 feet and are less exacting in design than high embankments such as used in superhighways. The rating is given for the whole soil, from the surface to a depth of about 5 feet, based on the assumption that soil horizons will be mixed in loading, dumping, and spreading. Soils are rated as to the amount of material available for excavation, the ease of excavation, and how well the material performs after it is in place.

Soil properties that affect the amount of material available for excavation are thickness of suitable material above bedrock or other material that is not as suitable. The percent of coarse fraction greater than 3 inches, depth to high water table and slope are properties that influence the ease of excavation. How well the soil performs in place is indicated by AASHTO classification and group index and the shrink-swell potential. Some damage to the borrow area is expected, but if revegetation and erosion control could become serious problems, then the soil is rated severe.

(b) Sand--Sand as a construction material is usually defined as the size of particles ranging from 0.74 mm (sieve #200) to 4.76 mm (sieve #4) in diameter. Sand is used in great quantities in many kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show only the probability of finding material in suitable quantity. The suitability of the sand for specific purposes is not evaluated.

The properties used to evaluate the soils as a probable source for sand are the grain size as indicated by the Unified Soil Classification, the thickness of the sand layer, and the amount of rock fragments in the soil material.

If the lowest layer of the soil contains sand, the soil is rated as a probable source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness.

(c) Gravel--Gravel as a construction material is defined as the size of particles ranging from 4.76 mm (sieve #4) to 76 mm (3 inches) in diameter. Gravel is used in great quantities in many kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show

only the probability of finding material in suitable quantity. The suitability of the gravel for specific purposes is not evaluated.

The properties used to evaluate the soil as a probable source for gravel are grain size as indicated by the Unified Soil Classification, the thickness of the gravel layer and the amount of rock fragments in the soil material. If the lowest layer of the soil contains gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness.

(d) Topsoil--The term "topsoil" has several meanings, but as used here, the term describes soil material used to cover an area so as to improve soil conditions for establishment and maintenance of adapted vegetation.

Generally, the organic rich upper part of the soil is most desirable, however, material excavated from deeper layers is also used. In this rating, the upper 40 inches of soil material is evaluated for its use as topsoil. In the borrow area, the material below 40 inches is evaluated for its suitability to grow vegetation after the upper 40 inches is removed.

The soil properties that are used to rate the soil as topsoil are those that influence plant growth, those that influence the ease of excavation, loading, and spreading; and those which influence the reclamation of the borrow area.

The physical and chemical soil properties that influence plant growth are the presence of toxic substances, soil reaction, and those properties which are inferred from the soil texture such as available water capacity and fertility. The properties that influence the ease of excavation, loading, and spreading are the amounts of rock fragments, slope, depth to the water table, soil texture, and thickness of suitable material. The properties that influence the reclamation of the borrow area are slope, depth to water table, amount of rock fragments, depth to rock, and the presence of toxic material.

TABLE M: WATER MANAGEMENT

Interpretations of soils for water management are given as limitations for pond reservoir areas, embankments, dikes and levees, and excavated ponds (aquifer-fed), and as restrictive features that affect drainage, irrigation, terraces and

diversions, and grass waterways. If there are no restrictive features the soil is shown as "favorable."

(a) Pond Reservoir Area is the area that holds water behind a dam or embankment. Soils best suited to this use have a low seepage potential which is determined by permeability and depth to fractured or permeable bedrock, cemented pan, or other permeable material. The soil is rated on its properties in the upper 60 inches as a natural barrier against seepage into deeper layers without regard to cutoff trenches or other features that may be installed under the pond embankment. Excessive slopes will seriously reduce the storage capacity of the reservoir area.

(b) Embankments, dikes, and levees are raised structures of soil material constructed to impound water or protect land against overflow. They are generally less than 20 feet high, constructed of "homogenous" soil material (without a core zone) and compacted to medium density. Embankments having zoned construction (core and shell) are not considered.

Ratings are made for soil as source material for embankment fills. The rating is given for whole soil, from the surface to a depth of about 5 feet, based on the assumption that soil horizons will be mixed in loading, dumping, and spreading. The ratings do not indicate the suitability of the natural soil for supporting the embankment. Soil properties to depths greater than the embankment height will have an effect on the embankment performance and safety. Generally, deeper onsite geologic investigations must be made to determine these important properties. Low density silts and clays in the supporting foundations usually have excess settlement and low strength.

Embankments, dikes, and levees require soil material that is resistant to seepage, piping, and erosion, and that has favorable compaction characteristics. Organic soils are not suitable because of high compression, low strength, and unpredictable permeability. When compacting with tamping rollers (sheepsfoot) or pneumatic rollers, stones over 6 inches in size must be removed, causing restrictions for stony soils. If a water table is present, the depth of usable material and the trafficability are affected.

The content of sodium and salts affects the capability for growing vegetation on embankment surfaces. These properties may also indicate dispersive soils that are highly erosive and susceptible to piping.

(c) Excavated Ponds (aquifer-fed)--An aquifer-fed excavated pond is a body of water created by excavating a pit or dugout into a ground water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface.

The soil properties that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, and quality of water as determined by inference from the salinity of the soil. Large stones are also considered because of their effect on ease of excavation.

(d) Drainage is the process of removing excess surface and subsurface water from agricultural land. How easily and effectively a soil is drained depends on the depth of the water table or ponding, soil permeability, depth to bedrock or cemented pan, flooding, subsidence of organic layers, and slope. The productivity of the soil after drainage is dependent on presence of toxic substances in the root zone, such as salts, sodium, sulfur, or extreme acidity.

Properties that affect grading, excavation, and stability of trench or ditch bands are depth to bedrock or cemented pan, large stones, slope and stability against caving.

Availability of drainage outlets is a feature that must be considered in design, but is not considered in this report.

(e) Irrigation is the controlled application of water to supplement rainfall for supporting plant growth. Soil features are listed that affect design, layout, construction, management or performance of an irrigation system. Those features important in design and management of most irrigation systems are wetness or ponding and the need for drainage, flooding, available water capacity, intake rate, permeability, susceptibility to wind or water erosion, and slope. Soil features that influence construction are large stones and depth to bedrock or cemented pan. The features that affect performance of the system are rooting depth, amount of salts or sodium, and soil acidity.

(f) Terraces and Diversions are embankments or a combination of an embankment and channel constructed across a slope to control erosion by diverting or storing runoff instead of permitting it to flow uninterrupted down the slope. Soil features are listed that affect the construction of terraces and diversions and that may cause problems after construction of terraces and diversions. Soil features that influence construction are slope, large stones, depth to bedrock or cemented pan, and wetness. Soil features that

may cause problems after construction are restricted rooting depth, high susceptibility to wind or water erosion, and restricted permeability to water and air.

(g) Grassed waterways are natural or constructed channels, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water to outlets at a nonerosive velocity. Soil features are listed that affect the construction of grassed waterways and the growth and maintenance of grass after construction. Soil features that influence the construction of grassed waterways are large stones, wetness, slope, and depth to bedrock or cemented pan. The soil features affecting the growth of grass after construction are susceptibility to wind or water erosion, available water capacity, rooting depth, presence of toxic substances such as salts or sodium and the permeability of water and air.

TABLE N: CLASSIFICATION OF THE SOILS

The classification of all the different kinds of soil that occur in the Mattawoman Watershed are listed along with their taxonomic placement at the family or higher taxonomic class level.

TABLE O: PRIME FARMLAND

All of the survey area's prime farmland soils are listed, including their classification code.

TABLE P: CAPABILITY CLASSES AND SUBCLASSES

Explanation of Items:

Class--The land capability classes are listed.
Total Acreage--The total acreage of each land capability class are listed.
Major Management Concerns (Subclass)--The number of acres of each land capability class is listed according to the major management concerns (subclass). The letter e shows that the main limitation is risk of erosion unless close growing plant cover is maintained; w shows that water in or on the soil surface interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and s shows that the soil is limited mainly because it is shallow, droughty, or stony.

Table A - ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Mapunit Name	Acres	Percent
1	ASSAWOMAN LOAMY SAND	110	0.4
2A	BELTSVILLE SILT LOAM, 0 TO 2 PERCENT SLOPES	121	0.4
2B	BELTSVILLE SILT LOAM, 2 TO 5 PERCENT SLOPES	475	1.7
2C	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES	927	3.3
3A	BELTSVILLE-MATTAWOMAN COMPLEX, 0 TO 2 PERCENT SLOPES	214	0.8
3B	BELTSVILLE-MATTAWOMAN COMPLEX, 2 TO 5 PERCENT SLOPES	5667	20.1
4B	BELTSVILLE-URBAN LAND COMPLEX, 0 TO 5 PERCENT SLOPES	690	2.5
5	BIBB SANDY LOAM	494	1.8
6	BIBB-IUKA COMPLEX, 0 TO 2 PERCENT SLOPES	8052	28.6
7B	BOURNE SANDY LOAM, 2 TO 5 PERCENT SLOPES	360	1.3
7C	BOURNE SANDY LOAM, 5 TO 10 PERCENT SLOPES	192	0.7
8C	CROOM GRAVELLY SANDY LOAM, 5 TO 10 PERCENT SLOPES	785	2.8
8D	CROOM GRAVELLY SANDY LOAM, 10 TO 15 PERCENT SLOPES	1028	3.6
8E	CROOM GRAVELLY SANDY LOAM, 15 TO 25 PERCENT SLOPES	991	3.5
8F	CROOM GRAVELLY SANDY LOAM, 25 TO 40 PERCENT SLOPES	236	0.8
9B	DOWNER LOAMY SAND, 2 TO 5 PERCENT SLOPES	703	2.5
9C	DOWNER LOAMY SAND, 5 TO 10 PERCENT SLOPES	87	0.3
10	ELKTON SILT LOAM	310	1.1
11	FALLSINGTON SANDY LOAM	632	2.3
12B	FORT MOTT LOAMY SAND, 2 TO 5 PERCENT SLOPES	152	0.5
13B	HAMBROOK SANDY LOAM, 2 TO 5 PERCENT SLOPES	312	1.1
14B	INGLESIDE LOAMY SAND, 2 TO 5 PERCENT SLOPES	272	1.0
15	IUKA FINE SANDY LOAM	840	3.0
16	KEYPORT SILT LOAM	103	0.4
17	LEONARDTOWN SILT LOAM	611	2.2
18B	MATTAPEX SILT LOAM, 2 TO 5 PERCENT SLOPES	127	0.5
19A	RUNCLINT SAND, 0 TO 2 PERCENT SLOPES	57	0.2
19B	RUNCLINT SAND, 2 TO 5 PERCENT SLOPES	215	0.8
20B	SASSAFRAS SANDY LOAM, 2 TO 5 PERCENT SLOPES	490	1.7
20C	SASSAFRAS SANDY LOAM, 5 TO 10 PERCENT SLOPES	129	0.5
21C	SASSAFRAS GRAVELLY SANDY LOAM, 5 TO 10 PERCENT SLOPES	787	2.8
21D	SASSAFRAS GRAVELLY SANDY LOAM, 10 TO 15 PERCENT SLOPES	89	0.3
22	URBAN LAND	525	1.9
23B	URBAN LAND-UDORTHENTS COMPLEX, 0 TO 5 PERCENT SLOPES	449	1.6
24	UDORTHENTS	304	1.1
25A	WOODSTOWN SANDY LOAM, 0 TO 2 PERCENT SLOPES	95	0.3
25B	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	433	1.5
99	OPEN WATER	84	0.3
	TOTAL	28148	100.0

(0.0 percent is less than 0.1 percent)

Table B - LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol and soil name		Land capability N	CORN N	CORN SILAGE N	WHEAT N	SOYBEANS N	GRASS-LEGUME HAY N
			(BU)	(TONS)	(BU)	(BU)	(TONS)
2A	BELTSVILLE	2W	95	19	45	35	3.0
2B	BELTSVILLE	2E	95	19	45	35	3.0
2C	BELTSVILLE	3E	80	18	40		3.0
3A	BELTSVILLE	2W	95	19	45	35	3.0
	MATTAWOMAN	2W	105		40		3.0
3B	BELTSVILLE	2E	95	19	45	35	3.0
4B	BELTSVILLE	2E	95	19	45	35	3.0
5	BIBB	3W	110			35	
6	BIBB	3W	110			35	
	IUKA	2W	110			40	
7B	BOURNE	2E	100		50	35	2.5
8C	CROOM	2E	60	13	30	30	2.5
8D	CROOM	3E	55	11	25		1.9
8E	CROOM	4E	40		18		
9B	DOWNER	2S	90		35	25	
9C	DOWNER	3E	80		30	20	
11	FALLSINGTON	4W	70	20	35	30	
12B	FORT MOTT	3S	80			20	
13B	HAMBROOK	2E	110		50		
14B	INGLESIDE	2E	100		40	35	
15	IUKA	2W	110			40	
16	KEYPORT	2W	110		40	50	4.5
17	LEONARDTOWN	4W	70	14		25	2.5
18B	MATTAPEX	2E	135	27	60	40	3.5
20B	SASSAFRAS	2E	130	26	50	45	3.5
20C	SASSAFRAS	3E	120	24	45	40	3.5
21C	SASSAFRAS	3E	120	24	45	40	
21D	SASSAFRAS	4E					
25A	WOODSTOWN	2W	130	26	45	40	
25B	WOODSTOWN	2W	130	26	45	40	

Table C - WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Prod class	Trees to plant
1 ASSAWOMAN	11	SLIGHT	SEVERE	SEVERE			longleaf pine	69	5	slash pine
							slash pine	85	11	loblolly pine
							loblolly pine	87	9	
2A BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
2B BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
2C BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
3A BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
MATTAWOMAN	4A	SLIGHT	MODERATE	SLIGHT	SLIGHT		shortleaf pine	75	8	yellow poplar
							northern red oak	70	4	Virginia pine
							yellow poplar	80	5	Japanese larch
							Virginia pine	75	8	Norway spruce
										eastern white pine

Table C - WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Prod class	Trees to plant
			Management concerns				Potential productivity			
3B BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
4B BELTSVILLE	4W	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	red maple			loblolly pine
							sweetgum			Virginia pine
							white oak			
							pin oak			
							black oak	70	4	
							loblolly pine	70	6	
							Virginia pine	70	8	
5 BIBB	9W	SLIGHT	SEVERE	SEVERE	MODERATE	SEVERE	Atlantic white cedar			sweetgum
							blackgum			yellow poplar
							water oak	90	6	loblolly pine
							sweetgum	90	7	eastern cottonwood
							yellow poplar			
							loblolly pine	90	9	
6 BIBB	9W	SLIGHT	SEVERE	SEVERE	MODERATE	SEVERE	Atlantic white cedar			sweetgum
							blackgum			yellow poplar
							water oak	90	6	loblolly pine
							sweetgum	90	7	eastern cottonwood
							yellow poplar			
							loblolly pine	90	9	
IUKA	9W	SLIGHT	MODERATE	MODERATE	SLIGHT	SEVERE	sweetgum	100	10	loblolly pine
							water oak	100	7	eastern cottonwood
							loblolly pine	100	9	yellow poplar
							eastern cottonwood	105	10	

Table C- WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Prod class	Trees to plant
7B BOURNE	6W	SLIGHT	MODERATE	SLIGHT	MODERATE		northern red oak	65	3	loblolly pine
							loblolly pine	70	6	Virginia pine
							Virginia pine	70	8	eastern white pine
8C CROOM	3D	SLIGHT	SLIGHT	MODERATE	MODERATE		white oak	60	3	Virginia pine
							Virginia pine	60	6	loblolly pine
8D CROOM	3D	SLIGHT	SLIGHT	MODERATE	MODERATE		white oak	60	3	Virginia pine
							Virginia pine	60	6	loblolly pine
8E CROOM	3D	MODERATE	MODERATE	MODERATE	MODERATE		white oak	60	3	Virginia pine
							Virginia pine	60	6	loblolly pine
8F CROOM	3D	MODERATE	MODERATE	MODERATE	MODERATE		white oak	60	3	Virginia pine
							Virginia pine	60	6	loblolly pine
9B DOWNER	4	SLIGHT	SLIGHT	SLIGHT	SLIGHT		white oak	70	4	Virginia pine
							scarlet oak	70	4	
							black oak	70	4	
							Virginia pine	70	8	
9C DOWNER	4	SLIGHT	SLIGHT	SLIGHT	SLIGHT		white oak	70	4	Virginia pine
							scarlet oak	70	4	
							black oak	70	4	
							Virginia pine	70	8	
10 ELKTON	8W	SLIGHT	SEVERE	SLIGHT	SLIGHT	SLIGHT	red maple			loblolly pine
							sweetgum	80	6	
							blackgum			
							southern red oak			
							willow oak			
							loblolly pine	78	8	
11 FALLSINGTON	9W	SLIGHT	MODERATE	MODERATE	MODERATE	SEVERE	white oak			sweetgum
							willow oak			loblolly pine
							sweetgum	80	6	yellow poplar
							loblolly pine	90	9	eastern white pine

Table C - WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Prod class	Trees to plant
12B FORT MOTT	3A	SLIGHT	MODERATE	SLIGHT	SLIGHT	SLIGHT	shortleaf pine			Virginia pine
							pitch pine			
							white oak			
							black oak			
							Virginia pine			
13B HAMBROOK	8A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	SLIGHT	Virginia pine	70	8	loblolly pine
							white oak	70	4	
							scarlet oak	70	4	
							black oak	65	3	
							loblolly pine	75	7	
14B INGLESIDE	8S	SLIGHT	SLIGHT	MODERATE	SLIGHT	SLIGHT	Virginia pine	70	8	loblolly pine
							white oak	70	4	
							scarlet oak	70	4	
							black oak	65	3	
15 IUKA	9W	SLIGHT	MODERATE	MODERATE	SLIGHT	SEVERE	sweetgum	100	10	loblolly pine
							water oak	100	7	eastern cottonwood
							loblolly pine	100	9	yellow poplar
							eastern cottonwood	105	10	
16 KEYPORT	6A	SLIGHT	MODERATE	SLIGHT	SLIGHT	MODERATE	American beech	80	6	yellow poplar
							yellow poplar	90	6	northern red oak
							northern red oak	80	4	
17 LEONARDTOWN	8W	SLIGHT	SEVERE	SEVERE	MODERATE		sweetgum	80	6	loblolly pine
							loblolly pine	80	8	eastern white pine
18B MATTAPEX	4A	SLIGHT	SLIGHT	MODERATE	SLIGHT	MODERATE	sweetgum	80	6	loblolly pine
							Virginia pine	70	8	yellow poplar
							white oak	70	4	eastern white pine
							northern red oak	70	4	
							loblolly pine	81	8	

Table C - WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Prod class	Trees to plant
19A RUNCLINT	7S	SLIGHT	SLIGHT	SEVERE	SLIGHT	SLIGHT	Virginia pine	60	6	loblolly pine
							white oak	55	3	
							northern red oak	70	4	
							black oak	70	4	
							loblolly pine	70	6	
19B RUNCLINT	7S	SLIGHT	SLIGHT	SEVERE	SLIGHT	SLIGHT	Virginia pine	60	6	loblolly pine
							white oak	55	3	
							northern red oak	70	4	
							black oak	70	4	
							loblolly pine	70	6	
20B SASSAFRAS	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT		Virginia pine	70	8	yellow poplar
							white oak	70	4	loblolly pine
							yellow poplar	80	5	eastern white pine
							loblolly pine	85	8	
20C SASSAFRAS	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT		Virginia pine	70	8	yellow poplar
							white oak	70	4	loblolly pine
							yellow poplar	80	5	eastern white pine
							loblolly pine	85	8	
21C SASSAFRAS	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	Virginia pine	70	8	yellow poplar
							white oak	70	4	loblolly pine
							yellow poplar	80	5	eastern white pine
							loblolly pine	85	8	
21D SASSAFRAS	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	Virginia pine	70	8	yellow poplar
							white oak	70	4	loblolly pine
							yellow poplar	80	5	eastern white pine
							loblolly pine	85	8	
23B UDORTHENTS	4W	SLIGHT	MODERATE	MODERATE	SLIGHT	SEVERE	red maple	40	2	loblolly pine
							sweetgum	40	4	
							willow oak	50	2	
							loblolly pine	60	5	

Table C - WOODLAND MANAGEMENT AND PRODUCTIVITY

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Prod class	Trees to plant
24 UDORTHENTS	4W	SLIGHT	MODERATE	MODERATE	SLIGHT	SEVERE	red maple	40	2	loblolly pine
							sweetgum	40	4	
							willow oak	50	2	
							loblolly pine	60	5	
25A WOODSTOWN	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	sweetgum	90	7	yellow poplar
							white oak	80	4	loblolly pine
							northern red oak			eastern white pine
							yellow poplar	90	6	
							loblolly pine	85	8	
25B WOODSTOWN	4A	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE	sweetgum	90	7	yellow poplar
							white oak	80	4	loblolly pine
							northern red oak			eastern white pine
							yellow poplar	90	6	
							loblolly pine	85	8	

TABLE D.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
1 Assawoman	Very poor.	Poor	Fair	Fair	Fair	---	Fair	Good	Poor	Fair	Fair	---
2A, 2B Beltsville	Good	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor	---
2C Beltsville	Fair	Good	Good	Good	Poor	---	Very poor.	Very poor.	Good	Good	Very poor.	---
3A*:												
Beltsville	Good	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor	---
Mattawoman	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
3B*:												
Beltsville	Good	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor	---
Mattawoman.												
4B*:												
Beltsville	Good	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor	---
Urban land	---	---	---	---	---	---	---	---	---	---	---	---
5 Bibb	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
6*:												
Bibb	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
Iuka	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
7B Bourne	Fair	Good	Good	Fair	Fair	---	Poor	Very poor.	Good	Fair	Very poor.	---
7C. Bourne												
8C, 8D Croom	Poor	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
8E Croom	Poor	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
8F Croom	Very poor.	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
9B, 9C Downer	Poor	Fair	Good	Good	Good	---	Poor	Very poor.	Fair	Good	Very poor.	---
10 Elkton	Poor	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	---
11 Fallsington	Poor	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	---

See footnote at end of table.

