CHAPTER 6

Preparing an Erosion and Sediment Control Plan

INDEX

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This chapter is intended as a complete guide for preparing an erosion and sediment control plan for a construction project. It is divided into three parts:

PART I - GENERAL GUIDELINES: Part I contains the basic information with which all site planners and plan reviewers should be familiar. It describes criteria for plan content and format, ideas for improving planning effectiveness, and sources of technical assistance.

PART II - STEP-BY-STEP PROCEDURE: Part II outlines and describes a step-by-step procedure for developing an erosion and sediment control plan. The procedure covers the steps from data collection through plan preparation. The procedure is written in general terms to be applicable to all types of projects.

PART III - SAMPLE PLAN: A sample plan is developed according to the step-by-step procedure outlined in Part II. This sample plan was developed for a proposed state construction project.

Site planners, as well as local plan approving authorities, are urged to become familiar with the contents of this chapter so that plans will become more standardized, and thus more effective, statewide.

PART I

GENERAL GUIDELINES

What is an Erosion and Sediment Control Plan?

Simply stated, an erosion and sediment control plan is a document which describes the potential for erosion and sedimentation on a construction project. The plan also explains and illustrates the measures which are to be taken to control those problems. The plan has a written portion known as the narrative and a illustrative portion known as a plan.

The erosion and sediment control plan should be an independent entity from the working or construction drawings of the project. While it is a good idea to include erosion and sediment control standards and specifications in contract documents, the erosion and sediment control plan itself should contain notes to ensure that the controls are installed, inspected and maintained properly.

A Narrative Is Important

A narrative is a written statement which explains the erosion and sediment control decisions made for a particular project and the justification for those decisions. The narrative is especially important to the plan approving authority because it contains concise information concerning existing site conditions, construction schedules, and other pertinent items which are not apparent in a typical site plan. Since a plan reviewer cannot always visit the site or discuss the project at length with the site planner, it is essential that the necessary information be provided for the plan review.

The narrative is also important to the construction superintendent and inspector who are responsible for seeing that the plan is implemented properly. It provides them with a single report which describes where and when the various erosion and sediment control practices should be installed.

What Is an "Adequate" Plan ?

An erosion and sediment control plan must contain sufficient information to satisfy the plan approving authority that the problems of erosion and sedimentation have been adequately addressed for a proposed project. The length and complexity of the plan should be commensurate with the size of the project, the severity of site conditions, and the potential for off-site damage.

Obviously, a plan for constructing a house on a single subdivision lot does not need to be as complex as a plan for a shopping center development. Also, plans for projects undertaken on flat terrain will generally be less complicated than plans for projects constructed on steep slopes where erosion potential is greater. The greatest level of planning and detail should be evident on plans for projects which are directly adjacent to

flowing streams, dense population centers, or high value properties where damage may be particularly costly or detrimental to the environment.

The primary guidelines for determining the adequacy of a plan are the Virginia Erosion and Sediment Control Regulations (VESCR). Each of the "Minimum Standards" in Section **40** of the Regulations should be satisfied in the E&S plan, unless a specific variance is granted by the plan approving authority. Variance procedures are contained in Section **50** of the Regulations. Maintenance and inspection requirements are contained in Section **60** of the Regulations. (The "Minimum Standards" are listed at the beginning of Chapter 3, or see Chapter 8 for the law and regulations in their entirety.)

As a guide to E&S plan content, the site planners and plan reviewers should use the checklist contained in Part II of this chapter. If the proposed project is subject to local program jurisdiction, the plan preparer should contact the locality since some localities have adopted more stringent requirements. The step-by-step procedure outlined in Part II is recommended for the development of all plans.

Practice Standards and Specifications

Chapter 3 of the Virginia Erosion and Sediment Control Handbook (handbook) contains minimum state standards and specifications for conservation practices. Wherever any of these practices are to be employed on a site, the specific title and number of the practice should be clearly marked on the plan. By referencing the handbook properly, the site planner can reduce the need for lengthy descriptions of the practices in the plan. The plan should contain sketches and notes related to the installation and maintenance of the practices.

Modifications to state standard practices or new innovative conservation practices may also be employed, but such practices must be thoroughly described in detail to the satisfaction of the plan approving authority. Variances from state standards should also be submitted at the time of plan submission.

Standard Practice Coding System

Site planners are urged to use the standard numbering and coding system for conservation practices contained in this handbook. Chapter 2 contains a large fold-out chart which lists each practice with its designated number, symbol and code. This chart can be placed on the wall for fast and easy reference. Use of this coding system will result in increased uniformity of plans and thus increase their readability to plan reviewers, job superintendents, and inspectors statewide.

Comprehensive Site Planning

Erosion and sediment control planning should be an integral part of the site planning process, not an afterthought. The potential for soil erosion should be a significant consideration when deciding upon the layout of buildings, parking lots, roads and other

facilities. Costly erosion and sediment control measures can be minimized if the site design can be adapted to existing site conditions and good conservation principles are used.

Who is Responsible for Preparing a Plan ?

The owner or lessee of the land being developed has the responsibility for plan preparation and submission. The owner or lessee may designate someone (e.g., an engineer, architect, contractor, etc.) to prepare the plan, but the owner or lessee retains the ultimate responsibility.

Technical Assistance

There are a number of possible sources of erosion and sediment control planning assistance within the state.

1. Soil and Water Conservation Districts: There are 45 soil and water conservation districts throughout the state serving 94 counties and 13 cities. These districts have elected representatives (directors) from each locality. One of the primary functions of these districts is to provide assistance to landowners for soil conservation planning and implementation. The USDA-Soil Conservation Service provides conservation districts with technical assistance. Requests for assistance in preparing an erosion and sediment control plan for a construction site can be made through the local district.

2. USDA-Soil Conservation Service: The Soil Conservation Service (SCS) provides technical assistance or conservation planning through local soil and water conservation districts to landowners throughout the country. In addition, the SCS, with the Agronomy Department of Virginia Polytechnic Institute and State University (VPI & SU) is involved in soil surveys throughout the state.

   Requests can be made through a SCS field office or a VPI & SU soil survey field office for soil survey on a specific site. Request will be acted upon according to local priorities.

3. Virginia Cooperative Extension Service: The Extension Service can provide valuable information on site planning and establishment of lawns and plant materials. The extension service has a number of useful publications and in addition will have soil samples analyzed upon request to determine fertilization and liming needs for establishing vegetation on a particular site.

4. Virginia Division of Soil and Water Conservation: Division staff members are available to answer any questions concerning the Virginia Erosion and Sediment Control Law (VESCL), the VESCR, and minimum standards and specifications for erosion and sediment control practices. Write or call the Division office in Richmond, or call your local regional office.

Richmond Central Office - 804-786-2064
203 Governor Street, Suite 206
Richmond, Virginia 23219

Regional Offices:

Abingdon	**540/676-5529**	Chase City	804-372-2191
Dublin	**540/674-2937**	Richmond	**804/527-4481**
Staunton	**540/332-9991**	Suffolk	**757/925-2467**
Tappahannock	804-443-6752	Warrenton	**540-347-6420**

5. Local government offices: Many localities have a separate department that is responsible for administering the local erosion and sediment control program. Local staff can be a valuable resource for technical assistance and information concerning local requirements.

PART II

STEP-BY-STEP PROCEDURE

STEP 1 - DATA COLLECTION

A. Topography
B. Drainage
C. Soils
D. Ground Cover
E. Adjacent Areas
F. Requirements

STEP 2 - DATA ANALYSIS

A. Topography - Slope gradients, lengths
B. Drainage - Existing drainage patterns
C. Soil - erodibility, permeability
D. Ground Cover - Trees, grassy areas, unique vegetation
E. Adjacent Areas - Streams, roads, buildings, etc.

STEP 3 - SITE PLAN DEVELOPMENT

A. Develop Site Plan
    1. Fit development to terrain
    2. Locate construction in least critical areas
    3. Utilize cluster development whenever possible
    4. Minimize paved areas
    5. Utilize natural drainage systems
B. Calculate Runoff

STEP 4 - PLAN FOR EROSION AND SEDIMENT CONTROL

A. Determine limits of clearing and grading
B. Divide the site into drainage areas
C. Select erosion and sediment control practices for each drainage area
    1. Vegetative
    2. Structural
    3. Management measures

STEP 5 - PREPARE THE PLAN

A. Narrative
B. Site Plan

STEP 1 - DATA COLLECTION

Inventory the existing site conditions to gather information which will help you develop the most effective erosion and sediment control plan. The information obtained should be plotted on a map and verbally explained in the narrative portion of the plan.

A. TOPOGRAPHY - A small scale topographic map of the site should be prepared to show the existing contour elevations at intervals of from 1 to 5 feet depending upon the slope of the terrain. Existing topographic maps (e.g., USGS or local government topos) can be a good starting point, however, the information should be verified by a field investigation.

B. DRAINAGE PATTERNS - All existing drainage swales and patterns on the site should be located and clearly marked on the topographic map. Live or intermittent streams should be shown on the map.

C. SOILS - Major soil type(s) on the site should be determined and shown on the topographic map. Soils information can be obtained from a soil survey if one has been published for your county. If a soil survey is not available, a request can be made to a district SCS office or the VPI & SU Agronomy Department for a soil survey of your site. Commercial soils evaluations are also available. Soils information should be plotted directly onto the map or an overlay of the same scale for ease of interpretation.

D. GROUND COVER - The existing vegetation such as tree clusters, grassy areas, and unique vegetation should be shown on the map. In addition, existing denuded or exposed soil areas should be indicated.

E. ADJACENT AREAS - Areas adjacent to the site should be delineated on the topographic map. Such features as streams, roads, houses or other buildings, wooded areas, etc. should be shown. Streams which will receive runoff from the site should be surveyed to determine their carrying capacity.

F. REQUIREMENTS - Sources of information include the handbook, the VESCL and VESCR, as well as any information on the local E&S program requirements (e.g, ordinance, handbook, guidelines, etc.).

STEP 2 - DATA ANALYSIS

When all of the data in Step 1 are considered together, a picture of the site potentials and limitations should begin to emerge. The site planner should be able to determine those areas which have potentially critical erosion hazards. The following are some important points to consider in site analysis:

A. Topography - The primary topographic considerations are slope steepness and slope length. Because of the effect of accumulated runoff, erosion potential is greater on long, steep slopes. When the percent of slope has been determined, areas of similar steepness should be outlined. Slope gradients can be grouped into three general ranges of soil erodibility:

0-7%	--	Low erosion hazard
7-15%	--	Moderate erosion hazard
> 15%	--	High erosion hazard

Within these slope gradient ranges, the erosion hazard becomes greater as the slope length increases. Therefore, in determining potential critical areas, the site planner should be aware of excessively long slopes. As a general rule, the erosion hazard will become critical if the slope exceeds the following criteria:

0-7%	--	300 feet
7-15%	--	150 feet
> 15%	--	75 feet

B. Natural Drainage - The existing drainage patterns, which consist of overland flow, swales and depressions, and natural watercourses, should be identified in order to plan around critical areas where water will concentrate. Where possible, natural drainageways should be used to convey runoff over and off the site to avoid the expense and problems of constructing an artificial drainage system. Man-made ditches and waterways can become part of the erosion problem if they are not properly designed and constructed. Care should also be taken to be sure that the increased runoff from the site will not erode or flood the existing natural drainage system. Possible sites for stormwater detention should be located at this time.

C. Soils - Such soils properties as natural drainage, depth to bedrock, depth to seasonal watertable, permeability, shrink-swell potential, texture, and erodibility should exert a strong influence on land development decisions. Appendix 6A contains basic guidelines for using soils information for site planning. A list of Virginia soils and their hydrologic soil groups is included in Appendix 6A.

D. Ground cover - Ground cover is the most important factor in terms of preventing erosion. Any existing vegetation which can be saved will help prevent erosion. Trees and other vegetation protect the soil as well as beautify the site after construction. If the existing vegetation cannot be saved, the planner should consider staging construction and using temporary seeding, or temporary mulching.

Staging of construction involves stabilizing one part of the site before disturbing another. In this way, the entire site is not disturbed at once and the time without ground cover is minimized. Temporary seeding and mulching involve seeding or mulching areas which would otherwise lie exposed for long periods of time. The time of exposure is limited, thus the erosion hazard is reduced.

E. Adjacent Areas - An analysis of adjacent properties should focus on areas downslope from the construction project. Of major concern should be watercourses which will receive direct runoff from the site. The potential for sediment pollution of these watercourses should be considered as well as the potential for downstream channel erosion due to increased volume, velocity and peak flow rate of stormwater runoff from the site. (See Minimum Standard 19.) The potential for sediment deposition on adjacent properties due to sheet and rill erosion should also be analyzed so that appropriate sediment trapping measures can be planned and installed prior to any land-disturbing activity.

F. Requirements - Find out what the requirements are for the development. State agencies that undertake land-disturbing activities are regulated directly by DSWC. Private land-disturbing activities or activities undertaken by localities are regulated by the local E&S program. Contact the appropriate authority for information regarding permits, fees and plan submission, as well as any other requirements.

STEP 3 - SITE PLAN DEVELOPMENT

A. Develop the site plan. After analyzing the data and determining the site limitations, the planner can develop a site plan. When designing the site plan, keep in mind that increases in runoff may require structural runoff control measures or channel improvements. Both items are expensive, and even more so when the site plan has to be re-designed to accommodate the runoff control measures. Therefore, try to minimize the increase in runoff or include runoff control measures in the initial design.

The following are some points to consider when developing the site plan:

1. Fit development to terrain. The development of an area should be tailored to the existing site conditions. This will avoid unnecessary land disturbance, thereby minimizing the erosion hazards and costs. Cutting and filling should be avoided if possible. Slopes should be at a maximum of 2:1 to provide for final stabilization.

2. Confine construction activities to the least critical areas. Any land disturbance in the critically erodible areas will necessitate the installation of more costly control measures.

3. Cluster buildings together. This minimizes the amount of disturbed area, concentrates utility lines and connections in one area, and provides more open natural space. The cluster concept not only lessens the erodible area, but it reduces runoff and generally reduces development costs.

4. Minimize impervious areas. Keep paved areas such as parking lots and roads to a minimum. This goes hand in hand with cluster development in

eliminating the need for duplicating parking areas, access roads, etc. The more land that is kept in vegetative cover, the more water will infiltrate, thus reducing runoff and erosion.

5. Utilize the natural drainage system. If the natural drainage system of a site can be preserved instead of being replaced with storm sewers or concrete channels, the potential for downstream damages due to increased runoff can be minimized.

B. Calculate runoff. Runoff calculations must be done to determine the effect of the development on the existing hydrologic system. Refer to Chapters 4 and 5 for more information on the VESCR and calculation procedures. Also, contact the locality to determine if the locality has adopted more stringent runoff requirements. After the calculations have been done, make the necessary changes to achieve compliance with the runoff requirements.

STEP 4 - PLAN FOR EROSION AND SEDIMENT CONTROL

When the layout of the site has been determined, a plan to control erosion and sedimentation from the disturbed areas must be formulated.

The site planner should be guided by the Minimum Standards in Section **40** of the VESCR. These minimum standards establish a level of control for all projects. The site planner should determine which of the "Minimum Standards" are applicable to the site and select conservation practices which can be used to comply with these regulations. If the site planner feels that any of the "Minimum Standards" are not justified on a given project, the site planner should apply for a variance in accordance with the procedures in the VESCR, Section **50**. (See Chapter 8.)

The following procedure is recommended for erosion and sediment control planning:

A. Determine the limits of clearing and grading. Decide which areas must be disturbed in order to accommodate the proposed construction. Pay special attention to critical areas which must be disturbed.

B. Divide the site into drainage areas. Determine how runoff will travel over the developed site. Consider how erosion and sedimentation can be controlled in each small drainage area before looking at the entire site. Remember, it is easier to control erosion than to contend with sediment after it has been carried downstream.

C. Select erosion and sediment control practices. Erosion and sediment control practices can be divided into three broad categories: vegetative controls, structural controls, and management measures. Each of these categories have temporary and permanent control measures to be considered. Vegetative and structural practices should be selected and designed in accordance with Chapter 3. Management

measures are construction management techniques which, if properly utilized, can minimize the need for physical controls and possibly reduce costs.

1. Vegetative Controls - Keep in mind that the first line of defense is to prevent erosion. This is accomplished by protecting the soil surface from raindrop impact and overland flow of runoff. The best way to protect the soil surface is to preserve the existing ground cover. Where land disturbance is necessary, temporary seeding or mulching should be used on areas which will be exposed for long periods of time. (See section 40 of "Minimum Standards".)

   Erosion and sediment control plans must contain provisions for permanent stabilization of denuded areas. Selection of permanent vegetation should include the following considerations:

   a. applicability to site conditions
   b. establishment requirements
   c. maintenance requirements
   d. aesthetics.

2. Structural Controls - Structural control practices are generally more costly than vegetative controls. However, they are usually necessary since not all disturbed areas can be protected with vegetation. Structural controls are often used as a second or third line of defense to capture sediment before it leaves the site.

   It is very important that structural practices be selected, designed and constructed according to the standards and specifications in Chapter 3 of this handbook. Improper use or inadequate installation can result in failure of the control and subsequent release of any trapped sediment.

3. Management Measures - Good construction management is as important as structural and vegetative practices for erosion and sediment control, and there is generally little or no cost involved. Following are some management considerations which can be employed:

   a. Include erosion and sediment control as an agenda item for the pre-construction meeting.

   b. Sequence construction so that no area remains exposed for unnecessarily long periods of time.
      - Work in a logical sequence, especially for drainage items.
      - Anticipate the site conditions that will exist as the construction progresses toward the final product.
      - Have the materials on-hand to complete the work without delay.
      - Apply temporary stabilization immediately after grading.

c. On large projects, stage the construction if possible, so that one area can be stabilized before another is disturbed.

d. Consider the time of year:
- Be prepared for sudden thunderstorms.
- Install E&S controls immediately.
- Use straw mulch, especially during poor germination periods.

e. Physically mark off limits of land disturbance on the site with tape, signs or other methods, so that workers can see areas to be protected.

f. Develop and carry out a regular maintenance schedule for erosion and sediment control practices.

g. Designate one individual (preferably the job superintendent) responsible for implementing the erosion and sediment control plan. Make sure that all workers understand the major provisions of the erosion and sediment control plan. Establish reporting procedures for problems identified by workers.

D. Plan for stormwater management. Where increased runoff will cause the carrying capacity of a receiving channel to be exceeded, the site planner must select appropriate stormwater management measures. "Minimum Standard 19" describes the conditions which must be satisfied. (See Chapter 4 for more details.)

STEP 5 - PREPARE THE PLAN

All of the necessary planning work has been done in steps 1-4. The final step consists of consolidating the pertinent information and developing it into a specific erosion and sediment control plan for the project.

The plan consists of two parts: a narrative and site plan. The narrative verbally explains the problems and their solutions with all necessary documentation. The site plan is a map(s) or drawing(s) that depicts information contained in the narrative. Table 6-1 lists some recommended notes that could be placed on the site plan.

The checklist (on the next two pages) should be submitted with the plan. This checklist can be used by a site planner, as well as the plan reviewer, as a quick reference to determine if all the major items are included in the erosion and sediment control plan.

CHECKLIST

FOR EROSION AND SEDIMENT CONTROL PLANS

_____ Minimum Standards - All applicable Minimum Standards must be addressed.

NARRATIVE

_____ Project description - Briefly describes the nature and purpose of the land-disturbing activity, and the area (acres) to be disturbed.

_____ Existing site conditions - A description of the existing topography, vegetation and drainage.

_____ Adjacent areas - A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.

_____ Off-site areas - Describe any off-site land-disturbing activities that will occur (including borrow sites, waste or surplus areas, etc.). Will any other areas be disturbed?

_____ Soils - A brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure.

_____ Critical areas - A description of areas on the site which have potentially serious erosion problems (e.g., steep slopes, channels, wet weather/ underground springs, etc.).

_____ Erosion and sediment control measures - A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should meet the specifications in Chapter 3.)

_____ Permanent stabilization - A brief description, including specifications, of how the site will be stabilized after construction is completed.

