Ordinance No. 91

HAYCOCK TOWNSHIP STORMWATER MANAGEMENT ORDINANCE

Haycock Township Bucks County, Pennsylvania

October 7, 2002

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ARTICLE 1. GENERAL PROVISIONS

Section 101. Statement of Findings

The governing body of the municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, degrades water quality, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, and threatens public health and safety.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated erosion, is fundamental to the public health, safety, welfare, and the protection of the people of the municipality and all the people of the Commonwealth, their resources, and the environment.

Section 102. Purpose

The purpose of this comprehensive stormwater management ordinance is to promote health, safety, and welfare within Haycock Township by minimizing the damages described in Section 101.A of this Ordinance through provisions designed to:

- A. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause these problems.
- B. Utilize and preserve the existing natural drainage systems.
- C. Maintain the pre-development volume of groundwater recharge and prevent degradation of groundwater quality.
- D. Maintain the pre-development peak and volume of stormwater runoff and prevent degradation of surface water quality.
- E. Minimize nonpoint source pollutant loadings to the ground and surface waters.
- F. Minimize impacts on stream temperatures.
- G. Maintain existing flows and quality of streams and watercourses in the municipality and the Commonwealth.
- H. Preserve and restore the flood-carrying capacity of streams.
- I. Provide proper maintenance of all permanent stormwater management facilities that are constructed in the municipality.
- J. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

Section 103. Statutory Authority

The municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of October 4, 1978 32 P.S., P.L. 864 (Act 167) Section 680.1 et seq., as amended, the 'Storm Water Management Act,"; and by the Authority of Pennsylvania Municipalities Planning Code, Act 247 of 1968, as amended by Act 170 of 1988, as further amended by Act 209 of 1990 and Act 131 of 1992, 53 P.S. Section 10101.

Section 104. Applicability

This Ordinance shall apply to all areas of the municipality that are located within the Tohickon Creek Watershed or Delaware River (North) Watershed as delineated in Appendix D which is hereby adopted as part of this Ordinance.

This Ordinance shall apply to temporary and permanent stormwater management facilities constructed as part of any of the regulated activities listed in this section. Stormwater management and erosion and sedimentation control during construction activities which are specifically not regulated by this Ordinance, shall continue to be regulated under existing laws and ordinances.

This Ordinance contains only the stormwater management performance standards and design criteria that are necessary or desirable from a watershed-wide perspective. Stormwater management design criteria (e.g. inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by applicable ordinances.

The following activities are defined as 'Regulated Activities' and shall be regulated by this Ordinance except as exempted by Section 105 of this Ordinance:

- A. Land development.
- B. Subdivision.
- C. Construction of new or additional impervious surfaces (driveways, parking lots, etc.) which exceed 1,000 square feet in area.
- D. Construction of new buildings or additions to existing buildings which exceed 1,000 square feet in area.
- E. Diversion or piping of any natural or man-made stream channel.
- F. Installation of stormwater management facilities or appurtenances thereto.
- G. Temporary storage of impervious or pervious material (rock, soil, etc.) where ground contact exceeds 5 percent of the lot area or 5,000 square feet (whichever is less), and where the material is placed on slopes exceeding 8 percent.

Section 105. Exemptions

A. Any Regulated Activity that meets the following exception criteria may be exempt from the requirements of Section 303.A of this Ordinance. This exemption shall not relieve the landowner and/or developer from complying with water quality and groundwater recharge standards under Section 303.C and the special requirements under Section 304.R for areas within Exceptional Value and High Quality sub-watersheds. Further, this exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, and property. These criteria shall apply to the total development even if development is to take place in phases. The date of adoption of this Ordinance shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively

considered. Exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, and property.

Total Parcel Size	Minimum Distance (ft.)*	Impervious Area Exemption (sq. ft.)
		(Maximum)
0 - 0.5 acre	10 ft.	1,200 sq. ft.
> 0. 5 -1 acre	50 ft.	2,500 sq. ft.
> 1 - 2 acres	100 ft.	4,000 sq. ft.
> 2 - 5 acres	250 ft.	5,000 sq. ft.
> 5 acres	500 ft.	7,500 sq. ft.

Stormwater Management Exemption Criteria

* The minimum setback distance is measured between the proposed impervious area (excluding driveway access) and/or stormwater control/structure discharge point to the downslope property boundary. In lieu of meeting the minimum distance criteria, the applicant may provide documentation from a Registered Professional Engineer in the Commonwealth of Pennsylvania that the increased flows from the site leaves the site in the same manner as the pre-development condition, and that there will be no adverse affects to properties along the path of flow(s), or that the increased flow(s) will reach a natural watercourse or an existing stormwater management structure before adversely affecting any property along the path of the flow(s).

B. The municipality, upon request by the applicant, may grant an exemption from the provisions of this Ordinance for a project qualifying under Section 105.A. If an exemption is granted, the municipality may require the developer to pay a fee in an amount established by separate Resolution of the Board of Supervisors to the Municipal Stormwater Management Capital Fund.

Section 106. Repealer

Any ordinance or ordinance provision of the municipality inconsistent with any of the provisions of this ordinance is hereby repealed to the extent of the inconsistency only.

Section 107. Severability

Should any section or provision of this ordinance be declared invalid by a court of competent jurisdiction, such decision shall not affect the validity of any of the remaining provisions of this ordinance.

Section 108. Compatibility with Other Ordinance Requirements

Approvals issued pursuant to this ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance.

ARTICLE II. DEFINITIONS

For the purposes of this chapter, certain terms and words used herein shall be interpreted as follows:

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
- C. The word "person' includes an individual, firm, association, organization, partnership, trust, company, corporation, or any other similar entity.
- D. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.
- E. The words "used" or "occupied" include the words "intended", "designed", "maintained", or "arranged to be used", "occupied" or "maintained".

Accelerated erosion The removal of the surface of the land through the combined action of man's activity and the natural processes of a rate greater than would occur because of the natural process alone.

Agricultural activities The work of producing crops and raising livestock including tillage, plowing, disking, harrowing, pasturing and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

Alluvial soils (floodplain soils) Areas subject to periodic flooding and listed in the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agricultural Soil Conservation Service as being "on, or in, the floodplain" or subject to flooding. The following soil types are alluvial and/or floodplain soils:

Alluvial land Alton gravely load, flooded Bowmansville silt loam Hatboro silt loam Marsh Pope loam Rowland silt loam

Alteration As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also the changing of surface conditions by causing the surface to be more or less impervious; land disturbance.

Applicant A landowner or developer who has filed an application for approval to engage in any Regulated Activities as defined in Section 104 of this Ordinance.

BMP (Best Management Practice) Stormwater structures, facilities and techniques to maintain or improve the water quality of surface runoff.

Channel erosion The widening, deepening, and headward cutting of channels and waterways, due to erosion caused by moderate to large floods.

Cistern An underground reservoir or tank for storing rainwater.

Conservation District Bucks Conservation District.