TABLE D.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
12B Fort Mott	Poor	Fair	Fair	Poor	Poor	---	Poor	Very poor.	Fair	Poor	Very poor.	---
13B Hambrook	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
14B Ingleside	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
15 Iuka	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
16 Keyport	Fair	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
17 Leonardtown	Poor	Poor	Fair	Fair	Fair	---	Good	Fair	Poor	Fair	Fair	---
18B Mattapex	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
19A, 19B Runclint	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
20B Sassafras	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
20C, 21C, 21D Sassafras	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
22* Urban land	---	---	---	---	---	---	---	---	---	---	---	---
23B*:												
Urban land	---	---	---	---	---	---	---	---	---	---	---	---
Udorthents	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Poor	Fair	Fair	---
24 Udorthents	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Poor	Fair	Fair	---
25A Woodstown	Fair	Good	Good	Good	Poor	---	Poor	Poor	Good	Good	Poor	---
25B Woodstown	Fair	Good	Good	Good	Poor	---	Poor	Very poor.	Good	Good	Very poor.	---
99*. Open water												

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE E.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1 Assawoman	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
2A, 2B Beltsville	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
2C Beltsville	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: wetness.
3A*:					
Beltsville	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
Mattawoman	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
3B*:					
Beltsville	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
Mattawoman.					
4B*:					
Beltsville	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
Urban land	Variable	Variable	Variable	Variable	Variable.
5 Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding, too sandy.	Severe: wetness.	Severe: wetness.
6*:					
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding, too sandy.	Severe: wetness.	Severe: wetness.
Iuka	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
7B Bourne	Severe: percs slowly.	Severe: percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
7C. Bourne					
8C Croom	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: slope, small stones.	Severe: erodes easily.	Moderate: small stones.

See footnote at end of table.

TABLE E--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8D Croom	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Severe: erodes easily.	Moderate: small stones, slope.
8E Croom	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: erodes easily.	Severe: slope.
8F Croom	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope, erodes easily.	Severe: slope.
9B Downer	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
9C Downer	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.
10 Elkton	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
11 Fallsington	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
12B Fort Mott	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
13B Hambrook	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
14B Ingleside	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
15 Iuka	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
16 Keyport	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
17 Leonardtown	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
18B Mattapex	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
19A, 19B Runclint	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
20B Sassafras	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.

See footnote at end of table.

TABLE E .--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
20C Sassafras	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
21C Sassafras	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones.
21D Sassafras	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
22* Urban land	Variable	Variable	Variable	Variable	Variable.
23B*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Udorthents	Severe: wetness.	Severe: wetness.	Severe: small stones.	Severe: wetness.	Severe: wetness.
24 Udorthents	Severe: wetness.	Severe: wetness.	Severe: small stones.	Severe: wetness.	Severe: wetness.
25A Woodstown	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
25B Woodstown	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
99*. Open water					

* See description of the map unit for composition and behavior characteristics of the map unit.

ENGINEERING INDEX PROPERTIES
TABLE F1

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	USDA Texture	Classification: Unified	Classification: AASHTO
1	ASSAWOMAN	0- 8	LS	SP-SM	A-2 A-3
		8-48	S LS LFS	SP-SM SM	A-2 A-3
		48-75	COS S FS	SP SP-SM	A-1 A-3 A-2-4
2A	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
2B	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
2C	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
3A	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
	MATTAWOMAN	0- 9	SIL	ML SM	A-4
		9-27	CL L SIL	ML CL	A-4 A-6
		27-43	CL L SIL	ML CL	A-4 A-6
		43-60	SR- GR-LS SICL	GM GW-GM SM ML	A-1 A-2 A-4
3B	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
4B	BELTSVILLE	0-14	SIL	ML CL-ML	A-4
		14-25	SICL SIL	CL	A-4 A-6
		25-50	SICL SIL L	CL	A-6 A-4
		50-72	GR-SL SL CL	SM ML CL GM	A-2 A-4 A-6 A-1-B
	URBAN LAND	0- 6	VAR		
5	BIBB	0-12	SL	SM SC-SM ML CL-ML	A-2 A-4
		12-60	SL L SIL	SM SC-SM ML CL-ML	A-2 A-4
6	BIBB	0-12	SL	SM SC-SM ML CL-ML	A-2 A-4
		12-60	SL L SIL	SM SC-SM ML CL-ML	A-2 A-4
	IUKA	0-13	FSL	SM SC-SM ML CL-ML	A-4 A-2
		13-22	FSL L SL	SM SC-SM ML CL-ML	A-4
		22-60	SL FSL L	SM ML	A-2 A-4
7B	BOURNE	0-12	SL	ML SM SC-SM CL-ML	A-2 A-4
		12-28	SCL CL L	SC CL ML	A-2 A-6 A-7
		28-52	L SCL FSL	SC CL SC-SM ML	A-2 A-4 A-6
		52-80	VAR		
8C	CROOM	0-12	GR-SL	SM ML CL GM	A-1 A-2 A-4 A-6

ENGINEERING INDEX PROPERTIES
TABLE F1

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	USDA Texture	Classification: Unified	Classification: AASHTO
		12-28	GRV-SCL GRV-SL GRV-L	GP-GM GP-GC GC GM	A-1 A-2-4 A-2-6
		28-48	GRV-LS GRV-SL GRV-SCL	GW GM GC GP	A-1 A-2-4 A-2-6
		48-99	GRV-S GRV-SL GRV-LS	GW SM GM SP	A-1 A-2 A-3 A-4
8D	CROOM	0-12	GR-SL	SM ML CL GM	A-1 A-2 A-4 A-6
		12-28	GRV-SCL GRV-SL GRV-L	GP-GM GP-GC GC GM	A-1 A-2-4 A-2-6
		28-48	GRV-LS GRV-SL GRV-SCL	GW GM GC GP	A-1 A-2-4 A-2-6
		48-99	GRV-S GRV-SL GRV-LS	GW SM GM SP	A-1 A-2 A-3 A-4
8E	CROOM	0-12	GR-SL	SM ML CL GM	A-1 A-2 A-4 A-6
		12-28	GRV-SCL GRV-SL GRV-L	GP-GM GP-GC GC GM	A-1 A-2-4 A-2-6
		28-48	GRV-LS GRV-SL GRV-SCL	GW GM GC GP	A-1 A-2-4 A-2-6
		48-99	GRV-S GRV-SL GRV-LS	GW SM GM SP	A-1 A-2 A-3 A-4
8F	CROOM	0-12	GR-SL	SM ML CL GM	A-1 A-2 A-4 A-6
		12-28	GRV-SCL GRV-SL GRV-L	GP-GM GP-GC GC GM	A-1 A-2-4 A-2-6
		28-48	GRV-LS GRV-SL GRV-SCL	GW GM GC GP	A-1 A-2-4 A-2-6
		48-99	GRV-S GRV-SL GRV-LS	GW SM GM SP	A-1 A-2 A-3 A-4
9B	DOWNER	0-18	LS	SM SC SP-SM	A-2-4 A-1-B
		18-30	SL GR-SL	SM SC	A-2-4 A-4 A-1-B
		30-40	SR- S GR-LS	GM SM SP-SM GP-GM	A-3 A-1-B
		40-60	SR- GR-S SCL	SC SM SP-SM	A-2-4 A-1-B A-3 A-4
9C	DOWNER	0-18	LS	SM SC SP-SM	A-2-4 A-1-B
		18-30	SL GR-SL	SM SC	A-2-4 A-4 A-1-B
		30-40	SR- S GR-LS	GM SM SP-SM GP-GM	A-3 A-1-B
		40-60	SR- GR-S SCL	SC SM SP-SM	A-2-4 A-1-B A-3 A-4
10	ELKTON	0-10	SIL	ML CL-ML	A-4 A-6
		10-24	SICL	CL	A-6
		24-40	SICL SIC	CL CH	A-6 A-7
		40-65	VFSL	SM ML CL	A-4
11	FALLSINGTON	0-10	SL	SM CL-ML ML SC-SM	A-2 A-4
		10-32	SL L SCL	SM SC CL ML	A-2 A-4 A-6
		32-72	SR- S SCL	SM SP-SM CL	A-2 A-3
12B	FORT MOTT	0-30	LS	SM SP-SM	A-2
		30-49	SL SCL	SM SC SC-SM	A-2 A-4 A-6
		49-60	SR- S LS	SM SP SP-SM SC	A-1 A-2 A-3
13B	HAMBROOK	0-10	SL	SM ML CL	A-2 A-4
		10-14	L SL	SM ML CL	A-2 A-4
		14-28	SCL SL L	SC-SM CL ML	A-2 A-4 A-6
		28-65	LS S	SC SM SP-SM	A-1 A-2
		65-72	SR- FSL SICL	SC-SM CL CL-ML	A-4 A-6
14B	INGLESIDE	0-10	LS	SM SP-SM	A-2 A-1
		10-43	SL SCL	SM SC SC-SM	A-2 A-4
		43-56	LS S LFS	SC SM SP-SM	A-2 A-1
		56-72	SR- FSL SICL	SC-SM CL-ML CL	A-4 A-6
15	IUKA	0-13	FSL	SM SC-SM ML CL-ML	A-4 A-2
		13-22	FSL L SL	SM SC-SM ML CL-ML	A-4

ENGINEERING INDEX PROPERTIES
TABLE F1

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	USDA Texture	Classification: Unified	Classification: AASHTO
		22-60	SL FSL L	SM ML	A-2 A-4
16	KEYPORT	0-10	SIL	ML CL SC SM	A-4 A-2-4 A-6 A-2-6
		10-60	SICL CL C	ML CL MH CH	A-6 A-7-6
17	LEONARDTOWN	0-12	SIL	ML SM	A-4 A-2-4
		12-49	SIL SICL	CL CL-ML	A-4 A-6
		49-70	L GR-SL CL	ML CL SM SC	A-2 A-4 A-6 A-1
18B	MATTAPEX	0-15	SIL	CL-ML CL	A-4
		15-36	SICL SIL	CL CL-ML	A-4 A-6 A-7
		36-60	FSL L LS	SM SC CL ML	A-2 A-4 A-6
		60-65	S LS	SM SC	A-2
19A	RUNCLINT	0-22	S	SP SP-SM	A-2 A-3
		22-40	S LS	SP-SM SM	A-2 A-3
		40-59	S LS GR-S	SP-SM SP	A-1 A-2 A-3
		59-72	SR- S SCL	SP-SM SC-SM CL-ML	A-2 A-3 A-4
19B	RUNCLINT	0-22	S	SP SP-SM	A-2 A-3
		22-40	S LS	SP-SM SM	A-2 A-3
		40-59	S LS GR-S	SP-SM SP	A-1 A-2 A-3
		59-72	SR- S SCL	SP-SM SC-SM CL-ML	A-2 A-3 A-4
20B	SASSAFRAS	0- 9	SL	SM SC SC-SM	A-2 A-4
		9-40	L SCL SL	SC-SM CL SC CL-ML	A-2 A-4 A-6
		40-70	SR- S GR-SL	SP-SM SC SM SC-SM	A-1 A-2 A-4 A-3
20C	SASSAFRAS	0- 9	SL	SM SC SC-SM	A-2 A-4
		9-40	L SCL SL	SC-SM CL SC CL-ML	A-2 A-4 A-6
		40-70	SR- S GR-SL	SP-SM SC SM SC-SM	A-1 A-2 A-4 A-3
21C	SASSAFRAS	0- 9	GR-SL	SM CL ML	A-1 A-2 A-4
		9-40	L SCL SL	SC-SM CL ML	A-2 A-4 A-6
		40-70	GR-SL LS S	SP-SM SC SM	A-1 A-2 A-4
21D	SASSAFRAS	0- 9	GR-SL	SM CL ML	A-1 A-2 A-4
		9-40	L SCL SL	SC-SM CL ML	A-2 A-4 A-6
		40-70	GR-SL LS S	SP-SM SC SM	A-1 A-2 A-4
22	URBAN LAND	0- 6	VAR		
23B	URBAN LAND	0- 6	VAR		
	UDORTHENTS	0-72	SR- S L	SM ML SP-SM	A-2 A-4 A-3
24	UDORTHENTS	0-72	SR- S L	SM ML SP-SM	A-2 A-4 A-3
25A	WOODSTOWN	0-11	SL	SM CL-ML SC-SM	A-2 A-4
		11-29	SCL L SL	SM CL-ML ML CL	A-2 A-4 A-6
		29-70	SR- GR-S SL	SM SP-SM SC-SM	A-1 A-2 A-3 A-2-4
25B	WOODSTOWN	0-11	SL	SM CL-ML SC-SM	A-2 A-4
		11-29	SCL L SL	SM CL-ML ML CL	A-2 A-4 A-6
		29-70	SR- GR-S SL	SM SP-SM SC-SM	A-1 A-2 A-3 A-2-4

ENGINEERING INDEX PROPERTIES
TABLE F2

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Fragments >3 Inches (pct)	Percent passing - sieve number 4	10	40	200	Liquid limit (pct)	Plasticity Index
1	ASSAWOMAN	0- 8	0- 0	100-100	98-100	60- 85	5- 12	-	0- 0
		8-48	0- 0	100-100	95-100	65- 96	5- 20	-	0- 0
		48-75	0- 0	100-100	90-100	40- 60	2- 10	-	0- 0
2A	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
2B	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
2C	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
3A	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
	MATTAWOMAN	0- 9	0- 0	85-100	75- 90	60- 90	45- 80	-	-
		9-27	0- 5	90-100	80- 95	70- 90	50- 70	25-35	3-11
		27-43	0- 5	90-100	80- 95	70- 90	50- 70	25-35	3-11
		43-60	0-10	60-100	40- 90	20- 90	10- 85	25-35	0- 7
3B	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
4B	BELTSVILLE	0-14	0- 0	85-100	80-100	70-100	50- 90	22-26	3- 7
		14-25	0- 0	85-100	80-100	70-100	55- 95	29-32	9-12
		25-50	0- 0	85-100	80-100	70-100	50- 95	29-34	9-14
		50-72	0- 0	60-100	50-100	30-100	15- 90	18-34	3-16
	URBAN LAND	0- 6	-	-	-	-	-	-	-
5	BIBB	0-12	0- 5	95-100	90-100	60- 90	30- 60	15-25	0- 7
		12-60	0-10	60-100	50-100	40-100	30- 90	15-30	0- 7
6	BIBB	0-12	0- 5	95-100	90-100	60- 90	30- 60	15-25	0- 7
		12-60	0-10	60-100	50-100	40-100	30- 90	15-30	0- 7
	IUKA	0-13	0- 0	95-100	90-100	70-100	30- 60	15-20	0- 7
		13-22	0- 0	95-100	85-100	65-100	36- 75	15-30	0- 7
		22-60	0- 0	95-100	90-100	70-100	25- 60	15-30	0- 7
7B	BOURNE	0-12	0- 0	80-100	75-100	45- 85	20- 55	15-25	0- 6
		12-28	0- 0	80-100	75-100	60- 95	30- 80	30-45	10-25
		28-52	0- 0	80-100	75-100	50- 95	30- 80	25-40	7-20

ENGINEERING INDEX PROPERTIES
TABLE F2

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Fragments >3 Inches (pct)	Percent passing - sieve number 4	10	40	200	Liquid limit (pct)	Plasticity Index
		52-80	-	-	-	-	-	-	-
8C	CROOM	0-12	0- 0	60- 85	50- 75	30- 70	15- 55	15-33	2-16
		12-28	0- 0	40- 80	30- 55	20- 50	10- 30	8-36	2-16
		28-48	0- 0	40- 80	30- 55	15- 50	2- 30	15-36	0-16
		48-99	0- 0	40- 80	30- 55	15- 40	2- 20	15-30	0-12
8D	CROOM	0-12	0- 0	60- 85	50- 75	30- 70	15- 55	15-33	2-16
		12-28	0- 0	40- 80	30- 55	20- 50	10- 30	8-36	2-16
		28-48	0- 0	40- 80	30- 55	15- 50	2- 30	15-36	0-16
		48-99	0- 0	40- 80	30- 55	15- 40	2- 20	15-30	0-12
8E	CROOM	0-12	0- 0	60- 85	50- 75	30- 70	15- 55	15-33	2-16
		12-28	0- 0	40- 80	30- 55	20- 50	10- 30	8-36	2-16
		28-48	0- 0	40- 80	30- 55	15- 50	2- 30	15-36	0-16
		48-99	0- 0	40- 80	30- 55	15- 40	2- 20	15-30	0-12
8F	CROOM	0-12	0- 0	60- 85	50- 75	30- 70	15- 55	15-33	2-16
		12-28	0- 0	40- 80	30- 55	20- 50	10- 30	8-36	2-16
		28-48	0- 0	40- 80	30- 55	15- 50	2- 30	15-36	0-16
		48-99	0- 0	40- 80	30- 55	15- 40	2- 20	15-30	0-12
9B	DOWNER	0-18	0- 0	80-100	75-100	40- 75	10- 30	15-17	0- 2
		18-30	0- 0	80-100	75-100	45- 70	20- 40	15-25	0- 8
		30-40	0- 0	45-100	35-100	20- 70	5- 15	-	0- 0
		40-60	0- 0	75-100	70-100	35- 90	5- 55	15-28	0-10
9C	DOWNER	0-18	0- 0	80-100	75-100	40- 75	10- 30	15-17	0- 2
		18-30	0- 0	80-100	75-100	45- 70	20- 40	15-25	0- 8
		30-40	0- 0	45-100	35-100	20- 70	5- 15	-	0- 0
		40-60	0- 0	75-100	70-100	35- 90	5- 55	15-28	0-10
10	ELKTON	0-10	0- 0	100-100	100-100	90-100	50- 95	20-35	0-10
		10-24	0- 0	100-100	100-100	90-100	85- 95	25-40	10-20
		24-40	0- 0	100-100	100-100	95-100	85- 95	0-50	10-35
		40-65	0- 0	100-100	95-100	85- 95	45- 75	15-30	5-10
11	FALLSINGTON	0-10	0- 0	95-100	90-100	65- 90	30- 60	15-19	0- 5
		10-32	0- 0	95-100	90-100	65- 85	30- 55	15-30	0-15
		32-72	0- 0	95-100	90-100	50- 85	5- 55	15-30	0-15
12B	FORT MOTT	0-30	0- 0	90-100	85-100	50- 90	10- 25	-	0- 0
		30-49	0- 0	90-100	80-100	50- 90	25- 45	15-35	0-15
		49-60	0- 0	90-100	75-100	40- 80	5- 35	15-40	0-12
13B	HAMBROOK	0-10	0- 0	90-100	75-100	50- 95	25- 60	15-25	5-10
		10-14	0- 0	90-100	75-100	40- 90	20- 60	10-30	0-10
		14-28	0- 0	90-100	75-100	50- 95	30- 75	20-30	5-15
		28-65	0- 0	80-100	55-100	20- 70	5- 30	5-10	0- 5
		65-72	0- 0	85-100	80-100	70- 90	40- 85	15-25	5-15
14B	INGLESIDE	0-10	0- 0	90-100	90-100	40- 75	10- 35	15-15	0- 5
		10-43	0- 0	90-100	55-100	50- 90	20- 40	10-25	0-10