_____ Stormwater runoff considerations - Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.

_____ Calculations - Detailed calculations for the design of temporary sediment basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

Checklist (continued)

SITE PLAN

_____ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks which might assist in locating the site.

_____ Indicate north - The direction of north in relation to the site.

_____ Limits of clearing and grading - Areas which are to be cleared and graded.

_____ Existing contours - The existing contours of the site.

_____ Final contours - Changes to the existing contours, including final drainage patterns.

_____ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.

_____ Soils - The boundaries of different soil types.

_____ Existing drainage patterns - The dividing lines and the direction of flow for the different drainage areas. Include the size (acreage) of each drainage area.

_____ Critical erosion areas - Areas with potentially serious erosion problems. (See Chapter 6 for criteria.)

_____ Site Development - Show all improvements such as buildings, parking lots, access roads, utility construction, etc.

_____ Location of practices - The locations of erosion and sediment controls and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of this handbook.

_____ Off-site areas - Identify any off-site land-disturbing activities (e.g., borrow sites, waste areas, etc.). Show location of erosion controls. (Is there sufficient information to assure adequate protection and stabilization?)

_____ Detail drawings - Any structural practices used that are not referenced to the E&S handbook or local handbooks should be explained and illustrated with detail drawings.

_____ Maintenance - A schedule of regular inspections and repair of erosion and sediment control structures should be set forth.

TABLE 6-1

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations 4VAC50-30 Erosion and Sediment Control Regulations.

ES-2: The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.

ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

ES-5: Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.

ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.

ES-7: All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

ES-8: During dewatering operations, water will be pumped into an approved filtering device.

ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

PART III

SAMPLE PLAN DEVELOPMENT

In this section, all of the previous information is put into use to develop an erosion and sediment control plan for a hypothetical housing project* located in the Williamsburg area. The erosion and sediment control plan for this project was developed according to the step-by-step procedure outlined in Part II. It has been updated to meet the current requirements and minimum standards.

For educational purposes, each step is discussed separately with corresponding maps to illustrate what was done. The actual plan consists of only the four maps, the detail drawings, and the narrative. Actually, maps 1-3 could have been consolidated into one map incorporating existing site conditions, analysis, and the site plan. The site planner should choose the best method of presenting the information. However, local plan approving authorities may require additional drawings or information concerning projects in their jurisdiction.

* Note: The sample plan contained in this section is for educational purposes only. Accordingly, only a sample of the necessary information is included here. If this were an actual plan, additional information would be required.

STEP 1 - DATA COLLECTION

(See Map #1, Plate 6-1.)

Topographic Information

Topographic information was obtained by an aerial survey and is shown on the map at a scale of 1":40' with 5-foot contours.

Drainage Patterns

From on-site inspections and by studying the topographic map, the site was divided into three watersheds, each drained by a distinct swale as shown on map #2.

Soils

Soils information was obtained from the Soil Survey of James City County and the City of Williamsburg. Soil boundaries are shown on the map and each soil type is identified by a symbol.

Ground Cover

An on-site inspection was made to determine the existing vegetation. The site is located in an urban developed area and is heavily wooded. There are areas of hardwood tree growth on the north, east, and west sides of the site. Tree lines are shown on the topo map along with the type of cover on the rest of the site.

Adjacent Property
Center Street borders the property on the west. On the north, there is a two story commercial building with parking space. On the south, there is a storage building with parking space. To the east, the site borders on an unnamed intermittent stream that runs to Harper's Creek. The developer owns the property on both sides of the stream.

STEP 2 - DATA ANALYSIS
(See Map #2, Plate 6-2.)

Topography
The site has a relatively flat topography on the western side with gently sloping natural drainage swales to the east. The area between the limits of clearing and the intermittent stream has been designated a critical area and land disturbance in this area should be avoided if possible. A buffer strip of existing vegetation should be preserved.

Drainage Patterns
The site consist of three major drainage areas identified as I, II, and III on map #2. The approximate acreage of each of these areas is also indicated on the map. Each of these areas is drained by a well defined swale. The swales run from west to east and should continue to be used for site drainage if possible. Extreme care should be exercised to control erosion which will occur from any disturbance in or around these swales. For this reason, these swales have been designated as critical areas on map #2.

Soils
(See map #1.)

The predominant soils on the site are Craven fine sandy loam, Uchee loamy sand, and Emporia loamy sand.

The Craven fine sandy loam soils are deep and moderately drained. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam approximately 5 inches thick. The subsoil extends to a depth of 42 inches. The permeability rate of the soil is 0.12 - 0.15 inches per hour, and erodibility factor (K) is 0.32. The hydrological group is C, and the high water table is between 2 - 3 feet.

The Uchee loamy sand consists of well drained Uchee soils. This soil is found on the side slopes of the narrow ridge tops. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam approximately 5 inches thick. The subsoil extends to a depth of 42 inches. The permeability rate for this soil is 0.10 - 0.15 inches per hour, and the erodibility factor (K) is 0.24. The hydrological group is A, and the high water table is between 3.5 - 5.0 feet.

The Emporia soil consists of areas of deep well drained soils. This soil is on side slopes along the drainage areas. Typically, the surface layer of this soil is dark grayish brown fine

sandy loam about 3 inches thick. The subsurface soil layer is pale brown loam approximately 3 inches thick, and the subsoil extends to a depth of 45 inches. The permeability rate for this soil is 2.0 -6.0 inches per hour, and the erodibility factor (K) is 0.28. The hydrological group is C, and the high water table is between 3.0 - 4.5 feet.

Ground Cover

The site is now covered by medium dense tree growth. It is particularly important that trees and undergrowth on the east side of the property be preserved as a buffer area between the site and the stream. For this reason, this area has been identified as a critical area. Land disturbance in this area must be kept to a minimum.

Adjacent Areas

The site drains to an intermittent stream, then to Harper's Creek. There is a high potential during construction for degradation of non-tidal wetlands areas in Harper's Creek from sedimentation. It is important to provide appropriate measures to limit erosion and contain sediment on site during construction. In addition, runoff calculations should be made to determine if there will be an increase in runoff amounts after development, and whether this will result in downstream erosion or flooding. (See Minimum Standard 19, VESCR, Chapters 4 and 8.)

With regard to other adjacent properties, the developer owns the property on the north and south boundaries of the site, and should suffer no ill effects due to erosion or sedimentation. A natural buffer will be preserved along the edge of the proposed site. The west boundary of the site is Center Street which will be used as access for construction equipment and should be protected from sediment and mud being tracked onto the road surface.

STEP 3 - SITE PLAN DEVELOPMENT

(See Map #3, plate 6-3.)

The maps developed for data collection (Map #1) and analysis (Map #2) were used to help determine the most suitable areas for development and the most critical areas from an erosion control standpoint. Erosion potential was one of many factors which were considered in locating the buildings and parking areas.

The final site plan shown on map #3 was developed through a balanced evaluation of such factors as convenience, drainage, maintenance, costs, aesthetics, erosion potential during construction, and stormwater runoff after construction.

The following are some considerations which played a role in site planning:

Roads

The only access will be from Center Street since there is existing development on the north and south boundaries of the site and the stream is on the east boundary of the site.

Buildings
The buildings are located on the portion of the site which will require the least amount of cut and fill, and will not encroach into the critical buffer area to the east. This location also allows the natural drainage patterns to be used after development.

Parking Areas
Parking areas were clustered to provide easy access to both the buildings and Center Street.

Drainage
The larger drainage swales on the north and south were preserved. A storm sewer system has been designed to convey the runoff from impervious surfaces.

STEP 4 - PLAN FOR EROSION AND SEDIMENT CONTROL

(See map #4. Plate 6-4.)

As a first step, the limits of grading were outlined on the site plan (Map #4) so that the areas requiring erosion and sediment control practices could be determined. Since construction will take place in three separate drainage areas, the erosion and sediment control planning was considered by drainage area as follows:

Drainage Area I
Land disturbance in this area will consist of grading for three buildings, streets, sidewalks, and lawn. The primary objective in this area is to keep sediment from being transported into the drainage swale and off-site. This will be accomplished by a combination of structural, vegetative, and management practices.

Drainage Area II
Clearing and grading in this area will be limited to disturbance for streets and parking areas. The objective here is to keep the sediment from entering the drainage swale and being transported off-site. This will also be accomplished by structural, vegetative, and management practices.

Drainage Area III
The major portion of the construction for the buildings will take place in this area. Grading will be done for several buildings, sidewalks and lawns. In addition to grading, a storm sewer system will be installed to manage the stormwater runoff after development. Erosion and sediment control techniques will consist of vegetative, structural, and management practices to minimize and trap sediment on site.

Structural Measures - Area I

1. Sediment Basin
   Drainage area I is completely drained by a single swale and portions of drainage areas II, and III will be drained by a storm sewer into this swale. A sediment basin constructed across the swale below all construction will be the most effective method of removing sediment from the runoff before it leaves the site. The basin will be designed to accommodate the removal of accumulated sediment and to function as a permanent runoff control measure after the site has been stabilized.

2. Check Dam
   Rock check dams built across the drainage swale up-slope from the sediment basin will greatly reduce the velocity of runoff from both the construction site and the adjacent property. This measure will reduce ditchline erosion and help increase the effectiveness by allowing more sediment to settle before the runoff reaches the basin.

3. Diversion Dike
   An earthen diversion dike in conjunction with a temporary slope drain will be the most effective method of diverting runoff into the sediment basin.

4. Inlet Protection
   Storm sewer inlets will need to be protected to prevent sediment-laden runoff from clogging the sewer pipe during construction. Inlet protection should be used on each inlet until upland areas are stabilized.

5. Silt Fence
   Silt fence should be installed downslope of disturbed areas with minimal slopes to filter sheet flow runoff before it enters the drainage swale.

6. Pipe Outlets
   Rip rap outlet protection should be placed at the discharge end of all storm sewer pipes and from the sediment basins to prevent erosion and scouring at the end of the pipes and to slow the velocity of the stormwater discharge to prevent downstream erosion.

7. Tree Protection
   Tree protection fencing should be installed around all areas where existing trees and vegetation are to be preserved to prevent damage and soil compaction from construction equipment and vehicles.

8. Construction Road Stabilization
   All roads should be stabilized with crushed stone or aggregate base material to prevent mud from being tracked onto Center Street.

Structural Measures - Area II

1. Sediment Basin
   Drainage Area II is completely drained by a single swale. As in Drainage Area I, a sediment basin incorporating a check dam, sediment trap, and diversion dikes, will be the most effective method of removing sediment from runoff before it leaves the site. The basin will be designed to accommodate the removal of accumulated sediment and to function as a permanent runoff control measure after the site has been stabilized.

2. Construction Entrance
   A construction entrance with a wash rack will be needed to clean the tires of vehicles and equipment during wet conditions. There is a high potential for tracking mud and sediment onto Center Street.

3. Construction Road Stabilization
   All roads and parking areas should be stabilized with crushed stone or aggregate base material to prevent mud from being tracked onto Center Street.

4. Storm Sewer Inlets
   All storm sewer inlets should be protected to prevent sediment from clogging the storm sewer system pipe.

5. Silt Fence
   Silt fence should be installed downslope of disturbed areas to filter sediment-laden runoff before it enters the drainage swale.

6. Tree Protection
   Tree protection should be installed around areas where trees and other existing vegetation is to be preserved to prevent damage and soil compaction from construction equipment and vehicles.

Structural Measures - Area III

1. Sediment Trap
   Drainage Area III is drained by a small less defined swale than Areas I and II. This is also the smallest drainage area of the site. A sediment trap incorporating a diversion dike would be the most effective method of filtering sediment-laden runoff before it leaves the site and enters the drainage swale.

2. Storm Drain Inlets
   As in Areas I and II, it is important to provide storm sewer inlet protection around each of the inlets to prevent the system from being clogged with sediment.

Vegetative Measures - Areas I, II and III

1. Topsoil Stockpiling
   Topsoil should be stripped from graded areas and stockpiled for use in final grading and permanent stabilization. The stockpiles will have to be kept off-site to stay clear of all construction activity. The stockpile must be stabilized with temporary vegetation to prevent soil loss and sediment transport from the stockpile itself until needed. Prior to land-disturbing activities, the contractor shall submit a supplementary E&S plan to the owner covering the off-site stockpile area which would have to be approved by the plan approving authority.

2. Temporary Seeding
   Certain areas of the site will be rough graded as a first stage of construction. Finish grading will occur near project completion. These areas shall be seeded temporarily with fast germinating temporary grasses to reduce erosion potential. Diversion dikes and the sediment basin embankment shall also receive temporary seeding.

3. Permanent Seeding
   Immediately following finish grading, permanent vegetation shall be applied in accordance with an overall landscape plan for the site.

4. Stabilization of Earthen Structures
   All earthen structures such as sediment basins, sediment traps, and diversion dikes should be seeded and mulched immediately after being constructed with fast germinating temporary vegetation to help prevent structural damage or failure. This will also help to ensure that the structure itself will not become part of an erosion problem.

Management Strategies - Areas I, II, and III

1. Construction traffic should be limited to access roads and areas to be graded. All traffic should be prohibited from crossing drainage swales and streams except where absolutely necessary.

2. The sediment basin, diversion dikes, and sediment traps will be installed as a first step in grading.

3. All major grading should be completed within 30 days of the beginning of the project. Temporary seeding shall be applied immediately after grading is completed on the respective areas.

4. Responsibility for plan implementation should be given to the construction superintendent, and he/she should make all construction workers aware of the provisions of the plan.

5. All erosion and sediment control measures shall be checked continuously and especially after each significant storm to locate damages and conduct maintenance operations.

6. After achieving adequate stabilization, temporary E&S controls will be removed and the sediment basins will be cleaned out and converted to permanent stormwater management basins.

STEP 5 - PREPARE THE PLAN

In steps 1-4, all of the information necessary for preparing an erosion and sediment control plan was developed. In this final step, the actual plan is to be prepared in a logical format containing all the pertinent information. The checklist at the end of Part II was used as a basis for developing the following erosion and sediment control plan.

NARRATIVE

PROJECT DESCRIPTION

The purpose of this project is the construction of a new housing complex. The site is located south of Williamsburg, Virginia, on Center Street. The site will consist of construction of eight buildings, parking areas, and lawn. A total of 9.5 acres will be disturbed during construction.

EXISTING SITE CONDITIONS

The proposed site is relatively flat and drains towards the eastern boundary. Most of the site is covered with dense tree growth. The site is divided into three distinct drainage areas as identified on map #2. Each of these areas is traversed by a distinct swale which drains to the east towards Harper's Creek. The slopes along the swales average between 7 - 10% with some small areas that are 50%.

ADJACENT PROPERTY

Center Street borders the property on the west. On the north, there is a two story commercial building with parking space. On the south, there is a storage building with parking space. To the east, the site borders on an unnamed intermittent stream that runs to Harper's Creek. The developer owns the property on both sides of the stream.

Across from Center Street, there is an existing residential neighborhood of single-family dwellings.

Off-site Areas

Topsoil must be stripped from graded areas and stockpiled for use in final grading and permanent stabilization. The stockpiles will have to be kept off site to stay clear of all construction activity. The stockpile will be stabilized with temporary vegetation to prevent soil loss and sediment transport from the stockpile itself until needed. Prior to land-disturbing activities, the contractor shall submit a supplementary E&S plan to the owner covering the off-site stockpile area which would have to be approved by the plan approving authority before any off-site activity commences.

Soils

(See map #1.)

The predominant soils on the site are Craven fine sandy loam, Uchee loamy sand, and Emporia loamy sand.

The Craven fine sandy loam soils are deep and moderately drained. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam approximately 5 inches thick. The subsoil extends to a depth of 42 inches. The permeability rate of the soil is 0.12 - 0.15 inches per hour, and erodibility factor (K) is 0.32. The hydrological group is C, and the high water table is between 2 - 3 feet.

The Uchee loamy sand consists of well drained Uchee soils. This soil is found on the side slopes of the narrow ridge tops. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam approximately 5 inches thick. The subsoil extends to a depth of 42 inches. The permeability rate for this soil is 0.10 - 0.15 inches per hour, and the erodibility factor (K) is 0.24. The hydrological group is A, and the high water table is between 3.5 - 5.0 feet.

The Emporia soil consists of areas of deep well drained soils. This soil is on side slopes along the drainage areas. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 3 inches thick. The subsurface soil layer is pale brown loam approximately 3 inches thick, and the subsoil extends to a depth of 45 inches. The permeability rate for this soil is 2.0 - 6.0 inches per hour, and the erodibility factor (K) is 0.28. The hydrological group is C, and the high water table is between 3.0 - 4.5 feet.

CRITICAL EROSION AREAS

Critical areas have been identified on map #2. The area between the site and the stream has been designated as critical due to drainage into Harper's Creek which lies east of the site. This creek has areas of non-tidal wetland vegetation which would experience serious degradation if sediment were to leave the site. Therefore, care will be taken to minimize land disturbance in this area, and sediment must be trapped on the site.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the handbook. The minimum standards of the VESCR shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

1. Temporary Diversion Dike - 3.09 and Sediment Trap - 3.13
   A system of temporary diversion dikes, to direct flow into sediment traps, will be installed below major graded areas

as indicated on map #4. Specific details of the sediment traps are shown on the detail sheet.

2. Temporary Sediment Basins - 3.14
Two permanent sediment basins are to be constructed across the swales in drainage areas I and II as indicated on map #4. Specific dimensions of the embankments and spillways are shown on the detail sheet. Calculations for sediment basins are attached.

3. Outlet Protection - 3.18
Riprap is to be placed at the outlet of all pipes as indicated on map #4 per detail sheet.

4. Silt Fence Barrier - 3.05
Silt fence sediment barriers will be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow as indicated on map #4.

5. Tree Protection - 3.38
A fence barrier is to be placed around the trees and vegetated areas which will not be disturbed to protect the trees and other vegetation from construction equipment and soil compaction.

6. Temporary Construction Entrance - 3.02
A temporary construction entrance with a wash rack shall be installed where the access area intersects with South Henry street. During muddy conditions, drivers of construction vehicles will be required to wash their wheels before entering the highway.

7. Storm Drain Inlet Protection - 3.07
All storm sewer inlets shall be protected during construction. Sediment-laden water shall be filtered before entering the storm sewer inlets.

8. Temporary Diversion Dikes - 3.09 and Sediment Traps - 3.13
A system of diversion dikes to direct flow into sediment traps will be installed below major graded areas as indicated on map #4. Specific details of the sediment traps are shown on the detail sheet.

9. Check Dam - 3.20
Several rock check dams will be installed upslope of the sediment basins to reduce the velocity of concentrated flows which will help to increase the effectiveness of the sediment basins.

10. Temporary Slope Drain - 3.15
Temporary slope drains will be installed to protect the fill slopes from rill and gully erosion. The locations of this practice are indicated on map #4.

VEGETATIVE PRACTICES

1. Topsoiling (Stockpile) - 3.30
   Topsoil will be stripped from areas to be graded and stockpiled for later use. Stockpile locations shall be located off-site and are to be stabilized with temporary vegetation. Prior to land-disturbing activities, the contractor shall submit a supplementary E&S plan to the owner covering the off-site stockpile area which would have to be approved by the plan approving authority before any off-site activity commences.

2. Temporary Seeding - 3.31
   All denuded areas which will be left dormant for extended periods of time shall be seeded with fast germinating temporary vegetation immediately following grading. Selection of the seed mixture will depend on the time of year it is applied.

3. Erosion Control Blankets - 3.36 or Mulch - 3.35
   Erosion control blankets will be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas and will be applied as a second step in the seeding operation.

MANAGEMENT STRATEGIES

1. Construction will be sequenced so that grading operations can begin and end as quickly as possible.

2. Sediment trapping measures will be installed as a first step in grading and will be seeded and mulched immediately following installation.

3. Temporary seeding or other stabilization will follow immediately after grading.

4. Areas which are not to be disturbed will be clearly marked by flags, signs, etc.

5. The job superintendent shall be responsible for the installation and maintenance of all erosion and sediment control practices.

6. After achieving adequate stabilization, the temporary E&S controls will be cleaned up and removed, and the sediment basins will be cleaned out and converted to permanent stormwater management basins.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be done with Kentucky 31 Tall Fescue according to Std. & Spec. 3.32, PERMANENT SEEDING, of the handbook. Erosion control blankets will be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

STORMWATER MANAGEMENT

Calculation of runoff before and after development indicates that there will be a net increase in peak runoff as a result of project development. Consequently, stormwater management basins have been designed to detain and release the runoff at the 2-year pre-developed rate. (See attached runoff calculations using TR-55.)