County Bucks County

Culvert A pipe, conduit, or similar structure including appurtenant works which conveys surface water under or through an embankment or fill.

Dam An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad, or other purposes which does or may impound water or another fluid or semifluid.

Design storm The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g. 50-year storm) and duration (e.g. 24-hours), used in the design and evaluation of stormwater management systems.

Designee The agent of the governing body involved with the administration, review, or enforcement of any provisions of this ordinance by contract or memorandum of understanding.

Detention basin An impoundment structure designed to manage stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

Detention district Those subareas in which some type of detention is required to meet the plan requirements and goals of Act 167.

Developer A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any regulated activity of this Ordinance.

Development Any man-made change to improved or unimproved real estate including, but not limited to, the construction or placement of buildings or other structures, mobile homes, streets and other paving, utilities, mining, dredging, filling, grading, excavation, or drilling operations, and the subdivision of land.

Development plan The provisions for development including a planned residential development, a plat of subdivision, all covenants relating to use, location and bulk of buildings and other structures, intensity of use or density of development, streets, ways and parking facilities, common open space and public facilities. The phrase "provisions of development plan" when used in this Ordinance shall mean the written and graphic materials referred to in this definition.

Development site The specific tract of land for which a regulated activity is proposed.

Downslope property line That portion of the property line of the lot, tract, or parcels of land being developed located such that all overland or pipe flow from the site would be directed toward it.

Downstream hydraulic capacity analysis Any downstream capacity hydraulic analysis conducted in accordance with this ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:

- 1. Natural or man-made channels or swales must be able to convey the increased rate of runoff associated with a 2-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP Erosion and Sediment Pollution Control Program Manual.
- 2. Natural or man-made channels or swales must be able to convey the increased 25-year return period rate of runoff without creating any hazard to persons or property.
- 3. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP, Chapter 105 regulations (if applicable) and, at a minimum, pass the increased 25-year return period rate of runoff.
- 4. No new channels or conveyance facilities shall be authorized by this language.

Drainage Conveyance facility A stormwater management facility designed to transmit stormwater runoff which shall include streams, channels, swales, pipes, conduits, culverts, storm sewers, etc.

Drainage easement A right granted by a landowner to a grantee, allowing the use of private land for stormwater management purposes.

Earth disturbance Any activity including, but not limited to, construction, mining, timber harvesting, and grubbing which alters, disturbs, and exposes the existing land surface.

Engineer A licensed professional civil engineer registered by the Commonwealth of Pennsylvania.

Erosion The movement of soil particles by the action of water, wind, ice, or other natural forces.

Erosion and Sediment Pollution Control Plan A plan which is designed to minimize accelerated erosion and sedimentation.

Existing conditions The initial condition of a project site prior to the proposed construction. Farm field, disturbed earth, or undeveloped cover conditions of a site or portions of a site used for modeling purposes, shall be considered "meadow" unless the natural groundcover generates lower curve numbers or Rational "C" value, such as forested land. Existing man-made impervious surfaces shall be considered as "meadow" when developing "cover complex" calculations.

Flood A general but temporary condition of partial or complete inundation of normally dry land areas from the overflow of streams, rivers, and other waters of this commonwealth.

Floodplain Those areas of Haycock Township which are subject to the one hundred year flood, as identified in the Flood Insurance Study (FIS) dated May 18, 1999, and the accompanying maps prepared for the Township by the Federal Emergency Management Agency (FEMA), or most

recent revision thereof; and also those areas along streams, ponds, or lakes not identified within the Flood Insurance Study which are inundated by the 100 year reoccurrence internal flood.

Floodway The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed-absent evidence to the contrary-that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

Forest Management/Timber Operations Planning and activities necessary for the management of forest land. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

Freeboard A vertical distance between the elevation of the design high-water and the top of a dam, levee, tank, basin, or diversion ridge. The space is required as a safety margin in a pond or basin.

Grade The slope of a street, other public way, land area, drainage facility or pipe specified in percent.

Grassed waterway A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from cropland.

Groundwater recharge Replenishment of natural underground water supplies.

Hydric soils Soils that are categorized as poorly drained that can support hydrophytic plants, but may not do so in many cases. For the purpose of this Ordinance, hydric soils are general wetland indicator soils. (Refer Wetlands) The following soils, classified in the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agricultural, Soil Conservation Service, July 1975, are hydric soils:

Bowmansville silt loam Doylestown silt loam Fallsington silt loam Hatboro silt loam Towhee silt loam Towhee extremely stony silt loam

Impervious surface Impervious surfaces are those surfaces which do not absorb precipitation and surface water. All buildings, parking areas, driveways, roads, sidewalks, swimming pools, and any areas containing concrete, asphalt, packed stone (not including clean stone used for decorative purposes), compacted soils, or other equivalent surfaces shall be considered impervious within this definition. In addition, other areas determined by the Township Engineer to be impervious within the meaning of this definition will be classified as impervious surfaces.

Impoundment A retention or detention basin designed to retain stormwater runoff and release it at a controlled rate.

Infiltration structures A structure designed to direct runoff into the ground (e.g. french drains, seepage pits, seepage trench, biofiltration swale).

Inlet A surface connection to a closed drain. A structure at the diversion end of a conduit. The upstream end of any structure through which water may flow.

Land development - Any of the following activities:

- 1. The improvement of one (1) or two (2) or more contiguous lots, tracts or parcels of land for any purpose involving:
 - A. A group of two (2) or more residential or nonresidential buildings, whether purposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
 - B. The division or allocation of land or space, whether initially or cumulatively, between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.
- 2. A subdivision of land.
- 3. "Land development" does not include development which involves:
 - A. The conversion of an existing single family detached dwelling or single family semi-detached dwelling into not more than three (3) residential units, unless such units are intended to be a condominium;
 - B. The addition of a residential accessory building, including farm building, on a lot or lots subordinate to an existing principal building; or
 - C. The addition or conversion of buildings or rides within the confines of an enterprise which would be considered an amusement park. For the purposes of this subsection, an amusement park is defined as a tract or area used principally as a location for permanent amusement structures or rides. This exclusion shall not apply to newly acquired acreage by an amusement park until initial plans for the expanded area have been approved by the proper authorities.

Land/earth disturbance Any activity involving grading, tilling, digging, or filling of ground or stripping of vegetation or any other activity that causes an alteration to the natural condition of the land.

Main Stem (Main channel) Any stream segment or other runoff conveyance facility used as a reach in the watershed hydrologic model.

Manning Equation (Manning formula) A method for calculation of velocity of flow (e.g., feet per second) and flow rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. "Open channels" may include closed conduits so long as the flow is not under pressure.

Municipal Engineer A professional engineer licensed as such in the Commonwealth of Pennsylvania and appointed by the Township pursuant to Article V of the Second Class Township Code.

Municipality Haycock Township, Bucks County, Pennsylvania.

Nonpoint source pollution Pollution that enters a watery body from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

NRCS Natural Resource Conservation Service (previously SCS).