ENGINEERING INDEX PROPERTIES
TABLE F2

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Fragments >3 Inches (pct)	Percent passing - sieve number 4	10	40	200	Liquid limit (pct)	Plasticity Index
		43-56	0- 0	80-100	75-100	20- 70	5- 30	15-20	0- 5
		56-72	0- 0	85-100	80-100	70- 90	40- 85	10-30	5-10
15	IUKA	0-13	0- 0	95-100	90-100	70-100	30- 60	15-20	0- 7
		13-22	0- 0	95-100	85-100	65-100	36- 75	15-30	0- 7
		22-60	0- 0	95-100	90-100	70-100	25- 60	15-30	0- 7
16	KEYPORT	0-10	0- 0	95-100	95-100	80-100	30- 55	20-30	3-12
		10-60	0- 0	95-100	95-100	85-100	70- 95	35-60	15-35
17	LEONARDTOWN	0-12	0- 0	85-100	80-100	55-100	30- 90	15-35	5-10
		12-49	0- 0	85-100	80-100	70-100	55- 95	15-35	5-15
		49-70	0- 0	65-100	50-100	30-100	15- 95	15-40	3-20
18B	MATTAPEX	0-15	0- 0	95-100	90-100	80-100	80-100	15-30	5-15
		15-36	0- 0	100-100	100-100	90-100	85- 95	24-45	7-21
		36-60	0- 0	95-100	90-100	45- 95	15- 75	15-40	0-18
		60-65	0- 0	95-100	90-100	43- 85	15- 40	15-10	0- 0
19A	RUNCLINT	0-22	0- 0	90-100	85-100	50- 90	5- 15	-	0- 0
		22-40	0- 0	90-100	85-100	50- 90	5- 15	-	0- 0
		40-59	0- 0	55-100	45-100	20- 80	5- 15	-	0- 0
		59-72	0- 0	90-100	80-100	50- 90	5- 40	15-30	0-10
19B	RUNCLINT	0-22	0- 0	90-100	85-100	50- 90	5- 15	-	0- 0
		22-40	0- 0	90-100	85-100	50- 90	5- 15	-	0- 0
		40-59	0- 0	55-100	45-100	20- 80	5- 15	-	0- 0
		59-72	0- 0	90-100	80-100	50- 90	5- 40	15-30	0-10
20B	SASSAFRAS	0- 9	0- 0	85-100	80-100	50- 85	25- 55	12-32	0-10
		9-40	0- 0	85-100	80-100	50- 95	25- 75	20-33	5-15
		40-70	0- 0	70-100	50-100	30- 90	5- 55	15-26	0- 8
20C	SASSAFRAS	0- 9	0- 0	85-100	80-100	50- 85	25- 55	12-32	0-10
		9-40	0- 0	85-100	80-100	50- 95	25- 75	20-33	5-15
		40-70	0- 0	70-100	50-100	30- 90	5- 55	15-26	0- 8
21C	SASSAFRAS	0- 9	0-10	60- 85	50- 75	30- 70	15- 55	15-32	0-10
		9-40	0- 0	85-100	85-100	50- 95	25- 75	20-33	5-15
		40-70	0- 0	70-100	50-100	30- 90	5- 50	15-26	0- 8
21D	SASSAFRAS	0- 9	0-10	60- 85	50- 75	30- 70	15- 55	15-32	0-10
		9-40	0- 0	85-100	85-100	50- 95	25- 75	20-33	5-15
		40-70	0- 0	70-100	50-100	30- 90	5- 50	15-26	0- 8
22	URBAN LAND	0- 6	-	-	-	-	-	-	-
23B	URBAN LAND	0- 6	-	-	-	-	-	-	-
	UDORTHENTS	0-72	0- 0	90-100	90-100	60- 95	5- 60	15-30	0-15
24	UDORTHENTS	0-72	0- 0	90-100	90-100	60- 95	5- 60	15-30	0-15
25A	WOODSTOWN	0-11	0- 0	90-100	80-100	60- 95	30- 75	15-28	0- 7
		11-29	0- 0	90-100	70-100	45- 90	25- 60	15-32	0-20
		29-70	0- 0	80-100	70- 95	35- 55	5- 25	15-26	0- 6
25B	WOODSTOWN	0-11	0- 0	90-100	80-100	60- 95	30- 75	15-28	0- 7

ENGINEERING INDEX PROPERTIES
TABLE F2

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Fragments >3 Inches (pct)	Percent passing - sieve number 4	10	40	200	Liquid limit (pct)	Plasticity Index
		11-29	0- 0	90-100	70-100	45- 90	25- 60	15-32	0-20
		29-70	0- 0	80-100	70- 95	35- 55	5- 25	15-26	0- 6

Table G - PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Clay (pct)	Moist Blk Density (g/cm3)	Permeab-ility (In/hr)	Available water cap (In/in)	Soil React (ph)	Salin-ity (mmhos/cm)	Shrink Swell Pot.	Erosion Factor K	Erosion Factor T	Wind Erod. Group	Organic Matter (pct)
1	ASSAWOMAN	0- 8	1-10	1.35-1.60	6.00-20.00	0.03-0.10	3.6-6.0	-	LOW	.10	5	2	2.0- 5.0
		8-48	1-10	1.40-1.60	6.00-20.00	0.03-0.10	3.6-6.0	-	LOW	.10			0.0- 0.0
		48-75	2- 5	1.40-1.60	20.00-20.00	0.02-0.05	3.6-6.0	-	LOW	.05			0.0- 0.0
2A	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
2B	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
2C	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
3A	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
	MATTAWOMAN	0- 9	10-20	1.20-1.40	0.60- 2.00	0.16-0.20	4.5-6.0	-	LOW	.37	3		2.0- 4.0
		9-27	18-34	1.40-1.60	0.60- 2.00	0.12-0.16	4.5-6.0	-	LOW	.28			0.5- 0.5
		27-43	18-34	1.40-1.60	0.20- 0.60	0.08-0.12	4.5-6.0	-	LOW	.28			0.5- 0.5
		43-60	5-15	1.40-1.60	0.60- 6.00	0.06-0.10	4.5-6.0	-	LOW	.28			0.5- 0.5
3B	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
4B	BELTSVILLE	0-14	7-20	1.20-1.40	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43	3		1.0- 3.0
		14-25	20-30	1.30-1.50	0.60- 2.00	0.18-0.21	3.6-5.5	-	LOW	.43			0.5- 0.5
		25-50	20-30	1.60-1.90	0.00- 0.20	0.05-0.10	3.6-5.5	-	LOW	.32			0.5- 0.5
		50-72	20-35	1.30-1.50	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
	URBAN LAND	0- 6	-	0.00-0.00	0.00- 0.00	0.00-0.00	0.0-0.0	-					0.0- 0.0
5	BIBB	0-12	2-18	1.25-1.55	0.60- 2.00	0.12-0.18	4.5-5.5	-	LOW	.20	5	3	0.5- 2.0
		12-60	2-18	1.30-1.60	0.60- 2.00	0.12-0.20	4.5-5.5	-	LOW	.37			0.0- 0.0
6	BIBB	0-12	2-18	1.25-1.55	0.60- 2.00	0.12-0.18	4.5-5.5	-	LOW	.20	5	3	0.5- 2.0
		12-60	2-18	1.30-1.60	0.60- 2.00	0.12-0.20	4.5-5.5	-	LOW	.37			0.0- 0.0
	IUKA	0-13	6-15	0.00-0.00	2.00- 6.00	0.10-0.15	5.1-6.0	-	LOW	.24	5		0.5- 2.0
		13-22	8-18	0.00-0.00	0.60- 2.00	0.10-0.20	4.5-5.5	-	LOW	.28			0.0- 0.0
		22-60	5-15	0.00-0.00	0.60- 2.00	0.10-0.20	4.5-5.5	-	LOW	.20			0.0- 0.0
7B	BOURNE	0-12	5-20	1.30-1.50	2.00- 6.00	0.10-0.15	4.5-6.5	-	LOW	.28	3	3	1.0- 3.0
		12-28	20-35	1.40-1.60	0.60- 2.00	0.11-0.16	3.6-5.5	-	LOW	.37			0.0- 0.0
		28-52	15-35	1.70-1.90	0.00- 0.20	0.08-0.12	3.6-5.5	-	LOW	.37			0.0- 0.0
		52-80	-	0.00-0.00	0.01-20.00	0.00-0.00	0.0-0.0	-					0.0- 0.0
8C	CROOM	0-12	10-23	1.20-1.40	0.60- 2.00	0.10-0.18	4.5-6.0	-	LOW	.43	4		1.0- 3.0
		12-28	10-35	1.30-1.50	0.20- 2.00	0.05-0.10	4.5-6.0	-	LOW	.17			0.0- 0.0

Table G - PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Clay (pct)	Moist Blk Density (g/cm3)	Permeability (In/hr)	Available water cap (In/in)	Soil React (ph)	Salinity (mmhos/cm)	Shrink Swell Pot.	Erosion Factor K	Erosion Factor T	Wind Erod. Group	Organic Matter (pct)
		28-48	5-30	1.30-1.50	0.60-20.00	0.04-0.07	4.5-6.0	-	LOW	.17			0.0- 0.0
		48-99	5-20	1.30-1.50	0.60-20.00	0.03-0.13	4.5-6.0	-	LOW	.17			0.0- 0.0
8D	CROOM	0-12	10-23	1.20-1.40	0.60- 2.00	0.10-0.18	4.5-6.0	-	LOW	.43	4		1.0- 3.0
		12-28	10-35	1.30-1.50	0.20- 2.00	0.05-0.10	4.5-6.0	-	LOW	.17			0.0- 0.0
		28-48	5-30	1.30-1.50	0.60-20.00	0.04-0.07	4.5-6.0	-	LOW	.17			0.0- 0.0
		48-99	5-20	1.30-1.50	0.60-20.00	0.03-0.13	4.5-6.0	-	LOW	.17			0.0- 0.0
8E	CROOM	0-12	10-23	1.20-1.40	0.60- 2.00	0.10-0.18	4.5-6.0	-	LOW	.43	4		1.0- 3.0
		12-28	10-35	1.30-1.50	0.20- 2.00	0.05-0.10	4.5-6.0	-	LOW	.17			0.0- 0.0
		28-48	5-30	1.30-1.50	0.60-20.00	0.04-0.07	4.5-6.0	-	LOW	.17			0.0- 0.0
		48-99	5-20	1.30-1.50	0.60-20.00	0.03-0.13	4.5-6.0	-	LOW	.17			0.0- 0.0
8F	CROOM	0-12	10-23	1.20-1.40	0.60- 2.00	0.10-0.18	4.5-6.0	-	LOW	.43	4		1.0- 3.0
		12-28	10-35	1.30-1.50	0.20- 2.00	0.05-0.10	4.5-6.0	-	LOW	.17			0.0- 0.0
		28-48	5-30	1.30-1.50	0.60-20.00	0.04-0.07	4.5-6.0	-	LOW	.17			0.0- 0.0
		48-99	5-20	1.30-1.50	0.60-20.00	0.03-0.13	4.5-6.0	-	LOW	.17			0.0- 0.0
9B	DOWNER	0-18	3- 8	1.20-1.60	6.00-20.00	0.06-0.08	3.6-5.5	-	LOW	.20	4	2	0.5- 2.0
		18-30	6-18	1.45-1.65	0.60- 6.00	0.10-0.13	4.5-5.5	-	LOW	.28			0.0- 0.0
		30-40	3- 5	1.40-1.75	6.00-20.00	0.01-0.08	4.5-5.5	-	LOW	.24			0.0- 0.0
		40-60	3-25	1.40-1.75	2.00-20.00	0.03-0.10	4.5-5.5	-	LOW	.17			0.0- 0.0
9C	DOWNER	0-18	3- 8	1.20-1.60	6.00-20.00	0.06-0.08	3.6-5.5	-	LOW	.20	4	2	0.5- 2.0
		18-30	6-18	1.45-1.65	0.60- 6.00	0.10-0.13	4.5-5.5	-	LOW	.28			0.0- 0.0
		30-40	3- 5	1.40-1.75	6.00-20.00	0.01-0.08	4.5-5.5	-	LOW	.24			0.0- 0.0
		40-60	3-25	1.40-1.75	2.00-20.00	0.03-0.10	4.5-5.5	-	LOW	.17			0.0- 0.0
10	ELKTON	0-10	11-25	1.20-1.50	0.60- 2.00	0.18-0.24	3.6-5.5	-	LOW	.43	4	5	1.0- 4.0
		10-24	27-35	1.35-1.55	0.06- 0.20	0.14-0.20	3.6-5.5	-	MODER	.37			0.5- 0.5
		24-40	27-45	1.35-1.55	0.00- 0.02	0.12-0.19	3.6-5.5	-	MODER	.32			0.5- 0.5
		40-65	15-20	1.45-1.65	0.20- 0.60	0.10-0.15	3.6-5.5	-	LOW	.32			0.5- 0.5
11	FALLSINGTON	0-10	5-18	1.00-1.45	0.60- 6.00	0.15-0.20	3.6-5.5	-	LOW	.24	4	3	0.5- 2.0
		10-32	18-30	1.50-1.80	0.20- 2.00	0.15-0.18	3.6-5.5	-	LOW	.28			0.5- 0.5
		32-72	2-30	1.50-1.85	0.60-20.00	0.06-0.20	3.6-5.5	-	LOW	.20			0.5- 0.5
12B	FORT MOTT	0-30	5-10	1.25-1.60	6.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.20	4	2	1.0- 2.0
		30-49	10-30	1.25-1.80	0.60- 6.00	0.12-0.16	3.6-5.5	-	LOW	.32			0.0- 0.0
		49-60	5-15	1.30-1.80	6.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.17			0.0- 0.0
13B	HAMBROOK	0-10	12-18	1.30-1.60	0.60- 6.00	0.12-0.20	3.6-5.5	-	LOW	.28	4	5	0.5- 3.0
		10-14	10-18	1.45-1.65	0.60- 6.00	0.10-0.16	3.6-5.5	-	LOW	.24			0.5- 0.5
		14-28	18-27	1.35-1.70	0.60- 2.00	0.14-0.22	3.6-5.5	-	LOW	.37			0.5- 0.5
		28-65	3- 8	1.40-1.70	2.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.24			0.5- 0.5
		65-72	15-30	1.50-1.70	0.06- 0.60	0.12-0.24	3.6-5.5	-	LOW	.49			0.5- 0.5
14B	INGLESIDE	0-10	3- 8	1.30-1.70	6.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.20	4	2	0.5- 2.0
		10-43	8-25	1.45-1.65	2.00- 6.00	0.10-0.16	3.6-5.5	-	LOW	.28			0.5- 0.5
		43-56	3- 8	1.40-1.70	2.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.15			0.5- 0.5
		56-72	15-30	1.50-1.70	0.06- 0.60	0.12-0.24	3.6-5.5	-	LOW	.49			0.5- 0.5
15	IUKA	0-13	6-15	0.00-0.00	2.00- 6.00	0.10-0.15	5.1-6.0	-	LOW	.24	5		0.5- 2.0
		13-22	8-18	0.00-0.00	0.60- 2.00	0.10-0.20	4.5-5.5	-	LOW	.28			0.0- 0.0
		22-60	5-15	0.00-0.00	0.60- 2.00	0.10-0.20	4.5-5.5	-	LOW	.20			0.0- 0.0
16	KEYPORT	0-10	10-25	1.20-1.60	0.20- 2.00	0.16-0.22	3.6-5.5	-	LOW	.43	3	5	1.0- 5.0

Table G - PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Soil Name	Depth (In)	Clay (pct)	Moist Blk Density (g/cm3)	Permeability (In/hr)	Available water cap (In/in)	Soil React (ph)	Salinity (mmhos/cm)	Shrink Swell Pot.	Erosion Factor K	Erosion Factor T	Wind Erod. Group	Organic Matter (pct)
		10-60	30-50	1.35-1.60	0.00- 0.20	0.13-0.17	4.5-5.5	-	MODER	.32			0.0- 0.0
17	LEONARDTOWN	0-12	8-22	1.40-1.70	0.60- 2.00	0.18-0.24	3.6-5.5	-	LOW	.43	3		0.5- 6.0
		12-49	15-35	1.70-1.90	0.00- 0.20	0.08-0.12	3.6-5.5	-	LOW	.32			0.5- 0.5
		49-70	10-30	1.60-1.90	0.20- 6.00	0.08-0.18	3.6-5.5	-	LOW	.37			0.5- 0.5
18B	MATTAPEX	0-15	10-18	1.10-1.45	0.60- 2.00	0.20-0.28	3.6-5.5	-	LOW	.43	4	5	0.5- 3.0
		15-36	18-30	1.25-1.45	0.20- 2.00	0.18-0.22	3.6-5.5	-	LOW	.43			0.5- 0.5
		36-60	8-15	1.45-1.65	0.60- 6.00	0.14-0.18	3.6-5.5	-	LOW	.28			0.5- 0.5
		60-65	3- 8	1.50-1.80	6.00-20.00	0.05-0.08	3.6-5.5	-	LOW	.17			0.5- 0.5
19A	RUNCLINT	0-22	1- 5	1.50-1.75	6.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.10	5	1	0.5- 3.0
		22-40	1- 8	1.50-1.75	6.00-20.00	0.02-0.10	3.6-5.5	-	LOW	.10			0.5- 0.5
		40-59	1- 8	1.50-1.75	6.00-20.00	0.02-0.10	3.6-5.5	-	LOW	.05			0.5- 0.5
		59-72	1-25	1.40-1.70	0.60- 2.00	0.02-0.15	3.6-5.5	-	LOW	.20			0.5- 0.5
19B	RUNCLINT	0-22	1- 5	1.50-1.75	6.00-20.00	0.05-0.10	3.6-5.5	-	LOW	.10	5	1	0.5- 3.0
		22-40	1- 8	1.50-1.75	6.00-20.00	0.02-0.10	3.6-5.5	-	LOW	.10			0.5- 0.5
		40-59	1- 8	1.50-1.75	6.00-20.00	0.02-0.10	3.6-5.5	-	LOW	.05			0.5- 0.5
		59-72	1-25	1.40-1.70	0.60- 2.00	0.02-0.15	3.6-5.5	-	LOW	.20			0.5- 0.5
20B	SASSAFRAS	0- 9	3-12	1.00-1.45	0.60- 6.00	0.10-0.16	3.6-5.5	-	LOW	.28	5	3	1.0- 2.0
		9-40	18-27	1.40-1.65	0.20- 2.00	0.11-0.22	3.6-5.5	-	LOW	.37			0.5- 0.5
		40-70	3-16	1.40-1.70	0.60-20.00	0.04-0.12	3.6-5.5	-	LOW	.17			0.5- 0.5
20C	SASSAFRAS	0- 9	3-12	1.00-1.45	0.60- 6.00	0.10-0.16	3.6-5.5	-	LOW	.28	5	3	1.0- 2.0
		9-40	18-27	1.40-1.65	0.20- 2.00	0.11-0.22	3.6-5.5	-	LOW	.37			0.5- 0.5
		40-70	3-16	1.40-1.70	0.60-20.00	0.04-0.12	3.6-5.5	-	LOW	.17			0.5- 0.5
21C	SASSAFRAS	0- 9	3-12	1.00-1.40	0.60- 6.00	0.10-0.14	3.6-5.5	-	LOW	.20	5		1.0- 2.0
		9-40	18-27	1.35-1.50	0.60- 2.00	0.11-0.22	3.6-5.5	-	LOW	.37			0.0- 0.0
		40-70	3-12	1.35-1.50	0.60-20.00	0.04-0.12	3.6-5.5	-	LOW	.17			0.0- 0.0
21D	SASSAFRAS	0- 9	3-12	1.00-1.40	0.60- 6.00	0.10-0.14	3.6-5.5	-	LOW	.20	5		1.0- 2.0
		9-40	18-27	1.35-1.50	0.60- 2.00	0.11-0.22	3.6-5.5	-	LOW	.37			0.0- 0.0
		40-70	3-12	1.35-1.50	0.60-20.00	0.04-0.12	3.6-5.5	-	LOW	.17			0.0- 0.0
22	URBAN LAND	0- 6	-	0.00-0.00	0.00- 0.00	0.00-0.00	0.0-0.0	-					0.0- 0.0
23B	URBAN LAND	0- 6	-	0.00-0.00	0.00- 0.00	0.00-0.00	0.0-0.0	-					0.0- 0.0
	UDORTHENTS	0-72	3-20	1.55-1.80	2.00-20.00	0.05-0.20	3.6-5.5	-	LOW	.15			0.5- 0.5
24	UDORTHENTS	0-72	3-20	1.55-1.80	2.00-20.00	0.05-0.20	3.6-5.5	-	LOW	.15			0.5- 0.5
25A	WOODSTOWN	0-11	5-18	1.00-1.40	0.60- 6.00	0.08-0.16	3.6-5.5	-	LOW	.24	4	3	1.0- 2.0
		11-29	18-30	1.35-1.70	0.20- 6.00	0.06-0.16	3.6-5.5	-	LOW	.28			0.5- 0.5
		29-70	5-20	1.35-1.65	0.60- 6.00	0.06-0.16	3.6-5.5	-	LOW	.28			0.5- 0.5
25B	WOODSTOWN	0-11	5-18	1.00-1.40	0.60- 6.00	0.08-0.16	3.6-5.5	-	LOW	.24	4	3	1.0- 2.0
		11-29	18-30	1.35-1.70	0.20- 6.00	0.06-0.16	3.6-5.5	-	LOW	.28			0.5- 0.5
		29-70	5-20	1.35-1.65	0.60- 6.00	0.06-0.16	3.6-5.5	-	LOW	.28			0.5- 0.5