MAINTENANCE

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

1. The sediment basin will be cleaned out when the level of sediment buildup reaches the cleanout point indicated on the riser pipe.

2. The sediment traps will be checked regularly for sediment cleanout.

3. The gravel outlets will be checked regularly for sediment buildup which will prevent drainage. If the gravel is clogged by sediment, it shall be removed and cleaned or replaced.

4. The silt fence barrier will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half way to the top of the barrier.

5. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and re-seeded as needed.

Worksheet 2: Runoff curve number and runoff

Project SAMPLE E&S PLAN By _____ Date _____

Location _____ Checked _____ Date _____

Circle one: (Present) Developed _____

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area ☐acres ☐mi² ☐%	Product of CN x area
CRAVEN EMPORIA 85% C	WOODED - GOOD	70			8.27	578.9
LICHEE A 15%	WOODED - GOOD	30			1.46	43.80
	Totals =				9.73	622.7

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{622.7}{9.73} = 63.99$; Use CN = 64

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	2	25	
Rainfall, P (24-hour)	in	3.36	6.5	
Runoff, Q (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)	in	0.65	2.62	

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project SAMPLE E&S PLAN By ____ Date ____

Location ____ Checked ____ Date ____

Circle one: (Present) Developed

Circle one: (T_c) T_t through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)		Segment ID	AB		
1. Surface description (table 3-1)			DENSE WOODS		
2. Manning's roughness coeff., n (table 3-1)			0.80		
3. Flow length, L (total L ≤ 300 ft)	ft		185		
4. Two-yr 24-hr rainfall, P_2	in		3.36		
5. Land slope, s	ft/ft		.16		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr		0.43	+	= 0.43
Shallow concentrated flow		Segment ID	BC		
7. Surface description (paved or unpaved)			UNPAVED		
8. Flow length, L	ft		215		
9. Watercourse slope, s	ft/ft		.14		
10. Average velocity, V (figure 3-1)	ft/s		6.0		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		.01	+	= .01
Channel flow		Segment ID	CE		
12. Cross sectional flow area, a	ft^2		1.5		
13. Wetted perimeter, p_w	ft		3.6		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft		0.42		
15. Channel slope, s	ft/ft		.0324		
16. Manning's roughness coeff., n			.033		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s		4.55		
18. Flow length, L	ft		340		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		.02	+	= .02
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr				0.46

Worksheet 4: Graphical Peak Discharge method

Project SAMPLE EE'S PLAN By ____ Date ____

Location ____ Checked ____ Date ____

Circle one: (Present) Developed ____

1. Data:

   Drainage area ..... A_m = .015 mi^2 (acres/640)

   Runoff curve number .... CN = 64 (From worksheet 2)

   Time of concentration .. T_c = .46 hr (From worksheet 3)

   Rainfall distribution type = II (I, IA, II, III)

   Pond and swamp areas spread throughout watershed ..... = — percent of A_m (____ acres or mi^2 covered)

			Storm #1	Storm #2	Storm #3
2.	Frequency	yr	2		
3.	Rainfall, P (24-hour)	in	3.36		
4.	Initial abstraction, I_a ..... (Use CN with table 4-1.)	in	1.125		
5.	Compute I_a/P		0.334		
6.	Unit peak discharge, q_u ..... (Use T_c and I_a/P with exhibit 4-____)	csm/in	440		
7.	Runoff, Q ..... (From worksheet 2).	in	0.65		
8.	Pond and swamp adjustment factor, F_p .... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area.)		—		
9.	Peak discharge, q_p ..... (Where $q_p = q_u A_m Q F_p$)	cfs	4.3		

Worksheet 2: Runoff curve number and runoff

Project SAMPLE E&S PLAN By ____ Date ____

Location ____ Checked ____ Date ____

Circle one: Present (Developed) ____

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area ☐acres ☐mi² ☐%	Product of CN x area
C	OPEN SPACE	74			2.83	209.42
C	WOODS	70			3.30	231.0
	IMPERVIOUS	98			4.7	460.60
1/ Use only one CN source per line.		Totals =			10.83	901.02

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{901.02}{10.83} = 83.19$; Use CN = 83

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	2	25	100
Rainfall, P (24-hour) ..... in	3.36	6.5	8.2
Runoff, Q ..... in (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)	1.74	4.55	6.17

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project SAMPLE E&S PLAN By ____ Date ____

Location ____ Checked ____ Date ____

Circle one: Present (Developed)

Circle one: (T_c) T_t through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)		Segment ID	AB			
1. Surface description (table 3-1)			DENSE GRASSES			
2. Manning's roughness coeff., n (table 3-1) ..			0.24			
3. Flow length, L (total L ≤ 300 ft)	ft		100			
4. Two-yr 24-hr rainfall, P_2	in		3.36			
5. Land slope, s	ft/ft		.01			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr		.30	+		= .30
Shallow concentrated flow		Segment ID	BC			
7. Surface description (paved or unpaved)			PAVED			
8. Flow length, L	ft		200			
9. Watercourse slope, s	ft/ft		.02			
10. Average velocity, V (figure 3-1)	ft/s		2.95			
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		.02	+		= .02
Channel flow		Segment ID	CD	DE		
12. Cross sectional flow area, a	ft^2			1.5		
13. Wetted perimeter, p_w	ft			3.6		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			0.42		
15. Channel slope, s	ft/ft			.0324		
16. Manning's roughness coeff., n			.013	.033		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s		AVG. 5.1	4.55		
18. Flow length, L	ft		640	200		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		0.03	+ 0.01	=	0.04
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr					0.36

Worksheet 4: Graphical Peak Discharge method

Project SAMPLE EG'S PLAN By ____ Date ____

Location ____ Checked ____ Date ____

Circle one: Present (Developed) ____

1. Data:

   Drainage area ..... A_m = .0169 mi^2 (acres/640)

   Runoff curve number .... CN = 83 (From worksheet 2)

   Time of concentration .. T_c = .36 hr (From worksheet 3)

   Rainfall distribution type = II (I, IA, II, III)

   Pond and swamp areas spread throughout watershed ..... = — percent of A_m (____ acres or mi^2 covered)

			Storm #1	Storm #2	Storm #3
2.	Frequency	yr	2	25	100
3.	Rainfall, P (24-hour)	in	3.36	6.5	8.2
	Initial abstraction, I_a ..... (Use CN with table 4-1.)	in	.410	.410	.410
5.	Compute I_a/P		0.122	0.063	0.05
6.	Unit peak discharge, q_u ..... (Use T_c and I_a/P with exhibit 4-____)	csm/in	600	625	625
7.	Runoff, Q ..... (From worksheet 2).	in	1.74	4.55	6.17
8.	Pond and swamp adjustment factor, F_p .... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area.)		—	—	—
9.	Peak discharge, q_p ..... (Where $q_p = q_u A_m Q F_p$)	cfs	17.6	48.1	65.2

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project SAMPLE E&S PLAN

Basin # 1 Location AREA I

Total area draining to basin: 10.83 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 10.83 acres = 725.6 cu. yds.

2. Available basin volume = 730* cu. yds. at elevation 59.8. (From storage - elevation curve) * BELOW DEWATERING ORIFACE

3. Excavate 0 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 10.83 acres = 357.4 cu. yds.

5. Elevation corresponding to cleanout level = 37.9.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.9 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 10.83 acres = 725.6 cu. yds.

8. Total available basin volume at crest of riser* = 1343 cu. yds. at elevation 42. (From Storage - Elevation Curve).

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 6 in.

10. Diameter of flexible tubing = 8 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 42

Top of Dam = 45

Design High Water = 43

Upstream Toe of Dam = 34

Basin Shape

12. Length of Flow / Effective Width $\frac{L}{We}$ = $\frac{200}{70}$

If > 2, baffles are not required 2.85 > 2

If < 2, baffles are required _____

Runoff

13. Q_2 = 17.6 cfs (From Chapter 5) - TR-55

14. Q_{25} = 48.1 cfs (From Chapter 5) - TR-55

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = _____ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25}$ = 48.1 cfs. (riser and barrel)

16. With emergency spillway: - Not Used

Assumed available head (h) = _____ ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = 1 ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 60 in. Actual head (h) = 1 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 50 ft.

Head (H) on barrel through embankment = 9 ft.

(From Plate 3.14-7).

19. Barrel diameter = 30 in.

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 90 inches.

Height = 29 inches.

(From Table 3.14-D).

Emergency Spillway Design - Not Used

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____cfs.

22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 8 ft.

Slope of upstream face of embankment (Z) = 2 :1.

Slope of principal spillway barrel (S_b) = 1 %

Length of barrel in saturated zone (L_s) = 50 ft.

24. Number of collars required = 2 dimensions = 5

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 45

Design High Water = 43

Emergency Spillway Crest = —

Principal Spillway Crest = 42

Dewatering Orifice Invert = 39.8

Cleanout Elevation = 37.9

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 34

NOTES: 1. The Basin for this example was designed as a temporary sediment basin only. Stormwater Management is required due to the increase in runoff, and the inability to modify the natural channel. This basin would therefore be designed by a Certified Professional Engineer in compliance with the state Stormwater Regulations, and would be modified to act as a temporary sediment basin.

2. The Basin in Area II is not calculated in this example.

APPENDIX 6A

SOILS INFORMATION

In many instances, a major soil-related problem is discovered after a site has been selected and construction is either well under way or in some cases completed. These problems often necessitate delays in construction and ultimately increase the total cost of the project. By consulting a soil survey during early in the planning process, designs can be prepared to address soil characteristics or alternate sites can be selected. Knowing the types of soil, the topography, and surface drainage patterns will prove very beneficial in planning and designing almost any type of land development project and is essential for erosion control planning.

Reference to soil maps and accompanying supportive data contained in soil surveys enables planners to determine the soil conditions in proposed construction areas. Soil surveys have proven to be of great savings in time and money, and their use has resulted in improved designs, more effective planning, and more accurate preliminary estimates of construction costs. In many cases, the survey will provide adequate information, but in other situations, it may only provide warnings or indications of soil-related problems likely to be encountered. In such cases, a more in-depth, on-site investigation may be needed.

Soil surveys are helpful in providing interpretations of the effect of soil properties on various land uses. This information can aid in determining soil suitability as a source of topsoil, fill for highway subgrade, or sand and gravel. The interpretations also show the degree of limitation of soils used for such purposes as: building foundations, highways, streets, roads, parking lots, pipelines, underground utility lines, and septic tank absorption fields.

Soil surveys describe soil properties that become important in erosion and sediment control planning for construction sites. These properties include the following:

Erodibility - The major soil consideration from an erosion and sediment control standpoint is its erodibility. An erodibility factor (K) indicates the susceptibility of different soils to the forces of erosion. A soil survey report includes the K factor for each soil found in the survey area. These K factors are used in the Universal Soil Loss Equation to determine soil loss from an area over a period of time due to splash, sheet, and rill erosion. K factors in Virginia range from about .10 (lowest erodibility) to about .50 (highest erodibility). K factors can be grouped into three general ranges:

0.23 and lower	-	low erodibility
0.23 to 0.36	-	moderate erodibility
0.36 and up	-	high erodibility

Cohesiveness of soil particles varies with different layers of the same soil, causing varying degrees of erodibility at different depths. Therefore, depth of excavation must be considered in determining soil erodibility on a construction site.

Table 6-1 lists the majority of currently known soil types in Virginia along with their corresponding erodibility factors at various depths.

Slope - Slope ranges are recorded in soil surveys. Cut and fill slopes can be identified by studying soil maps. The erosion potential increases as the slope becomes longer and steeper.

Soil Permeability - Permeability is one of the major factors influencing erosion. Soil permeability is a charactistic of the soil that enables it to transmit water or air. Deep, permeable soils are less erodible simply because more of the rainfall soaks in, reducing surface runoff. Permeability also varies with different layers and must be considered when excavating.

Hydrologic Soil Group - The hydrologic soil group is a direct reflection of the infiltration rate of the soil. The hydrologic soil groups, based on the infiltration and transmission rates of the soil, are:

A. (Low runoff potential) Soils having high infiltration rates even when thoroughly wetted.

B. Soils having moderate infiltration rates when thoroughly wetted.

C. Soils having slow infiltration rates when thoroughly wetted.

D. (High runoff potential) Soils having very slow infiltration rates when thoroughly wetted.

Texture - Soil texture refers specifically to the proportions of clay, silt, and sand below 2 millimeters in diameter contained in a mass of soil. Plate 6-5 shows the percentages of clay, silt, and sand in the basic soil textural classes.

Soil texture is a primary factor affecting soil erodibility and is reflected in the erodibility factor (K). Erodibility tends to increase with greater silt and very fine sand content. Soils with high clay content are generally more resistant to detachment, but once detached, the clay particles are easily transported.

Shrink-Swell Potential - Certain soils have clays that shrink when dry and swell when wet. In this situation, special foundations are required to allow for this variation. By consulting the soil survey, soils with these problems can be identified and the necessary precautions can be taken.

Flood Hazard - Although soil survey information does not take the place of hydrologic studies, it does provide estimates of where floods are most likely to occur. The hazards of flooding and ponding are rated in soil surveys, and flood-prone areas are shown on soil maps.

Soil Reaction (pH) - Soil survey information includes the pH of the individual layers of each soil. This factor becomes very helpful when planning the establishment of vegetation on a construction site.

Wetness - Data indicating natural soil drainage, depth to seasonal water table, and suitability for winter grading for various kinds of soils are available in soil surveys. With this information such things as seasonal limitations on the use of heavy earth-moving machinery and the hazard estimation of flooding or damage to underground structures due to soil wetness can be determined.

Depth to Bedrock - Soil surveys indicate the type of bedrock and the areas where bedrock will be encountered at a depth of less than 5 to 6 feet. This factor becomes very helpful in determining time and cost of excavation.

APPENDIX 6B

SOIL SURVEY INFORMATION

Soil surveys in Virginia are conducted as a joint effort by the USDA-Soil Conservation Service, VPI & SU Agronomy Department, and the Virginia Division of Soil and Water Conservation. Additional soils information may be obtained by contacting the local representative of any of these agencies in your area.

The following report details the status of soil surveys in Virginia.

VIRGINIA COOPERATIVE SOIL SURVEY
PROGRESS REPORT through March 31, 1992

Published Modern Soil Surveys (year of publication shown):

Total 55

1985 Albemarle
1979 Augusta
1989 Bedford
1977 Campbell and City of Lynchburg
1967 Carroll
1974 Charlotte
1959 Chesapeake (Norfolk County)
1979 Chesterfield
1982 Clarke
1952 Culpeper
1989 Essex
1963 Fairfax
1956 Fauquier
1958 Fluvanna
1987 Frederick
1985 Giles
1980 Gloucester
1980 Goochland
1986 Greene
1989 Greensville
1980 Hanover
1975 Henrico
1986 Isle of Wight
1985 James City
1974 King George
1963 Lancaster
1960 Loudoun
1976 Louisa
1981 Lunenburg
1975 Madison
1962 Mathews
1956 Mecklenburg
1985 Middlesex
1985 Montgomery
1990 New Kent
1990 Northampton
1963 Northumberland
1960 Nottoway
1961 Orange
1988 Powhatan
1958 Prince Edward
1985 Prince George
1990 Prince William
1985 Pulaski
1961 Rappahannock
1982 Richmond
1982 Rockingham
1991 Shenandoah
1985 Spotsylvania
1974 Stafford
1981 Suffolk
1985 Virginia Beach
1984 Warren
1981 Westmoreland
1985 York

Modern Soil Surveys Completed but not Published (year field work completed):

1988 Accomack
1990 Amelia
1990 Appomattox
1988 Botetourt
1988 Charles City
1988 Dinwiddie
1990 King and Queen
1989 King William
1989 Nelson
1989 Roanoke
1989 Rockbridge
1988 Pittsylvania
1991 Smyth
1988 Wythe

Progressive Surveys Underway:

County	Size Acres	Acres Mapped	Approximate % Completed as of 3/31/92	Other Comments
Alleghany	290,300	125,629	43%	
Amherst	306,300	166,880	54%	
Bath	344,100	127,486	37%	
Brunswick	364,400	98,069	30%	
Buckingham	373,600	56,064	15%	
Caroline	345,300	143,824	42%	
Cumberland	192,400	39,824	21%	
Floyd	244,000	103,926	43%	
Franklin	455,300	153,585	34%	
Grayson	252,900	32,700	13%	
Halifax	530,800	243,755	46%	
Henry	252,700	218,517	86%	
Lee	260,600	-	%	Preliminary
Page	202,400	202,400	100%	
Patrick	311,100	177,704	57%	
Southampton	390,800	256,375	66%	
Surry	198,500	151,392	76%	
Sussex	315,600	92,298	29%	
Tazewell	325,100	153,328	47%	
Tidewater	243,400	54,720	22%	6 Cities
Washington	349,000	335,627	96%	
Jefferson Nat'l Forest:				
South -	385,095	202,647	53%	
North -	306,684	301,479	98%	
Total state:	**26,090,600**	**20,171,650**	**77%**	**5,918,950**

Note: Mapping in progressive survey areas was 235,910 acres from January 1, 1992 through March 31, 1992.

Requests: Total 2

Requests with Priorities: Total 2

Russell
Scott

Remaining Counties without Soil Surveys: Total 6

Bland
Buchanan
Craig
Dickenson
Highland
Wise

Prepared by: Department of Conservation and Recreation
Division of Soil and Water Conservation
203 Governor Street, Suite 206
Richmond, Virginia 23219-2094
Telephone (804)786-2064

APPENDIX 6C

LISTING OF SOIL TYPES IN VIRGINIA

The majority of soils currently found in Virginia along with their corresponding Hydrologic Soil Group designation are listed on the following pages.

The following key explains some of the abbreviations found the on attached soils list. For abbreviations not listed here, consult your local soil survey.

CL	-	clay loam	LS	-	loamy sand
FS	-	fine sand	SICL	-	silt clay loam
FSL	-	fine sandy loam	SIL	-	silt loam
L	-	loam	SL	-	sandy loam
LFS	-	loamy fine sand	VFSL	-	very fine sandy loam

WTDEPL and WTDEPH refer to range of depths to the surface of the groundwater.