Open channel A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

Outfall Point where water flows from a conduit, stream, or drain.

Outlet Points of water disposal from a stream, river, lake, tidewater or artificial drain.

Parking lot storage Involves the use of impervious parking areas as temporary impoundments with controlled release rates during rainstorms.

Peak discharge The maximum rate of stormwater runoff from a specific storm event.

Penn State runoff model (calibrated) The computer-based hydrologic modeling technique adapted to the watershed for the Act 167 Plan. The model has been "calibrated" to reflect actual recorded flow values by adjoining key model input parameters.

Pipe A culvert, closed conduit, or similar structure (including appurtenances) that conveys stormwater.

Planning Commission The Planning Commission of Haycock Township.

PMF (Probable Maximum Flood) The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in any area. The PMF is derived from the probable maximum precipitation (PMP) as determined on the basis of data obtained from the National Oceanographic and Atmospheric Administration (NOAA).

Rational formula A rainfall-runoff relation used to estimate peak flow.

Recharge volume A calculated volume of stormwater runoff from impervious areas which is required to be infiltrated at a site and may be achieved through use of structural or non-structural BMPs.

Regulated activities Any activity to which this Ordinance is applicable pursuant to Section 104 of this Ordinance.

Release rate The percentage of predevelopment peak rate of runoff from a site or subarea to which the post development peak rate of runoff must be reduced to protect downstream areas.

Retention basin A basin designed to retain stormwater runoff so that a permanent pool is established.

Return period The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the 25-year return period rainfall would be expected to recur on the average once every 25 years.

Riser A vertical pipe extending from the bottom of a pond that is used to control the discharge rate from the pond for a specified design storm.

Rooftop detention Temporary ponding and gradual release of stormwater falling directly onto flat roof surfaces by incorporating controlled-flow roof drains into building designs.

Runoff Any part of precipitation that flows over the land surface.

Sediment basin A barrier, dam, or retention or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by water.

Sediment pollution The placement, discharge or any other introduction of sediment into the waters of the commonwealth occurring from the failure to design, construct, implement or maintain control measures and control facilities in accordance with the requirements of this ordinance.

Sedimentation The process by which mineral or organic matter is accumulated or deposited by the movement of water.

Seepage pit/seepage trench An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the ground.

Sheet flow Runoff that flows over the ground surface as a thin, even layer, not concentrated in a channel.

Soil-cover complex method A method of runoff computation developed by the NRCS that is based on relating soil type and land use/cover to a runoff parameter called a Curve Number (CN).

Soil group, hydrologic A classification of soils by the NRCS into four runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

Spillway A depression in the embankment of a pond or basin which is used to pass peak discharge greater than the maximum design storm controlled by the pond.

Storage indication method A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

Storm frequency The number of times that a given storm event occurs or is exceeded on the average in a stated period of years. See "Return Period."

Storm sewer A system of pipes and/or open channels that convey intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

Stormwater The total amount of precipitation reaching the ground surface.

Stormwater management facility Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration structures.

Stormwater management permit A permit issued by the township governing body after the drainage plan has been approved. Said permit is issued prior to or with the final township approval.

Stormwater management plan The plan for managing stormwater runoff within the Township adopted as required by the Act of October 4, 1978, P.L. 864, (Act 167).

Stormwater management site plan The plan prepared by the Developer or his engineer indicating how stormwater runoff will be managed at the particular site of interest according to this Ordinance.

Stream enclosure A bridge, culvert or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of this commonwealth.

Subarea The smallest drainage unit of a watershed for which stormwater management criteria have been established in the stormwater management plan.

Subdivision The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership, or building or lot development, provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwellings, shall be exempt.

Swale A low-lying stretch of land which gathers or carries surface water runoff.

Timber operations See Forest Management.

Time of concentration (Tc) The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

Volumetric Runoff Coefficient A variable indicative of stormwater runoff volume and dependent on the impervious coverage for a site.

Water Quality BMP Water quality improvements pertain primarily to suspended sediment and sediment-bound contaminants, although some BMPs also will be effective in reducing pollution caused by dissolved nutrients, biological oxygen demand, and oil and grease.

Water Quality Volume A calculated volume of stormwater runoff from impervious areas which is required to be captured and treated at a site and may be achieved through use of structural or non-structural BMPs. Numerically, the water quality volume is a product of the volumetric runoff coefficient, the site area, and a depth of rainfall of 1".

Watercourse An intermittent or perennial stream of water, river, brook, creek, or swale identified on USGS or SCS mapping; and/or delineated Waters of the Commonwealth.

Waters of the Commonwealth Any and all rivers, streams, creeks, rivulets, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Wetland Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, ferns, and similar areas.

Wetland Delineation The process by which wetland limits are determined. Wetlands must be delineated by a qualified specialist according to the 1989 Federal Manuals (as amended) for the Delineation of Jurisdictional Wetlands (whichever is greater) or according to any subsequent Federal or State regulation. Qualified specialist shall include those persons being Certified Professional Soil Scientists as registered with Registry of Certified Professionals in Agronomy Crops and Soils (ARCPACS); or as contained on consultant's list of Pennsylvania Association of Professional Soil Scientists (PAPSS); or as registered with National Society of Consulting Soil Scientists (NSCSS), or as certified by State and/or Federal certification programs; or by a qualified Biologist/Ecologist.

ARTICLE III. STORMWATER MANAGEMENT

Section 301. General Requirements

- A. All regulated activities in the municipality which do not fall under the exemption criteria shown in Section 105 of this Ordinance shall submit a stormwater management plan consistent with this Ordinance to the municipality for review. These criteria shall apply to the total proposed development even if development is to take place in stages. Impervious surface shall include, but not be limited to, any roof, parking or driveway areas and any new streets and sidewalks. Any areas designed to be gravel or crushed stone shall be assumed to be impervious.
- B. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities designed to encourage infiltration, groundwater recharge, and improved water quality.
- C. Existing points of concentrated drainage that discharge onto adjacent property shall not be altered without written approval of the affected property owner(s) and shall be subject to any applicable discharge criteria specified in this ordinance.
- D. Areas of existing sheet flow discharge shall be maintained wherever possible. If sheet flow is proposed to be concentrated and discharged onto adjacent property, the developer must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other harm will result from the concentrated discharge; and submit written approval from the affected adjacent property owner(s).
- E. Where a development site is traversed by watercourses, drainage easements shall be provided conforming to the line of such watercourses. The width of the easement shall be adequate to provide for the unimpeded flow of stormwater runoff from the 100 year storm event. Terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Periodic maintenance of the easement shall be required by the landowner to ensure proper runoff conveyance.
- F. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainageways shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, through the General Permit process.
- G. Any stormwater management facilities regulated by this Ordinance that will be located in or adjacent to waters of the commonwealth or wetlands shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, the General Permit process. When there is a question whether wetlands may be involved, it is the responsibility of the Developer or his agent to show that the land in question cannot be classified as wetlands, otherwise approval to work in the area must be obtained from PA DEP.