Table H - WATER FEATURES

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol and soil name		Hydrologic group	Flooding Freq	Flooding Duration	Flooding Months	High water table Depth	High water table Kind	High water table Months
						(Ft)		
1	ASSAWOMAN	A/D	NONE		-	0- 0.5	APPAR	NOV-MAR
2A	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
2B	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
2C	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
3A	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
	MATTAWOMAN	C	NONE		-	0.5- 3.0	PERCH	NOV-MAR
3B	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
	MATTAWOMAN		NONE		-	-		-
4B	BELTSVILLE	C	NONE		-	1.5- 2.5	PERCH	NOV-APR
	URBAN LAND		NONE		-	2.0- 2.0		-
5	BIBB	D	OCCA	LONG	DEC-MAY	0.5- 1.5	APPAR	DEC-APR
6	BIBB	D	OCCA	LONG	DEC-MAY	0.5- 1.5	APPAR	DEC-APR
	IUKA	C	OCCA	BRIEF	DEC-APR	1.0- 3.0	APPAR	DEC-APR
7B	BOURNE	C	NONE		-	1.5- 2.5	PERCH	DEC-MAY
7C	BOURNE		NONE		-	-		-
8C	CROOM	C	NONE		-	6.0- 6.0		-
8D	CROOM	C	NONE		-	6.0- 6.0		-
8E	CROOM	C	NONE		-	6.0- 6.0		-
8F	CROOM	C	NONE		-	6.0- 6.0		-
9B	DOWNER	B	NONE		-	6.0- 6.0		-
9C	DOWNER	B	NONE		-	6.0- 6.0		-
10	ELKTON	C/D	NONE		-	0- 1.0	APPAR	NOV-MAY
11	FALLSINGTON	B/D	NONE		-	0- 1.0	APPAR	DEC-MAY
12B	FORT MOTT	A	NONE		-	6.0- 6.0		-
13B	HAMBROOK	B	NONE		-	4.0- 6.0	APPAR	JAN-MAY
14B	INGLESIDE	B	NONE		-	4.0- 6.0	APPAR	JAN-MAY
15	IUKA	C	OCCA	BRIEF	DEC-APR	1.0- 3.0	APPAR	DEC-APR
16	KEYPORT	C	NONE		-	1.5- 4.0	PERCH	NOV-MAY
17	LEONARDTOWN	D	NONE		-	0- 1.0	PERCH	NOV-MAR
18B	MATTAPEX	C	NONE		-	1.5- 3.0	APPAR	JAN-APR
19A	RUNCLINT	A	NONE		-	4.0- 6.0	APPAR	JAN-MAY
19B	RUNCLINT	A	NONE		-	4.0- 6.0	APPAR	JAN-MAY
20B	SASSAFRAS	B	NONE		-	6.0- 6.0		-
20C	SASSAFRAS	B	NONE		-	6.0- 6.0		-
21C	SASSAFRAS	B	NONE		-	6.0- 6.0		-
21D	SASSAFRAS	B	NONE		-	6.0- 6.0		-
22	URBAN LAND		NONE		-	2.0- 2.0		-
23B	URBAN LAND		NONE		-	2.0- 2.0		-
	UDORTHENTS	A/D	NONE		-	0- 6.0	APPAR	NOV-MAY
24	UDORTHENTS	A/D	NONE		-	0- 6.0	APPAR	NOV-MAY
25A	WOODSTOWN	C	NONE		-	1.5- 3.5	APPAR	JAN-APR
25B	WOODSTOWN	C	NONE		-	1.5- 3.5	APPAR	JAN-APR
99	OPEN WATER				-	-		-

Table I - SOIL FEATURES

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol and soil name		Bedrock Depth	Bedrock Hardness	Cemented pan Depth	Cemented pan Hardness	Subsidence Initial	Subsidence Total	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In		In		In	In			
1	ASSAWOMAN	60- 60		-		-	-		HIGH	HIGH
2A	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
2B	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
2C	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
3A	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
	MATTAWOMAN	60- 60		-		-	-	HIGH	HIGH	MODERATE
3B	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
	MATTAWOMAN	-		-		-	-			
4B	BELTSVILLE	60- 60		-		-	-	HIGH	HIGH	HIGH
	URBAN LAND	10- 10		-		-	-			
5	BIBB	60- 60		-		-	-		HIGH	MODERATE
6	BIBB	60- 60		-		-	-		HIGH	MODERATE
	IUKA	60- 60		-		-	-		MODERATE	HIGH
7B	BOURNE	60- 60		-		-	-		HIGH	HIGH
7C	BOURNE	-		-		-	-			
8C	CROOM	60- 60		-		-	-	MODERATE	LOW	HIGH
8D	CROOM	60- 60		-		-	-	MODERATE	LOW	HIGH
8E	CROOM	60- 60		-		-	-	MODERATE	LOW	HIGH
8F	CROOM	60- 60		-		-	-	MODERATE	LOW	HIGH
9B	DOMNER	60- 60		-		-	-	LOW	MODERATE	HIGH
9C	DOMNER	60- 60		-		-	-	LOW	MODERATE	HIGH
10	ELKTON	60- 60		-		-	-	MODERATE	HIGH	HIGH
11	FALLSINGTON	60- 60		-		-	-	MODERATE	HIGH	HIGH
12B	FORT MOTT	60- 60		-		-	-	MODERATE	MODERATE	HIGH
13B	HAMBROOK	60- 60		-		-	-	MODERATE	MODERATE	HIGH
14B	INGLESIDE	60- 60		-		-	-	LOW	MODERATE	HIGH
15	IUKA	60- 60		-		-	-		MODERATE	HIGH
16	KEYPORT	60- 60		-		-	-	HIGH	HIGH	HIGH
17	LEONARDTOWN	60- 60		-		-	-	HIGH	HIGH	HIGH
18B	MATTAPEX	60- 60		-		-	-	MODERATE	HIGH	HIGH
19A	RUNCLINT	60- 60		-		-	-	LOW	LOW	HIGH
19B	RUNCLINT	60- 60		-		-	-	LOW	LOW	HIGH
20B	SASSAFRAS	60- 60		-		-	-	MODERATE	LOW	HIGH
20C	SASSAFRAS	60- 60		-		-	-	MODERATE	LOW	HIGH
21C	SASSAFRAS	60- 60		-		-	-	MODERATE	LOW	HIGH
21D	SASSAFRAS	60- 60		-		-	-	MODERATE	LOW	HIGH
22	URBAN LAND	10- 10		-		-	-			
23B	URBAN LAND	10- 10		-		-	-			
	UDORTHENTS	60- 60		-		-	-	LOW	HIGH	HIGH
24	UDORTHENTS	60- 60		-		-	-	LOW	HIGH	HIGH
25A	WOODSTOWN	60- 60		-		-	-	MODERATE	MODERATE	HIGH
25B	WOODSTOWN	60- 60		-		-	-	MODERATE	MODERATE	HIGH
99	OPEN WATER	-		-		-	-			

Table J - SANITARY FACILITIES REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Septic Tank Absorption Fields	Sewage Lagoons	Sanitary Landfill (Trench)	Sanitary Landfill (Area)	Daily Cover for Landfill
1	ASSAWOMAN	SEVERE Wetness Poor Filter	SEVERE Seepage Wetness	SEVERE Seepage Wetness Too Sandy	SEVERE Seepage Wetness	POOR Seepage Too Sandy Wetness
2A	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
2B	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
2C	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage Slope	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
3A	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
	MATTAWOMAN	SEVERE Wetness Percs Slowly	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Wetness	POOR Wetness
3B	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
4B	BELTSVILLE	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	MODERATE Wetness	FAIR Too Clayey Wetness
	URBAN LAND	Variable	Variable	Variable	Variable	Variable
5	BIBB	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	POOR Wetness

Table J - SANITARY FACILITIES REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Septic Tank Absorption Fields	Sewage Lagoons	Sanitary Landfill (Trench)	Sanitary Landfill (Area)	Daily Cover for Landfill
6	BIBB	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	POOR Wetness
	IUKA	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	FAIR Wetness
7B	BOURNE	SEVERE Wetness Percs Slowly	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	FAIR Wetness
8C	CROOM	SEVERE Percs Slowly Poor Filter	SEVERE Seepage Slope	SEVERE Seepage Too Sandy	SEVERE Seepage	POOR Seepage Too Sandy Small Stones
8D	CROOM	SEVERE Percs Slowly Poor Filter	SEVERE Seepage Slope	SEVERE Seepage Too Sandy	SEVERE Seepage	POOR Seepage Too Sandy Small Stones
8E	CROOM	SEVERE Percs Slowly Poor Filter Slope	SEVERE Seepage Slope	SEVERE Seepage Slope Too Sandy	SEVERE Seepage Slope	POOR Seepage Too Sandy Small Stones
8F	CROOM	SEVERE Percs Slowly Poor Filter Slope	SEVERE Seepage Slope	SEVERE Seepage Slope Too Sandy	SEVERE Seepage Slope	POOR Seepage Too Sandy Small Stones
9B	DOWNER	SEVERE Poor Filter	SEVERE Seepage	SEVERE Seepage Too Sandy	SEVERE Seepage	SEVERE Seepage Too Sandy
9C	DOWNER	SEVERE Poor Filter	SEVERE Slope Seepage	SEVERE Seepage Too Sandy	SEVERE Seepage	SEVERE Seepage Too Sandy
10	ELKTON	SEVERE Wetness Percs Slowly	SLIGHT	SEVERE Wetness	SEVERE Wetness	POOR Wetness

Table J - SANITARY FACILITIES REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name	Septic Tank Absorption Fields	Sewage Lagoons	Sanitary Landfill (Trench)	Sanitary Landfill (Area)	Daily Cover for Landfill
11 FALLSINGTON	SEVERE Wetness Percs Slowly Poor Filter	SEVERE Seepage Wetness	SEVERE Seepage Wetness Too Sandy	SEVERE Seepage Wetness	POOR Seepage Too Sandy Wetness
12B FORT MOTT	SEVERE Poor Filter	SEVERE Seepage	SEVERE Seepage	SEVERE Seepage	POOR Seepage
13B HAMBROOK	SEVERE Poor Filter	SEVERE Seepage	SEVERE Wetness Too Sandy	SEVERE Seepage	POOR Seepage Too Sandy
14B INGLESIDE	SEVERE Percs Slowly	SEVERE Seepage	SEVERE Wetness	SEVERE Seepage	POOR Thin Layer
15 IUKA	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	FAIR Wetness
16 KEYPORT	SEVERE Wetness Percs Slowly	SEVERE Wetness	SEVERE Wetness Too Clayey	MODERATE Wetness	POOR Too Clayey Hard To Pack
17 LEONARDTOWN	SEVERE Wetness Percs Slowly	SEVERE Seepage	SEVERE Seepage Wetness	SEVERE Wetness	POOR Wetness
18B MATTAPEX	SEVERE Wetness Percs Slowly	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Seepage Wetness	FAIR Too Sandy Wetness
19A RUNCLINT	SEVERE Poor Filter	SEVERE Seepage	SEVERE Wetness Too Sandy	SEVERE Seepage	POOR Seepage Too Sandy Small Stones
19B RUNCLINT	SEVERE Poor Filter	SEVERE Seepage	SEVERE Wetness Too Sandy	SEVERE Seepage	POOR Seepage Too Sandy Small Stones

Table J - SANITARY FACILITIES REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Septic Tank Absorption Fields	Sewage Lagoons	Sanitary Landfill (Trench)	Sanitary Landfill (Area)	Daily Cover for Landfill
20B	SASSAFRAS	SEVERE Percs Slowly	SEVERE Seepage	SEVERE Seepage	SLIGHT	FAIR Thin Layer
20C	SASSAFRAS	SEVERE Percs Slowly	SEVERE Seepage Slope	SEVERE Seepage	SLIGHT	FAIR Thin Layer
21C	SASSAFRAS	MODERATE Percs Slowly	SEVERE Seepage Slope	SEVERE Seepage	SLIGHT	FAIR Thin Layer
21D	SASSAFRAS	MODERATE Percs Slowly Slope	SEVERE Seepage Slope	SEVERE Seepage	MODERATE Slope	FAIR Slope Thin Layer
22	URBAN LAND	Variable	Variable	Variable	Variable	Variable
23B	URBAN LAND	Variable	Variable	Variable	Variable	Variable
	UDORTHENTS	SEVERE Wetness Poor Filter	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Seepage Wetness	POOR Seepage Too Sandy
24	UDORTHENTS	SEVERE Wetness Poor Filter	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Seepage Wetness	POOR Seepage Too Sandy
25A	WOODSTOWN	SEVERE Wetness Percs Slowly	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Seepage Wetness	POOR Seepage Too Sandy
25B	WOODSTOWN	SEVERE Wetness Percs Slowly	SEVERE Seepage Wetness	SEVERE Seepage Wetness	SEVERE Seepage Wetness	POOR Seepage Too Sandy

Table K - BUILDING SITE DEVELOPMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Shallow Excavations	Dwellings Without Basements	Dwellings With Basements	Small Commercial Buildings	Local Streets and Roads	Lawns, Landscaping, and Golf Fairways
1	ASSAWOMAN	SEVERE Cutbanks Cave Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness Droughty
2A	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Frost Action	MODERATE Wetness
2B	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Frost Action	MODERATE Wetness
2C	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness Slope	SEVERE Frost Action	MODERATE Wetness
3A	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Frost Action	MODERATE Wetness
	MATTAWOMAN	SEVERE Cutbanks Cave Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness
3B	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Frost Action	MODERATE Wetness
4B	BELTSVILLE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Frost Action	MODERATE Wetness
	URBAN LAND	Variable	Variable	Variable	Variable	Variable	Variable
5	BIBB	SEVERE Wetness Cutbanks Cave	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Wetness Flooding	SEVERE Wetness

Table K - BUILDING SITE DEVELOPMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name	Shallow Excavations	Dwellings Without Basements	Dwellings With Basements	Small Commercial Buildings	Local Streets and Roads	Lawns, Landscaping, and Golf Fairways
6 BIBB	SEVERE Wetness Cutbanks Cave	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Wetness Flooding	SEVERE Wetness
IUKA	SEVERE Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding	MODERATE Wetness Flooding
7B BOURNE	SEVERE Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	MODERATE Low Strength Wetness	MODERATE Wetness
8C CROOM	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	MODERATE Slope	MODERATE Frost Action	MODERATE Small Stones
8D CROOM	SEVERE Cutbanks Cave	MODERATE Slope	MODERATE Slope	SEVERE Slope	MODERATE Slope Frost Action	MODERATE Small Stones Slope
8E CROOM	SEVERE Cutbanks Cave Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope
8F CROOM	SEVERE Cutbanks Cave Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope	SEVERE Slope
9B DOWNER	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	SLIGHT	SLIGHT	MODERATE Droughty
9C DOWNER	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	MODERATE Slope	SLIGHT	MODERATE Droughty
10 ELKTON	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Low Strength Wetness	SEVERE Wetness

Table K - BUILDING SITE DEVELOPMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Shallow Excavations	Dwellings Without Basements	Dwellings With Basements	Small Commercial Buildings	Local Streets and Roads	Lawns, Landscaping, and Golf Fairways
11	FALLSINGTON	SEVERE Cutbanks Cave Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness
12B	FORT MOTT	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	SLIGHT	MODERATE Frost Action	MODERATE Droughty
13B	HAMBROOK	SEVERE Cutbanks Cave	SLIGHT	MODERATE Wetness	SLIGHT	MODERATE Frost Action	SLIGHT
14B	INGLESIDE	SEVERE Cutbanks Cave	SLIGHT	MODERATE Wetness	SLIGHT	SLIGHT	MODERATE Droughty
15	IUKA	SEVERE Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding Wetness	SEVERE Flooding	MODERATE Wetness Flooding
16	KEYPORT	SEVERE Wetness	MODERATE Wetness Shrink-swell	SEVERE Wetness	MODERATE Wetness Shrink-swell	SEVERE Low Strength Frost Action	MODERATE Wetness
17	LEONARDTOWN	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness Frost Action	SEVERE Wetness
18B	MATTAPEX	SEVERE Cutbanks Cave Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	SEVERE Low Strength	MODERATE Wetness
19A	RUNCLINT	SEVERE Cutbanks Cave	SLIGHT	MODERATE Wetness	SLIGHT	SLIGHT	SEVERE Droughty
19B	RUNCLINT	SEVERE Cutbanks Cave	SLIGHT	MODERATE Wetness	SLIGHT	SLIGHT	SEVERE Droughty

Table K - BUILDING SITE DEVELOPMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name	Shallow Excavations	Dwellings Without Basements	Dwellings With Basements	Small Commercial Buildings	Local Streets and Roads	Lawns, Landscaping, and Golf Fairways
20B SASSAFRAS	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	SLIGHT	MODERATE Frost Action	SLIGHT
20C SASSAFRAS	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	MODERATE Slope	MODERATE Frost Action	SLIGHT
21C SASSAFRAS	SEVERE Cutbanks Cave	SLIGHT	SLIGHT	MODERATE Slope	MODERATE Frost Action	MODERATE Small Stones Large Stones
21D SASSAFRAS	SEVERE Cutbanks Cave	MODERATE Slope	MODERATE Slope	SEVERE Slope	MODERATE Slope Frost Action	MODERATE Small Stones Large Stones Slope
22 URBAN LAND	Variable	Variable	Variable	Variable	Variable	Variable
23B URBAN LAND	Variable	Variable	Variable	Variable	Variable	Variable
UDORTHENTS	SEVERE Cutbanks Cave Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness
24 UDORTHENTS	SEVERE Cutbanks Cave Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness	SEVERE Wetness
25A WOODSTOWN	SEVERE Cutbanks Cave Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	MODERATE Wetness Frost Action	MODERATE Wetness Droughty
25B WOODSTOWN	SEVERE Cutbanks Cave Wetness	MODERATE Wetness	SEVERE Wetness	MODERATE Wetness	MODERATE Wetness Frost Action	MODERATE Wetness Droughty

Table L - CONSTRUCTION MATERIALS REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Roadfill	Sand	Gravel	Topsoil
1	ASSAWOMAN	POOR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Wetness
2A	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
2B	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
2C	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
3A	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
	MATTAWOMAN	POOR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Area Reclaim Wetness
3B	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
4B	BELTSVILLE	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Too Clayey Small Stones
	URBAN LAND	Variable	Variable	Variable	Variable
5	BIBB	POOR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Wetness Small Stones
6	BIBB	POOR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Wetness Small Stones

Table L - CONSTRUCTION MATERIALS REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Roadfill	Sand	Gravel	Topsoil
	IUKA	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	GOOD
7B	BOURNE	FAIR Low Strength Thin Layer Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Area Reclaim Small Stones Thin Layer
8C	CROOM	GOOD	PROBABLE	PROBABLE	POOR Small Stones Area Reclaim
8D	CROOM	GOOD	PROBABLE	PROBABLE	POOR Small Stones Area Reclaim
8E	CROOM	FAIR Slope	PROBABLE	PROBABLE	POOR Small Stones Area Reclaim Slope
8F	CROOM	POOR Slope	PROBABLE	PROBABLE	POOR Small Stones Area Reclaim Slope
9B	DOWNER	GOOD	PROBABLE	IMPROBABLE Too Sandy	POOR Small Stones
9C	DOWNER	GOOD	PROBABLE	IMPROBABLE Too Sandy	POOR Small Stones
10	ELKTON	POOR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Too Clayey Wetness
11	FALLSINGTON	POOR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Wetness
12B	FORT MOTT	GOOD	PROBABLE	IMPROBABLE Too Sandy	FAIR Too Sandy Small Stones