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
ABELL	FSL	B	0.28	2.00	3.50
ABELL	L	B	0.32	2.00	3.50
ABELL	SIL	B	0.32	2.00	3.50
ABELL	SL	B	0.28	2.00	3.50
ABELL VARIANT	L	B	0.32	2.00	3.50
ACKWATER	SICL	D	0.37	1.50	3.00
ACKWATER	SIL	D	0.43	1.50	3.00
ACREDALE	SIL	D	0.37	0.00	1.00
ADEN	SIL	C	0.43	0.00	1.00
AIRMONT	FLV-L	C	0.10	1.50	3.00
ALAGA	FS	A	0.10	6.00	6.00
ALAGA	LS	A	0.10	4.00	6.00
ALAGA	LS	A	0.10	6.00	6.00
ALAGA	S	A	0.10	6.00	6.00
ALBANO	SIL	D	0.37	0.00	1.50
ALBEMARLE	FSL	B	0.20	6.00	6.00
ALBEMARLE	L	B	0.32	6.00	6.00
ALBEMARLE	STV-FSL	B	0.20	6.00	6.00
ALDERFLATS	SIL	D	0.43	0.00	1.00
ALDIE	SIL	D	0.37	1.50	2.50
ALDINO	SIL	C	0.43	1.50	2.50
ALLEGHENY	CB-FSL	B	0.20	6.00	6.00
ALLEGHENY	CB-L	B	0.20	6.00	6.00
ALLEGHENY	FSL	B	0.28	6.00	6.00
ALLEGHENY	L	B	0.32	6.00	6.00
ALLEGHENY	SIL	B	0.32	6.00	6.00
ALONZVILLE	CB-L	B	0.20	6.00	6.00
ALONZVILLE	CB-L	B	0.32	6.00	6.00
ALONZVILLE	FSL	B	0.20	6.00	6.00
ALONZVILLE	L	B	0.32	6.00	6.00
ALTAVISTA	FSL	C	0.24	1.50	2.50
ALTAVISTA	FSL	C	0.37	1.00	2.50
ALTAVISTA	L	C	0.24	1.50	2.50
ALTAVISTA	LS	C	0.17	1.50	2.50
ALTAVISTA	SIL	C	0.32	1.50	2.50
ALTAVISTA	SIL	C	0.37	1.00	2.50
ALTAVISTA	SL	C	0.24	1.50	2.50
ALTAVISTA VARIANT	L	C	0.24	1.50	2.50
ALTICREST	FSL	B	0.24	6.00	6.00
ALTICREST	RB-FSL	B	0.24	6.00	6.00
ALTICREST	SL	B	0.24	6.00	6.00
ANGIE	L	D	0.32	3.00	5.00
ANGIE VARIANT	L	D	0.32	3.00	5.00
APPLING	CL	B	0.24	6.00	6.00
APPLING	CL	B	0.28	6.00	6.00
APPLING	FSL	B	0.24	6.00	6.00
APPLING	GR-COSL	B	0.15	6.00	6.00
APPLING	GR-FSL	B	0.24	6.00	6.00
APPLING	GR-SL	B	0.15	6.00	6.00
APPLING	L	B	0.32	6.00	6.00
APPLING	SCL	B	0.28	6.00	6.00
APPLING	SL	B	0.24	6.00	6.00
APPLING	SL	B	0.28	6.00	6.00
APPLING	VFSL	B	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
APPLING FINE SANDY L	FSL	B	0.24	6.00	6.00
APPLING GRITTY	GR-SL	B	0.15	6.00	6.00
APPOMATTOX	FSL	B	0.20	4.00	4.00
APPOMATTOX	SL	B	0.20	4.00	4.00
AQUENTS	L	D	0.32	0.00	1.00
AQUULTS	FSL	D	0.28	0.00	1.00
ARAPAHOE	MK-L	B/D	0.15	0.00	1.00
ARCOLA	GR-SIL	C	0.24	6.00	6.00
ARCOLA	SIL	C	0.37	6.00	6.00
ARGENT	SIL	D	0.32	0.00	1.00
ASHBURN*	SIL	C	0.43	1.50	3.00
ASHE	L	B	0.24	6.00	6.00
ASHE	SL	B	0.24	6.00	6.00
ASHE	STV-L	B	0.15	6.00	6.00
ASHE	STV-SL	B	0.15	6.00	6.00
ASHLAR	FSL	B	0.24	6.00	6.00
ASHLAR	GR-SL	B	0.24	6.00	6.00
ASHLAR	LCOS	B	0.20	6.00	6.00
ASHLAR	SL	B	0.24	6.00	6.00
ASHLAR FINE SANDY LO	FSL	B	0.24	6.00	6.00
ASSATEAGUE	FS	A	0.10	6.00	6.00
ASSATEAGUE	S	A	0.10	6.00	6.00
ATKINS	FSL	D	0.28	0.00	1.00
ATKINS	L	D	0.28	0.00	1.00
ATKINS	SIL	D	0.32	0.00	1.00
ATLEE	L	C	0.37	1.50	2.50
ATLEE	SIL	C	0.37	1.50	2.50
ATLEE	VFSL	C	0.37	1.50	2.50
AUGUSTA	FSL	C	0.20	1.00	2.00
AUGUSTA	L	C	0.24	1.00	2.00
AUGUSTA	SIL	C	0.24	1.00	2.00
AUGUSTA	SIL	C	0.43	0.00	1.00
AUGUSTA	SL	C	0.20	1.00	2.00
AUGUSTA VARIANT	SIL	C	0.24	1.00	2.00
AURA	GR-SL	B	0.37	6.00	6.00
AUSTINVILLE	CL	B	4.20	6.00	6.00
AUSTINVILLE	SICL	B	4.20	6.00	6.00
AXIS	VFSL	D	0.24		
AYCOCK	SIL	B	0.37	4.00	6.00
BACKBAY	MPT	D			
BADIN	SIL	B	0.32	6.00	6.00
BAILE	L	D	0.43	0.00	0.50
BAILE	SIL	D	0.43	0.00	0.50
BAILE	ST-SIL	D	0.43	0.00	0.50
BAILEGAP	CB-FSL	B	0.17	6.00	6.00
BAILEGAP	FSL	B	0.24	6.00	6.00
BAILEGAP	FSL	B	0.28	3.00	3.00
BAILEGAP	SL	B	0.24	6.00	6.00
BAILEGAP	STV-FSL	B	0.28	6.00	6.00
BAILEGAP	STV-FSL	B	0.32	6.00	6.00
BAILEGAP	STV-L	B	0.28	6.00	6.00
BAILEGAP	STX-L	B	0.15	6.00	6.00
BAMA	L	B	0.24	6.00	6.00
BAMA	SL	B	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
BAYBORO	L	D	0.17	0.00	1.00
BAYBORO	MK-L	D	0.10	0.00	1.00
BEACHES	S	D	0.05	0.00	6.00
BECKHAM	CL	B	0.20	6.00	6.00
BELHAVEN	MUCK	D		0.00	1.00
BELTSVILLE	L	C	0.32	1.00	2.50
BELTSVILLE	L	C	0.43	1.50	2.50
BELTSVILLE	SIL	C	0.43	1.50	2.50
BELTSVILLE	SL	C	0.15	1.00	2.50
BELVOIR	L	C	0.37	1.00	2.00
BELVOIR	SL	C	0.37	1.00	2.00
BERKS	CN-L	C	0.17	6.00	6.00
BERKS	CN-SIL	C	0.17	6.00	6.00
BERKS	CNV-SIL	C	0.17	6.00	6.00
BERKS	SIL	C	0.24	6.00	6.00
BERKS	STV-L	C	0.17	6.00	6.00
BERKS	STV-SIL	C	0.17	6.00	6.00
BERKS VARIANT	CN-SIL	D	0.32	0.00	0.50
BERMUDIAN	SIL	B	0.37	3.00	6.00
BERTIE	FSL	B	0.20	1.50	2.50
BERTIE	VFSL	B	0.17	1.50	2.50
BERTIE VARIANT	FSL	B	0.20	1.50	2.50
BETHERA	SIL	D	0.28		
BIBB	FSL	D	0.20	0.50	1.50
BIBB	L	D	0.28	0.50	1.50
BIBB	LS	D	0.15	0.50	1.50
BIBB	SL	D	0.20	0.50	1.50
BILTMORE	FSL	A	0.15	3.50	6.00
BILTMORE	LS	A	0.10	3.50	6.00
BIRDSBORO	L	B	0.37	2.00	6.00
BIRDSBORO	SIL	B	0.37	2.00	6.00
BIRDSBORO*	L	C	0.37	6.00	6.00
BLADEN	L	D	0.37	0.00	1.00
BLADEN	SIL	D	0.37	0.00	1.00
BLAIRTON	SIL	C	0.43	0.50	3.00
BLAND	SICL	C	0.43	6.00	6.00
BLEAKHILL	FSL	C	0.28	1.50	3.00
BLUEMONT*	CB-SIL	B	0.24	6.00	6.00
BOHICKET	MK-SICL	D	0.28		
BOHICKET	MUCK	D	0.28		
BOHICKET	SICL	D	0.28		
BOJAC	FSL	B	0.24	4.00	6.00
BOJAC	FSL	C	0.28	3.00	4.50
BOJAC	GR-LS	B	0.15	4.00	6.00
BOJAC	GR-LS	B	0.24	4.00	6.00
BOJAC	LFS	B	0.17	4.00	6.00
BOJAC	LS	B	0.17	4.00	6.00
BOJAC	SL	B	0.24	4.00	6.00
BOLLING	FSL	C	0.28	1.50	2.50
BOLLING	L	C	0.28	1.50	2.50
BOLLING	SIL	C	0.28	1.50	2.50
BOLLING VARIANT	GR-SL	C	0.20	2.00	3.00
BOLTON	FSL	B	0.28	6.00	6.00
BOLTON	L	B	0.37	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
BOLTON	STV-FSL	B	0.28	6.00	6.00
BOLTON VARIANT	STV-FSL	B	0.28	6.00	6.00
BONNEAU	LS	A	0.15	3.50	5.00
BOOKWOOD	SIL	B	0.32	6.00	6.00
BOTETOURT	L	C	0.32	1.50	2.50
BOTETOURT	SIL	C	0.32	1.50	2.50
BOURNE	FSL	C	0.28	1.50	2.50
BOURNE	L	C	0.37	1.50	2.50
BOURNE	SL	C	0.28	1.50	2.50
BOURNE VARIANT	FSL	C	0.28	1.50	2.50
BOWMANSVILLE	SIL	B/D	0.32	0.00	1.50
BRADDOCK	CB-CL	B	0.24	6.00	6.00
BRADDOCK	CB-FSL	B	0.10	6.00	6.00
BRADDOCK	CB-FSL	B	0.24	6.00	6.00
BRADDOCK	CB-L	B	0.24	6.00	6.00
BRADDOCK	CL	B	0.32	6.00	6.00
BRADDOCK	FSL	B	0.32	6.00	6.00
BRADDOCK	GR-L	B	0.24	6.00	6.00
BRADDOCK	L	B	0.32	6.00	6.00
BRADDOCK	SL	B	0.32	6.00	6.00
BRADDOCK	ST-L	B	0.28	6.00	6.00
BRADDOCK	STV-FSL	B	0.24	6.00	6.00
BRADDOCK	STV-L	B	0.24	6.00	6.00
BRADLEY	FSL	C	0.32	6.00	6.00
BRANDYWINE	GRF-L	C	0.24	6.00	6.00
BRANDYWINE	L	A	0.24	6.00	6.00
BRANDYWINE	L	C	0.24	6.00	6.00
BRANDYWINE	SIL	C	0.24	6.00	6.00
BRANDYWINE	SL	A	0.24	6.00	6.00
BRANDYWINE	ST-L	C	0.24	6.00	6.00
BRANDYWINE GRITTY	GR-L	C	0.20	6.00	6.00
BRECKNOCK	L	B	0.32	6.00	6.00
BRECKNOCK	SIL	B	0.32	6.00	6.00
BREMO	L	C	0.28	6.00	6.00
BREMO	SIL	C	0.28	6.00	6.00
BRENTSVILLE	L	C	0.32	6.00	6.00
BRENTSVILLE	SL	C	0.28	6.00	6.00
BROADWAY	SIL	B	0.28	6.00	6.00
BROCKROAD	L	C	0.32	6.00	6.00
BROCKROAD	SIL	C	0.32	6.00	6.00
BRUSHY	CN-L	B	0.17	6.00	6.00
BRUSHY	CR-L	B	0.17	6.00	6.00
BRUSHY	GR-L	B	0.20	6.00	6.00
BRUSHY	GRV-SIL	B	0.17	6.00	6.00
BRUSHY	GRV-SIL	C	0.20	6.00	6.00
BRUSHY	GRX-L	B	0.17	6.00	6.00
BRUSHY	GRX-L	B	0.20	6.00	6.00
BRUSHY	GRX-SIL	B	0.20	6.00	6.00
BUCHANAN	CB-FSL	C	0.24	0.50	3.00
BUCHANAN	FSL	C	0.32	0.50	3.00
BUCHANAN	L	C	0.32	0.50	3.00
BUCHANAN	SIL	C	0.32	0.50	3.00
BUCHANAN	STV-FSL	C	0.20	0.50	3.00
BUCHANAN	STV-SL	C	0.20	0.50	3.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
BUCHANAN	STX-FSL	C	0.24	0.50	3.00
BUCKHALL	L	B	0.32	6.00	6.00
BUCKHALL	SL	B	0.28	6.00	6.00
BUCKS	L	B	0.32	6.00	6.00
BUCKS	SICL	B	0.32	6.00	6.00
BUCKS	SIL	B	0.32	6.00	6.00
BUCKS	SIL	B	0.37	6.00	6.00
BUCKS	SIL	C	0.37	6.00	6.00
BUCKTON	L	B	0.37	6.00	6.00
BUCKTON	SICL	B	0.37	6.00	6.00
BUCKTON	SIL	B	0.37	6.00	6.00
BUFFSTAT	GR-L	B	0.24	6.00	6.00
BUFFSTAT	SIL	C	0.37	6.00	6.00
BUGLEY	CN-SIL	C/D	0.20	6.00	6.00
BUNCOMBE	LFS	A	0.10	6.00	6.00
BUNCOMBE	LS	A	0.10	6.00	6.00
BURKETOWN	FSL	C	0.28	2.00	3.50
BURROWSVILLE	LS	C	0.32	1.50	3.00
BURROWSVILLE	SL	C	0.32	1.50	3.00
CALVERTON	L	C	0.43	1.00	2.00
CALVERTON	SIL	C	0.43	1.00	2.00
CALVIN	CB-L	C	0.20	6.00	6.00
CALVIN	CN-SIL	C	0.20	6.00	6.00
CALVIN	SIL	C	0.24	6.00	6.00
CALVIN	STV-L	C	0.15	6.00	6.00
CALVIN	STV-SIL	C	0.15	6.00	6.00
CAMOCCA	FS	A/D	0.10	0.00	1.00
CANEYVILLE	SIL	C	0.43	6.00	6.00
CARBO	SICL	C	0.37	6.00	6.00
CARBO	SIL	C	0.37	6.00	6.00
CARDIFF	SY-L	B	0.28	6.00	6.00
CAROLINE	CL	C	0.43	3.50	5.00
CAROLINE	CL	C	0.43	6.00	6.00
CAROLINE	FSL	C	0.43	3.50	5.00
CAROLINE	FSL	C	0.43	6.00	6.00
CAROLINE	L	C	0.43	6.00	6.00
CAROLINE	SIL	C	0.43	3.50	5.00
CAROLINE	SL	C	0.43	6.00	6.00
CAROLINE	VFSL	C	0.43	3.50	5.00
CARRVALE	SIL	D	0.32	1.00	2.00
CARTECAY	FSL	C	0.24	0.50	1.50
CARTECAY	SL	C	0.24	0.50	1.50
CATASKA	CN-SIL	D	0.20	6.00	6.00
CATASKA	STV-L	D	0.15	6.00	6.00
CATASKA	STV-SIL	D	0.15	6.00	6.00
CATASKA	SY-SIL	D	0.20	6.00	6.00
CATHARPIN	SIL	C	0.32	6.00	6.00
CATLETT	GR-SIL	C/D	0.20	6.00	6.00
CATLETT	SIL	C/D	0.32	6.00	6.00
CATOCTIN	CB-SIL	C	0.17	6.00	6.00
CATOCTIN	SIL	C	0.32	6.00	6.00
CATOCTIN	ST-SIL	C	0.17	6.00	6.00
CATOCTIN	STV-L	C	0.32	6.00	6.00
CATOCTIN	STV-SIL	C	0.32	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
CATOCTIN	STX-SIL	C	0.20	6.00	6.00
CATPOINT	FS	A	0.10	4.00	6.00
CATPOINT	LS	A	0.10	4.00	6.00
CAVERNS	SL	B	0.20	6.00	6.00
CECIL	CB-FSL	B	0.28	6.00	6.00
CECIL	CL	B	0.24	6.00	6.00
CECIL	CL	B	0.28	6.00	6.00
CECIL	FSL	B	0.20	6.00	6.00
CECIL	FSL	B	0.28	6.00	6.00
CECIL	GR-FSL	B	0.15	6.00	6.00
CECIL	GR-SL	B	0.15	6.00	6.00
CECIL	GRF-SL	B	0.28	6.00	6.00
CECIL	L	B	0.28	6.00	6.00
CECIL	SCL	B	0.28	6.00	6.00
CECIL	SL	B	0.28	6.00	6.00
CECIL	VFSL	B	0.28	6.00	6.00
CHAGRIN	FSL	B	0.32	4.00	6.00
CHAGRIN	L	B	0.32	4.00	6.00
CHAGRIN	SIL	B	0.32	4.00	6.00
CHAGRIN VARIANT	LS	A	0.10	6.00	6.00
CHAPANOKE	SIL	C	0.43	0.50	1.50
CHASTAIN	L	D	0.32	0.00	1.00
CHASTAIN	SICL	D	0.32	0.00	1.00
CHASTAIN	SIL	D	0.32	0.00	1.00
CHATUGE	L	D	0.32	1.00	2.00
CHATUGE	SL	D	0.32	1.00	2.00
CHAVIES	FSL	B	0.24	6.00	6.00
CHAVIES	SL	B	0.24	6.00	6.00
CHAVIES VARIANT	SL	B	0.24	3.50	3.50
CHENNEBY	L	C	0.37	1.00	2.50
CHENNEBY	SIL	C	0.37	1.00	2.50
CHESTER	CB-L	B	0.32	6.00	6.00
CHESTER	CN-L	B	0.28	6.00	6.00
CHESTER	L	B	0.32	6.00	6.00
CHESTER	SIL	B	0.32	6.00	6.00
CHESTER	SL	B	0.32	6.00	6.00
CHESTER	STV-L	B	0.24	5.00	5.00
CHESTER	STV-L	B	0.32	5.00	5.00
CHESTER LOAM	L	B	0.32	6.00	6.00
CHEWACLA	FSL	C	0.24	0.50	1.50
CHEWACLA	L	C	0.28	0.50	1.50
CHEWACLA	L	C	0.49	1.00	2.00
CHEWACLA	SIL	C	0.28	0.50	1.50
CHEWACLA	SIL	C	0.49	1.00	2.00
CHICKAHOMINY	L	D	0.37		
CHICKAHOMINY	L	D	0.37	0.00	0.50
CHICKAHOMINY	SIL	D	0.37	0.00	0.50
CHILHOWIE	C	C	0.37	6.00	6.00
CHILHOWIE	CN-SICL	C	0.20	6.00	6.00
CHILHOWIE	CN-SICL	C	0.37	6.00	6.00
CHILHOWIE	SIC	C	0.37	6.00	6.00
CHILHOWIE	SICL	C	0.37	6.00	6.00
CHINCOTEAGUE	SIL	D	0.32		
CHIPLEY	S	C	0.10	2.00	3.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
CHISWELL	CN-SIL	D	0.24	6.00	6.00
CHISWELL	CNV-SIL	D	0.20	6.00	6.00
CHISWELL	SIL	D	0.37	6.00	6.00
CHRISTIAN	FSL	C	0.37	6.00	6.00
CHRISTIAN	GR-SIL	C	0.20	6.00	6.00
CHRISTIAN	GRV-SIL	C	0.20	6.00	6.00
CHRISTIAN	SICL	C	0.37	6.00	6.00
CHRISTIAN	SIL	C	0.37	6.00	6.00
CID	L	C	0.37	1.50	2.50
CLAPHAM*	SIL	C	0.43	2.00	3.00
CLEARBROOK	CN-SIL	D	0.32	0.00	0.50
CLIFTON	ST-L	C	0.17	6.00	6.00
CLUBCAF	SIL	D	0.28	0.00	1.50
CLYMER	CN-L	B	0.20	6.00	6.00
CLYMER	FSL	B	0.24	6.00	6.00
CLYMER	L	B	0.24	6.00	6.00
CLYMER	RB-FSL	B	0.10	6.00	6.00
CLYMER	RB-SL	B	0.10	6.00	6.00
CLYMER	RB-SL	B	0.17	6.00	6.00
CLYMER	SL	B	0.24	6.00	6.00
CLYMER	STV-FSL	B	0.17	6.00	6.00
CLYMER	STV-SL	B	0.17	6.00	6.00
CLYMER VARIANT	RB-SL	B	0.10	6.00	6.00
CLYMER VARIANT	STV-SL	B	0.17	6.00	6.00
COASTAL BEACH		D	0.05	0.00	6.00
CODORUS	FSL	C	0.49	1.00	2.00
CODORUS	L	C	0.49	1.00	2.00
CODORUS	SIL	C	0.49	1.00	2.00
CODORUS VARIANT	L	C	0.49	1.00	2.00
COLFAX	FSL	C	0.17	0.50	1.50
COLFAX	FSL	C	0.28	0.50	1.50
COLFAX	L	C	0.32	0.50	1.50
COLFAX	SL	C	0.17	0.50	1.50
COLFAX VARIANT	FSL	C	0.17	0.50	1.50
COLLEEN	GR-L	C	0.24	6.00	6.00
COLLEEN	L	C	0.20	6.00	6.00
COLVARD	FSL	B	0.15	4.00	6.00
COMBS	FSL	B	0.24	6.00	6.00
COMBS	FSL	B	0.28	6.00	6.00
COMBS	L	B	0.28	6.00	6.00
COMBS	SL	B	0.24	6.00	6.00
COMUS	FSL	B	0.43	6.00	6.00
COMUS	L	B	0.43	6.00	6.00
COMUS	SIL	B	0.43	6.00	6.00
CONETOE	LFS	A	0.15	6.00	6.00
CONETOE	LS	A	0.15	6.00	6.00
CONGAREE	FSL	B	0.24	2.50	4.00
CONGAREE	FSL	B	0.43	6.00	6.00
CONGAREE	L	B	0.37	2.50	4.00
CONGAREE	SIL	B	0.37	2.50	4.00
CONGAREE	SIL	B	0.43	6.00	6.00
COOSAW	LS	B	0.10	2.00	3.00
COROLLA	FS	D	0.10	1.50	3.00
CORYDON	SICL	D	0.32	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
COTACO	CB-FSL	C	0.24	1.50	2.50
COTACO	FSL	C	0.37	1.50	2.50
COTACO	L	C	0.37	1.50	2.50
COTACO	SIL	C	0.37	1.50	2.50
COTACO VARIANT	CB-L	C	0.24	2.00	3.00
COTACO VARIANT	SIL	C	0.43	2.00	3.00
COURSEY	L	C	0.32	2.00	3.00
COWEE	CH-L	B	0.20	6.00	6.00
COXVILLE	FSL	D	0.24	0.00	1.50
COXVILLE	L	D	0.24	0.00	1.50
CRAIGSVILLE	CB-FSL	B	0.28	6.00	6.00
CRAIGSVILLE	CB-SL	B	0.20	6.00	6.00
CRAIGSVILLE	CB-SL	B	0.28	6.00	6.00
CRAIGSVILLE	CBV-L	B	0.10	6.00	6.00
CRAIGSVILLE	GR-FSL	B	0.17	6.00	6.00
CRAIGSVILLE	L	B	0.28	6.00	6.00
CRAIGSVILLE	SL	B	0.17	6.00	6.00
CRAVEN	CL	C	0.37	2.00	3.00
CRAVEN	FSL	C	0.32	2.00	3.00
CRAVEN	L	C	0.32	2.00	3.00
CRAVEN	SCL	C	0.37	2.00	3.00
CRAVEN	SIL	C	0.32	2.00	3.00
CREEDMOOR	FSL	C	0.28	1.50	2.00
CREEDMOOR	GR-FSL	C	0.28	1.50	2.00
CREEDMOOR	GRV-SL	C	0.28	1.50	2.00
CREEDMOOR	L	C	0.28	1.50	2.00
CREEDMOOR	SL	C	0.28	1.50	2.00
CREEDMOOR VARIANT	FSL	C	0.37	0.50	1.50
CREEDMORE	FSL	C	0.28	1.50	2.00
CROTON	SIL	D	0.37	0.00	1.50
CROTON	SIL	D	0.43	0.00	0.50
CULLEN	CL	C	0.24	6.00	6.00
CULLEN	L	C	0.37	6.00	6.00
CULPEPER	CL	C	0.37	6.00	6.00
CULPEPER	FSL	C	0.37	6.00	6.00
CULPEPER	L	C	0.37	6.00	6.00
DALEVILLE	L	D	0.32	0.00	1.00
DALEVILLE	SIL	D	0.32	0.00	1.00
DANDRIDGE	SH-SICL	D	0.17	6.00	6.00
DAVIDSON	C	B	0.28	6.00	6.00
DAVIDSON	CL	B	0.24	6.00	6.00
DAVIDSON	CL	B	0.28	6.00	6.00
DAVIDSON	CL	B	0.37	6.00	6.00
DAVIDSON	ST-CL	B	0.20	6.00	6.00
DAWHOO VARIANT	FSL		0.17		
DECATUR	CL	B	0.32	6.00	6.00
DEKALB	CB-FSL	C	0.17	6.00	6.00
DEKALB	CB-L	C	0.17	6.00	6.00
DEKALB	CB-SL	C	0.17	6.00	6.00
DEKALB	CN-FSL	C	0.17	6.00	6.00
DEKALB	CN-L	C	0.17	6.00	6.00
DEKALB	CN-SL	C	0.17	6.00	6.00
DEKALB	FSL	C	0.24	6.00	6.00
DEKALB	RB-FSL	C	0.17	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
DEKALB	SL	C	0.24	6.00	6.00
DEKALB	ST-FSL	C	0.17	6.00	6.00
DEKALB	STV-FSL	C	0.17	6.00	6.00
DEKALB	STV-L	C	0.17	6.00	6.00
DEKALB	STV-SL	C	0.17	6.00	6.00
DEKALB	STX-FSL	C	0.17	6.00	6.00
DEKALB	STX-SL	C	0.17	6.00	6.00
DELANCO	FSL	C	0.37	1.00	2.50
DELANCO	L	C	0.37	1.00	2.50
DELANCO	SIL	C	0.37	1.00	2.50
DELOSS	MK-L	B/D	0.15		
DERROC	CB-FSL	B	0.17	6.00	6.00
DERROC	CB-L	B	0.17	6.00	6.00
DERROC	CB-SL	B	0.17	6.00	6.00
DERROC	CBV-L	B	0.17	6.00	6.00
DERROC	CBV-SL	B	0.17	6.00	6.00
DILLARD	L	C	0.32	2.00	3.00
DOGUE	FSL	C	0.28	1.50	3.00
DOGUE	L	C	0.37	1.50	3.00
DOGUE	SIL	C	0.37	1.50	3.00
DOGUE	SL	C	0.28	1.50	3.00
DOGUE VARIANT	L	C	0.37	1.50	3.00
DOROVAN	MPT	D			
DOTHAN	LS	B	0.15	3.00	5.00
DRAGSTON	FSL	C	0.20	1.00	2.50
DRAGSTON	LFS	C	0.17	1.00	2.50
DRAGSTON	SL	C	0.20	1.00	2.50
DRALL	CN-SL	B	0.17	6.00	6.00
DRALL	STV-LS	B	0.17	6.00	6.00
DRALL	STX-SL	B	0.17	6.00	6.00
DRYPOND	CN-L	D	0.17	6.00	6.00
DRYPOND	CN-SL	D	0.17	6.00	6.00
DRYPOND	GR-SL	D	0.17	6.00	6.00
DRYPOND	GRV-SL	D	0.15	6.00	6.00
DRYPOND	RB-SL	D	0.17	6.00	6.00
DRYPOND	SL	D	0.17	6.00	6.00
DUCKSTON	FS	A/D	0.10	0.00	1.00
DUFFIELD	SIL	B	0.32	6.00	6.00
DULLES	SIL	D	0.43	1.00	2.50
DUMFRIES	SL	B	0.28	6.00	6.00
DUMPS				6.00	6.00
DUMPS	VAR			6.00	6.00
DUMPS, MINES	VAR			6.00	6.00
DUNBAR	FSL	D	0.32	1.00	2.50
DUNNING	SICL	D	0.32	0.00	0.50
DUPLIN	CL	C	0.24	2.00	3.00
DUPLIN	FSL	C	0.24	2.00	3.00
DUPLIN	SIL	C	0.24	2.00	3.00
DUPLIN	VFSL	C	0.24	2.00	3.00
DURHAM	FSL	B	0.24	6.00	6.00
DURHAM	FSL	C	0.28	0.50	1.50
DURHAM	LCOS	B	0.17	6.00	6.00
DURHAM	SL	B	0.24	6.00	6.00
DYKE	CL	B	0.37	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
DYKE	L	B	0.37	6.00	6.00
DYKE	SIL	B	0.37	6.00	6.00
EBBING	L	C	0.37	1.50	3.00
EDGEHILL	GRV-FSL	C	0.15	6.00	6.00
EDGEHILL	GRV-SL	C	0.15	6.00	6.00
EDGEHILL VARIANT	GRV-SL	B	0.24	6.00	6.00
EDGEMONT	CN-FSL	B	0.15	6.00	6.00
EDGEMONT	CN-SL	B	0.15	6.00	6.00
EDGEMONT	STV-SL	B	0.15	6.00	6.00
EDGEMONT	STX-SL	B	0.15	6.00	6.00
EDNEDYTOWN	L	B	0.20	6.00	6.00
EDNEYTOWN	L	B	0.15	6.00	6.00
EDNEYTOWN	L	B	0.20	6.00	6.00
EDNEYTOWN	STV-L	B	0.15	6.00	6.00
EDNEYTOWN	STX-L	B	0.10	6.00	6.00
EDNEYTOWN	STX-L	B	0.15	6.00	6.00
EDNEYVILLE	FSL	B	0.24	6.00	6.00
EDNEYVILLE	L	B	0.24	6.00	6.00
EDNEYVILLE	RB-SL	B	0.17	6.00	6.00
EDNEYVILLE	SL	B	0.17	6.00	6.00
EDNEYVILLE	SL	B	0.24	6.00	6.00
EDNEYVILLE	ST-FSL	B	0.17	6.00	6.00
EDNEYVILLE	STV-L	B	0.15	6.00	6.00
EDNEYVILLE	STV-L	B	0.17	6.00	6.00
EDNEYVILLE	STV-SL	B	0.15	6.00	6.00
EDNEYVILLE	STX-FSL	B	0.17	6.00	6.00
EDNEYVILLE	STX-L	B	0.17	6.00	6.00
EDNEYVILLE	STX-SL	B	0.17	6.00	6.00
EDOM	SH-SICL	C	0.28	6.00	6.00
EDOM	SICL	C	0.28	6.00	6.00
EDOM	SIL	C	0.28	6.00	6.00
ELBERT	L	D	0.37	0.00	1.00
ELBERT	SIL	D	0.43	0.00	1.00
ELBERT VARIANT	SIL	D	0.43	0.00	1.00
ELIOAK	CL	C	0.28	6.00	6.00
ELIOAK	FSL	C	0.32	6.00	6.00
ELIOAK	L	C	0.32	6.00	6.00
ELIOAK	SCL	C	0.32	6.00	6.00
ELIOAK	SICL	C	0.28	6.00	6.00
ELIOAK	SIL	C	0.32	6.00	6.00
ELIOAK	STV-SCL	C	0.32	6.00	6.00
ELIOK	CL	C	0.28	6.00	6.00
ELIOK	FSL	C	0.32	6.00	6.00
ELKTON	SIL	C/D	0.43		
ELLIBER	CRV-SIL	A	0.17	6.00	6.00
ELLIBER	CRV-SIL	A	0.24	6.00	6.00
ELLIBER	GR-L	A	0.24	6.00	6.00
ELSINBORO	L	B	0.37	5.00	5.00
ELSINBORO	SL	B	0.37	5.00	5.00
EMPORIA	FSL	C	0.28	3.00	4.50
EMPORIA	GR-FSL	C	0.28	3.00	4.50
EMPORIA	L	C	0.28	3.00	4.50
EMPORIA	LFS	C	0.28	3.00	4.50
EMPORIA	LS	C	0.28	3.00	4.50