- H. Any stormwater management facilities regulated by this Ordinance that would be located on state highway rights-of-way, or discharge stormwater to facilities located within a state highway right-of-way, shall be subject to approval by the Pennsylvania Department of Transportation (PADOT).
- I. Minimizing site disturbance and impervious surface, and infiltrating stormwater runoff through seepage beds, infiltration trenches, etc. are encouraged, where soil conditions permit, to reduce the size or eliminate the need for retention/detention facilities.
- J. Roof drains and sump pumps shall discharge to a natural watercourse, drainage swale, or stormwater easement. Roof drains and sump pumps shall not be connected to a storm sewer or street drainage structure unless designed as part of a stormwater management facility. In no case shall roof drains or sump pumps be connected to a sanitary sewer.
- K. Whenever a watercourse is located within a development site, it shall remain open in the natural state and location and shall not be piped, impeded, or altered (except for road crossings). It is the responsibility of the developer to stabilize existing eroded stream/channel banks.

Section 302. Stormwater Management Districts – Peak Rate Control

- A. Mapping of Stormwater Runoff Peak Rate Districts In order to implement the provisions of this Ordinance, the Tohickon Creek Watershed Stormwater Management Plan and Delaware River (North) Watershed Stormwater Management Plan, Haycock Township is hereby divided into Stormwater Runoff Peak Rate Districts consistent with the plan. The boundaries of the districts are indicated on the runoff peak rate district map that is available for inspection at the municipal building. A large-scale boundary map is included as Appendix D for reference.
- B. The exact location of the Stormwater Runoff Peak Rate District boundary as it applies to a given development site shall be determined by mapping the boundaries using the 2-feet or 5-feet topographic contours provided as part of the stormwater management plan developed for the site in accordance with the Subdivision and Land Development Ordinance. The District boundaries as originally drawn coincide with topographic divides or, in certain instances, are drawn from the intersection of the watercourse or a potential flow obstruction to the topographic divide consistent with topography. The locations determined on the stormwater management plan shall be reviewed and verified by the municipal engineer.
- C. Description of Tohickon Creek Watershed Stormwater Runoff Hydrologic Peak Rate Districts
 - Conditional No Detention Districts (Direct Discharge). Subareas identified on the official Sub-Basin Map available for inspection at the Township Office. Included in this district are 2, 3, 8-10, 18, 20, 21, 42, 43, 52, 54, 56, 57, 59, 61, 62, 67, 70-73, 76, 77, 81-83. These sub-areas may discharge post-development runoff without detention facilities without adversely affecting the total watershed peak flow. These areas are located adjacent to the Delaware River. However, where the conveyance capabilities of the local receiving facilities are not adequate to safely transport the increased peak flows from undetained runoff a 100% release rate control is applied.

- 2. 100 Percent Release Rate District. Subareas included in this district are 4-7, 1-17, 19, 22-28, 31-34, 41, 44-51, 53, 55, 58, 60, 63, 64, 66, 68, 69, 74, 75, 84-98, 101, 109, 111 114, 116, 118, 119, 121-126. These subareas are not expected to incur a great deal of development growth due to location, topography, soils, or a combination of all three factors. Also, the location in the watershed of these sub-areas is of minor importance in supporting the overall watershed level runoff control. Therefore, these areas are allowed to release development runoff at a rate that does not exceed the existing rates of runoff.
- 3. 90 Percent Release Rate District. Subareas included in this district are 30, 35-40, 226. These areas are located in developing areas that have adequate drainage capacity in the receiving waterways. A slight amount of reduction is necessary to preserve this integrity of the receiving waterways and increase water quality of the receiving waterways, at the request of the local municipality.
- 4. 75 Percent Release Rate District. Subareas included in this district are 78-80, 99, 100, 102-108, 110, 115, 117, 120. Certain subareas require the control of stormwater runoff to a portion of the existing runoff equal to 75 percent. These areas are located in upper reaches of the watershed, specifically, areas around Quakertown Borough and Richlandtown Township which are projected to incur significant development impacts and have existing inadequate storm conveyance facilities. Some of these areas are expected to incur a relatively major increase in development pressure, while some areas may not see much development at all. In order to assure uniform watershed-level runoff control; however, the assignment of this release rate on a widespread basis will uniformly restrict the future runoff in a fashion that favors no particular sub-watershed.
- D. Description of Delaware River (North) Watershed Stormwater Runoff Hydrologic Peak Rate Districts
 - 1. Conditional No Detention Districts. Subareas included in this district are 1, 2, 6-11, 20, 61-68, 70-72, 89-91, 93. These subareas may discharge post-development runoff without detention facilities without adversely affecting the total watershed peak flow. These areas are located adjacent to the Delaware River, which is capable of absorbing undetained runoff without affecting the watershed level control. In certain instances, the conveyance capabilities of the local receiving facilities may not be adequate to safely transport the increased peak flows from undetained runoff. In these cases, the developer shall ensure that 100 percent release rate control is applied to the particular receiving facilities in order to insure safe passage of any undetained runoff.
 - 2. 100 Percent Release Rate District. Subareas included in this district are 3-5, 12-19, 21-60, 69, 73-88, 92, 94-103, 112-130. These subareas are not expected to incur a great deal of development growth due to location, topography, soils or a combination of all three factors. Also, the location in the watershed of these subareas is of minor importance in supporting the overall watershed level runoff control. Therefore, these areas are allowed to release development runoff at a rate that does not exceed the existing rates of runoff.
 - 3. 75 Percent Release Rate District. Subareas included in this district are 104-111. Certain subareas require the control of stormwater runoff to a portion of the existing runoff equal to 75 percent. These areas are located in upper reaches of the

watershed, specifically, areas around Springfield and Lower Saucon Townships. In order to ensure uniform watershed-level runoff control, the assignment of this release rate on a widespread basis will uniformly restrict the future runoff in a fashion that favors no particular sub-watershed. (Not applicable within Haycock Township).

Section 303. Stormwater Management Implementation Provisions (Performance Standards and Best Management Practices)

A. General Standards.

Post-development rates of runoff from any regulated activity shall not exceed the peak release rates of runoff prior to development for the design storms specified in Watershed Stormwater Management Plan, Section 302 of the Ordinance and using rainfall depths given in Table 3-1 below and Figure A-2, Appendix A of this Ordinance.

Table 3-1.	Rainfall Depth	S
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Frequency of Storm Event (years)	Rainfall Depth (inches)
1	2.4
2	3.1
5	3.7
10	4.5
25	5.5
50	7.0
100	7.5

(Source PennDOT, Intensity-Duration-Frequency Tables for Region 4)

B. Groundwater Recharge. Developed areas shall maintain groundwater recharge consistent with pre-development conditions, dependent on hydrologic soil groups and impervious cover. A minimum of one inch (1") of runoff shall be infiltrated unless the developer can prove the inability of the site to achieve this specific volume based on existing site conditions. The maximum available recharge shall be calculated based on utilizing the most capable recharge areas of the site. This volume of runoff is termed the "Recharge Volume" and is calculated in accordance with Section 305.K.