Table L - CONSTRUCTION MATERIALS REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Roadfill	Sand	Gravel	Topsoil
13B	HAMBROOK	GOOD	PROBABLE	IMPROBABLE Too Sandy	POOR Small Stones
14B	INGLESIDE	GOOD	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Small Stones
15	IUKA	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	GOOD
16	KEYPORT	POOR Low Strength	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Thin Layer Too Clayey
17	LEONARDTOWN	POOR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	POOR Area Reclaim Wetness
18B	MATTAPEX	FAIR Wetness	IMPROBABLE Excess Fines	IMPROBABLE Excess Fines	FAIR Too Clayey
19A	RUNCLINT	GOOD	PROBABLE	IMPROBABLE Thin Layer	POOR Too Sandy Area Reclaim
19B	RUNCLINT	GOOD	PROBABLE	IMPROBABLE Thin Layer	POOR Too Sandy Area Reclaim
20B	SASSAFRAS	GOOD	PROBABLE	PROBABLE	FAIR Too Clayey Small Stones
20C	SASSAFRAS	GOOD	PROBABLE	PROBABLE	FAIR Too Clayey Small Stones
21C	SASSAFRAS	GOOD	PROBABLE	PROBABLE	POOR Small Stones

Table L - CONSTRUCTION MATERIALS REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Roadfill	Sand	Gravel	Topsoil
21D	SASSAFRAS	GOOD	PROBABLE	PROBABLE	POOR Small Stones
22	URBAN LAND	Variable	Variable	Variable	Variable
23B	URBAN LAND	Variable	Variable	Variable	Variable
	UDORTHENTS	POOR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Too Sandy Wetness
24	UDORTHENTS	POOR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Too Sandy Wetness
25A	WOODSTOWN	FAIR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Small Stones
25B	WOODSTOWN	FAIR Wetness	PROBABLE	IMPROBABLE Too Sandy	POOR Small Stones

Table M - WATER MANAGEMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Limitations for: Pond Reservoir Area	Embankments, Dikes and Levees	Excavated Ponds--Aquifier Fed	Features affecting: Drainage	Irrigation	Terraces and Diversions	Grassed Waterways
1	ASSAWOMAN	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Cutbanks Cave	LIMITATION Cutbanks Cave	LIMITATION Wetness Droughty Fast Intake	LIMITATION Wetness Too Sandy	LIMITATION Wetness Droughty
2A	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action	LIMITATION Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
2B	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action Slope	LIMITATION Slope Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
2C	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action Slope	LIMITATION Slope Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
3A	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action	LIMITATION Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
	MATTAWOMAN	SEVERE Seepage	SEVERE Wetness Piping	SEVERE No Water	LIMITATION Frost Action	LIMITATION Wetness Rooting Depth	LIMITATION Erodes Easily Wetness	LIMITATION Wetness Erodes Easily
3B	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action Slope	LIMITATION Slope Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
4B	BELTSVILLE	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Percs Slowly Frost Action	LIMITATION Wetness Percs Slowly	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Rooting Depth
	URBAN LAND	Variable	Variable	Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable
5	BIBB	MODERATE Seepage	SEVERE Piping Wetness	MODERATE Slow Refill	LIMITATION Flooding	LIMITATION Wetness Flooding	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Wetness

Table M - WATER MANAGEMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name		Limitations for: Pond Reservoir Area	Embankments, Dikes and Levees	Excavated Ponds--Aquifier Fed	Features affecting: Drainage	Irrigation	Terraces and Diversions	Grassed Waterways
6	BIBB	MODERATE Seepage	SEVERE Piping Wetness	MODERATE Slow Refill	LIMITATION Flooding	LIMITATION Wetness Flooding	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Wetness
	IUKA	MODERATE Seepage	SEVERE Piping Wetness	MODERATE Slow Refill	LIMITATION Flooding	LIMITATION Wetness Flooding	LIMITATION Wetness	LIMITATION Wetness
7B	BOURNE	MODERATE Seepage Slope	MODERATE Thin Layer Piping Wetness	SEVERE No Water	LIMITATION Percs Slowly Slope	LIMITATION Wetness Soil Blowing Percs Slowly	LIMITATION Erodes Easily Wetness Rooting Depth	LIMITATION Erodes Easily Rooting Depth Percs Slowly
8C	CROOM	SEVERE Seepage	SEVERE Seepage	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Droughty Slope Erodes Easily	LIMITATION Erodes Easily Too Sandy	LIMITATION Erodes Easily Droughty
8D	CROOM	SEVERE Seepage Slope	SEVERE Seepage	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Droughty Slope Erodes Easily	LIMITATION Slope Erodes Easily Too Sandy	LIMITATION Slope Erodes Easily Droughty
8E	CROOM	SEVERE Seepage Slope	SEVERE Seepage	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Droughty Slope Erodes Easily	LIMITATION Slope Erodes Easily Too Sandy	LIMITATION Slope Erodes Easily Droughty
8F	CROOM	SEVERE Seepage Slope	SEVERE Seepage	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Droughty Slope Erodes Easily	LIMITATION Slope Erodes Easily Too Sandy	LIMITATION Slope Erodes Easily Droughty
9B	DOWNER	SEVERE Seepage	SEVERE Seepage Piping	Deep To Water Slope	LIMITATION Deep To Water	LIMITATION Slope Droughty Soil Blowing	LIMITATION Too Sandy Soil Blowing	LIMITATION Droughty Rooting Depth
9C	DOWNER	SEVERE Seepage	SEVERE Seepage Piping	Deep To Water Slope	LIMITATION Deep To Water	LIMITATION Slope Droughty Soil Blowing	LIMITATION Too Sandy Soil Blowing	LIMITATION Droughty Rooting Depth
10	ELKTON	SLIGHT	SEVERE Piping Wetness	SEVERE Slow Refill	LIMITATION Percs Slowly	LIMITATION Wetness	LIMITATION Erodes Easily Wetness	LIMITATION Wetness Erodes Easily Percs Slowly

Table M - WATER MANAGEMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name	Limitations for: Pond Reservoir Area	Embankments, Dikes and Levees	Excavated Ponds--Aquifer Fed	Features affecting: Drainage	Irrigation	Terraces and Diversions	Grassed Waterways
11 FALLSINGTON	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Slow Refill Cutbanks Cave	LIMITATION Cutbanks Cave	LIMITATION Wetness Soil Blowing	LIMITATION Wetness Too Sandy	LIMITATION Wetness Rooting Depth
12B FORT MOTT	SEVERE Seepage	SEVERE Seepage Piping	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Droughty Fast Intake Soil Blowing	LIMITATION Too Sandy Soil Blowing	LIMITATION Droughty
13B HAMBROOK	SEVERE Seepage	SEVERE Seepage Piping	SEVERE Slow Refill Cutbanks Cave	LIMITATION Deep To Water	LIMITATION Slope	LIMITATION Erodes Easily Too Sandy	LIMITATION Erodes Easily
14B INGLESIDE	SEVERE Seepage	SEVERE Piping	SEVERE Slow Refill Cutbanks Cave	LIMITATION Deep To Water	LIMITATION Slope Droughty Soil Blowing	LIMITATION Soil Blowing	LIMITATION Droughty
15 IUKA	MODERATE Seepage	SEVERE Piping Wetness	MODERATE Slow Refill	LIMITATION Flooding	LIMITATION Wetness Flooding	LIMITATION Wetness	LIMITATION Wetness
16 KEYPORT	SLIGHT	MODERATE Piping Wetness	SEVERE No Water	LIMITATION Percs Slowly Frost Action	LIMITATION Wetness Erodes Easily	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily Percs Slowly
17 LEONARDTOWN	SEVERE Seepage	SEVERE Piping Wetness	SEVERE No Water	LIMITATION Percs Slowly Frost Action	LIMITATION Wetness Percs Slowly	LIMITATION Erodes Easily Wetness Rooting Depth	LIMITATION Wetness Erodes Easily Rooting Depth
18B MATTAPEX	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Slow Refill Cutbanks Cave	LIMITATION Slope Cutbanks Cave	LIMITATION Slope Wetness	LIMITATION Erodes Easily Wetness	LIMITATION Erodes Easily
19A RUNCLINT	SEVERE Seepage	SEVERE Seepage Piping	SEVERE Cutbanks Cave	LIMITATION Deep To Water	LIMITATION Droughty Fast Intake Soil Blowing	LIMITATION Too Sandy Soil Blowing	LIMITATION Droughty Rooting Depth
19B RUNCLINT	SEVERE Seepage	SEVERE Seepage Piping	SEVERE Cutbanks Cave	LIMITATION Deep To Water	LIMITATION Droughty Fast Intake Soil Blowing	LIMITATION Too Sandy Soil Blowing	LIMITATION Droughty Rooting Depth

Table M - WATER MANAGEMENT REPORT

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map symbol, soil name	Limitations for: Pond Reservoir Area	Embankments, Dikes and Levees	Excavated Ponds--Aquifer Fed	Features affecting: Drainage	Irrigation	Terraces and Diversions	Grassed Waterways
20B SASSAFRAS	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Slope	LIMITATION Erodes Easily Soil Blowing	LIMITATION Erodes Easily
20C SASSAFRAS	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Slope	LIMITATION Erodes Easily Soil Blowing	LIMITATION Erodes Easily
21C SASSAFRAS	SEVERE Seepage	SEVERE Piping	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Slope	LIMITATION Erodes Easily	LIMITATION Erodes Easily
21D SASSAFRAS	SEVERE Seepage Slope	SEVERE Piping	SEVERE No Water	LIMITATION Deep To Water	LIMITATION Slope	LIMITATION Slope Erodes Easily	LIMITATION Slope Erodes Easily
22 URBAN LAND	Variable	Variable	Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable
23B URBAN LAND	Variable	Variable	Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable	LIMITATION Variable
UDORTHENTS	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Cutbanks Cave	LIMITATION Cutbanks Cave	LIMITATION Wetness Droughty	LIMITATION Wetness Too Sandy	LIMITATION Wetness Droughty
24 UDORTHENTS	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Cutbanks Cave	LIMITATION Cutbanks Cave	LIMITATION Wetness Droughty	LIMITATION Wetness Too Sandy	LIMITATION Wetness Droughty
25A WOODSTOWN	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Slow Refill Cutbanks Cave	LIMITATION Cutbanks Cave	LIMITATION Wetness Droughty	LIMITATION Wetness Too Sandy	LIMITATION Droughty
25B WOODSTOWN	SEVERE Seepage	SEVERE Seepage Piping Wetness	SEVERE Slow Refill Cutbanks Cave	LIMITATION Slope Cutbanks Cave	LIMITATION Slope Wetness Droughty	LIMITATION Wetness Too Sandy	LIMITATION Droughty

Table N - CLASSIFICATION OF THE SOIL

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Soil Name	Family or higher taxonomic class
ASSAWOMAN	TYPIC PSAMMAQUENTS, SILICEOUS, THERMIC
BELTSVILLE	TYPIC FRAGIUDULTS, FINE-LOAMY, MIXED, MESIC
BIBB	TYPIC FLUVAQUENTS, COARSE-LOAMY, SILICEOUS, ACID, THERMIC
BOURNE	TYPIC FRAGIUDULTS, FINE-LOAMY, MIXED, THERMIC
CROOM	TYPIC HAPLUDULTS, LOAMY-SKELETAL, MIXED, MESIC
DOWNER	TYPIC HAPLUDULTS, COARSE-LOAMY, SILICEOUS, MESIC
ELKTON	TYPIC OCHRAQUULTS, FINE-SILTY, MIXED, MESIC
FALLSINGTON	TYPIC OCHRAQUULTS, FINE-LOAMY, MIXED, MESIC
FORT MOTT	ARENIC HAPLUDULTS, LOAMY, SILICEOUS, MESIC
HAMBROOK	TYPIC HAPLUDULTS, FINE-LOAMY, SILICEOUS, MESIC
INGLESIDE	TYPIC HAPLUDULTS, COARSE-LOAMY, SILICEOUS, MESIC
IUKA	AQUIC UDIFLUVENTS, COARSE-LOAMY, SILICEOUS, ACID, THERMIC
KEYPORT	AQUIC HAPLUDULTS, CLAYEY, MIXED, MESIC
LEONARDTOWN	TYPIC FRAGIAQUULTS, FINE-SILTY, MIXED, MESIC
MATTAPEX	AQUIC HAPLUDULTS, FINE-SILTY, MIXED, MESIC
MATTAWOMAN	AQUIC FRAGIUDULTS, FINE-LOAMY, MIXED, MESIC
RUNCLINT	TYPIC QUARTZIPSAMMENTS, MESIC, COATED
SASSAFRAS	TYPIC HAPLUDULTS, FINE-LOAMY, SILICEOUS, MESIC
UDORTHENTS	UDORTHENTS
WOODSTOWN	AQUIC HAPLUDULTS, FINE-LOAMY, MIXED, MESIC

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Table O - PRIME FARMLAND

Survey Area- MATTAWOMAN WATERSHED CHARLES COUNTY, MARYLAND

Map Symbol	Prime Farmland Code	Soil Mapunit Name
9B	1	DOWNER LOAMY SAND, 2 TO 5 PERCENT SLOPES
11	2	FALLSINGTON SANDY LOAM
12B	4	FORT MOTT LOAMY SAND, 2 TO 5 PERCENT SLOPES
13B	1	HAMBROOK SANDY LOAM, 2 TO 5 PERCENT SLOPES
14B	1	INGLESIDE LOAMY SAND, 2 TO 5 PERCENT SLOPES
15	1	IUKA FINE SANDY LOAM
18B	1	MATTAPEX SILT LOAM, 2 TO 5 PERCENT SLOPES
20B	1	SASSAFRAS SANDY LOAM, 2 TO 5 PERCENT SLOPES

Prime Farmland Code	Description
1	All areas are prime farmland
2	Only drained areas are Prime Farmland.
4	Only irrigated areas are Prime Farmland.

TABLE P.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	13,677	8,915	4,059	703	---
III	9,401	2,958	6,291	152	---
IV	2,816	1,080	1,553	272	---
V	544	---	544	---	---
VI	236	236	---	---	---
VII	---	---	---	---	---
VIII	1,105	---	---	1,105	---

MAP UNIT DESCRIPTIONS

1 -- Assawoman loamy sand. This soil is very deep, nearly level, and has a natural drainage class of poorly drained. It is located on lowland flats along rivers and streams. It formed in unconsolidated sandy alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 6 inches, very dark gray loamy sand.

Subsurface layer:

6 to 15 inches, grayish brown sand with yellowish brown mottles.

Substratum:

15 to 34 inches, light brownish gray sand with gray and brownish yellow mottles.
34 to 72 inches, light gray gravelly sand with brownish yellow mottles.

In some areas there are similar soils with sandy loam or loam surfaces. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are Elkton and Fallsington soils in similar landscape positions; and Iuka and Woodstown soils at slightly higher elevations. These soils make up 20 percent of the unit.

The potential productivity for loblolly pine on this soil is moderate. The seasonal high water table is the main management concern. Conventional methods of timber harvest should not be performed during wet periods to avoid compacting of the soil.

The main limitation for water management is seepage in pond reservoir areas. Selection of better suited soils will help overcome this limitation.

The main limitations for urban uses are the seasonal high water table, rapid permeability, and sloughing of excavation walls. These soils are poorly suited to urban uses. They are well suited to wetland wildlife habitat.

The erosion potential for this soil is low.

Assawoman is a hydric soil.

The capability subclass is 3w.

2A -- Beltsville silt loam, 0 to 2 percent slopes. This soil is very deep, nearly level, and has a natural soil drainage class of moderately well drained. It is on smooth uplands of the coastal plain. It formed in a thin silty mantle overlying loamy and gravelly alluvial deposits. These soils have a distinct hard pan that restricts water movement and root growth.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 10 inches, light olive brown silt loam.

Subsoil:

10 to 23 inches, yellowish brown silt loam.
23 to 30 inches, yellowish brown silt loam with light yellowish brown mottles.
30 to 48 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

48 to 60 inches, yellowish brown very fine sandy loam with gray mottles.
60 to 72 inches, yellowish brown loam.

In some areas there are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small intermingled areas of Keyport and Mattapex soils in similar landscape positions; and Mattawoman soils at slightly lower landscape positions. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine on this soil is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber

harvest are generally suitable, but the use of heavy equipment will compact the soil when wet.

There are no severe limitations for pond reservoir areas.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and potential frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this soil is low.

Beltsville is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability sublass is 2w.

2B -- Beltsville silt loam, 2 to 5 percent slopes. This soil is very deep, gently sloping, and has a natural soil drainage class of moderately well drained. It is on smooth uplands of the coastal plain. It formed in a thin silty mantle overlying loamy and gravelly alluvial deposits. These soils have a distinct hard pan that restricts water movement and root growth.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 8 inches, light olive brown silt loam.

Subsoil:

8 to 22 inches, yellowish brown silt loam.
22 to 30 inches, yellowish brown silt loam with pale

brown mottles.
30 to 46 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

46 to 62 inches, yellowish brown very fine sandy loam with gray mottles.
62 to 72 inches, yellowish brown sandy loam.

In some areas there are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small areas of Croom soils along the edge of steep side slopes; Keyport and Mattapex soils in similar landscape positions; and Mattawoman soils at slightly lower landscape positions. These areas make up 20 percent of the unit.

The potential productivity for loblolly pine on this soil is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet.

The main limitations for water management is seepage. The selection of better suited soils will help overcome this limitation.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this soil is high.

Beltsville is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass is 2e.

2C -- Beltsville silt loam, 5 to 10 percent slopes. This soil is very deep, moderately sloping, and has a natural soil drainage class of moderately well drained. It is on uplands of the coastal plain. It formed in a thin silty mantle overlying loamy and gravelly alluvial and marine deposits. These soils have a distinct hard pan that restricts water movement and root growth.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 8 inches, light olive brown silt loam.

Subsoil:

8 to 17 inches, yellowish brown silt loam.
17 to 24 inches, yellowish brown silt loam with pale brown mottles.
24 to 40 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

40 to 65 inches, yellowish brown very fine sandy loam with gray mottles.
65 to 72 inches, light yellowish brown gravelly sandy loam.

In some areas there are similar soils with 0 to 15 percent gravel in the substratum. These areas make up 10 percent of the unit.

Dissimilar soils included in mapping are small areas of Croom soils along the edge of steep side slopes; Keyport and Mattapex soils in similar landscape positions; and Mattawoman soils at slightly lower landscape positions. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine on this soil is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet. Management practices that reduce

the risk of erosion are essential during harvest and site preparation activities.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, very slow permeability, slope, and seepage. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Planning structures to conform to the contour will help overcome the limitation of slope. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table, very slow permeability, and slope onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this soil is high.

Beltsville is not a hydric soil, but this unit may contain hydric soil inclusions especially at the toe of slopes.

The capability subclass is 3e.

3A -- Beltsville-Mattawoman complex, 0 to 2 percent slopes. This unit consists of very deep, nearly level soils of the Beltsville and Mattawoman series. Thie Beltsville soil has a natural soil drainage class of moderately well drained. The Mattawoman soil has a natural soil drainage class of somewhat poorly drained. This unit is on broad, upland flats of the Coastal Plain. The Beltsville and Mattawoman soils occur together in such an intricate pattern that it is not practical to separate them at the scale of mapping.

About 60 percent of this unit is Beltsville soils and 25 percent Mattawoman soils. The typical sequence, depth, and composition of the layers of the Beltsville soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 10 inches, light olive brown silt loam.

Subsoil:

10 to 23 inches, yellowish brown silt loam.
23 to 30 inches, yellowish brown silt loam with light yellowish brown mottles.
30 to 48 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

48 to 60 inches, yellowish brown very fine sandy loam with gray mottles.
60 to 72 inches, yellowish brown loam.

The typical sequence, depth, and composition of the layers of the Mattawoman soil are as follows:

Surface layer:

Surface to 8 inches, dark brown silt loam.

Subsurface layer:

8 to 11 inches, light yellowish brown silt loam.

Subsoil:

11 to 24 inches, light olive brown silt loam with light gray mottles.
24 to 38 inches, light gray firm silty clay loam with brownish yellow mottles.
38 to 46 inches, light olive brown silty clay loam with light brownish yellow and strong brown mottles.

Substratum:

46 to 54 inches, light gray silt loam with brownish yellow mottles.
54 to 72 inches, light gray loam with yellowish brown and yellowish red mottles.

In some areas there are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small intermingled areas of Keyport and Mattapex soils in similar landscape positions; and Croom soils along the edge of steep sideslopes. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine on this unit is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet.

There are no severe limitations for pond reservoir areas.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and potential frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this unit is moderate.

The Beltsville and Mattawoman soils are not hydric, but this complex may contain hydric soil inclusions.

The capability subclass is 3w.

3B -- Beltsville-Mattawoman complex, 2 to 5 percent slopes. This unit consists of very deep, gently sloping soils of the Beltsville and Mattawoman series. Thie Beltsville soil has a natural soil drainage class of moderately well drained. The Mattawoman soil has a natural soil drainage class of somewhat poorly drained. This unit is on broad, upland flats of the Coastal Plain. The Beltsville and Mattawoman soils occur together in such an intricate pattern that it is not practical to separate them at the scale of mapping.