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
EMPORIA	LS	C	0.43	6.00	6.00
EMPORIA	SL	C	0.28	3.00	4.50
ENDCAV	SICL	C	0.37	6.00	6.00
ENDCAV	SIL	C	0.37	6.00	6.00
ENON	CL	C	0.24	6.00	6.00
ENON	FSL	C	0.28	6.00	6.00
ENON	L	C	0.32	6.00	6.00
ENON	SL	C	0.28	6.00	6.00
ENOTT	FSL	C	0.20	6.00	6.00
ENOTT	L	C	0.32	6.00	6.00
ENOTT	SL	C	0.20	6.00	6.00
ERNEST	L	C	0.43	1.50	3.00
ERNEST	SIL	C	0.43	1.50	3.00
ERNEST	STV-L	C	0.32	1.50	3.00
EUBANKS	CL	B	0.32	6.00	6.00
EUBANKS	GRF-L	B	0.24	6.00	6.00
EUBANKS	L	B	0.32	6.00	6.00
EUBANKS	SIL	B	0.32	6.00	6.00
EUBANKS	ST-L	B	0.28	6.00	6.00
EUBANKS	ST-SIL	B	0.28	6.00	6.00
EULONIA	L	C	0.15	1.50	3.50
EULONIA	SL	C	0.24	1.50	3.50
EUNOLA	FSL	C	0.20	1.50	2.50
EUNOLA	L	C	0.20	1.50	2.50
EUNOLA	LFS	C	0.15	1.50	2.50
EUNOLA	SL	C	0.20	1.50	2.50
EVANSHAM	SICL	D	0.20	0.00	0.50
EVARD	FSL	B	0.24	6.00	6.00
EVARD	GRV-SL	B	0.24	6.00	6.00
EVARD	L	B	0.28	6.00	6.00
EVARD	SL	B	0.24	6.00	6.00
EVERGREEN	SIL	B	0.37	2.00	3.00
EXUM	SIL	C	0.37	2.00	3.00
FACEVILLE	FSL	B	0.28	6.00	6.00
FACEVILLE	GR-FSL	B	0.17	6.00	6.00
FACEVILLE	L	B	0.17	6.00	6.00
FACEVILLE	LS	B	0.17	6.00	6.00
FACEVILLE	SL	B	0.28	6.00	6.00
FAIRFAX	L	B	0.43	6.00	6.00
FAIRFAX	SIL	B	0.43	6.00	6.00
FALLSINGTON	FSL	B/D	0.24	0.00	1.00
FALLSINGTON	VFSL	B/D	0.24	0.00	1.00
FAUGUIER	SICL	C	0.32	6.00	6.00
FAUQUIER	L	C	0.32	6.00	6.00
FAUQUIER	SIC	C	0.32	6.00	6.00
FAUQUIER	SICL	C	0.32	6.00	6.00
FAUQUIER	SIL	C	0.32	6.00	6.00
FAUQUIER	ST-SIL	C	0.32	6.00	6.00
FAUQUIER	STV-L	C	0.28	6.00	6.00
FAUQUIER	STV-SIL	C	0.28	6.00	6.00
FAYWOOD	SICL	C	0.37	6.00	6.00
FAYWOOD	SIL	C	0.37	6.00	6.00
FEATHERSTONE	MK-SIL	D	0.49		
FISHERMAN	FS	D	0.10	1.50	3.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
FLATWOODS	SIL	C	0.28	1.50	3.00
FLETCHER	L	B	0.43	6.00	6.00
FLUVANNA	CL	C	0.37	6.00	6.00
FLUVANNA	FSL	C	0.37	6.00	6.00
FLUVANNA	L	C	0.37	6.00	6.00
FLUVANNA	SIL	C	0.37	6.00	6.00
FLUVANNA	STV-SIL	C	0.24	6.00	6.00
FLUVAQUENTS	FSL	D	0.37		
FLUVAQUENTS	SIL	C	0.28	0.50	1.50
FLUVAQUENTS	SIL	D	0.32	0.00	1.00
FORESTDALE	FSL	D	0.37	0.50	2.00
FORESTDALE	L	D	0.43	0.50	2.00
FORESTDALE	SICL	D	0.37	0.50	2.00
FORESTDALE	SIL	D	0.37	0.50	2.00
FORESTDALE	SIL	D	0.43	0.50	2.00
FORK	FSL	C	0.37	1.00	2.00
FORK VARIANT	SIL	C	0.43	1.00	2.00
FRANKSTOWN	CN-SIL	B	0.37	6.00	6.00
FREDERICK	GR-L	B	0.28	6.00	6.00
FREDERICK	GR-L	C	0.15	1.00	2.50
FREDERICK	GR-SIL	B	0.28	6.00	6.00
FREDERICK	GR-SL	B	0.28	6.00	6.00
FREDERICK	GRV-L	B	0.28	6.00	6.00
FREDERICK	GRV-SIL	B	0.28	6.00	6.00
FREDERICK	L	B	0.32	6.00	6.00
FREDERICK	SICL	B	0.32	6.00	6.00
FREDERICK	SIL	B	0.32	6.00	6.00
FREDERICK	STV-SIL	B	0.32	6.00	6.00
FRENCH	L	C	0.28	1.00	2.50
FRERDERICK	GR-L	B	0.28	6.00	6.00
FRIPP	S	A	0.10	6.00	6.00
GAILA	SL	B	0.28	6.00	6.00
GAINESBORO	SIL	C	0.32	6.00	6.00
GALESTOWN	LS	A	0.17	6.00	6.00
GEORGEVILLE	CL	B	0.49	6.00	6.00
GEORGEVILLE	FSL	B	0.43	6.00	6.00
GEORGEVILLE	L	B	0.43	6.00	6.00
GEORGEVILLE	SICL	B	0.49	6.00	6.00
GEORGEVILLE	SIL	B	0.49	6.00	6.00
GEORGEVILLE	VFSL	B	0.43	6.00	6.00
GILPIN	CN-L	C	0.24	6.00	6.00
GILPIN	CN-SIL	C	0.24	6.00	6.00
GILPIN	L	C	0.32	6.00	6.00
GILPIN	SIL	C	0.32	6.00	6.00
GILPIN	ST-SIL	C	0.24	6.00	6.00
GILPIN	STV-SIL	C	0.24	6.00	6.00
GLADEHILL	FSL	B	0.20	6.00	6.00
GLENELG	CB-L	B	0.32	6.00	6.00
GLENELG	CN-L	B	0.28	6.00	6.00
GLENELG	L	B	0.32	6.00	6.00
GLENELG	SIL	B	0.32	6.00	6.00
GLENELG	STV-L	C	0.43	1.50	2.50
GLENVILLE	L	C	0.32	0.50	3.00
GLENVILLE	SIL	C	0.32	0.50	3.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
GLENWOOD	CB-L	B	0.20	6.00	6.00
GLENWOOD VARIANT	RB-L	B	0.05	6.00	6.00
GOLDSBORO	FSL	B	0.20	2.00	3.00
GOLDSBORO	SL	B	0.20	2.00	3.00
GOLDSTON	CN-L	C	0.15	6.00	6.00
GOLDSTON	CN-SIL	C	0.15	6.00	6.00
GOLDSTON	CNV-SIL	C	0.05	6.00	6.00
GOLDSTON	SIL	C	0.15	6.00	6.00
GOLDVEIN	GRF-SIL	C	0.28	1.00	2.00
GOLDVEIN GRITTY	GRF-SIL	C	0.28	1.00	2.00
GORESVILLE*	GR-SIL	B	0.24	6.00	6.00
GREENLEE	STV-L	B	0.10	6.00	6.00
GRIMSLEY	CB-L	B	0.20	6.00	6.00
GRIMSLEY	CB-SL	B	0.20	6.00	6.00
GRIMSLEY	ST-L	B	0.20	6.00	6.00
GRIMSLEY	STX-L	B	0.20	6.00	6.00
GRITNEY	FSL	C	0.20	6.00	6.00
GRITNEY	GR-FSL	C	0.15	6.00	6.00
GROSECLOSE	GR-L	C	0.28	6.00	6.00
GROSECLOSE	GR-SIL	C	0.28	6.00	6.00
GROSECLOSE	L	C	0.43	6.00	6.00
GROSECLOSE	SICL	C	0.32	6.00	6.00
GROSECLOSE	SIL	C	0.43	6.00	6.00
GROVER	FSL	B	0.24	6.00	6.00
GROVER	SCL	B	0.28	6.00	6.00
GROVER	SL	B	0.24	6.00	6.00
GUERNSEY	SIL	C	0.43	1.50	3.00
GULLIED LAND	VAR			6.00	6.00
GULLION	L	C	0.32	1.50	3.00
GULLION	SIL	C	0.32	1.50	3.00
GUNSTOCK	CN-L	C	0.37	6.00	6.00
GUNSTOCK	SL	C	0.28	6.00	6.00
GUYAN	SIL	C	0.32	0.50	1.50
GWINNETT VARIANT	CL	B	0.28	6.00	6.00
HAGERSTOWN	SIL	C	0.32	6.00	6.00
HAGERSTWON	SIL	C	0.32	6.00	6.00
HALEWOOD	L	B	0.32	6.00	6.00
HALEWOOD	STV-FSL	C	0.24	6.00	6.00
HARTLETON	CN-L	B	0.20	6.00	6.00
HARTLETON	STV-L	B	0.15	6.00	6.00
HATBORO	L	D	0.49	0.00	0.50
HATBORO	SIL	D	0.49	0.00	0.50
HAWKSBILL	CB-L	B	0.17	6.00	6.00
HAWKSBILL	CBV-L	B	0.17	6.00	6.00
HAWKSBILL	STX-L	B	0.17	6.00	6.00
HAYESVILE	L	B	0.20	6.00	6.00
HAYESVILLE	CB-L	B	0.20	6.00	6.00
HAYESVILLE	CL	B	0.20	6.00	6.00
HAYESVILLE	CL	B	0.24	6.00	6.00
HAYESVILLE	FSL	B	0.20	6.00	6.00
HAYESVILLE	GR-FSL	B	0.20	6.00	6.00
HAYESVILLE	L	B	0.20	6.00	6.00
HAYESVILLE	STV-FSL	C	0.15	6.00	6.00
HAYESVILLE	STV-L	C	0.15	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
HAYESVILLE	STV-L	C	0.24	6.00	6.00
HAYESVILLE	STV-SCL	C	0.32	6.00	6.00
HAYMARKET	SIL	D	0.32	6.00	6.00
HAYTER	CB-L	B	0.20	6.00	6.00
HAYTER	CBV-L	B	0.15	6.00	6.00
HAYTER	L	B	0.28	6.00	6.00
HAYWOOD	L	B	0.24	6.00	6.00
HAZEL	CN-L	C	0.24	6.00	6.00
HAZEL	L	C	0.32	6.00	6.00
HAZEL	SIL	C	0.32	6.00	6.00
HAZEL	ST-L	C	0.24	6.00	6.00
HAZEL	STV-L	C	0.24	6.00	6.00
HAZEL CHANNERY	CN-SIL	C	0.32	6.00	6.00
HAZELTON	STV-L	B	0.15	6.00	6.00
HAZLETON	CN-SL	B	0.17	6.00	6.00
HAZLETON	ST-SL	B	0.15	6.00	6.00
HAZLETON	STV-SL	B	0.15	6.00	6.00
HAZLETON	STX-SL	B	0.15	6.00	6.00
HELENA	CL	C	0.28	1.50	2.50
HELENA	FSL	C	0.20	1.50	2.50
HELENA	FSL	C	0.24	1.50	2.50
HELENA	GR-COSL	C	0.15	1.50	2.50
HELENA	GRF-FSL	C	0.15	1.50	2.50
HELENA	L	C	0.20	1.50	2.50
HELENA	L	C	0.24	1.50	2.50
HELENA	SL	C	0.20	1.50	2.50
HELENA	SL	C	0.24	1.50	2.50
HERNDON	L	B	0.43	6.00	6.00
HERNDON	SICL	B	0.49	6.00	6.00
HERNDON	SIL	B	0.43	6.00	6.00
HERNDON	VFSL	B	0.43	6.00	6.00
HIWASSEE	CB-FSL	B	0.28	6.00	6.00
HIWASSEE	CB-SL	B	0.24	6.00	6.00
HIWASSEE	CL	B	0.28	6.00	6.00
HIWASSEE	FSL	B	0.28	6.00	6.00
HIWASSEE	GR-L	B	0.24	6.00	6.00
HIWASSEE	L	B	0.28	6.00	6.00
HIWASSEE	SIL	B	0.32	6.00	6.00
HIWASSEE VARIANT	L	B	0.32	6.00	6.00
HOADLY	L	C	0.28	0.50	1.50
HOBUCKEN	L	D	0.10		
HOGELAND*	CB-SIL	C	0.24	6.00	6.00
HOLLYWOOD	CL	D	0.32	6.00	6.00
HUNTINGTON	L	B	0.28	6.00	6.00
HUNTINGTON	SIL	B	0.28	6.00	6.00
HYATTSVILLE	FSL	B	0.28	4.00	6.00
HYDE	SIL	B/D	0.17	0.00	1.50
HYDRAQUENTS	SL	B	0.37	4.00	6.00
HYDRAQUENTS	SL	D	0.37		
INGLEDOVE	L	B	0.32	6.00	6.00
IREDELL	CL	C/D	0.32	1.00	2.00
IREDELL	FSL	C/D	0.28	1.00	2.00
IREDELL	L	C/D	0.32	1.00	2.00
IREDELL	SIL	C/D	0.32	1.00	2.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
IREDELL	SIL	D	0.32	1.00	2.00
IREDELL	SL	C/D	0.28	1.00	2.00
IREDELL	ST-L	C/D	0.24	1.00	2.00
IREDELL	ST-SIL	D	0.28	1.00	2.00
IREDELL VARIANT	SIL	C/D	0.32	1.00	2.00
IRONGATE	L	B	0.37	1.50	3.00
IRONGATE	SL	B	0.37	1.50	3.00
IUKA	FSL	C	0.24	1.00	3.00
IUKA	SL	C	0.24	1.00	3.00
IZAGORA	L	C	0.37	2.00	3.00
IZAGORA	SIL	C	0.37	2.00	3.00
JACKLAND	GR-L	D	0.32	1.00	2.00
JACKLAND	GR-SIL	D	0.32	1.00	2.00
JACKLAND	L	D	0.32	1.00	2.00
JACKLAND	SIL	D	0.32	1.00	2.00
JACKLAND	STV-SIL	D	0.32	1.00	2.00
JEDBURG	L	C	0.32	0.50	1.50
JEFFERSON	CB-FSL	B	0.17	6.00	6.00
JEFFERSON	CB-L	B	0.17	6.00	6.00
JEFFERSON	FSL	B	0.24	6.00	6.00
JEFFERSON	GRV-FSL	B	0.28	6.00	6.00
JEFFERSON	L	B	0.24	6.00	6.00
JEFFERSON	SL	B	0.10	6.00	6.00
JEFFERSON	SL	B	0.24	6.00	6.00
JEFFERSON	STV-FSL	B	0.10	6.00	6.00
JEFFERSON	STV-L	B	0.10	6.00	6.00
JEFFERSON	STV-SL	B	0.10	6.00	6.00
JEFFERSON	STX-L	B	0.10	6.00	6.00
JEFFERSON VARIANT	STV-SL	B	0.24	6.00	6.00
JOHNS	SL	C	0.20	1.50	3.00
JOHNS VARIANT	LS	C	0.43	1.00	2.00
JOHNSTON	L	D	0.20		
JOHNSTON	MK-L	D	0.17		
JUNALUSKA	CN-L	B	0.15	6.00	6.00
KALMIA	FSL	B	0.15	4.00	6.00
KALMIA	FSL	B	0.20	6.00	6.00
KALMIA	SL	B	0.20	6.00	6.00
KELLY	SIL	D	0.37	1.50	2.50
KEMPSVILLE	FSL	B	0.28	6.00	6.00
KEMPSVILLE	GR-FSL	B	0.24	6.00	6.00
KEMPSVILLE	GR-SL	B	0.24	6.00	6.00
KEMPSVILLE	L	B	0.32	6.00	6.00
KEMPSVILLE	LS	B	0.28	6.00	6.00
KEMPSVILLE	SL	B	0.28	6.00	6.00
KEMPSVILLE	VFSL	B	0.32	6.00	6.00
KEMPSVILLE FINE SAND	FSL	B	0.28	6.00	6.00
KENANSVILLE	FS	A	0.15	4.00	6.00
KENANSVILLE	FS	A	0.15	6.00	6.00
KENANSVILLE	LFS	A	0.15	4.00	6.00
KENANSVILLE	LFS	A	0.15	6.00	6.00
KENANSVILLE	LS	A	0.15	4.00	6.00
KENANSVILLE	LS	A	0.15	6.00	6.00
KENANSVILLE	S	A	0.15	6.00	6.00
KENANSVILLE VARIANT	LS	C		3.50	4.50