Design of the stormwater management facilities shall provide for groundwater recharge to compensate for the reduction in the percolation that occurs when the ground surface runoff characteristics have been altered. A detailed geologic evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation of the project site shall be performed by a qualified geologist and/or soil scientist, and shall at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. Where pervious pavement is proposed for parking lots, recreational facilities, nondedicated streets, or other areas, pavement construction specifications shall be noted on the plan.

Whenever a stormwater facility will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation. Soils used for construction of basins shall have low-erodibility factors ("K" factors). The municipality may require the installation of an impermeable liner in detention basins. If the

developer can prove through analysis that the site is in an area underlain by limestone, and such geologic conditions may result in sinkhole formations, then the site is exempt from recharge requirements. However, the site shall still be required to meet all other hydrologic and water quality management standards as found in this ordinance.

It shall be the developer's responsibility to verify if the site is underlain by limestone. The following note shall be attached to all Stormwater Management Site plans and signed by the developer's engineer/surveyor/landscape architect/architect "I, _____ certify that the proposed detention basin (circle one) is/is not underlain by limestone."

- C. Water Quality. Developed areas will provide adequate storage and treatment facilities necessary to capture and treat the Water Quality Volume (WQ_v) consistent with Articles 3 and 4 of this ordinance. The "Water Quality Volume" is calculated in accordance with Section 305.J. The Recharge Volume may be a component of the Water Quality Volume. If the Recharge Volume is less than the Water Quality Volume, the remaining Water Quality Volume may be captured and treated by methods other than recharge/infiltration BMPs.
- D. District Boundaries The boundaries of the Stormwater Management Districts are shown on an official map, which is available for inspection at the municipal office. A copy of the official map at a reduced scale is included in the Appendix D of this Ordinance. The exact location of Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using topographic contours at an appropriate level of detail, but in no case less than 2 feet intervals (or 5 feet intervals as applicable). This information shall be provided as part of the Stormwater Management Plan.
- E. Sites Located in More Than One District For a proposed development site located within two or more release category subareas, the peak discharge rate from any subarea shall be the pre-development peak discharge for that subarea multiplied by the applicable release rate. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea.
- F. Off-Site Areas Off-site areas that drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates or volume reduction. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.
- G. Site Areas Where the site area to be impacted by a proposed development activity differs significantly from the total site area as determined by the municipality, the municipality may, but is not required to, permit only the proposed impact area to be subject to the release rate criteria.
- H. Stormwater Conveyance Corridor Protection (Riparian Corridor Preservation and Vegetation) Runoff from developed areas of the site, including but not limited to areas of impervious surface, shall be managed through a series of riparian corridor vegetation facilities whenever possible. This will be accomplished in a manner satisfactory to the municipality, utilizing the "Pennsylvania Handbook of Best Management Practices for Developing Areas", 1998, Riparian Forested Buffer, and the priority goal of the riparian vegetation will be the reduction of thermal impacts on stormwater runoff associated with impervious areas, with a secondary goal being the protection of capacity of existing stormwater conveyance channels. These goals will be achieved through the use of design

criteria in Section 304.P of this Ordinance, and shall be in addition to any other municipal ordinance provisions.

- I. Regional Detention Alternatives For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. "Hydrologic model" refers to the calibrated model as developed for the stormwater management plan.
- J. "Downstream Hydraulic Capacity Analysis"-Any downstream capacity hydraulic analysis conducted in accordance with this ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:
 - 1. Natural or man-made channels or swales must be able to convey the increased runoff associated with a 2-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP *Erosion and Sediment Pollution Control Program Manual.*
 - 2. Natural or man-made channels or swales must be able to convey the increased 25year return period runoff without creating any hazard to persons or property.
 - 3. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP, Chapter 105 regulations (if applicable) and, at a minimum, pass the increased 25-year return period runoff.

Section 304. Design Criteria for Stormwater Management Facilities and Best Management Practices

- A. Increased stormwater runoff which may result from Regulated Activities listed in Section 104 shall be controlled by permanent stormwater runoff control measures that will provide the required standards within Article III. The methods of stormwater control or Best Management Practices (BMPs) which may be used to meet the required standards are described in this Ordinance and are the preferred methods of controlling stormwater runoff. Additional design criteria are included in these descriptions. The choice of BMPs is not limited to the ones appearing in this Ordinance, however, any selected BMP must meet or exceed the runoff peak rate requirements of this Ordinance for the applicable Hydrologic District.
- B. Any stormwater facility located on state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation.
- C. Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment required or regulated by this Ordinance shall be designed to provide an emergency spillway to handle flow up to and including the 100-year post-development conditions. The height of embankment must be set as to provide a minimum 1.0 foot of

freeboard above the maximum pool elevation computed when the facility functions for the 100-year post-development inflow.

- D. Emergency spillways discharging over embankment fill shall be constructed of reinforced concrete checker blocks to protect the berm against erosion. The checker block lining shall extend to the toe of the fill slope on the outside of the berm, and shall extend to an elevation three (3) feet below the spillway crest on the inside of the berm.
- E. Vegetated spillways may be utilized for spillways constructed entirely on undisturbed ground (i.e. not discharging over fill) if the designer can demonstrate that flow velocities through the spillways will not cause erosion of the spillway. A dense cover of vegetation shall be rapidly established in such spillways by sodding or seeding with a geotextile anchor. Such a vegetated spillway must be stabilized before runoff is directed to the basin.
- F. Should any stormwater management facility require a dam safety permit under PA DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than 100-year event.
- G. Stormwater management facility outlet piping shall be Class III reinforced O-ring concrete pipe. A minimum of one (1) concrete anti-seep collar shall be required. Pre-cast collars shall have a minimum thickness of eight (8) inches; field poured collars shall have a minimum thickness of twelve (12) inches. Collars may not be installed within two (2) feet of pipe joints. Collars must be designed to project a minimum of two (2) feet around the perimeter of the pipe. Maximum collar spacing is fourteen (14) times the design projection around the perimeter.
- H. Berms shall be constructed in accordance with requirements specified in Appendix "A".
- I. No stone gabion baskets may be used in the construction of stormwater management facilities.
- J. Retention/detention basins:
 - 1. Pipe outlet shall permit complete drainage of all detained water, unless the stormwater management facility is designed as a retention basin/pond or provides for stormwater renovation with constructed wetlands.
 - 2. When a detention basin is not designed as a stormwater management constructed wetland, the stormwater management facility shall be planted with low maintenance grass or substitute satisfactory to the Township.
 - 3. All detention basin bottoms intended to be maintained as lawn (i.e. recreational fields) shall be designed with a minimum grade of 2%. As an alternative, the detention basin may be designed with a minimum grade of 1% with underdrains to ensure complete drainage.
 - 4. To minimize the visual impact of detention basins, the detention basin shall be designed to avoid the need for safety fencing. To meet this requirement, basins shall be designed to the following specifications:

- a. Maximum depth of detained runoff shall be 24 inches for a 2 year or 10 year storm event.
- b. Maximum depth of detained runoff shall be 36 inches for a 100 year storm event.
- c. Interior slopes shall not be steeper than a ratio of 4:1 horizontal to vertical.
- d. Ponded water shall never exceed a depth of 24 inches for more than four hours.