About 60 percent of this unit is Beltsville soils and 25 percent Mattawoman soils. The typical sequence, depth, and composition of the layers of the Beltsville soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 10 inches, light olive brown silt loam.

Subsoil:

10 to 23 inches, yellowish brown silt loam.
23 to 30 inches, yellowish brown silt loam with light yellowish brown mottles.
30 to 48 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

48 to 60 inches, yellowish brown very fine sandy loam with gray mottles.
60 to 72 inches, yellowish brown loam.

The typical sequence, depth, and composition of the layers of the Mattawoman soil are as follows:

Surface layer:

Surface to 8 inches, dark brown silt loam.

Subsurface layer:

8 to 11 inches, light yellowish brown silt loam.

Subsoil:

11 to 24 inches, light olive brown silt loam with light gray mottles.
24 to 38 inches, light gray firm silty clay loam with brownish yellow mottles.
38 to 46 inches, light olive brown silty clay loam with light brownish yellow and strong brown mottles.

Substratum:

46 to 54 inches, light gray silt loam with brownish yellow mottles.
54 to 72 inches, light gray loam with yellowish brown and yellowish red mottles.

In some areas there are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small intermingled areas of Keyport and Mattapex soils in similar landscape positions; and Croom soils along the edge of steep sideslopes. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine on this unit is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet.

There are no severe limitations for pond reservoir areas.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this unit is high.

The Beltsville and Mattawoman soils are not hydric, but this complex may contain hydric soil inclusions.

The capability subclass is 3w.

4B -- Beltsville-Urban land complex, 0 to 5 percent slopes. This unit consists of very deep, nearly level to gently sloping soils of the Beltsville series and areas paved over or otherwise covered by impervious materials. The Beltsville soil has a natural drainage class of moderately well drained. This unit is on uplands of the coastal plain. Beltsville soils and Urban land occur together in such an intricate pattern that it is not practical to separate them at the scale of mapping.

About 45 percent of this unit is relatively undisturbed Beltsville soil and 40 percent Urban land. The typical sequence, depth, and composition of the layers of the Beltsville soil are as follows:

Surface layer:

Surface to 3 inches, dark brown silt loam.

Subsurface layer:

3 to 10 inches, light olive brown silt loam.

Subsoil:

10 to 19 inches, yellowish brown silt loam.
19 to 28 inches, yellowish brown silt loam with light gray mottles 28 to 50 inches, yellowish brown firm silt loam with gray mottles and yellowish red mottles.

Substratum:

50 to 65 inches, yellowish brown very fine sandy loam with gray mottles.
65 to 72 inches, yellowish brown loam.

In some areas there are similar soils that have 10 to 20 percent gravel in the substratum. These areas make up 5 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Keyport, Mattawoman, and Udorthents soils. These areas make up 10 percent of the unit.

The potential productivity for loblolly pine on this soil is moderately high. The seasonal high water table is the main limitation for timber production.

The main limitations for water management is slope. The selection of better suited soils will help overcome this limitation.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed will help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitation of potential frost action. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for the Beltsville soil is high.

Beltsville is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass of the Beltsville soil is 2e.

5 -- **Bibb sandy loam.** This soil is very deep, nearly level, and has a natural soil drainage class of poorly drained. It is on thin drainageways on the coastal plain. It formed in sandy alluvial material deposited within floodplains.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

0 to 8 inches, dark grayish brown sandy loam.

Subsurface layer:

8 to 16 inches, light brownish gray sandy loam with yellowish brown mottles.

Substratum:

16 to 38 inches, grayish brown sandy loam with yellowish brown mottles.
38 to 72 inches, gray stratified gravelly sandy loam and loam with light yellowish brown mottles.

In some areas there are similar soils with 5 to 15 percent gravels in the surface layer. These areas make up 10 percent of the unit.

Dissimilar soils included in mapping are Iuka and Woodstown soils at slightly higher elevations. These included soils make up 25 percent of the unit.

Due to the high water table and flooding this soil has severe limitations for all woodland, cropland, and urban uses. Selection of better suited soils will help overcome these limitations.

The main limitations for water management are seepage, and sloughing and piping of embankments. Digging ponds deep enough into the water table will help maintain a sufficient water level in the pond during dry periods. Selection of better suited soils will help overcome the limitations of sloughing and piping of embankments.

This soil is well suited to wetland wildlife habitat.

The erosion potential for this soil is high due to scouring.

Bibb is a hydric soil.

This unit floods frequently.

The capability subclass is 5w.

6 -- Bibb-Iuka complex. This unit consists of very deep, nearly level soils of the Bibb and Iuka series. The Bibb soil has a natural soil drainage class of poorly drained. The Iuka soil has a natural soil drainage class of moderately well drained. This unit is on floodplains of the coastal plain. Bibb soils and Iuka soils occur together in such an intricate pattern that it is not practical to seperate them at the scale of mapping.

About 60 percent of this unit is Bibb soils and 30 percent Iuka soils. The typical sequence, depth and composition of the layers of the Bibb soil are as follows:

Surface layer:

0 to 8 inches, dark grayish brown sandy loam.

Subsurface layer:

8 to 16 inches, light brownish gray sandy loam with yellowish brown mottles.

Substratum:

16 to 38 inches, grayish brown sandy loam with yellowish brown mottles.
38 to 72 inches, gray stratified gravelly sandy loam and loam with light yellowish brown mottles.

The typical sequence, depth, and composition of the layers of the Iuka soil are as follows:

Surface Layer:

Surface to 6 inches, dark brown fine sandy loam.

Substratum:

6 to 24 inches, yellowish brown fine sandy loam.
24 to 34 inches, yellowish brown gravelly fine sandy loam.
34 to 46 inches, yellowish brown sandy clay loam with gray mottles.
46 to 65 inches, light yellowish brown fine sandy loam with gray and strong brown mottles.
65 to 72 inches, light brownish gray sandy clay loam with olive yellow and light yellowish brown

mottles.

In some areas there are similar soils with that have 10 to 20 percent gravel throughout the profile. There are other similar soils which have a loam surface. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Fallsington and Woodstown soils. These areas are dominantly along the edges of the floodplains. These areas make up 20 percent of the unit.

Due to the high water table and flooding this unit has severe limitations for all woodland, cropland, and urban uses. Selection of better suited soils will help overcome these limitations.

The main limitations for water management are seepage, and sloughing and piping of embankments. Digging ponds deep enough into the water table will help maintain a sufficient water level in the pond during dry periods. Selection of better suited soils will help overcome the limitations of sloughing and piping of embankments.

This unit is well suited to wetland wildlife habitat.

The erosion potential for this soil is high due to scouring.

Bibb is a hydric soil.

Iuka is not a hydric soil, but is subject to flooding.

The capability subclass of the Iuka soil is 5w.

7B -- Bourne very fine sandy loam, 2 to 5 percent slopes. This soil is very deep, gently sloping and has a natural soil drainage class of moderately well drained. It is on ridges at higher elevations of the Coastal Plain. It formed in loamy allluvial deposits. These soils have a distinct hardpan that restricts water movement and root growth.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 8 inches, dark brown very fine sandy loam.
8 to 15 inches, dark brown fine sandy loam.

Subsurface layer:

15 to 20 inches, olive yellow loam.

Subsoil:

20 to 30 inches, yellowish brown sandy clay loam.
30 to 42 inches, yellowish brown firm sandy clay loam with strong brown and gray mottles.

Substratum:

42 to 57 inches, yellowish brown loam with olive yellow and gray mottles.
57 to 72 inches, brownish yellow loam with very pale brown and reddish yellow mottles.

In some areas, similar soils have fine sandy loam or sandy loam surfaces. Also included are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 25 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Beltsville soils; and Fallsington and Leonardtown soils at the toe slopes. These included soils make up 20 percent of the unit.

The potential productivity for Loblolly pine in this soil is moderately high. The seasonal high water table is the main limitation for timber production. Convential methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet. Management practices that reduce the risk of erosion are essential during harvest and site preparation activities.

The limitations for water management are seepage in pond reservoir areas. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and seepage. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structure will help overcome the limitations for structures with basements. To avoid limitations due to wetness, shallow excavations should occur during dry season. Due to the seasonal high water table and very slow permeability, onsite sanitary facilities need special design which could include sandy backkfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility. The use of wastewater for irrigation or sewage sludge as soil amendment will be limited due to permeability and water table.

The erosion potential for this soil is moderate.

Bourne is not a hydric soil, but may contain hydric soil inclusions.

The capability subclass is 2e.

7C -- Bourne very fine sandy loam, 5 to 10 percent slope. This soil is very deep, moderately sloping and has a natural soil drainage class of moderately well drained. It is on ridges at higher elevations of the Coastal Plain. It formed in loamy alluvial deposits. These soils have a distinct hardpan that restricts water movement and root growth.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 8 inches, dark brown very fine sandy loam.
8 to 15 inches, dark brown fine sandy loam.

Subsurface layer:

15 to 24 inches, olive yellow loam.

Subsoil:

24 to 32 inches, yellowish brown sandy clay loam.
32 to 44 inches, yellowish brown firm sandy clay loam with strong brown and gray mottles.

Substratum:

44 to 58 inches, yellowish brown silty loam with olive yellow and gray mottles.
58 to 72 inches, brownish yellow silty loam with very pale brown and reddish yellow mottles.

In some areas, similar soils have fine sandy loam or sandy loam surfaces. Also included are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 25 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Beltsville soils; and Fallsington and Leonardtown soils at the toe of slopes. These included soils make up 20 percent of the unit.

The potential productivity for loblolly pine in this soil is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment

will compact the soil when wet. Management practices that reduce the risk of erosion are essential during harvest and site preparation activities.

The limitations for water management are slope and seepage in pond reservoir areas. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, very slow permeability, slope, and seepage. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structure will help overcome the limitations for structures with basements. To avoid limitations due to wetness, shallow excavations should occur during dry season. Planning structures to conform to the contour will help overcome the limitation of slope. Due to the seasonal high water table, low permeability, and slope, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility. The use of wastewater for irrigation or sewage sludge as soil amendment will be limited due to permeability and water table.

The erosion potential on this soil is high.

Bourne is not a hydric soil, but may contain hydric soil inclusions.

The capability subclass is 3e.

8C -- Croom gravelly sandy loam, 5 to 10 percent slopes. This soil is very deep, moderately sloping, and has a natural soil drainage class of well drained. It is on upland side slopes of the coastal plain. It formed in gravelly alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown gravelly sandy loam.

Subsurface layer:

3 to 15 inches, brownish yellow gravelly sandy loam.

Subsoil:

15 to 24 inches, strong brown gravelly sandy loam.
24 to 36 inches, strong brown very gravelly sandy loam.

Substratum:

36 to 72 inches, strong brown firm extremely gravelly sandy loam.

In some areas there are similar soils with fine sandy loam surfaces. These areas make up 5 percent of the unit.

Dissimilar soils included in mapping are small areas of Beltsville, Mattawoman, and Sassafras soils on the shoulders of slopes; and very thin alluvial areas of Bibb soils within drainage cuts, often with an active stream. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine is moderate on this soil. Windthrow hazard is moderate due to the firm gravel layer below 20 inches.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are sloughing of excavation walls, slow permeability, seepage, and slope. Shallow excavation walls need shoring to prevent sloughing. To prevent contamination of water supplies and seepage down slope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Planning structures to conform to the contour will help overcome the limitation of slope.

The erosion potential for this soil is high.

Croom is not a hydric soil, but this unit may contain active streams with thin areas of hydric soils.

The capability subclass is 2e.

8D -- Croom gravelly sandy loam, 10 to 15 percent slopes. This soil is very deep, moderately steep, and has a natural soil drainage class of well drained. It is on upland side slopes of the coastal plain. It formed in gravelly alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 2 inches, dark brown gravelly sandy loam.

Subsurface layer:

2 to 17 inches, brownish yellow gravelly sandy loam.

Subsoil:

17 to 26 inches, strong brown gravelly sandy loam.
26 to 30 inches, strong brown very gravelly sandy loam.

Substratum:

30 to 72 inches, strong brown firm extremely gravelly sandy loam.

In some areas there are similar soils with fine sandy loam surfaces. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small areas of Beltsville, Mattawoman, and Sassafras soils on the shoulders of slopes; and very thin alluvial areas of Bibb soils within drainage cuts, often with an active stream. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine is moderate on this soil. Windthrow hazard is moderate due to the firm gravel layer below 20 inches.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are sloughing of excavation walls, slow permeability, seepage, and slope. Shallow excavation walls need shoring to prevent sloughing. To prevent contamination of water supplies and seepage down slope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Planning structures to conform to the contour will help overcome the limitation of slope.

The erosion potential for this soil is high.

Croom is not a hydric soil, but this unit may contain active streams with very thin areas of hydric soils.

The capability subclass is 3e.8E -- Croom gravelly sandy loam, 15 to 25 percent slopes. This soil is very deep, steep, and has a natural soil drainage class of well drained. It is on upland side slopes of the coastal plain. It formed in gravelly alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 2 inches, dark brown gravelly sandy loam.

Subsurface layer:

2 to 12 inches, brownish yellow gravelly sandy loam.

Subsoil:

12 to 20 inches, strong brown gravelly sandy loam.
20 to 42 inches, strong brown very gravelly sandy loam.

Substratum:

42 to 72 inches, strong brown firm gravelly sandy loam.

In some areas there are similar soils with gravelly loam surfaces. These areas make up 10 percent of the unit.

Dissimilar soils included in mapping are small areas of Beltsville, Mattawoman, and Sassfras soils on the shoulders of slopes; and very thin alluvial areas of Bibb soils within drainage cuts, often with an active stream. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine is moderate on this soil. Windthrow hazard is moderate due to the firm gravel layer below 20 inches. The steep slopes cause poor trafficability for equipment. Management practices that reduce the risk of erosion are essential during harvest and site preparation
activities.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are sloughing of excavation walls, slow permeability, seepage, and slope. Shallow excavation walls need shoring to prevent sloughing.
To prevent contamination of water supplies and seepage down slope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Planning structures to conform to the contour will help overcome the limitation of slope.

Land shaping and grading will help overcome the slope limitation. Practices which reduce the risk of erosion should be utilized during any grading activities.

The erosion potential for this soil is high.

Croom is not a hydric soil, but this unit frequently contains active streams with very thin areas of hydric soils.

The capability subclass is 4e.

8F -- Croom gravelly sandy loam, 25 to 40 percent slopes. This soil is very deep, very steep, and has a natural drainage class of well drained. It is on upland side slopes of the coastal plain. It formed in gravelly alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 2 inches, dark brown gravelly sandy loam.

Subsurface layer:

2 to 17 inches, brownish yellow gravelly sandy loam.

Subsoil:

17 to 26 inches, strong brown gravelly sandy loam with very pale brown mottles.
26 to 30 inches strong brown gravelly sandy loam.

Substratum:

30 to 72 inches, strong brown firm gravelly sandy loam.

In some areas there are similar soils with very gravelly sandy loam surfaces. These areas make up 20 percent of the unit.

Dissimilar soils included in mapping are small areas of Beltsville, Mattawoman, and Sassafras soils on the shoulders of slopes; and very thin alluvial areas of Bibb soils within drainage cuts, often with an active stream. These areas make up 15 percent of the unit.

The potential productivity for loblolly pine is low to moderate on this soil. Windthrow hazard is moderate due to the firm gravel layer below 20 inches. The steep slopes cause poor

trafficability for equipment. Management practices that reduce the risk of erosion are essential during harvest and site preparation activities.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are sloughing of excavation walls, slow permeability, seepage, and slope.

These soils are not suited to urban uses. Selection of better suited soils will help overcome these limitations.

The erosion potential for this soil is high.

Croom is not a hydric soil, but this unit frequently contains active streams with very thin areas of hydric soils.

The capability subclass is 6e.

9B -- Downer loamy sand, 2 to 5 percent slopes. This soil is very deep, gently sloping and has a natural soil drainage class of well drained. These soils formed in unconsolidated stratified alluvial and marine sediments. They are on uplands and ancient alluvial terraces of the mid-Atlantic Coastal Plain.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 9 inches, yellowish brown loamy sand.

Subsoil:

9 to 24 inches, yellowish brown sandy loam.
24 to 36 inches, strong brown gravelly sandy loam.

Substratum:

36 to 42 inches, strong brown very gravelly loamy sand.
42 to 72 inches, strong brown very gravelly sand.

In some areas, similar soils have a sand or sandy loam surface. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Fort Mott, Ingleside and Runclint soils; and Croom soils along

the edge of steep sideslopes. These included soils make up 25 percent of the unit.

The potential productivity for loblolly pine is high. This soil has few limitations that effect the management of woodland. The sandy surface texture limits seedling survival due to possible moisture stress. Planting early enough in the spring to take advantage of spring rains will help overcome this limitation. The sandy surface also limits equipment use.

The limitation for water management is piping and seepage in the substratum. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses include sloughing of excavation walls, droughtiness, and permeability. Shallow excavations will need shoring to prevent sloughing. Landscape plants need irrigation to overcome droughtiness. To prevent contamination of water supplies and seepage points downslope, all sanitary facilities need special design, including the use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope.

The erosion potential on this soil is low.

Downer is not a hydric soil.

The capability subclass is 2e.

9C -- Downer loamy sand, 5 to 10 percent slope. This soil is very deep, moderately sloping, and has natural drainage class of well drained. These soils formed in unconsolidated stratified alluvial and marine sediments. These soils are on uplands and ancient alluvial terraces of the mid-Atlantic Coastal Plain.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 10 inches, yellowish brown loamy sand.

Subsoil:

10 to 20 inches, yellowish brown sandy loam.
20 to 33 inches, strong brown gravelly sandy loam.

Substratum:

33 to 48 inches, strong brown very gravelly loamy sand.
48 to 72 inches, strong brown very gravelly sand.

The potential productivity for loblolly pine is high. This soil has few limitations that effect the management of woodland. The sandy surface texture limits seedling survival due to possible moisture stress. Planting early enough in the spring to take advantage of spring rains will help overcome this limitation. The sandy surface and slope also limits equipment use.

The limitations for water management are piping of embankments, seepage, and slope in pond reservoir areas. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses include sloughing of excavation walls, droughtiness, and the rapid permeability. Shallow exactions will need shoring to prevent sloughing. Planning structures to conform to the contour will help overcome the limitation of slope. To prevent contamination of water supplies and seepage points downslope, all sanitary facilities need special design, including the use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope.

The erosion potential on this soil is moderate.

Downer is not a hydric soil.

The capability subclass is 3e.

10 -- Elkton silt loam. This soil is very deep, nearly level and has a natural soil drainage class of poorly drained. These soils are found in areas bordering rivers or streams, and upland flats. These soils formed in old deposits of loamy marine and alluvial sediments. The soils have a fine subsoil that restricts water movement.

The typical depth, sequence, and composition of the soil are as follows:

Surface:

Surface to 8 inches, dark gray silt loam with pale olive mottles.

Subsoil:

8 to 13 inches, light gray silty clay loam with olive yellow mottles.
13 to 22 inches, light gray silty clay loam with yellowish brown mottles.

22 to 48 inches, gray silty clay with light gray mottles.

Substratum:

48 to 60 inches, light gray silty clay loam with light olive brown mottles.
60 to 72 inches, light gray sandy loam with light yellowish brown mottles.

Small areas of similar soils have a surface layer of loam or sandy loam. In some areas, 15 to 35 percent gravels can be found in the substratum. These areas makeup 20 percent of the unit.

Dissimilar soils included in this mapping are intermingled areas of Fallsington soils; and Woodstown and Keyport soils at slightly higher elevations. These included soils make up 25 percent of the unit.

The potential productivity of loblolly pine is moderately high on this soil. Due to the seasonal high water table, equipment limitations are a management concern. The use of heavy equipment during January through May could expose the subsoil which is sticky and slippery when wet. Unless road drainage is provided, harvest and planting operations will be delayed until a drier period. Conventional methods of harvesting timber generally are suitable but the use of heavy equipment will compact soil.

The soil is not well suited to pond reservoir areas due to seepage. Ponds should be dug deep enough into the water table to maintain a sufficient water level in the pond during dry periods. Only surface, subsurface and subsoil material should be used for embankments.

The main limitations for urban uses are the seasonal high water table, the permeability, and the potential frost action. Drainage around elevated footings, sandy backfield under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Shallow excavations are limited due to wetness. Drainage and a raised bed help overcome the limitations of a high water table for local roads and streets. Coarse grained suborder and base materials will help overcome the limitations of low strength and potential forest action. Due to the seasonal high water table and low permeability, onside sanitary facilities need special design which could include sandy backfield for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential on this soil is low.

Elkton is a hydric soil.

The capability subclass is 3w.

11 -- **Fallsington sandy loam.** This soil is very deep, nearly level, and has a natural drainage class of poorly drained. These soils formed in loamy marine and alluvial deposits of the mid-Atlantic Coastal Plain. They are on upland depressions and alluvial terraces.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 6 inches, olive brown sandy loam.