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
KEYPORT	FSL	C	0.37	1.50	4.00
KEYPORT	SIL	C	0.43	1.50	4.00
KINKORA	L	D	0.43	0.00	0.50
KINKORA	SIL	D	0.43	0.00	0.50
KINSTON	FSL	B/D	0.24	0.00	1.00
KINSTON	L	B/D	0.37	0.00	1.00
KINSTON	SIL	B/D	0.37	0.00	1.00
KLEJ	LFS	B	0.17	1.50	2.00
KLINESVILLE	CN-SIL	C/D	0.20	6.00	6.00
KLINESVILLE	SIL	C/D	0.20	6.00	6.00
KOANNAROCK	CN-SIL	C	0.17	6.00	6.00
KONNAROCK	CN-SIL	C	0.17	6.00	6.00
KONNAROCK	CNV-SIL	C	0.17	6.00	6.00
LAIDIG	CB-FSL	C	0.28	2.50	4.00
LAIDIG	CB-SL	C	0.28	2.50	4.00
LAIDIG	CN-FSL	C	0.24	2.50	4.00
LAIDIG	CN-L	C	0.28	2.50	4.00
LAIDIG	CN-SL	C	0.32	2.50	4.00
LAIDIG	FL-FSL	C	0.24	2.50	4.00
LAIDIG	FSL	C	0.24	2.50	4.00
LAIDIG	FSL	C	0.28	2.50	4.00
LAIDIG	GR-FSL	C	0.24	2.50	4.00
LAIDIG	RB-FSL	C	0.24	2.50	4.00
LAIDIG	RB-SL	C	0.24	2.50	4.00
LAIDIG	SL	C	0.24	2.50	4.00
LAIDIG	STV-FSL	C	0.28	2.50	4.00
LAIDIG	STV-L	C	0.28	2.50	4.00
LAIDIG	STV-SL	C	0.28	2.50	4.00
LAIDIG	STX-SL	C	0.24	2.50	4.00
LAKEHURST VARIANT	S	A	0.10	1.50	3.00
LAKELAND	FS	A	0.10	6.00	6.00
LAKIN	LS	A	0.17	6.00	6.00
LANEXA	MK-SIC	D	0.32		
LANSDALE	L	B	0.28	6.00	6.00
LAROQUE	L	B	0.37	6.00	6.00
LAWNES	MK-SL	D	0.20		
LAWNES	MUCK	D			
LEAF	SIL	D	0.32	0.50	1.50
LEAKSVILLE	SIL	D	0.43	0.00	2.00
LECK KILL	SIL	B	0.32	6.00	6.00
LEEDSVILLE*	CB-L	B	0.28	6.00	6.00
LEETONIA	STV-LS	C	0.17	6.00	6.00
LEETONIA	STX-LS	C	0.17	6.00	6.00
LEGORE	L	B	0.24	6.00	6.00
LEGORE	STV-SIL	B	0.24	6.00	6.00
LEHEW	CB-L	C	0.24	6.00	6.00
LEHEW	CB-SL	C	0.17	6.00	6.00
LEHEW	CN-FSL	C	0.17	6.00	6.00
LEHEW	CN-L	C	0.17	6.00	6.00
LEHEW	CNV-L	C	0.24	6.00	6.00
LEHEW	FL-FSL	C	0.17	6.00	6.00
LEHEW	FSL	C	0.24	6.00	6.00
LEHEW	RB-L	C	0.17	6.00	6.00
LEHEW	STV-L	C	0.17	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
LEHEW	STV-SL	C	0.17	6.00	6.00
LEHEW	STX-FSL	C	0.17	6.00	6.00
LEHEW	STX-L	C	0.17	6.00	6.00
LEHEW	STX-L	C	0.24	6.00	6.00
LENOIR	L	D	0.37	1.00	2.50
LENOIR	SIL	D	0.37	1.00	2.50
LENOIR	VFSL	D	0.37	1.00	2.50
LEON	S	B/D	0.10	0.00	1.00
LEON	S	B/D	0.10	0.50	1.50
LEVY	MK-SIC	D	0.37		
LEVY	SIC	D	0.32		
LEVY	SICL	D	0.37		
LEVY	SIL	D	0.37		
LEW	BY-SIL	B	0.17	6.00	6.00
LEW	CB-SIL	B	0.17	6.00	6.00
LEW	CN-L	B	0.15	6.00	6.00
LEW	SIL	B	0.37	6.00	6.00
LEW	STV-L	B	0.17	6.00	6.00
LEW	STV-SIL	B	0.17	6.00	6.00
LEW	STX-L	B	0.10	6.00	6.00
LEW	STX-SIL	B	0.10	6.00	6.00
LEWISBERRY	SL	B	0.20	6.00	6.00
LIBRARY	SIL	D	0.37	0.50	1.50
LIGNUM	L	C	0.43	1.00	2.50
LIGNUM	SIL	C	0.37	1.00	2.50
LIGNUM	SIL	C	0.43	1.00	2.50
LILY	GR-FSL	B	0.28	6.00	6.00
LILY	GR-SL	B	0.28	6.00	6.00
LILY	L	B	0.28	6.00	6.00
LILY	RB-FSL	B	0.24	6.00	6.00
LILY	SL	B	0.28	6.00	6.00
LILY	STV-FSL	B	0.24	6.00	6.00
LILY	STV-L	B	0.24	6.00	6.00
LILY	STV-SL	B	0.24	6.00	6.00
LILY	STX-SL	B	0.17	6.00	6.00
LINDSIDE	SIL	C	0.32	1.50	3.00
LITTLEJOE	GR-L	B	0.20	6.00	6.00
LITTLEJOE	L	B	0.37	6.00	6.00
LITTLEJOE	SIL	B	0.37	6.00	6.00
LITZ	CN-SIL	C	0.32	6.00	6.00
LITZ	SIL	C	0.37	6.00	6.00
LLOYD	CL	C	0.24	6.00	6.00
LLOYD	FSL	C	0.20	6.00	6.00
LLOYD	L	C	0.37	6.00	6.00
LLOYD	SIL	C	0.37	6.00	6.00
LLOYD VARIANT	L	C	0.37	6.00	6.00
LOBDELL	L	B	0.37	2.00	3.50
LOBDELL	SIL	B	0.37	2.00	3.50
LODI	GR-L	B	0.20	6.00	6.00
LODI	GR-SIL	B	0.20	6.00	6.00
LODI	GRV-SIL	B	0.17	6.00	6.00
LODI	L	B	0.37	6.00	6.00
LODI	SICL	B	0.28	6.00	6.00
LODI	SIL	B	0.37	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
LOUISA	FSL	B	0.28	6.00	6.00
LOUISA	L	B	0.28	6.00	6.00
LOUISA	SL	B	0.28	6.00	6.00
LOUISA VARIANT	L	B	0.28	6.00	6.00
LOUISBURG	FSL	B	0.24	6.00	6.00
LOUISBURG	GR-COSL	B	0.24	6.00	6.00
LOUISBURG	SL	B	0.20	6.00	6.00
LOUISBURG	SL	B	0.24	6.00	6.00
LOUISBURG	ST-SL	B	0.10	6.00	6.00
LOUISBURG	STV-SL	B	0.10	6.00	6.00
LOWELL	SIL	C	0.37	6.00	6.00
LUCKETTS	SIL	B	0.32	6.00	6.00
LUCKETTS*	SIL	B	0.32	6.00	6.00
LUCY	LS	A	0.10	6.00	6.00
LUGNUM	SIL	C	0.43	1.00	2.50
LUMBEE	L	B/D	0.24	0.00	1.50
LUMBEE	SIL	B/D	0.24	0.00	1.50
LUMBEE	SL	B/D	0.24	0.00	1.50
LUMBEE VARIANT	SL	D	0.24	0.00	0.50
LUNT	FSL	C	0.32	6.00	6.00
LUNT	L	C	0.32	6.00	6.00
LYNCHBURG	FSL	C	0.20	0.50	1.50
LYNCHBURG	L	C	0.20	0.50	1.50
MACOVE	CB-SIL	B	0.20	6.00	6.00
MACOVE	CNV-SIL	B	0.20	6.00	6.00
MACOVE	GR-SIL	B	0.20	6.00	6.00
MACOVE	RB-SIL	B	0.05	6.00	6.00
MACOVE	RB-SIL	B	0.20	6.00	6.00
MADE LAND				6.00	6.00
MADELAND				6.00	6.00
MADISON	CB-FSL	B	0.24	6.00	6.00
MADISON	CL	B	0.28	6.00	6.00
MADISON	FSL	B	0.24	6.00	6.00
MADISON	L	B	0.24	6.00	6.00
MADISON	SCL	B	0.28	6.00	6.00
MADISON	SL	B	0.24	6.00	6.00
MAGOTHA	FSL	D	0.28	0.00	1.00
MANASSAS	SIL	B	0.37	2.00	3.00
MANOR	L	B	0.37	6.00	6.00
MANOR	SIL	B	0.37	6.00	6.00
MANOR	STV-L	B	0.32	6.00	6.00
MANTACHIE	L	C	0.28	1.00	1.50
MANTEO	CN-L	C/D	0.28	6.00	6.00
MANTEO	CN-SIL	C/D	0.28	6.00	6.00
MANTEO	CNV-L	C/D	0.28	6.00	6.00
MANTEO	CNV-SIL	C/D	0.28	6.00	6.00
MANTEO	SIL	C/D	0.28	6.00	6.00
MARBIE	SIL	C	0.37	2.00	4.00
MARGO	L	B	0.37	1.00	3.00
MARLBORO	FSL	B	0.20	6.00	6.00
MARR	VFSL	B	0.32	6.00	6.00
MARUMSCO	L	C	0.32	1.00	1.50
MASADA	FSL	C	0.32	6.00	6.00
MASADA	GR-FSL	C	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
MASADA	GR-L	C	0.24	6.00	6.00
MASADA	L	C	0.32	6.00	6.00
MASADA	SCL	C	0.24	6.00	6.00
MASADA	SCL	C	0.32	6.00	6.00
MASSADA	FSL	C	0.32	6.00	6.00
MASSANETTA	L	B	0.37	2.00	3.50
MASSANETTA	SIL	B	0.37	2.00	3.50
MASSANUTTEN	CN-SIL	B	0.24	6.00	6.00
MASSANUTTEN	STV-L	B	0.24	6.00	6.00
MASSANUTTEN	STV-SIL	B	0.24	6.00	6.00
MATAPEAKE	FSL	B	0.24	6.00	6.00
MATAPEAKE	FSL	B	0.28	4.00	6.00
MATAPEAKE	FSL	B	0.37	6.00	6.00
MATAPEAKE	SIL	B	0.49	6.00	6.00
MATNEFLAT	ST-SL	B	0.15	6.00	6.00
MATTAN	MK-CL	D			
MATTAN	MK-L	D	0.32		
MATTAN	MK-SICL	D	0.32		
MATTAN	MUCK	D			
MATTAPEX	FSL	C	0.37	1.50	2.50
MATTAPEX	L	C	0.32	1.00	1.50
MATTAPEX	SIL	C	0.37	1.50	2.50
MATTAPONI	FSL	C	0.28	3.00	6.00
MATTAPONI	GR-SL	C	0.28	3.00	6.00
MATTAPONI	SCL	C	0.28	3.00	6.00
MATTAPONI	SL	C	0.28	3.00	6.00
MATTAPONI	SL	C	0.32	3.00	6.00
MAURERTOWN	SICL	D	0.37	0.00	0.50
MAURERTOWN	SIL	D	0.43	0.00	0.50
MAYODAN	FSL	B	0.24	6.00	6.00
MAYODAN	GR-FSL	B	0.15	6.00	6.00
MAYODAN	GR-SL	B	0.15	6.00	6.00
MAYODAN	GRV-SL	B	0.24	6.00	6.00
MAYODAN	L	B	0.24	6.00	6.00
MAYODAN	SIL	B	0.24	6.00	6.00
MAYODAN	SL	B	0.24	6.00	6.00
MAYODAN	STV-FSL	B	0.17	6.00	6.00
MAYODAN, CLAYEY SUBS	SL	B	0.24	6.00	6.00
MCGARY	SICL	C	0.43	1.00	3.00
MCGARY	SIL	C	0.43	1.00	3.00
MCQUEEN	L	C	0.37	5.00	6.00
MEADOWS	GR-L	D	0.20	6.00	6.00
MEADOWS	GR-SIL	D	0.20	6.00	6.00
MEADOWVILLE	FSL	B	0.37	3.00	5.00
MEADOWVILLE	L	B	0.37	3.00	5.00
MEADOWVILLE	SIL	B	0.37	3.00	5.00
MEADOWVILLE	STV-SIL	B	0.37	3.00	5.00
MECKLENBURG	CL	C	0.28	6.00	6.00
MECKLENBURG	FSL	C	0.24	6.00	6.00
MECKLENBURG	GR-L	C	0.17	6.00	6.00
MECKLENBURG	L	C	0.24	6.00	6.00
MECKLENBURG	L	D	0.32	6.00	6.00
MECKLENBURG	SIL	C	0.24	6.00	6.00
MECKLENBURG VARIANT	L	C	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
MEGGETT	SL	D	0.24	0.00	1.00
MELFA	MPT	D		0.00	1.00
MELVIN	SIL	D	0.43	0.00	1.00
MILLROCK	LFS	A	0.17	6.00	6.00
MILLROCK	LS	A	0.17	6.00	6.00
MINE DUMP				6.00	6.00
MINES		A	0.17	6.00	6.00
MINNIEVILLE	CL	C	0.28	6.00	6.00
MINNIEVILLE	L	C	0.37	6.00	6.00
MIXED ALLUVIUM	SL	D	0.24	0.00	1.00
MOLENA	LFS	A	0.10	6.00	6.00
MOLENA	LS	A	0.10	6.00	6.00
MONACAN	SIL	C	0.43	0.50	2.00
MONGLE	L	C	0.37	0.50	1.50
MONONGAHELA	CB-FSL	C	0.37	1.50	3.00
MONONGAHELA	CB-L	C	0.37	1.50	3.00
MONONGAHELA	FSL	C	0.43	1.50	3.00
MONONGAHELA	GR-L	C	0.37	1.50	3.00
MONONGAHELA	L	C	0.43	1.50	3.00
MONONGAHELA	SIL	C	0.43	1.50	3.00
MONTALTO	L	C	0.32	5.00	5.00
MONTALTO	SICL	B	0.28	6.00	6.00
MONTALTO	SICL	C	0.32	5.00	5.00
MONTALTO	SIL	B	0.32	6.00	6.00
MONTALTO	SIL	C	0.32	5.00	5.00
MONTALTO	SIL	C	0.32	6.00	6.00
MONTALTO	ST-SIL	B	0.24	6.00	6.00
MONTALTO	STV-L	C	0.28	6.00	6.00
MONTRESSOR*	GR-SIL	B	0.24	4.00	6.00
MONTROSS	SIL	C	0.49	1.00	2.50
MOOMAW	CB-FSL	C	0.24	1.50	3.00
MOOMAW	FSL	C	0.17	1.50	3.00
MOOMAW	L	C	0.28	1.50	3.00
MORRISONVILLE*	SIL	B	0.32	6.00	6.00
MORRISONVILLE*	STV-SIL	B	0.28	6.00	6.00
MORRISONVILLE*	STV-SIL	B	0.32	6.00	6.00
MORVEN*	SIL	B	0.37	5.00	6.00
MOUNT LUCAS	SIL	C	0.32	0.50	3.00
MT WEATHER*	STV-SIL	B	0.17	6.00	6.00
MUCKALEE	L	D	0.20	0.50	1.50
MUNDEN	FSL	B	0.20	1.50	2.50
MUNDEN	LFS	B	0.17	1.50	2.50
MUNDEN	LS	B	0.17	1.50	2.50
MUNDEN	SL	B	0.20	1.50	2.50
MURRILL	CN-FSL	B	0.32	6.00	6.00
MURRILL	CN-SIL	B	0.28	6.00	6.00
MURRILL	L	B	0.32	6.00	6.00
MURRILL	STV-FSL	B	0.24	6.00	6.00
MURRILL	STV-L	B	0.24	6.00	6.00
MURRILL	STV-SL	B	0.24	6.00	6.00
MYATT	FSL	D	0.28	0.00	1.00
MYATT	L	D	0.32	0.00	1.00
MYATT	SIL	D	0.32	0.00	1.00
MYATT	SL	D	0.28	0.00	1.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
MYATT VARIANT	FSL	D		0.00	1.00
MYERSVILLE	CN-SIL	B	0.20	6.00	6.00
MYERSVILLE	L	B	0.37	6.00	6.00
MYERSVILLE	SIL	B	0.37	6.00	6.00
MYERSVILLE	ST-L	B	0.32	6.00	6.00
MYERSVILLE	ST-SIL	B	0.32	6.00	6.00
MYERSVILLE	STV-L	B	0.28	6.00	6.00
MYERSVILLE	STV-L	B	0.32	6.00	6.00
MYERSVILLE	STV-SIL	B	0.28	6.00	6.00
MYERSVILLE	STV-SIL	B	0.32	6.00	6.00
MYERSVILLE	STX-SIL	B	0.32	6.00	6.00
MYSERSVILLE	STV-L	B	0.28	6.00	6.00
NAHUNTA	SIL	C	0.43	1.00	2.50
NANSEMOND	FSL	C	0.20	1.50	2.50
NANSEMOND	LFS	C	0.15	1.50	2.50
NANSEMOND	LS	C	0.15	1.50	2.50
NANSEMOND	SL	C	0.20	1.50	2.50
NASON	GR-L	B	0.24	6.00	6.00
NASON	GR-SIL	B	0.24	6.00	6.00
NASON	L	C	0.43	6.00	6.00
NASON	SICL	C	0.49	6.00	6.00
NASON	SIL	C	0.43	6.00	6.00
NAWNEY	L	D	0.24	0.00	0.50
NAWNEY	SIL	D	0.32		
NAWNEY	SIL	D	0.32	0.00	0.50
NEABSCO	L	C	0.32	1.00	2.50
NESTORIA	GR-SIL	C/D	0.28	6.00	6.00
NEVARC	CL	C	0.32	1.50	3.00
NEVARC	FSL	C	0.32	1.50	3.00
NEVARC	L	C	0.37	1.50	3.00
NEVARC	SIL	C	0.37	1.50	3.00
NEVARC	SL	C	0.32	1.50	3.00
NEVRAC	SL	C	0.32	1.50	3.00
NEWARK	SIL	C	0.43	0.50	1.50
NEWARK VARIANT	SIL	C	0.43	0.50	1.50
NEWBERN	SIL	C	0.28	6.00	6.00
NEWFLAT	SIL	D	0.37	0.50	1.50
NEWHAN	FS	A	0.10	6.00	6.00
NEWMARC	SIL	C	0.32	0.50	1.50
NICHOLSON	SIL	C	0.43	1.50	2.50
NIMMO	FSL	D	0.20	0.00	1.00
NIMMO	L	D	0.20	0.00	1.00
NIMMO	SL	D	0.20	0.00	1.00
NIXA	CRV-SIL	C	0.32	6.00	6.00
NIXA	GR-L	C	0.32	6.00	6.00
NOLICHUCKY	GR-SL	B	0.15	6.00	6.00
NOLICHUCKY	L	B	0.28	6.00	6.00
NOLICHUCKY	STV-SL	B	0.20	6.00	6.00
NOLIN	SIL	B	0.43	3.00	6.00
NOMBERVILLE	L	B	0.28	6.00	6.00
NOMBERVILLE	SIL	B	0.28	6.00	6.00
NORFOLK	FSL	B	0.20	4.00	6.00
OAKHILL	GR-SIL	B	0.20	6.00	6.00
OAKLET	SIL	C	0.37	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
OATLANDS	L	B	0.32	6.00	6.00
OCCOQUAN	L	B	0.37	6.00	6.00
OCCOQUAN	SL	B	0.24	6.00	6.00
OCCOQUAN	STV-L	B	0.20	6.00	6.00
OCHLOCKONEE	SIL	B	0.24	3.00	5.00
OCHLOCKONEE	SL	B	0.20	3.00	5.00
OCHLOCKONEE VARIANT	SL	C		2.00	4.50
OKEETEE	SL	D	0.24	0.50	1.00
OPEQUON	SIC	C	0.37	6.00	6.00
OPEQUON	SICL	C	0.37	6.00	6.00
OPEQUON	SIL	C	0.43	6.00	6.00
ORAGNE	SIL	D	0.28	1.00	3.00
ORANGE	FSL	D	0.15	1.00	3.00
ORANGE	L	D	0.28	1.00	3.00
ORANGE	SIL	D	0.28	1.00	3.00
ORANGE	SIL	D	0.32	1.00	2.00
ORANGE	SL	D	0.15	1.00	3.00
ORANGE	STV-SIL	D	0.24	1.00	3.00
ORANGE VARIANT	SIL	D	0.28	1.00	3.00
ORANGEBURG	FSL	B	0.20	6.00	6.00
ORANGEBURG	LS	B	0.10	6.00	6.00
ORANGEBURG	SL	B	0.20	6.00	6.00
ORENDA	L	B	0.37	6.00	6.00
ORISKANY	BYX-SL	B	0.10	6.00	6.00
ORISKANY	L	B	0.15	6.00	6.00
ORISKANY	RB-L	B	0.05	6.00	6.00
ORISKANY	RB-SL	B	0.05	6.00	6.00
ORISKANY	STV-L	B	0.15	6.00	6.00
ORISKANY	STV-SL	B	0.15	6.00	6.00
OSIER	LFS	A/D	0.15	0.00	1.00
OTHELLO	FSL	C/D	0.37	0.00	1.00
OTHELLO	SIL	C/D	0.37	0.00	1.00
PACOLET	CL	B	0.24	6.00	6.00
PACOLET	FSL	B	0.20	6.00	6.00
PACOLET	GR-FSL	B	0.15	6.00	6.00
PACOLET	GR-SL	B	0.15	6.00	6.00
PACOLET	SCL	B	0.24	6.00	6.00
PACOLET	SL	B	0.15	6.00	6.00
PACOLET	SL	B	0.20	6.00	6.00
PACTOLUS	FS	A	0.10	1.50	3.00
PACTOLUS	LFS	A	0.10	1.50	3.00
PACTOLUS	LS	A	0.10	1.50	3.00
PAGEBROOK	SICL	D	0.37	2.00	4.00
PAGEBROOK	SIL	D	0.37	2.00	4.00
PAMLICO	MUCK	D			
PAMLICO	MUCK	D		0.00	1.00
PAMUNKEY	CL	B	0.28	6.00	6.00
PAMUNKEY	FSL	B	0.28	4.00	6.00
PAMUNKEY	FSL	B	0.28	6.00	6.00
PAMUNKEY	L	B	0.28	4.00	6.00
PAMUNKEY	L	B	0.28	6.00	6.00
PAMUNKEY	LS	B	0.28	6.00	6.00
PAMUNKEY	SL	B	0.28	6.00	6.00
PAMUNKEY VARIANT	GR-SL	A	0.20	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
PANORAMA	SIL	B	0.37	6.00	6.00
PARKER	CB-L	B	0.17	6.00	6.00
PARKER	STV-L	B	0.17	6.00	6.00
PARKER	STV-SL	B	0.17	6.00	6.00
PARKER	STX-L	B	0.17	6.00	6.00
PARTLOW	FSL	D	0.28	0.00	1.00
PARTLOW	L	D	0.32	0.00	1.00
PARTLOW	SL	D	0.28	0.00	1.00
PASQUOTANK	VFSL	B/D	0.43	1.00	2.00
PEAKS	BY-SIL	C	0.15	6.00	6.00
PEAKS	CN-SIL	C	0.17	6.00	6.00
PEAKS	GR-FSL	C	0.17	6.00	6.00
PEAKS	GR-L	C	0.17	6.00	6.00
PEAKS	GR-SL	C	0.17	6.00	6.00
PEAKS	RB-SIL	C	0.15	6.00	6.00
PEAKS	RB-SL	C	0.15	6.00	6.00
PEAKS	STV-FSL	C	0.15	6.00	6.00
PEAKS	STV-L	C	0.15	6.00	6.00
PEAKS	STV-SL	C	0.15	6.00	6.00
PEAKS	STX-SL	C	0.15	6.00	6.00
PEAWICK	CL	D	0.37	1.50	3.00
PEAWICK	L	D	0.37	1.50	3.00
PEAWICK	SIL	D	0.37	1.50	3.00
PENN	CN-SIL	C/D	0.17	6.00	6.00
PENN	GR-L	C/D	0.28	6.00	6.00
PENN	L	C	0.32	6.00	6.00
PENN	SH-SIL	C	0.28	6.00	6.00
PENN	SIL	C	0.32	6.00	6.00
PENN	SIL	C	0.37	6.00	6.00
PENN	SIL	C/D	0.28	6.00	6.00
PENNN	L	C	0.32	6.00	6.00
PHILO	SIL	B	0.37	1.50	3.00
PHILO	SL	B	0.28	1.50	3.00
PHILOMOMT*	STV-SIL	B	0.32	6.00	6.00
PHILOMONT	SL	B	0.32	6.00	6.00
PINEYWOODS	L	D	0.37	0.00	1.00
PINEYWOODS	SIL	D	0.37	0.00	1.00
PINKSTON	CB-SL	B	0.17	6.00	6.00
PINKSTON	FSL	B	0.20	6.00	6.00
PINKSTON	GR-SL	B	0.10	6.00	6.00
PINKSTON	SL	B	0.20	6.00	6.00
PINKSTON	STV-SL	B	0.15	6.00	6.00
PISGAH	SIL	C	0.37	6.00	6.00
PITS				6.00	6.00
PITS		A	0.02	6.00	6.00
PITS		A	0.17	6.00	6.00
PITS	UWB			6.00	6.00
PITS	VAR			6.00	6.00
PITS AND DUMPS				6.00	6.00
PITS QUARRIES	VAR			6.00	6.00
PITS, BEDROCK	UWB			6.00	6.00
PITS, GRAVEL		A	0.02	6.00	6.00
PITS, GRAVEL	GRX-COS	A	0.02	6.00	6.00
PITS, GRAVELLY	GRX-S	A	0.02	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
PITS, QUARRIES	VAR			6.00	6.00
PITS, QUARRIES, LAND				6.00	6.00
PITS, QUARRY				6.00	6.00
PITS, QUARRY	UWB			6.00	6.00
POCATY	MUCK	D			
POCATY	PEAT	D			
POCOMOKE	FSL	B/D	0.20		
POINDEXTER	FSL	B	0.28	6.00	6.00
POINDEXTER	GR-SIL	B	0.32	6.00	6.00
POINDEXTER	L	B	0.37	6.00	6.00
POINDEXTER	SIL	B	0.37	6.00	6.00
POINDEXTER	SL	B	0.28	6.00	6.00
POLAWANA	LS	A/D	0.10		
POLAWANA	MK-SL	A/D	0.10		
POOLER VARIANT	L	D	0.24	0.00	1.00
POPE	FSL	B	0.28	6.00	6.00
POPE	GR-FSL	B	0.28	6.00	6.00
POPLIMENTO	GR-L	C	0.32	6.00	6.00
POPLIMENTO	GR-SIL	C	0.24	6.00	6.00
POPLIMENTO	GRV-L	C	0.24	6.00	6.00
POPLIMENTO	L	C	0.32	6.00	6.00
POPLIMENTO	SIL	C	0.32	6.00	6.00
PORTERS	CB-L	B	0.17	6.00	6.00
PORTERS	L	B	0.28	6.00	6.00
PORTERS	RB-L	B	0.17	6.00	6.00
PORTERS	SL	B	0.24	6.00	6.00
PORTERS	ST-L	B	0.17	6.00	6.00
PORTERS	STV-FSL	B	0.17	6.00	6.00
PORTERS	STV-L	B	0.17	6.00	6.00
PORTSMOUTH	L	B/D	0.24	0.00	1.00
PORTSMOUTH	MK-L	B/D	0.24	0.00	1.00
PORTSMOUTH	SIL	B/D	0.32	0.00	1.00
PORTSMOUTH	SL	B/D	0.24	0.00	1.00
POUNCEY	FSL	D	0.28	0.00	0.00
POUNCEY	SL	D	0.28	0.00	0.00
POYNER	GRV-SIL	B	0.28	6.00	6.00
POYNOR	GRV-SIL	B	0.28	6.00	6.00
POYNOR	GRX-L	B	0.28	6.00	6.00
POYNOR	GRX-SIL	B	0.28	6.00	6.00
PUNGO	MUCK	D		0.00	1.00
PURCELLVILLE	SIL	B	0.32	6.00	6.00
PURDY	L	D	0.43		
PURDY	SICL	D	0.43		
PURDY	SIL	D	0.43		
QUANTICO	L	B	0.32	6.00	6.00
QUANTICO	SL	B	0.32	6.00	6.00
QUARRIES				6.00	6.00
QUARRY				6.00	6.00
RABUM	SIL	B	0.32	6.00	6.00
RABUN	C	B	0.32	6.00	6.00
RABUN	CL	B	0.32	6.00	6.00
RABUN	SIL	B	0.32	6.00	6.00
RABUN	STV-CL	B	0.20	6.00	6.00
RAINS	FSL	B/D	0.20	0.00	1.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
RAINS	L	B/D	0.15	0.00	1.00
RAINS	VFSL	B/D	0.20	0.00	1.00
RAMSEY	ST-FSL	D	0.17	6.00	6.00
RAMSEY	ST-SL	D	0.17	6.00	6.00
RAMSEY	STV-L	D	0.20	6.00	6.00
RAMSEY	STV-SL	D	0.10	6.00	6.00
RAPIDAN	SICL	B	0.37	6.00	6.00
RAPIDAN	SIL	B	0.37	6.00	6.00
RAPPAHANNOCK	M-PT	D			
RAPPAHANNOCK	MUCK	D			
RAPPAHANNOCK	SICL	D	0.32		
RAPPAHANNOCK	SP	D			
RARITAN	SIL	C	0.37	0.50	3.00
RARITAN	SIL	C	0.43	0.50	3.00
RAYNE	CN-L	B	0.20	6.00	6.00
RAYNE	SIL	B	0.28	6.00	6.00
READINGTON	SIL	C	0.43	1.50	3.00
REAVILLE	SIL	C	0.43	0.50	3.00
REMLIK	FS	A	0.10	4.00	6.00
REMLIK	GR-LS	A	0.10	4.00	6.00
REMLIK	LFS	A	0.10	4.00	6.00
REMLIK	LS	A	0.10	4.00	6.00
RIGLEY	STV-SL	B	0.24	6.00	6.00
RION	FSL	B	0.24	6.00	6.00
RIVERVIEW	L	B	0.32	3.00	5.00
RIVERVIEW	LFS	B	0.20	3.00	5.00
RIVERVIEW	SIL	B	0.32	3.00	5.00
RIVERVIEW	SL	B	0.24	3.00	5.00
RIVERWASH	CBX-SL	D		0.00	2.00
ROANOKE	FSL	D	0.28	0.00	1.00
ROANOKE	L	D	0.37	0.00	1.00
ROANOKE	SIL	D	0.37		
ROANOKE	SIL	D	0.37	0.00	1.00
ROCK LAND		D		6.00	6.00
ROCK LAND BASIC		D		6.00	6.00
ROCK OURCROP	UWB	D		6.00	6.00
ROCK OUTCROP		D		6.00	6.00
ROCK OUTCROP	UWB	D		6.00	6.00
ROCK OUTCROP	VAR	D		6.00	6.00
ROHRERSVILLE	SIL	D	0.43	0.50	1.50
ROHRERSVILLE	STV-SIL	D	0.43	0.50	1.50
ROHRESVILLE	SIL	D	0.43	0.50	1.50
ROSS	L	B	0.32	4.00	6.00
ROWLAND	SIL	C	0.43	1.00	3.00
RUBBLE LAND	FRAG	A		6.00	6.00
RUBBLELAND	FRAG	A		6.00	6.00
RUMFORD	FSL	B	0.24	6.00	6.00
RUMFORD	LFS	B	0.17	6.00	6.00
RUMFORD	LS	B	0.17	6.00	6.00
RUSHTOWN	CN-SIL	A	0.24	6.00	6.00
RUSHTOWN	CNV-SIL	A	0.17	6.00	6.00
RUSTON	FSL	B	0.28	6.00	6.00
SAFELL	FSL	B	0.24	6.00	6.00
SASSAFRAS	FSL	B	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
SASSAFRAS	FSL	B	0.28	6.00	6.00
SASSAFRAS	LFS	B	0.17	6.00	6.00
SASSAFRAS	SL	B	0.24	6.00	6.00
SASSFRAS	FSL	B	0.24	6.00	6.00
SAUNOOK	L	B	0.24	6.00	6.00
SAUNOOK	STV-L	B	0.24	6.00	6.00
SAVANNAH	FSL	C	0.24	1.50	3.00
SAVANNAH	L	C	0.37	1.50	3.00
SAVANNAH	SL	C	0.28	1.50	2.50
SCATTERSVILLE*	GR-L	C	0.37	1.50	3.00
SCHAFFENAKER	STV-LS	A	0.17	6.00	6.00
SEABROOK	LFS	C	0.10	2.00	4.00
SEABROOK	LS	C	0.10	2.00	4.00
SEDGEFIELD	FSL	C	0.28	1.00	1.50
SEKIL	SL	B	0.32	6.00	6.00
SENECA	FSL	B	0.28	2.00	3.50
SENECA	FSL	B	0.37	3.00	5.00
SENECA	L	B	0.37	3.00	5.00
SENECA	SIL	B	0.32	2.00	3.50
SENECA	SL	B	0.28	2.00	3.50
SEQUOIA	L	C	0.37	6.00	6.00
SEQUOIA	SIL	C	0.37	6.00	6.00
SEQUOIA	STV-L	C	0.17	6.00	6.00
SHELOCTA	CB-FSL	B	0.32	6.00	6.00
SHELOCTA	CN-SIL	B	0.28	6.00	6.00
SHELOCTA	FSL	B	0.32	6.00	6.00
SHELOCTA	GR-SIL	B	0.28	6.00	6.00
SHELOCTA	RB-SIL	B	0.32	6.00	6.00
SHELOCTA	SIL	B	0.32	6.00	6.00
SHELOCTA VARIANT	ST-L		0.32	5.00	5.00
SHELOCTA VARIANT	STV-L		0.32	5.00	5.00
SHENVAL	CB-L	B	0.24	6.00	6.00
SHENVAL	L	B	0.32	6.00	6.00
SHERANDO	CB-FSL	B	0.20	6.00	6.00
SHERANDO	CB-SL	B	0.20	6.00	6.00
SHERANDO	CBV-FSL	B	0.10	6.00	6.00
SHERANDO	CBV-SL	B	0.10	6.00	6.00
SHERANDO	GR-SL	B	0.28	6.00	6.00
SHERANDO	RB-SL		0.32	5.00	5.00
SHERANDO	RB-SL	B	0.10	6.00	6.00
SHERANDO	RB-SL	B	0.20	6.00	6.00
SHERANDO	SL	B	0.28	6.00	6.00
SHEVA	FSL	C	0.20	1.50	2.00
SHOTTOWER	CB-L	B	0.24	6.00	6.00
SHOTTOWER	L	B	0.32	6.00	6.00
SINDION	L	B	0.32	1.50	3.00
SINDION	SIL	B	0.32	1.50	3.00
SKETERVILLE	L	C	0.37	1.50	2.50
SKETERVILLE	SIL	C	0.37	1.50	2.50
SLABTOWN	SIL	B	0.43	1.50	3.00
SLAGLE	FSL	C	0.28	1.50	3.00
SLAGLE	L	C	0.37	1.50	3.00
SLAGLE	LS	C	0.24	1.50	3.00
SLAGLE	SIL	C	0.37	1.50	3.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
SLAGLE	SL	C	0.28	1.50	3.00
SLICKENS		B	0.64	0.00	2.00
SNICKERSVILLE*	GR-L	B	0.24	4.00	6.00
SPEEDWELL	FSL	B	0.17	6.00	6.00
SPEEDWELL	L	B	0.32	6.00	6.00
SPEEDWELL	SL	B	0.17	6.00	6.00
SPESSARD	LS	A	0.10	6.00	6.00
SPIVEY	BY-L	B	0.17	6.00	6.00
SPIVEY	GR-L	B	0.17	6.00	6.00
SPIVEY	RB-L	B	0.17	6.00	6.00
SPOTSYLVANIA	FSL	C	0.32	6.00	6.00
SPOTSYLVANIA	SL	C	0.32	6.00	6.00
SPRIGGS	GR-L	C	0.37	6.00	6.00
SPRIGGS	L	C	0.37	6.00	6.00
SPRIGGS	SIL	C	0.37	6.00	6.00
SPRIGGS	STV-L	C	0.20	6.00	6.00
SPRIGGS	STV-L	C	0.37	6.00	6.00
SPRINGWOOD	SIL	B	0.32	6.00	6.00
SPRINGWOOD*	SIL	B	0.32	6.00	6.00
STANTON	SIL	D	0.43	0.00	0.50
STARR	L	C	0.28	6.00	6.00
STARR	SICL	C	0.28	6.00	6.00
STARR	SIL	B	0.37	3.00	5.00
STARR	SIL	C	0.28	6.00	6.00
STATE	FSL	B	0.28	4.00	6.00
STATE	GR-FSL	B	0.28	4.00	6.00
STATE	L	B	0.24	6.00	6.00
STATE	L	B	0.28	4.00	6.00
STATE	L	B	0.37	5.00	5.00
STATE	LFS	B	0.28	4.00	6.00
STATE	LS	B	0.28	4.00	6.00
STATE	SIL	B	0.28	4.00	6.00
STATE	SL	B	0.28	4.00	6.00
STATE	VFSL	B	0.28	4.00	6.00
STEINSBURG	FSL	C	0.28	6.00	6.00
STONEVILLE	SIL	B	0.32	6.00	6.00
STONY ALLUVIAL LAND		D		0.00	2.00
STONY COLLUVIAL LAND		A		6.00	6.00
STONY LOCAL ALLUVIAL	ST-L	D		0.00	2.00
STUART	L	C	0.37	1.50	3.00
STUMPTOWN	FL-L	B	0.20	6.00	6.00
STUMPTOWN	FLV-L	B	0.20	6.00	6.00
SUCHES	FSL	B	0.24	2.50	4.00
SUCHES	L	B	0.24	2.50	4.00
SUDLEY	L	B	0.37	6.00	6.00
SUEQUEHANNA	L	D	0.37	6.00	6.00
SUFFOLK	FSL	B	0.28	6.00	6.00
SUFFOLK	LFS	B	0.24	6.00	6.00
SUFFOLK	LS	B	0.24	6.00	6.00
SUFFOLK	SL	B	0.28	6.00	6.00
SUSDLEY	L	B	0.37	6.00	6.00
SUSQUEHANNA	L	D	0.37	6.00	6.00
SWAMP	L	D	0.28	0.50	1.50
SWEETAPPLE	FSL	B	0.28	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
SWIMLEY	SICL	C	0.37	6.00	6.00
SWIMLEY	SIL	C	0.37	6.00	6.00
SYCOLINE	SIL	D	0.32	1.50	3.00
SYCOLINE	SIL	D	0.43	1.50	3.00
SYLCO	CN-SIL	C	0.24	6.00	6.00
SYLCO	FL-SIL	C	0.24	6.00	6.00
SYLCO	STV-L	C	0.20	6.00	6.00
SYLCO	STV-SIL	C	0.20	6.00	6.00
SYLCO	STX-SIL	C	0.20	6.00	6.00
SYLVATUS	CN-SIL	D	0.26	6.00	6.00
SYLVATUS	CN-SIL	D	0.28	6.00	6.00
SYLVATUS	CNV-SIL	D	0.16	6.00	6.00
SYLVATUS	STV-L	D	0.26	6.00	6.00
SYLVATUS	STX-L	D	0.28	6.00	6.00
SYLVATUS	STX-SIL	D	0.12	6.00	6.00
SYLVATUS	STX-SIL	D	0.28	6.00	6.00
TALLADEGA	CN-L	C	0.28	6.00	6.00
TALLADEGA	CN-SIL	C	0.28	6.00	6.00
TALLADEGA	SIL	C	0.32	6.00	6.00
TALLAPOOSA	L	C	0.32	6.00	6.00
TALLAPOOSA VARIANT	FSL	C	0.28	6.00	6.00
TALLEDEGA	CN-L	C	0.28	6.00	6.00
TARBORO	LS	A	0.10	6.00	6.00
TARBORO	S	A	0.10	6.00	6.00
TATE	L	B	0.24	6.00	6.00
TATE	ST-L	B	0.17	6.00	6.00
TATUM	CL	B	0.32	6.00	6.00
TATUM	GR-L	B	0.20	6.00	6.00
TATUM	GR-SIL	B	0.20	6.00	6.00
TATUM	L	B	0.37	6.00	6.00
TATUM	SICL	B	0.32	6.00	6.00
TATUM	SIL	B	0.20	6.00	6.00
TATUM	SIL	B	0.37	6.00	6.00
TETOTUM	FSL	C	0.28	1.50	2.50
TETOTUM	L	C	0.37	1.50	2.50
TETOTUM	SIL	C	0.37	1.50	2.50
TETOTUM	SL	C	0.28	1.50	2.50
TETOTUM VARIANT	L	C	0.24	1.50	2.50
THUNDER	BY-L	B	0.05	6.00	6.00
THUNDER	CBV-L	B	0.05	6.00	6.00
THUNDER	GR-L	B	0.05	6.00	6.00
THUNDER	RB-L	B	0.05	6.00	6.00
THUNDER	STV-L	B	0.05	6.00	6.00
THURMONT	CB-L	B	0.20	4.00	6.00
THURMONT	FSL	B	0.32	4.00	6.00
THURMONT	GR-L	B	0.24	4.00	6.00
THURMONT	L	B	0.32	4.00	6.00
THURMONT	SL	B	0.32	4.00	6.00
THURMONT	ST-L	B	0.28	4.00	6.00
THURMONT	STV-L	B	0.24		6.00
THURMONT	STV-L	B	0.24	4.00	6.00
TIDAL MARSH	MK-L	D	0.49		
TIMBERVILLE	FSL	B	0.17	6.00	6.00
TIMBERVILLE	GR-SIL	B	0.24	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
TIMBERVILLE	L	B		6.00	6.00
TIMBERVILLE	L	B	0.28	3.00	3.00
TIMBERVILLE	L	B	0.32	6.00	6.00
TIMBERVILLE	SIL	B		6.00	6.00
TIMBERVILLE	SIL	B	0.32	6.00	6.00
TIMBERVILLE VARIANT	L	B	0.28	3.00	3.00
TIMBERVILLE VARIANT	SIL	B		6.00	6.00
TIOGA	FSL	B	0.37	3.00	6.00
TOCCOA	FSL	B	0.10	2.50	5.00
TOCCOA	FSL	B	0.24	2.50	5.00
TOCCOA	L	B	0.24	2.50	5.00
TOCCOA	LFS	B	0.24	2.50	5.00
TOCCOA	LS	B	0.10	2.50	5.00
TOCCOA	SIL	B	0.24	2.50	5.00
TOCCOA	SL	B	0.10	2.50	5.00
TODDSTAV	SIL	D	0.32		
TOMOTLEY	FSL	B/D	0.20	0.00	1.00
TOMOTLEY	L	B/D	0.24	0.00	1.00
TOMOTLEY	SL	B/D	0.20	0.00	1.00
TOMS	SIL	C	0.43	0.50	1.50
TORHUNTA	L	C	0.15	0.50	1.50
TOTIER	SICL	C	0.37	6.00	6.00
TOTIER	SIL	C	0.37	6.00	6.00
TOXAWAY	SIL	B/D	0.17	0.00	1.00
TRAPPIST	SIL	C	0.37	6.00	6.00
TREGO	L	B	0.32	6.00	6.00
TRENHOLM	SL	D	0.32	1.00	3.00
TUCKAHOE	L	B	0.37	6.00	6.00
TUMBLING	BYV-L	B	0.24	6.00	6.00
TUMBLING	CB-L	B	0.22	6.00	6.00
TUMBLING	CB-L	B	0.24	6.00	6.00
TUMBLING	FSL	B	0.24	6.00	6.00
TUMBLING	L	B	0.32	6.00	6.00
TUMBLING	STV-L	B	0.24	6.00	6.00
TURBEVILLE	CB-FSL	C	0.28	6.00	6.00
TURBEVILLE	CL	C	0.28	6.00	6.00
TURBEVILLE	FSL	C	0.32	6.00	6.00
TURBEVILLE	GR-FSL	C	0.24	6.00	6.00
TURBEVILLE	L	C	0.37	6.00	6.00
TURBEVILLE	SCL	C	0.28	6.00	6.00
TURBEVILLE	SIL	C	0.37	6.00	6.00
TUSQUITEE	CB-L	B	0.24	6.00	6.00
TUSQUITEE	L	B	0.28	6.00	6.00
TUSQUITEE	ST-L	B	0.17	6.00	6.00
TUSQUITEE	STV-L	B	0.17	6.00	6.00
TYGART	L	C	0.37	1.50	2.50
TYGART	L	D	0.43	0.50	1.50
TYGART	SIL	D	0.43	0.50	1.50
UCHEE	LFS	A	0.10	3.50	5.00
UCHEE	LS	A	0.10	3.50	5.00
UDIFLUVENTS	FSL	B	0.10	2.50	5.00
UNISON	CB-FSL	B	0.24	6.00	6.00
UNISON	CB-L	B	0.24	6.00	6.00
UNISON	FSL	B	0.32	6.00	6.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
UNISON	GR-L	B	0.24	6.00	6.00
UNISON	L	B	0.32	6.00	6.00
UNISON	SIL	B	0.32	6.00	6.00
UNISON	STV-L	B	0.24	6.00	6.00
UNISON	STV-SIL	B	0.24	6.00	6.00
UNISON VARIANT	L	B	0.32	6.00	6.00
URBAN LAND				2.00	2.00
URBAN LAND	0-30			2.00	2.00
URBAN LAND	VAR			2.00	2.00
URBANLAND	VAR			2.00	2.00
VANCE	CL	C	0.28	6.00	6.00
VANCE	FSL	C	0.24	6.00	6.00
VANCE	GR-SL	C	0.15	6.00	6.00
VANCE	GRF-SL	C	0.24	6.00	6.00
VANCE	SL	C	0.24	6.00	6.00
VARINA	FSL	C	0.15	4.00	5.00
VARINA	GR-SL	C	0.17	4.00	5.00
VARINA	SL	C	0.17	4.00	5.00
VAUCLUSE	SL	C	0.24	6.00	6.00
VERTREES	CR-SIL	B	0.24	6.00	6.00
VERTREES	SIL	B	0.37	6.00	6.00
VERY ROCKY LAND		D		6.00	6.00
WADESBORO	CL	B	0.32	6.00	6.00
WADESBORO	FSL	B	0.24	6.00	6.00
WADESBORO	FSL	B	0.37	6.00	6.00
WADESBORO	SIL	B	0.24	6.00	6.00
WADESBORO	SIL	B	0.37	6.00	6.00
WAHEE	FSL	D	0.24	0.50	1.50
WAHEE	L	D	0.28	0.50	1.50
WAHEE	SIL	D	0.28	0.50	1.50
WAHEE	SL	D	0.24	0.50	1.50
WAKULLA	LS	A	0.10	6.00	6.00
WALLEN	CN-SL	B	0.17	6.00	6.00
WALLEN	STV-SL	B	0.17	6.00	6.00
WALLEN	STX-SL	B	0.17	6.00	6.00
WARMINSTER	L	C	0.37	6.00	6.00
WATAUGA	CB-SIL	B	0.17	6.00	6.00
WATAUGA	SIL	B	0.24	6.00	6.00
WATER			0.28		
WATEREE	FSL	B	0.20	6.00	6.00
WATT	CN-SIL	D	0.32	6.00	6.00
WATT	SIL	D	0.32	6.00	6.00
WATT VARIANT	SIL	D	0.32	6.00	6.00
WAXPOOL	SIL	D	0.43	0.00	1.00
WEAVER	SIL	C	0.32	1.50	2.50
WEAVERTON*	FLV-L	C	0.10	1.50	3.00
WEBBTOWN	CN-SIL	C	0.32	6.00	6.00
WEDOWEE	CL	B	0.28	6.00	6.00
WEDOWEE	FSL	B	0.24	6.00	6.00
WEDOWEE	GR-FSL	B	0.15	6.00	6.00
WEDOWEE	GR-SL	B	0.15	6.00	6.00
WEDOWEE	SCL	B	0.28	6.00	6.00
WEDOWEE	SL	B	0.24	6.00	6.00
WEEKSVILLE	SIL	B/D	0.43	0.00	1.00