Depths and slopes may be exceeded by permission of the Township on a case-bycase basis if lot runoff, topography and/or existing downsteam systems make the required pond area unreasonably large. In such case, fence and landscape screens will be required.

- 5. An access ramp of 10:1, 10 feet wide, shall be provided to allow maintenance equipment to reach the basin floor. The ramp shall coincide with the required gate if fencing is needed.
- 6. When required by the Township, fencing shall provide a suitable barrier at least four (4) feet in height of material approved by the Township, such as split rail fencing with wire backing. Access to the basin shall be provided by a gate or gates having a total opening of at least ten (10) feet at such location(s) as to permit ready access to the detention basin with maintenance equipment.
- 7. Landscaping:
 - a. The perimeter berms and embankments of retention/detention basins including wet ponds, and artificial wetland stormwater management facilities shall be designed to create a natural appearance and reduce future maintenance requirements. Landscaping shall include a mixture of native tall grasses and perennial plants, ground cover, shrubs, and trees to eliminate the necessity of periodic mowing.
 - Artificial wetland basins shall be designed pursuant to requirements of the Pennsylvania Handbook of Best Management Practices for developing areas. Plant material and arrangement shall be subject to approval of the Township. (Refer Appendix C – Plant lists for Wetland Management)
 - c. The perimeter of the retention/detention basin shall be landscaped with a mixture of deciduous trees, evergreens, and shrubs arranged in an informal manner. Retention basin (wet ponds) and artificial wetland basin landscaping shall be designed to create a "natural" appearance. Minimum plant material shall include the following per 100 linear feet of basin perimeter measured at the 100 year reoccurrence stormwater elevation:
 - (1) Three (3) evergreen trees (minimum height 4 feet)
 - (2) Two (2) deciduous trees (minimum caliper 2¹/₂ inches)
 - (3) Five (5) shrubs (minimum height 3 feet)

Retention/detention basin landscaping design is subject to approval by the municipality.

- 8. Retaining walls shall not be specified for use within the 100 year water surface elevation area of any detention/retention facility or as part of any embankment or cut slope that is appurtenant to the construction of a detention/retention facility.
- 9. The Developer shall provide written assurance, satisfactory to the Township, that the retention/detention basin will be properly maintained. Such assurances shall be in a form to act as a covenant that will run with the land, and shall provide Township maintenance at the cost of the landowner in case of default, and further provide for assessment of costs and penalties in case of default.
- 10. As an alternate to the above paragraph, the Township may, at their own option, assume responsibility of the basin and may accept dedication of the basin by the Developer. If the retention/detention basin is dedicated or offered to the Township for long term maintenance, the following regulations shall apply:
 - a. The dedicated area shall include the entire ponded area for the 100 year storm event and the outside slope at the berm.
 - b. The dedicated area shall not be considered part of the Open Space and Recreation Land required elsewhere in the Subdivision and Land Development Ordinance and Zoning Ordinance.
 - c. If fencing is necessary, the basin design shall provide a level area (2% slope) eight feet in width on both the inside and outside of the fence, along the entire length of the fence for proper access by Township maintenance equipment. The total width of this generally level area shall be at least 16 feet.
 - d. The Developer shall provide for the special financial burden the Township will be accepting if the Township accepts the detention basin maintenance. To help mitigate this future financial burden, the Developer shall contribute to the Township a cash payment in the amount of fifteen thousand (\$15,000.00) dollars per acre, on a pro rata basis, for any detention/retention basin site or area dedicated to the Township and being accepted by the Township. The detention/retention basin site area is measured to the outside limit of grading necessary to construct the basin and basin berm. The minimum contribution for any basin, regardless of size, shall be \$7,500.00. This requirement may be modified by a Resolution of the Township, from time to time, to reflect actual long term costs of detention basin maintenance in the Township.
- K. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands as directed in PA DEP Chapter 105 regulations (as amended or replaced from time to time by PA DEP), shall be designed in accordance with Chapter 105 and will require a permit from PA DEP. Any other drainage conveyance facility that doesn't fall under Chapter 105 regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm with a minimum 1.0 foot of freeboard measured below the lowest point along the top of the roadway. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm with a minimum 1.0-foot of freeboard

measured below the lowest point along surface of the roadway. Any facility that constitutes a dam as defined in PA DEP chapter 105 regulations may require a permit under dam safety regulations. Any facility located within a PA DOT right of way must meet PA DOT minimum design standards and permit submission requirements.

- L. Any drainage conveyance facility and/or channel that doesn't fall under Chapter 105 regulations, must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm. Conveyance facilities to or exiting from stormwater management facilities shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm. Any facility located within a PA DOT right-of-way must meet PA DOT minimum design standards and permit submission requirements.
- M. Adequate erosion protection shall be provided along all open channels, and at all points of discharge.
- N. Except for drainage at roadway stream crossings, pipe or artificial swale discharge shall be set back 75 feet from a receiving waterway, and the pipe discharge shall be diffused or spread out to reduce and eliminate high-velocity discharges to the impacted ground surface. The conveyance mechanism shall minimize disturbance and velocity of discharge.
- O. All infiltration devices and groundwater recharge facilities shall be designed to completely drain all water in three days subsequent to any storm event.
- P. Riparian Corridor Preservation The area up to seventy-five feet from top of streambank on either side of a stream shall be planted in accordance with Zone 1 and Zone 2 buffer planting requirements as depicted in "Pennsylvania Handbook of Best Management Practices for Developing Areas", 1998, Riparian Forested Buffer. (Refer Appendix B) Zone 1 will comprise, at a minimum, the first 15 feet from top of bank, with Zone 2 comprising the remaining 60 feet. This replanting is not required along streambank areas which receive overland or shallow flow from upstream, undisturbed, meadow or other existing pervious surfaces.
- Q. All developments which create impervious surface shall provide capacity for and treatment of the "Water Quality Volume" and "Recharge Volume", unless exempt from applicability under Section 104.
- R. Special requirements for areas falling within defined Exceptional Value and High-Quality Sub-Watersheds: The temperature and quality of water and streams that have been declared as exceptional value or high quality is to be maintained as defined in Chapter 93 Water Quality standards, Title 25 of Pennsylvania Department of Environmental Protection Rules and Regulations. Temperature sensitive BMPs and stormwater conveyance systems are to be used and designed with storage pool areas and supply outflow channels, and shaded with trees. This will require the modification of berms for permanent ponds. At a minimum, the southern half of pond shorelines shall be planted with shade or canopy trees within ten feet of the pond shoreline. In conjunction with this requirement, the maximum slope allowed on the berm area to be planted is 10 to 1 to lessen the de-stabilization of berm soils due to root growth.