Subsoil:

6 to 10 inches, olive brown sandy clay loam with gray mottles.
10 to 27 inches, gray sandy clay loam with strong brown and yellowish brown mottles.

Substratum:

27 to 40 inches, gray sandy clay loam with dark brown and strong brown mottles.
40 to 45 inches, strong brown sandy loam with gray mottles.
45 to 72 inches, gray gravelly sandy loam with strong brown mottles.

In some areas, similar soils have a silt loam or fine sandy loam surfaces. These areas make up 10 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Assawoman soils; and Woodstown, Hambrook and Ingleside soils at slightly higher elevations. These included soils make up 15 percent of the unit.

The potential productivity for loblolly pine in this soil is high. Seed mortality and plant competition are severe. The use of heavy equipment is limited due to high water table and seasonal wetness.

The limitations for water management are seepage, sloughing and piping. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, potential frost action, sloughing of excavation walls, and the permeability of the substratum. Drainage around elevated footings if an outlet is available, sandy backfill under dwellings, and land shaping so that surface water moves away from dwellings will help to overcome the high water table as a limitation for dwellings without basements. Shallow excavation walls will need shoring to prevent sloughing. Drainage and a raised bed for the roadway construction, help to overcome the high water table as a limitation for local roads and streets. Limitations from the high water table and moderately rapid permeability for septic tanks, absorption field, or other onsite sanitary facilities could be overcome by specially designing enlarged and raised absorption fields and drainage systems for waste management.

The erosion potential for this soil is low.

Fallsington is a hydric soil.

The capability subclass is 3w.

12B -- Fort Mott loamy sand, 2 to 5 percent slopes. This soil is very deep, gently sloping, and has a natural soil drainage class of well drained. It is on broad uplands and old alluvial terraces of the coastal plain. It developed in thick sandy deposits overlying loamy or gravelly materials.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown loamy sand.

Subsurface layer:

3 to 22 inches, yellowish brown loamy sand.

Subsoil:

22 to 38 inches, yellowish brown sandy loam.
38 to 65 inches, yellowish brown loam.

Substratum:

65 to 72 inches, yellowish brown stratified sandy loam and sandy clay loam.

In some areas there are similar soils that have 10 to 30 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Downer and Runclint soils; and Ingleside and Woodstown soils in lower landscape positions. These included areas make up 20 percent of the unit.

The potential productivity for loblolly pine is moderately high on this soil. Seedling survival is limited by moisture stress. The rate of seedling mortality can be reduced by planting seedlings in early spring, allowing them to obtain sufficient water
from spring rains. The loose sand in places causes poor trafficability for equipment.

The limitations for water management are seepage in pond reservoir areas and sloughing and piping of embankments. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are sloughing of excavation walls, droughtiness, rapid permeability, and seepage in the substratum. Shallow excavation walls need shoring to prevent sloughing. Food plots and landscape plants need irrigation to overcome droughtiness. To prevent contamination of water supplies and seepage points down slope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope.

The erosion potential on this soil is low.

Fort Mott is not a hydric soil.

The capability subclass 2s.

13B -- Hambrook sandy loam, 2 to 5 percent slopes. This soil is very deep, gently sloping, and has a natural soil drainage class of well drained. It formed in unconsolidated loamy and sandy sediments of alluvial and marine origin. It is on old alluvial terraces of the coastal plain.

This typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 11 inches, dark brown sandy loam.

Subsurface layer:

11 to 17 inches brownish yellow loamy sand.

Subsoil:

17 to 36 inches, strong brown loam.
36 to 42 inches, strong brown sandy loam.

Substratum:

42 to 45 inches, brownish yellow sand.
45 to 62 inches, yellowish brown loamy sand.
62 to 72 inches, light olive brown sand with light brownish gray and light olive brown mottles.

Small areas of similar soils have a loamy sand surface. These areas make up 10 percent of the unit.

Included with this soil in mapping are intermingled areas of Fort Mott, Ingleside, Runclint and Sassafras soils; and Woodstown soils in the lower landscape positions. These soils make up 25 percent of the unit.

The potential productivity for loblolly pine is high. This soil has few limitations that effect the management of woodland.

The limitations for water management are seepage in pond reservoir areas and piping of embankments. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses include sloughing of excavation walls, permeability, seepage, and the seasonal high water table. Shallow excavations will need shoring to prevent sloughing. To prevent contamination of water supplies and seepage points downslope, all sanitary facilities need special design, including the use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope.

Enlarging the absorption fields and installing drainage around the field helps to overcome the effects of the high water table. Structures with basements need sealed foundations and foundation drains to help prevent wet basements.

The erosion potential for this soil is moderate.

Hambrook is not a hydric soil.

The capability subclass is 2e.

14B -- Ingleside loamy sand, 2 to 5 percent slope. This soil is very deep, gently sloping, and has a natural soil drainage class of well drained. It is on an old alluvial terrace of the mid-Atlantic Coastal Plain. It formed in unconsolidated sandy alluvial deposits.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown loamy sand.

Subsurface layer:

3 to 9 inches, brownish yellow loamy sand.

Subsoil:

9 to 29 inches, yellowish brown sandy loam.

Substratum:

29 to 38 inches, strong brown loamy sand.
38 to 49 inches, yellowish brown sandy loam.
49 to 72 inches, light brownish gray loam with strong brown and light yellowish brown mottles.

Small areas of similar soils have a sandy loam surface. These areas make up 10 percent of the unit.

Included with this soil in mapping are intermingled areas of Downer, Fort Mott, Hambrook, and Runclint soils; and Woodstown soils at lower landscape positions. These soils make up 25 percent of the unit.

The potential productivity for loblolly pine is high. This soil has few limitations that effect the management of woodland. The sandy surface texture limits seedling survival due to possible moisture stress. Planting early enough in the spring to take advantage of spring rains will help overcome this limitation.

The limitations for water management are seepage in pond reservoir areas and seepage and piping of embankments. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses include sloughing of excavation walls, droughtiness, permeability, and the seasonal

high water table. Shallow excavations will need shoring to prevent sloughing. To prevent contamination of water supplies and seepage points downslope, all sanitary facilities need special design, including the use of trenches shallow enough to be the root zone and tile lines along the contour of the slope. Enlarging the absorption fields and installing drainage around the field helps to overcome the effects of the high water table. Structures with basements need sealed foundations and foundation drains to help prevent wet basements.

The erosion potential for this soil is moderate.

Ingleside is not a hydric soil.

The capability subclass is 2e.

15 -- Iuka fine sandy loam. This soil is deep, nearly level to gently sloping and has a natural soil drainage class of moderately well drained. This soil formed in recently deposited alluvium that was washed mainly from soils on the uplands in the county. Where these soils occur on flood plains, they are subject to flooding from streams. Where they occur in upland depressions, they are saturated with water for short periods of time.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 6 inches, dark brown fine sandy loam.

Substratum:

6 to 24 inches, yellowish brown fine sandy loam.
24 to 34 inches, yellowish brown fine sandy loam.
34 to 46 inches, yellowish brown loam with gray and yellowish brown mottles.
46 to 65 inches, light yellowish brown fine sandy loam with gray and strong brown mottles.
65 to 72 inches, light brownish gray loam with olive yellow and light yellowish brown mottles.

In some areas, similar soils have silt loam, loam, or loamy sand surfaces. These areas makeup 10 percent of the unit.

Dissimilar soils included in mapping are Bibb and Fallsington soils at slightly lower elevations and Woodstown soils at slightly higher elevations.

The potential productivity for loblolly pine is high. No significant limitations to woodland use and management are present. In some places, the hazard of flooding is moderate but this is not a serious limitation.

The limitations for water management are wetness and piping of embankments for pond reservoir areas. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table and occasional flooding. Drainage around elevated footing if an outlet is available, sandy backfill under dwellings, and land shaping so that the surface water moves away from dwellings will help to overcome the high water table as a limitation for dwellings with and without basements. Drainage and a raised bed for the roadway construction, help overcome the high water table as a limitation for local roads and streets. To overcome the high water table and moderately rapid permeability, septic tank absorption fields and other onsite sanitary facilities need special design which could include enlarged and raised absorption fields and a drainage system around the facility.

The erosion potential for this soil is moderate.

Iuka is not a hydric soil, but may contain hydric soil inclusions.

The capability subclass is 2w.

16 -- Keyport silt loam. This soil is very deep, nearly level to gently sloping, and has a natural soil drainage class of moderately well drained. This unit is on low-lying uplands of the mid-Atlantic Coastal Plain. It formed in clayey alluvial and marine deposits.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 1 inch, dark brown silt loam.

Subsurface layer:

1 to 8 inches, light yellowish brown silt loam with

yellowish brown mottles.
8 to 13 inches, olive yellow silt loam with light brownish gray mottles.

Subsoil:

13 to 18 inches, light brownish gray silt loam with dark yellowish brown and light yellowish brown mottles.
18 to 47 inches, grayish brown silty clay loam with strong brown mottles.

Substratum:

47 to 60 inches, strong brown silty clay loam with light gray mottles.
60 to 72 inches, light gray sandy clay loam with strong brown mottles.

In some areas there are similar soils that have a fine sandy loam surface texture. There are also areas with 10 to 30 percent gravels in the substratum. These included areas make up 15 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Beltsville, Mattapex, and Mattawoman soils; and Elkton soils at slightly lower elevations. These included soils make up 20 percent of the unit.

The potential productivity is moderate for loblolly Pine on this soil. Due to the seasonal high water table, equipment limitations are a management concern.

The soil is well suited to pond reservoir areas. Ponds should be dug deep enough into the water table to maintain a sufficient water level in the pond during dry periods. Only surface, subsurface and subsoil material should be used for embankments.

The main limitations for urban uses are the seasonal high water table, the slow permeability, low strength, and the potential frost action. Drainage around elevated footings, sandy backfill under structures, and land shaping to divert water from the structures will help overcome the limitations for structures with basements. Drainage and a raised bed help overcome the limitations of a high water table for local roads and streets. Coarse grained subgrade and base materials will help overcome the limitations of low strength and potential frost action. Due to the seasonal high water table and low permeability, onsite sanitary facilities need special design which could include sandy backfill for trenches, enlarged and raised absorption fields, and drainage systems around the facility.

The erosion potential for this soil is moderate.

Keyport is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass is 2w.

17 -- Leonardtown silt loam. This soil is very deep, nearly level and has a natural soil drainage class of poorly drained. This soil is located on upland flats that commonly lack channeled drainageways. It formed in old silty alluvial and marine deposits. These soils have a distinct hard pan that restrict water movement and root growth.

The typical depth, sequence, and composition of the soil are as follows:

Surface layer:

Surface to 4 inches, dark grayish brown silt loam.

Subsurface layer:

4 to 8 inches, grayish brown silt loam.

Subsoil:

8 to 16 inches, grayish brown silty clay loam with light brown gray and yellowish brown mottles.
16 to 36 inches, gray firm silty clay loam with yellowish brown and dark brown mottles.
36 to 46 inches, gray firm silty clay loam with yellowish brown mottles.
46 to 63 inches, light gray firm silty clay with yellowish brown mottles.

Substratum:

63 to 70 inches, light gray silt loam.
70 to 72 inches, light gray silt loam with yellowish brown mottles.

In some areas there are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small intermingled areas of Elkton and Fallsington soils; and Mattawoman soils at

slightly higher elevations. These soils make up 15 percent of the unit.

The potential productivity for loblolly pine on this soil is moderately high. The seasonal high water table is the main limitation for timber production. Conventional methods of timber harvest are generally suitable, but the use of heavy equipment will compact the soil when wet. Seedling mortality is high due to the high water table.

For water management, there are no severe limitations for pond reservoir areas.

The main limitations for urban uses are the seasonal high water table, very slow permeability, and potential frost action. Drainage around elevated footings, sandy backfield under structures and land shaping to direct water form structures will help overcome the limitations for structures with basements and without basements. Shallow excavation are limited by the water table. Coarse grained suborder and base material will help overcome the limitation of potential frost action. Due to the seasonal high water table and the slow permeability, onside sanitary facilities need special designs which could include sandy backfield for trenches, enlarged and raised absorption fields, and drainage from around the facility.

The erosion potential for this soil is moderate.

Leonardtown is a hydric soil.

The capability subclass is 4w.

18B -- Mattapex silt loam, 2 to 5 percent slopes. This soil is very deep, gently sloping, and has a natural soil drainage class of moderately well drained. It is on lowland flats and along the edges of rivers and creeks. It developed in a thin mantle of silts overlying sandy or gravelly alluvial materials.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 8 inches, dark brown silt loam.

Subsurface layer:

8 to 13 inches, yellowish brown silt loam.

Subsoil:

13 to 24 inches, strong brown silt loam with light yellowish brown mottles.
24 to 35 inches, yellowish brown silt loam with strong brown and dark gray mottles.
35 to 48 inches, light brownish gray silty clay loam with yellowish brown mottles.

Substratum:

48 to 58 inches, pale brown silty clay with pinkish gray mottles.
58 to 72 inches, yellowish brown fine sandy loam with light gray mottles.

In some areas there are similar soils with 5 to 10 percent gravel throughout the soil profile. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are Keyport soils in slightly lower landscape positions, intermingled areas of Beltsville and Mattawoman soils, and Sassafras soils on slightly higher landscape positions. Also included are Fort Mott and Woodstown soils in areas where a thicker overburden of sand was deposited. These included soils make up 20 percent of the unit.

The potential productivity for loblolly pine on this soil is high. The seasonal high water table is the only limitation. Conventional methods of harvesting timber generally are suitable, but the use of heavy equipment compacts the soil if it is wet.

The limitations for water management are seepage in pond reservoir areas and sloughing and piping of embankments. The selection of better suited soils can overcome these limitations.

The main limitations for urban uses are the seasonal high water table, sloughing of excavation walls, low strength, and the permeability of the subsoil. Drainage around elevated footings if an outlet is available, sandy backfill under dwellings, and land shaping so that surface water moves away from dwellings will help to overcome the high water table as a limitation for dwellings without basements. Shallow excavation walls will need shoring to prevent sloughing. The selection of better suited soils can overcome the limitations for dwellings with basements. Drainage and a raised bed for the roadway construction, help to overcome the high water table as a limitation for local roads and streets. Coarse grained subgrade and base materials for the raised bed help to overcome the limitation of low strength. To overcome the high water table and moderately slow permeability, septic tank absorption fields and other onsite sanitary facilities need special design, including sandy backfill for the

trenches, enlarged and raised absorption fields, and a drainage system around the facility.

The erosion potential for this soil is high.

Mattapex is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass is 2w.

19A -- Runclint loamy sand, 0 to 2 percent slopes. This soil is very deep, nearly level, and has a natural soil drainage class of excessively drained. It is on broad uplands and old alluvial terraces of the coastal plain. It formed in thick sandy alluvial deposits.

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:

Surface to 10 inches, dark yellowish brown loamy sand.

Subsurface layer:

10 to 18 inches, yellowish brown loamy sand.

Subsoil:

18 to 32 inches, yellowish brown loamy sand.
32 to 42 inches, strong brown loamy sand.
42 to 48 inches, light yellowish brown loamy sand with light yellowish brown mottles.

Substratum:

48 to 66 inches, pale olive brown sand with light olive brown mottles.
66 to 72 inches, yellowish brown sandy loam with light brownish gray mottles.

In some areas similar soils have a sand surface texture. Also included are similar soils with 10 to 20 percent gravel in the substratum. These areas make up 10 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Fort Mott soils; and Ingleside and Downer soils at slightly

higher elevations and along ridge tops. These included soils make up 25 percent of the unit.

The potential productivity for loblolly pine is moderately high on this soil. Seedling survival is limited by moisture stress. The rate of seedling mortality can be reduced by planting seedlings in early spring, allowing them to obtain sufficient moisture from spring rains. Once established, the seasonal high water table supplies water to the trees in an otherwise extremely droughty soil. Only drought-tolerant species should be planted. These would include Virginia pine, loblolly pine and shortleaf pine.

The loose sand in places causes poor trafficability for equipment.

The limitations for water management are seepage in pond reservoir areas and sloughing and piping of embankments. Selection of better suited soils will help to overcome these limitations.

The limitations for urban uses include sloughing of excavation walls, droughtiness, rapid permeability, and seepage in the substratum. Shallow excavation walls will need shoring to prevent sloughing. Garden and landscape plants need irrigation to overcome droughtiness. To prevent contamination of water supplies, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone. Dwellings with basements need sealed foundations and foundation drains to help prevent wet basements. The land should also be shaped to divert runoff away from the dwelling.

The erosion potential for this soil is low.

Runclint is not a hydric soil.

The capability subclass is 4s.

19B --- Runclint loamy sand, 2 to 5 percent slopes. This soil is very deep, gently sloping, and has a natural soil drainage class of excessively drained. It is on broad uplands, and old alluvial terraces. It formed in thick deposits of sandy alluvial deposits.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 8 inches, dark yellowish brown loamy sand.

Subsurface layer:

8 to 16 inches, yellowish brown loamy sand.

Subsoil:

16 to 43 inches, yellowish brown loamy sand.
43 to 47 inches, light yellowish brown loamy sand with yellowish brown mottles.

Substratum:

47 to 60 inches, pale olive brown sand with light olive brown mottles.
60 to 72 inches, yellowish brown fine sandy loam with light brownish gray mottles.

In some areas similar soils have a sand surface texture. Also included are similar soils with 10 to 20 percent gravels in the substratum. These areas make up 25 percent of the unit.

Dissimilar soils included in mapping are intermingled areas of Fort Mott soils; and Downer and Ingleside soils at slightly higher elevations and along ridge tops. These included soils make up 20 percent of the unit.

The potential productivity for loblolly pine is moderately high on this soil. Seedling survival is limited by moisture stress. The rate of seedling mortality can be reduced by planting seedlings in early spring, allowing them to obtain sufficient moisture from spring rains. Once established, the seasonal high water table supplies water to the trees in an otherwise extremely droughty soil. Only drought-tolerant species should be planted. These would include Virginia pine, Loblolly pine and Shortleaf pine. The loose sand in places causes poor trafficability for equipment.

The limitations for water management are seepage in pond reservoir areas and sloughing and piping of embankments. Selection of better suited soils will help to overcome these limitations.

The limitations for urban uses include sloughing of excavation walls, droughtiness, rapid permeability, and seepage in the substratum. Shallow excavation walls will need shoring to prevent sloughing. Garden and landscape plants need irrigation to overcome droughtiness. To prevent contamination of water supplies and seepage at points down slope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Dwellings with basements need sealed foundations and

foundation drains to help prevent wet basements. The land should also be shaped to divert runoff away from the dwelling.

The erosion potential for this soil is low.

Runclint is not a hydric soil.

The capability subclass is 4s.

20B -- Sassafras sandy loam, 2 to 5 percent slope. This soil is very deep, nearly level to gently sloping and has a natural drainage class of well drained. This soil formed in loose deposits of loamy and sandy sediments of marine and alluvial origin.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown sandy loam.

Subsurface layer:

3 to 15 inches, yellowish brown fine sandy loam.

Subsoil:

15 to 31 inches, strong brown sandy loam.
31 to 36 inches, yellowish red sandy clay loam.
36 to 43 inches, yellowish red loam with brownish yellow mottles and strong brown mottles.

Substratum:

43 to 72 inches, strong brown loamy sand.

In some areas, there are similar soils with 0 to 15 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small intermingled areas of Beltsville, Downer, and Woodstown soils, and Croom soils along the edge of sideslopes. These areas make up 25 percent of the unit.

The potential productivity for loblolly pine is high. No significant limitations to woodland use and management are present.

For water management, excavated ponds are limited due to seepage and sloughing. The selection of a better suited soil can overcome this limitation.

The main limitations for urban uses are sloughing of excavation walls and the permeability of the substratum. Shallow excavation walls will need shoring to prevent sloughing. The selection of better suited soils can overcome these limitations for dwellings with basements. Drainage and a raised bed for roadway construction helps to overcome the high water table as a limitation for local roads and street.

The erosion potential for this soil is moderate.

Sassafras is not a hydric soil.

The capability subclass is 2e.

20C -- Sassafras sandy loam, 5 to 10 percent slope. This soil is deep, moderately sloping and has a natural soil drainage class of well drained. This soil formed in loamy marine and alluvial deposits. It is on uplands of the mid-Atlantic Coastal Plain.

The typical depth, sequence, and composition of this soil are as follows:

Surface layer:

Surface to 3 inches, dark brown sandy loam.

Subsurface layer:

3 to 15 inches, yellowish brown fine sandy loam.

Subsoil:

15 to 22 inches, strong brown sandy loam.
22 to 36 inches, yellowish red sandy clay loam.
36 to 43 inches, yellowish red loam with brownish yellow and strong brown mottles.