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
WEHADKEE	FSL	D	0.24	0.00	1.00
WEHADKEE	L	C	0.28	1.50	2.00
WEHADKEE	L	D	0.24	0.00	1.00
WEHADKEE	L	D	0.24	0.00	2.50
WEHADKEE	L	D	0.49	0.00	0.50
WEHADKEE	SIL	D	0.32	0.00	1.00
WEHADKEE	SIL	D	0.32	0.00	2.50
WEHADKEE	SIL	D	0.49	0.00	0.50
WEHADKEE	VFSL	D	0.24	0.00	2.50
WEIKERT	CN-SIL	C/D	0.28	6.00	6.00
WEIKERT	CNV-SIL	C/D	0.28	6.00	6.00
WEIKERT	SHV-SIL	C/D	0.28	6.00	6.00
WEIKERT	SIL	C/D	0.37	6.00	6.00
WEIKERT	STV-SIL	C/D	0.20	6.00	6.00
WEKERT	CNV-SIL	C/D	0.28	6.00	6.00
WESTMORELAND	L	B	0.37	6.00	6.00
WESTMORELAND	SIL	B	0.37	6.00	6.00
WESTON	FSL	D	0.24	0.00	1.00
WESTON	SL	D	0.24	0.50	1.50
WESTPHALIA	LVFS	B	0.49	6.00	6.00
WEVERTON	FLV-L	B	0.15	6.00	6.00
WHEELING	FSL	B	0.28	6.00	6.00
WHEELING	FSL	B	0.37	6.00	6.00
WHEELING	GR-L	B	0.28	6.00	6.00
WHEELING	L	B	0.37	6.00	6.00
WHEELING	SIL	B	0.37	6.00	6.00
WHEELING	SL	B	0.37	6.00	6.00
WHITE STORE	FSL	D	0.28	1.00	1.50
WHITE STORE	L	D	0.43	1.00	1.50
WHITE STORE VARIANT	L	D	0.43	1.00	1.50
WHITEFORD	SIL	B	0.32	6.00	6.00
WICHKAM	FSL	B	0.24	6.00	6.00
WICKHAM	FSL	B	0.24	6.00	6.00
WICKHAM	L	B	0.24	6.00	6.00
WICKHAM	LFS	B	0.15	6.00	6.00
WICKHAM	SL	B	0.24	6.00	6.00
WICKHAM VARIANT	L	B	0.24	6.00	6.00
WICKHAM VARIANT	SL	B	0.24	6.00	6.00
WILKES	CL	C	0.28	6.00	6.00
WILKES	FSL	C	0.24	6.00	6.00
WILKES	GR-FSL	C	0.17	6.00	6.00
WILKES	L	C	0.24	6.00	6.00
WILKES	SL	C	0.24	6.00	6.00
WINTON	SL	C	0.20	2.00	4.00
WOLFGAP	CL	B	0.32	6.00	6.00
WOLFGAP	FSL	B	0.17	6.00	6.00
WOLFGAP	L	B	0.32	6.00	6.00
WOODINGTON	FSL	B/D	0.20	0.50	1.00
WOODSTOWN	FSL	C	0.24	1.50	2.50
WORSHAM	FSL	D	0.28	0.00	1.00
WORSHAM	L	D	0.37	0.00	1.00
WORSHAM	L	D	0.43	0.00	0.50
WORSHAM	SIL	D	0.37	0.00	1.00
WORSHAM	SIL	D	0.43	0.00	0.50