- S. Developers shall utilize BMPs to provide for additional water quality improvement and groundwater recharge. In evaluating potential stormwater BMPs, the order of preference is as follows:
 - 1. infiltration BMPs
 - 2. flow attenuation methods (e.g. vegetated open swales and natural depressions)
 - 3. artificial wetlands, bioretention structures, and wetponds
 - 4. minimum first flush detention or dual purpose detention (where appropriate)

Infiltration BMPs shall be utilized unless the applicant can demonstrate use of infiltration techniques is not feasible due to site conditions based upon site specific soil testing. Vegetated swales, wetlands or artificial wetlands and bioretention structures shall be utilized wherever possible if infiltration BMPs are deemed unfeasible. BMP techniques can and should be used in conjunction with each other (e.g. vegetated swales with infiltration or retention facilities).

- Infiltration Best Management Practices (BMPs) Infiltration devices shall be selected based upon suitability of soils and site conditions. Soil infiltration tests shall be performed on all sites to determine suitability of the site for infiltration BMPs. Testing shall include evaluation of selected soil horizons by soil probes, deep pits and/or percolation measurements. The soil infiltration rate of discharge from the infiltration area being used in the proposed design shall be based on these measurements. Infiltration BMPs shall be designed in accordance with the design criteria and specifications in Section 5 of the *Pennsylvania Handbook o[Best Management Practices for Developing Areas* (1998) and shall meet the following minimum requirements:
 - a. Infiltration BMPs intended to receive runoff from residential uses shall be constructed on soils which have the following characteristics:
 - (1) A minimum depth of 48 inches between the intended bottom of the facility and the seasonal high water table and/or bedrock (limiting zones). The 48-inch minimum depth to a limiting zone requirement may be reduced to 24 inches as long as the soil has a cation exchange capacity (CEC) of greater than ten and/or does not have a sandy loam or loam sand texture.
 - (2) Infiltration rate and percolation rate of greater than 0.2 inches/hour.
 - b. Infiltration BMPs intended to receive runoff from non-residential uses shall be constructed on soils that have the following characteristics:
 - (1) A minimum depth of 48 inches between the intended bottom of the facility and the seasonal high water table and/or bedrock (limiting zones),
 - (2) Infiltration rate and percolation rate of greater than 0.2 inches/hour.
 - c. Infiltration BMPs intended to receive rooftop runoff shall be constructed on soils that have a minimum depth of 24 inches between the intended bottom of the facility and the seasonal high water table and/or bedrock (limiting zones) and have an infiltration rate and percolation rate of greater than 0.2 inches/hour. Appropriate

measures such as leaf traps and cleanouts shall be required to prevent clogging by vegetation.

- d. Where direct discharge is permitted under the requirements of Section 302, infiltration BMPs shall be designed to provide adequate storage to accommodate the post-development first flush design storm (1 year 24 storm) volume with outlet and overflow controls to convey runoff larger than the first flush design storm volume safely to a natural outfall.
- e. In areas where runoff release rates are specified under the requirements of Section 302, regardless of the specified release rate percentage, if infiltration BMPs are intended, they shall be designed to, as a minimum:
 - (1) Provide adequate storage to accommodate the volume of runoff calculated as the difference between the pre-development runoff volume and postdevelopment runoff volume based on the 100 year design storm.
 - (2) Control the post-development peak rate of runoff to the pre-development peak rate of runoff for all design storms identified in Section 303.A.2. of this Ordinance.
 - (3) Provide an overflow or spillway that safely permits the passing of runoff greater than that occurring during the 100 year design storm.
- 2. Non-infiltration Facilities used as Best Management Practices (BMPs)

All facilities shall be designed in accordance to the design criteria and specifications in the *Pennsylvania Handbook of Best Management Practices for Developing Areas* (1998). This design shall be in particular coordination with Section 8, Descriptions of Selected Best Management Practices.

- 3. Artificial wetlands, wet ponds, and bioretention structures
 - a. Wet Pond BMPs shall meet the following requirements:
 - (1) Wet ponds shall be constructed on hydric or wet soils and/or soils which have an infiltration rate of less than 0.2 inches/hour.
 - (2) A minimum drainage area of five (5) acres shall be directed to the pond unless a source of recharge is utilized such as a natural spring or well.
 - (3) The length of the pond between the inflow and outlet points shall be maximized. In addition, an irregular shoreline shall be provided. By maximizing the flow length through the pond and providing an irregular shoreline, the greatest water quality benefit will be achieved by minimizing "short circuiting" of runoff flowing through the pond.
 - (4) A shallow forebay shall be provided adjacent to all inflow areas. The forebay shall be planted as a marsh with emergent wetland vegetation. The forebay serves to enhance sediment trapping and pollutant removal, as well

as concentrating accumulated sediment in an area where it can be readily removed.

- (5) All wet ponds shall be designed with public safety as a primary concern -An aquatic safety bench shall be provided around the perimeter of the permanent pool. The depth of the bench shall be a maximum of one (1) foot for a width of at least three (3) feet. A 3:1 slope shall lead from the edge of the safety bench toward the deep water portion of the pond. At least 15 feet of 3:1 slope shall be provided from the edge of the safety bench. Slopes in the remainder of the pond below the permanent pool elevation shall be a maximum of 2:1.
- (6) The perimeter slope above the permanent pool shall have a maximum slope of 4:1 for a distance of at least 20 feet. The remaining areas above the permanent pool shall have a maximum slope of 3:1.
- (7) Wet ponds shall have a deep water zone to encourage gravity settling of suspended fines, and prevent stagnation and possible eutrophication.
- (8) Wet ponds shall be capable of being substantially drained by gravity flow. Where possible, wet ponds shall be equipped with a manually operated – drain that can be secured against unauthorized operation.
- (9) A planting plan shall be developed for the wet pond, showing all proposed aquatic, emergent, and upland plantings.
- (10) Wet ponds shall be designed to discourage use by Canada geese. Techniques employed shall include the following:
 - (a) Elimination of straight shorelines, islands, and peninsulas;
 - (b) Placement of walking paths (where applicable) along the shoreline;
 - (c) Placement of grassed areas (i.e. playing fields) at least 450 feet from the water surface;
 - (d) Vegetative barriers;
 - (e) Rock barriers;
 - (f) Installation of tall trees within 10 feet of the water surface;
 - (g) Use of ground covers not palatable to Canada geese.
- b. Artificial Wetland BMPs shall meet the following requirements:
 - (1) Artificial wetlands shall be constructed on hydric or wet soils and/or soils which have an infiltration rate of less than 0.2 inches/hour.
 - (2) Runoff entering artificial wetlands shall be filtered through a sediment removal device before entering the wetland.