Substratum:

43 to 72 inches, strong brown loamy sand.

In some areas, there are similar soils with 0 to 15 percent gravel in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are small areas of Downer, Hambrook, and Woodstown soils; and Croom soils along the edges of sideslopes. These soils make up 20 percent of the unit.

The potential productivity for loblolly pine is high. The hazard of erosion is the main limitation for forestry use. Measures to control erosion during are harvest operations are essential.

For water management, excavated ponds are limited due to piping, seepage and sloughing in pond reservoir areas. Selection of a better soil can overcome this limitation.

The main limitations for urban uses include slope, sloughing of excavation walls, droughtiness, and the rapid permeability. Shallow exactions will need shoring to prevent sloughing. Planning structures to conform to the contour will help overcome the limitation of slope. To prevent contamination of water supplies and seepage points downslope, all sanitary facilities need special design,
including the use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope.

The erosion potential for this soil is moderate.

Sassafras is not a hydric soil.

The capability subclass is 3e.

21C -- Sassafras gravelly sandy loam, 5 to 10 percent slopes. This soil is very deep, moderately sloping, and has a natural soil drainage class of well drained. It is on steep sideslopes of the mid-Atlantic Coastal Plain. It formed in loamy and gravelly alluvial and marine deposits.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 12 inches, dark brown gravelly sandy loam.

Subsurface layer:

12 to 18 inches, light yellowish brown sandy loam.

Subsoil:

18 to 37 inches, strong brown sandy clay loam.

Substratum:

37 to 58 inches, yellowish brown gravelly sandy loam.
58 to 72 inches, brownish yellow gravelly sandy loam.

In some areas there are similar soils with gravelly loam surfaces. In other areas there is 15 to 25 percent gravel throughout the profile. These areas make up 25 percent of the unit.

Dissimilar soils included in mapping are Croom soils in similar landscape positions, and Woodstown and Hambrook soils at slightly lower elevations. These included soils make up 15 percent of the unit.

The potential productivity for loblolly pine is moderate on this soil. The erosion hazard is moderate due to slope. Use of practices to reduce erosion potential are recommended during harvest.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are seepage and slope. To prevent contamination of water supplies and seepage downslope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Planning structures to conform to the contour will help overcome the limitation of slope.

The erosion potential for this soil is high.

Sassafras is not a hydric soil.

The capability subclass is 3e.

21D -- Sassafras gravelly sandy loam, 10 to 15 percent slopes. This soil is very deep, moderately steep, and has a natural soil drainage class of well drained. It is on steep sideslopes of the mid-Atlantic Coastal Plain. It formed in loamy and gravelly alluvial and marine deposits.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 10 inches, dark brown gravelly sandy loam.

Subsurface layer:

10 to 15 inches, light yellowish brown sandy loam.

Subsoil:

15 to 34 inches, strong brown sandy clay loam.

Substratum:

34 to 52 inches, yellowish brown gravelly sandy loam.
52 to 72 inches, brownish yellow gravelly sandy loam.

In some areas there are similar soils with gravelly loam surfaces. In other areas there is 15 to 25 percent gravel throughout the profile. These areas make up 25 percent of the unit.

Dissimilar soils included in mapping are Croom soils in similar landscape positions, and Woodstown and Hambrook soils at slightly lower elevations. These included soils make up 15 percent of the unit.

The potential productivity for loblolly pine is moderate on this soil. The erosion hazard is moderate due to slope. Use of practices to reduce erosion potential are recommended during harvest.

The limitations for water management are seepage in pond reservoir areas and slope. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are seepage and slope. To prevent contamination of water supplies and seepage downslope, all onsite sanitary facilities need special design, including use of trenches shallow enough to be in the root zone and tile lines along the contour of the slope. Planning structures to conform to the contour will help overcome the limitation of slope.

The capability subclass is 4e.

22 -- Urban Land. This unit consists of areas paved over or otherwise covered with impervious materials. Much of the area is covered by parking lots and buildings. This unit is dominantly along the Rt. 301 corridor in Waldorf.

Included with this unit are very small areas of Udorthents and undisturbed Beltsville, Leonardtown, Mattawoman, and Woodstown soils. These areas make up 5 percent of the unit.

These areas are not suited to agricultural or wildlife uses.

These areas are not hydric.

No erosion potential or capability subclass is assigned.

23B -- Urban Land-Udorthents complex, 0 to 5 percent slopes. This unit is consists of very deep, nearly level to gently sloping Udorthents soils and areas paved over or otherwise covered by impervious materials. This unit is dominantly along the Rt. 301 corridor in Waldorf. Udorthents soils and Urban Land occur in such an intricate pattern that it is not practical to separate them at the scale of mapping.

About 60 percent of the unit is Urban Land and 25 percent Udorthents. The typical sequence, depth, and composition of the layers of the Udorthents soil are as follows:

Surface layer:

Surface to 4 inches, dark brown sandy loam.

Subsurface layer:

4 to 12 inches, light yellowish brown sandy loam.

Substratum:

12 to 30 inches, yellowish brown gravelly loam.
30 to 48 inches, light yellowish brown gravelly sandy loam.
48 to 72 inches, yellowish brown sandy loam.

In some areas are similar soils with less than 15 percent gravel throughout the soil profile. These soils make up 5 percent of the unit.

Dissimilar soils included in mapping are small undisturbed areas of Beltsville, Downer, Mattawoman, and Woodstown soils. These areas make up 10 percent of the unit.

The major land use on this unit is roads, shopping centers, and stormwater management facilities. This unit is not suited to agricultural uses.

The properties of the soil material are extremely variable. Onsite investigations are needed to estimate the potential and limitations of this unit for each specific use.

These areas are not hydric, but may at times have hydric soil inclusions.

No erosion potential or capability subclass is assigned.

24 -- Udorthents. This unit consists of nearly level to moderately sloping loamy and gravelly soil material that has been moved, graded, cut, filled in or otherwise disturbed by machinery. Most of these areas have either been reshaped, leveled, and filled; or consist of cuts and excavations that extend into the underlying geologic material. Slopes range from 0 to 10 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 4 inches, dark brown sandy loam.

Subsurface layer:

4 to 12 inches, light yellowish brown sandy loam.

Substratum:

12 to 30 inches, yellowish brown gravelly loam.
30 to 48 inches, light yellowish brown gravelly sandy loam.
48 to 72 inches, yellowish brown sandy loam.

In some areas are similar soils with less than 15 percent gravel throughout the soil profile. These soils make up 30 percent of the unit.

Dissimilar soils included in mapping are small undisturbed areas of Beltsville, Downer, Mattawoman, and Woodstown soils, and soils that have loamy substratums. These areas make up 15 percent of the unit.

Most areas of this unit are on borrow pits and filled areas along the Waldorf Rt. 301 corridor and Mattawoman Creek. Some smaller abandoned areas are wooded.

The properties of the soil material are extremely variable. Onsite investigations are needed to estimate the potential and limitations of this unit for each specific use.

The erosion potential on this soil is moderate.

Udorthents are not hydric, but this unit may contain hydric soil inclusions.

No capability subclass is assigned.

25A -- Woodstown sandy loam, 0 to 2 percent slopes. This soil is very deep, nearly level, and has a natural soil drainage class of moderately well drained. It is on uplands of the coastal plain. It formed in loamy alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

0 to 2 inches, dark brown sandy loam.

Subsurface layer:

2 to 10 inches, light yellowish brown fine sandy loam.

Subsoil:

10 to 18 inches, yellowish brown sandy clay loam.
18 to 23 inches, yellowish brown loam.
23 to 37 inches, yellowish brown loam with gray mottles.

Substratum:

37 to 40 inches, yellowish brown gravelly sandy loam with gray mottles.
40 to 72 inches, pale brown very gravelly sandy loam with gray mottles.

In some areas there are similar soils with fine sandy loam surfaces. In other areas there are similar soils with less than 15 percent gravels in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are Beltsville and Hambrook soils at slightly higher elevations; and Fallsington soils at slightly lower elevations. These included soils make up 25 percent of the unit.

The potential productivity is high for loblolly pine. There are few limitations for timber production.

The limitations for water management are seepage in pond reservoir areas, and sloughing and piping of embankments. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, sloughing of excavation walls, and the permeability of the substratum. Drainage around elevated footings if an outlet is available, sandy backfill under dwellings, and land shaping so that surface water moves away from dwellings will help to overcome the high water table as a limitation for dwellings without basements. Shallow excavation walls will need shoring to prevent sloughing. The selection of better suited soils can overcome these limitations for dwellings with basements. Drainage and a raised bed for the roadway construction, help to overcome the high water table as a limitation for local roads and streets. To overcome the high water table and moderately rapid permeability, septic tank absorption fields and other onsite sanitary facilities need special design, which could include enlarged and raised absorption fields and a drainage system around the facility.

The erosion potential for this soil is moderate.

Woodstown is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass is 2w.

25B -- Woodstown sandy loam, 2 to 5 percent slopes. This soil is very deep, nearly level, and has a natural soil drainage class of moderately well drained. It is on uplands of the coastal plain. It formed in loamy alluvial sediments.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

0 to 2 inches, dark brown sandy loam.

Subsurface layer:

2 to 10 inches, light yellowish brown fine sandy loam.

Subsoil:

10 to 18 inches, yellowish brown sandy clay loam.
18 to 23 inches, yellowish brown loam.
23 to 37 inches, yellowish brown loam with gray

mottles.

Substratum:

37 to 40 inches, yellowish brown gravelly sandy loam with gray mottles.
40 to 72 inches, pale brown very gravelly sandy loam with gray mottles.

In some areas there are similar soils with fine sandy loam surfaces. In other areas there are similar soils with less than 15 percent gravels in the substratum. These areas make up 15 percent of the unit.

Dissimilar soils included in mapping are Beltsville and Hambrook soils at slightly higher elevations; and Fallsington soils at slightly lower elevations. These included soils make up 25 percent of the unit.

The potential productivity is high for loblolly pine. There are few limitations for timber production.

The limitations for water management are seepage in pond reservoir areas, and sloughing and piping of embankments. Selection of better suited soils will help overcome these limitations.

The main limitations for urban uses are the seasonal high water table, sloughing of excavation walls, and the permeability of the substratum. Drainage around elevated footings if an outlet is available, sandy backfill under dwellings, and land shaping so that surface water moves away from dwellings will help to overcome the high water table as a limitation for dwellings without basements. Shallow excavation walls will need shoring to prevent sloughing. The selection of better suited soils can overcome these limitations for dwellings with basements. Drainage and a raised bed for the roadway construction, help to overcome the high water table as a limitation for local roads and streets. To overcome the high water table and moderately rapid permeability, septic tank absorption fields and other onsite sanitary facilities need special design, which could include enlarged and raised absorption fields and a drainage system around the facility.

The erosion potential for this soil is moderate.

Woodstown is not a hydric soil, but this unit may contain hydric soil inclusions.

The capability subclass is 2w.

Soil Identification Legend

Mattawoman Watershed, Charles Co., Maryland
July 1991

Soil Symbol	Soil Map Unit Name	Published Old Symbol
1	Assawoman loamy sand	Os
2A	Beltsville silt loam, 0 to 2 percent slopes	BlA
2B	Beltsville silt loam, 2 to 5 percent slopes	BlB2
2C	Beltsville silt loam, 5 to 10 percent slopes	BlC3
3A	Beltsville-Mattawoman complex, 0 to 2 percent slopes	BlA
3B	Beltsville-Mattawoman complex, 2 to 5 percent slopes	BlB2
4B	Beltsville-Urban Land complex, 0 to 5 percent slopes	BlA, BlB2
5	Bibb sandy loam	Bo
6	Bibb-Iuka complex, 0 to 2 percent slopes	Bo, Sx, Ad
7B	Bourne sandy loam, 2 to 5 percent slopes	BrB2
7C	Bourne sandy loam, 5 to 10 percent slopes	BrC2
8C	Croom gravelly sandy loam, 5 to 10 percent slopes	AuC2, CrC2, CrC3
8D	Croom gravelly sandy loam, 10 to 15 percent slopes	AuD2, AuD3, GvE
8E	Croom gravelly sandy loam, 15 to 25 percent slopes	GvE

Soil Identification Legend (cont'd)

8F	Croom gravelly sandy loam, 25 to 40 percent slopes	GvE
9B	Downer loamy sand, 2 to 5 percent slopes	RdB2
9C	Downer loamy sand, 5 to 10 percent slopes	SaE, RdC2
10	Elkton silt loam	Ek
11	Fallsington sandy loam	Or, Fa
12B	Fort Mott loamy sand, 2 to 5 percent slopes	EvB
13B	Hambrook sandy loam, 2 to 5 percent slopes	ShB2
14B	Ingleside loamy sand, 2 to 5 percent slopes	EvB
15	Iuka fine sandy loam	Ik, Im
16	Keyport silt loam	KpA, KeA
17	Leonardtown silt loam	Le
18B	Mattapex silt loam, 2 to 5 percent slopes	KpA
19A	Runclint sand, 0 to 2 percent slopes	EvB
19B	Runclint sand, 2 to 5 percent slopes	RdB2, RdC2
20B	Sassafras sandy loam, 2 to 5 percent slopes	ShB2
20C	Sassafras sandy loam, 5 to 10 percent slopes	ShC2, ShC3
21C	Sassafras gravelly sandy loam, 5 to 10 percent slopes	ShC2, ShD2, ShD3
21D	Sassafras gravelly sandy loam, 10 to 15 percent slopes	ShC2, ShD2, ShD3

Soil Identification Legend (cont'd)

22	Urban Land	BlB2, Le, WoA
23B	Urban Land-Udorthents complex, 0 to 5 percent slopes	
24	Udorthents	G.P., Cu
25A	Woodstown sandy loam, 0 to 2 percent slopes	WoA
25B	Woodstown sandy loam, 2 to 5 percent slopes	WoB2, WoC2

SCS-SOILS-37A
3-75

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Soil Survey Area: Mattawoman Watershed
State: Charles Co., Maryland

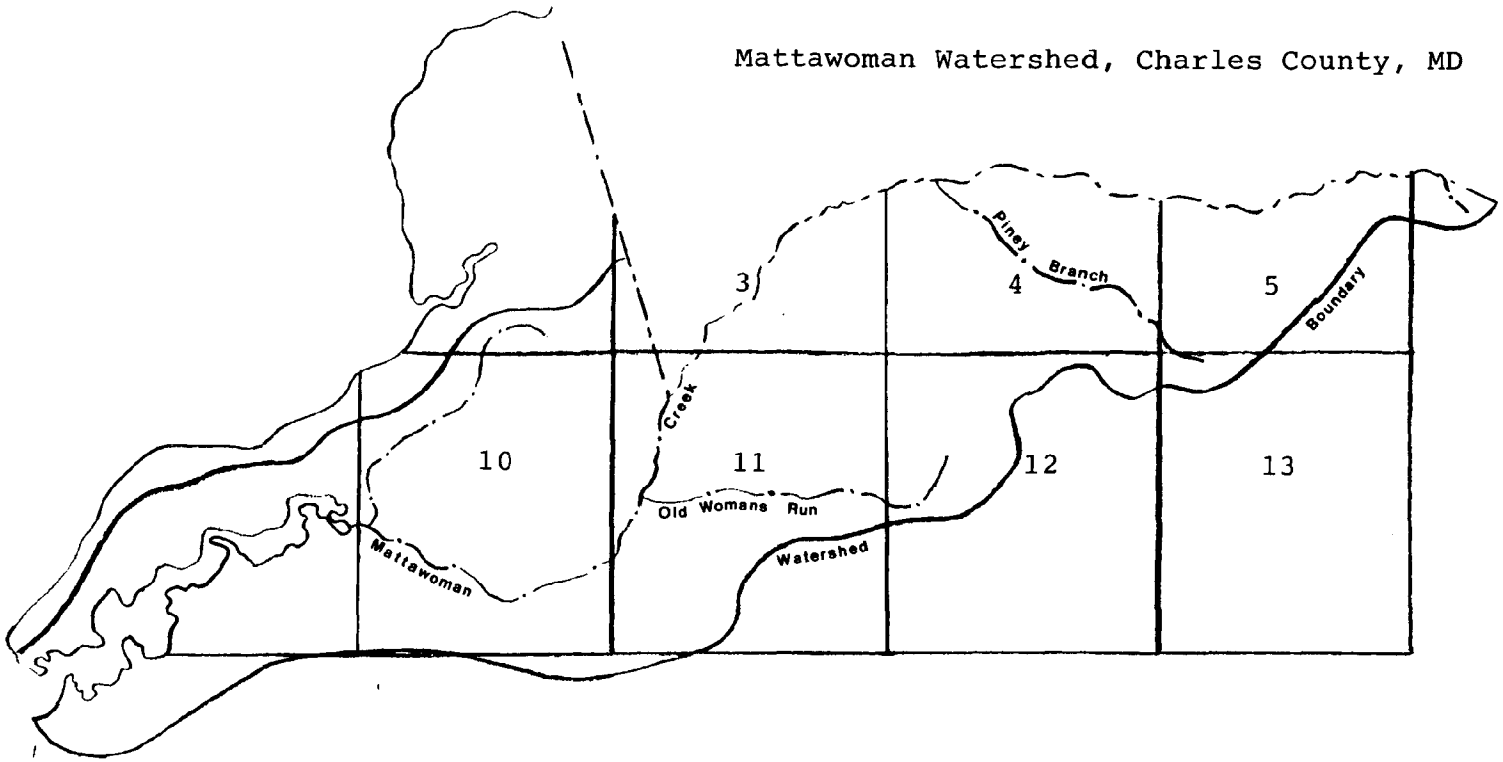
Date: 09/91

DESCRIPTION	SYMBOL
CULTURAL FEATURES	
BOUNDARIES	
National, state, or province	
County or parish	
Minor civil division	
Reservation (national forest or park, state forest or park, and large airport)	
Land grant	
Limit of soil survey (label)	
Field sheet matchline & neatline	
AD HOC BOUNDARY (label)	
Small airport, airfield, park, oilfield, cemetery, or flood pool	
STATE COORDINATE TICK	1 890 000 FEET
LAND DIVISION CORNERS (sections and land grants)	
ROADS	
Divided (median shown if scale permits)	
County, farm or ranch	
Trail	
ROAD EMBLEMS & DESIGNATIONS	
Interstate	66
Federal	287
State	52
Other	999
RAILROAD	
POWER TRANSMISSION LINE (normally not shown)	
PIPE LINE (normally not shown)	
FENCE (normally not shown)	
LEVEES	
Without road	
With road	
With railroad	
DAMS	
Large (to scale)	
Medium or small	w
PITS	
Gravel pit	
Mine or quarry	

DESCRIPTION	SYMBOL
CULTURAL FEATURES (cont.)	
MISCELLANEOUS CULTURAL FEATURES	
Farmstead, house (omit in urban areas)	
Church	
School	
Indian mound (label)	
Located object (label)	
Tank (label)	
Wells, oil or gas	
Windmill	
Kitchen midden	
WATER FEATURES	
DRAINAGE	
Perennial, double line	
Perennial, single line	
Intermittent	
Drainage end	
Canals or ditches	
Double - line (label)	CANAL
Drainage and/or irrigation	
LAKES, PONDS AND RESERVOIRS	
Perennial	water w
Intermittent	intermittent int
MISCELLANEOUS WATER FEATURES	
Marsh or swamp	
Spring	
Well, artesian	
Well, irrigation	
Wet spot	

DESCRIPTION	SYMBOL
SPECIAL SYMBOLS FOR SOIL SURVEY	
SOIL DELINEATIONS AND SOIL SYMBOLS	
ESCARPMENTS	CeA FoB2
Bedrock (points down slope)	
Other than bedrock (points down slope)	
SHORT STEEP SLOPE	
GULLY	
DEPRESSION OR SINK	
SOIL SAMPLE SITE (normally not shown)	S
MISCELLANEOUS	
Blowout	
Clay spot	
Gravelly spot	
Gumbo, slick or scabby spot (sodic)	
Dumps and other similar non soil areas	
Prominent hill or peak	
Rock outcrop (includes sandstone and shale)	
Saline spot	
Sandy spot	
Severely eroded spot	
Slide or slip (tips point upslope)	
Stony spot, very stony spot	
RECOMMENDED AD HOC SOIL SYMBOLS	

Mattawoman Watershed, Charles County, MD



Index to Field Sheets

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
COOPERATING WITH
STATE AGRICULTURAL EXPERIMENT STATION

APPROX. SCALE 1" = 2,000'

USDA-SCS-FORT WORTH, TEXAS

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SURVEY HAS NOT BEEN COMPILED NOR CORRELATED. NAMES MAY BE CHANGED AND AREAS MAY BE COMBINED.

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