Soil name	surftex	hydgrp	kfact	wtdepl	wtdeph
WORSHAM	SL	D	0.28	0.00	1.00
WORSHAM VARIANT	FSL	D	0.28	0.00	1.00
WRIGHTSBORO	FSL	C	0.28	2.00	3.00
WRIGHTSBORO	FSL	D	0.43	1.50	3.00
WRYICK	L	B	0.32	6.00	6.00
WURNO	CN-L	C	0.28	6.00	6.00
WURNO	CN-SIL	C	0.28	6.00	6.00
WURNO	SIL	C	0.28	6.00	6.00
WYRICK	L	B	0.32	6.00	6.00
WYRICK	SIL	B	0.32	6.00	6.00
YADKIN	L	C/D	0.32	6.00	6.00
YEMASSEE	FSL	C	0.20	1.00	1.50
YEMASSEE	SL	C	0.20	1.00	1.50
YEOPIM	SIL	B	0.37	1.50	3.00
YORK	SIL	C	0.43	1.50	3.00
ZEPP	STV-L	B	0.17	6.00	6.00
ZEPP	STV-SL	B	0.10	6.00	6.00
ZEPP	STX-L	B	0.15	6.00	6.00
ZEPP	STX-SL	B	0.10	6.00	6.00
ZION		C	0.37	6.00	6.00
ZION	L	C	0.37	6.00	6.00
ZION	SIL	C	0.37	6.00	6.00
ZION	SIL	D	0.43	1.00	2.50
ZION SILT LOAM	SIL	C	0.37	6.00	6.00
ZION VARIANT	L	C	0.37	6.00	6.00
ZOAR	L	C	0.43	1.50	2.50
ZOAR	SIL	C	0.43	1.50	2.50