- (3) A planting plan shall be developed for the artificial wetland showing all proposed aquatic, emergent, and upland plantings. The planting plan shall be developed to provide a diversity of species resulting in a dense stand of wetland vegetation.
- (4) At least 75% of the surface area of the wetland shall be developed as a shallow water emergent wetland, with a water depth of less than 12". The reminder shall be constructed as open water with depths between 2 feet and 4 feet.
- 4. Minimum first flush detention/dual purpose BMPs
 - a. Minimum first flush detention/dual purpose detention basin BMPs shall be designed to meet the following requirements:
 - (1) Post-development runoff from a "water quality storm" (a 1-year, 24-hour event) shall be released over a minimum period of 24 hours.
 - (2) Two stage basins shall be utilized where first flush detention will be employed for water quality and conventional detention used for peak rate control of storms exceeding the 1-year, 24-hour event.
 - (3) Two stage basins shall be constructed so that the lower part of the basin is graded to detain stormwater from the "water quality storm", and the remainder of the basin graded as a flat overbank area to provide storage only for the larger, less frequent storm events. The overbank area is encouraged to be developed as an active or passive recreational area.
 - (4) The area inundated by the "water quality storm" is encourage to be maintained as a wetland environment, which will increase the water quality benefits of the first flush/dual purpose detention basin, and will prevent the need for mowing of a frequently saturated area.
- T. All stormwater control facility designs shall conform to the applicable standards and specifications of the following governmental and institutional agencies:
 - 1. American Society of Testing and Materials (ASTM)
 - 2. Asphalt Institute (AI)
 - 3. Bucks Conservation District (BCD)
 - 4. Federal Highway Administration (FHWA)
 - 5. National Crushed Stone Association (NCSA)
 - 6. National Sand and Gravel Association (NSGA)
 - 7. Pennsylvania Department of Environmental Protection (PADEP)
 - 8. Pennsylvania Department of Transportation (PADOT)
 - 9. U.S. Department of Agriculture, Natural Resources Conservation Service, Pennsylvania (USDA, NRCS, PA)
- U. If special geological hazards or soil conditions, such as carbonate derived soils, are identified on the site, the developer's professional engineer shall consider the effect of

proposed stormwater management measures on these conditions. In such cases, the municipality shall require an in-depth report by a registered professional geologist.

V. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. Guidelines established by the *Pennsylvania Handbook of Best Management Practices for Developing Areas* (1998) shall be utilized in determining stormwater management facility design except where specifically modified by this or other Municipal Ordinance. The Municipality shall reserve the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.

Section 305 . Calculation Methodology

Stormwater runoff from all development sites shall be calculated using either the rational method or a soil-cover-complex methodology.

A. Any stormwater runoff calculations involving drainage areas greater than 200 acres, including on- and off-site areas, shall use generally accepted calculation technique that is based on the NRCS soil cover complex method. Table 3-2 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular site.

The municipality may approve the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres.

METHOD	METHOD DEVELOPED BY	APPLICABILITY
TR-20 or commercial package based on TR-20	USDA - NRCS	When use of full model is desirable or necessary
TR-55 or commercial package based on TR-55	USDA - NRCS	Applicable for plans within the models limitations
HEC - 1	U.S. Army Corps of Engineers	When full model is desirable or necessary
PSRM	Penn state Univ.	When full model is desirable or, necessary
Rational Method or commercial package based on Rational Method	Emil Kuiching (1889)	For sites less than 200 acres When approved by the municipality
Other methods	Various	As approved by the municipal engineer

 Table 3-2. Acceptable Computation Methodologies For Stormwater Management Plans

- B. All calculations consistent with this Ordinance using the soil cover complex method shall use the appropriate design rainfall depths for the various return period storms presented in Table 3-1 of this ordinance. If a hydrologic computer model such as PSRM or HEC-1 is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The NRCS 'S' curve shown in Figure A-1, Appendix A of this Ordinance shall be used for the rainfall distribution.
- C. For the purposes of predevelopment flow rate determination, farm field or disturbed earth pre-development cover conditions of a site or portions of a site, and existing man-made impervious surface shall be considered as "meadow" when developing "cover complex" calculations.
- D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods from the Design Storm Curves from PA Department of Transportation Design Rainfall Curves (1986) (Figure A-2). Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times of concentration for channel and pipe flow shall be computed using Manning's equation.
- E. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the soil cover complex method shall be obtained from Table A-2 in Appendix A of this Ordinance.
- F. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational method shall be obtained from Table A-3 in Appendix A of this Ordinance.
- G. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations, and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table A-4 in Appendix A of this Ordinance.

Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this Ordinance using any generally accepted hydraulic analysis technique or method.

- H. The design of any stormwater management facilities intended to meet the performance standards of this Ordinance shall be verified by routing the design storm hydrograph through these facilities using the Storage Indication Method. For drainage areas greater than 20 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.
- I. The municipality has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the design professional engineer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Municipal Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.
- J. Calculations of Water Quality Volume: The Water Quality Volume (WQ_v) is the storage capacity needed to treat 90 percent of the average annual stormwater rainfall from the developed areas of the site. The following calculation is used to determine the storage volume, WQ_v, in acre-feet of storage:

$$WQ_v = (1.95) (R_v) (A)$$

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 $WQ_v = Water Quality Volume$ A = Area in acres (developed area) $R_v = 0.05 + 0.009(I)$ where I is the percent impervious cover (example: I = 50 for 50 percent impervious cover) 1.95 = is a coefficient representing the 90 percent annual rainfall (PA Handbook of Best Management Practices for Developing Areas)

 WQ_v shall be designed as part of a stormwater management facility which incorporates water quality BMPs as a primary benefit of using that facility, in accordance with design specifications contained in "Pennsylvania Handbook of Best Management Practices for Developing Areas", 1998.

K. Calculation of Recharge Volume: The Recharge Volume (Re_v) is the volume of stormwater runoff from a developed site which shall be required to maintain existing pre-development groundwater recharge at development sites. It may be part of the Water Quality volume, and is calculated on the basis of treatment and recharge by structural stormwater management practices, as follows: $\begin{aligned} & \text{Re}_{\text{v}} = \underbrace{(S) \ (R_{\text{v}}) \ (A)}_{12} \\ & \text{Re}_{\text{v}} = \text{Recharge Volume} \\ & \text{A} = \text{Area in acres (developed area)} \\ & \text{R}_{\text{v}} = 0.05 + 0.009(\text{I}) \text{ is the percent of impervious cover (example: I} \\ & = 50 \text{ for } 50 \text{ percent impervious cover}) \end{aligned}$

S is the Soil Specific Recharge factor and varies according to soil type, as follows:

<u>Hydrologic Soil Group</u>	Soil Specific Recharge Factor (S)
A	0.38
В	0.26
С	0.14
D	0.07

Structural stormwater management facilities which provide treatment and recharge of the required Recharge Volume will be designed as part of stormwater management facility which incorporates groundwater recharge BMP's as a primary benefit of using that facility, in accordance with design specifications contained in "Pennsylvania Handbook of Best Management Practices for Developing Areas", 1998.

L. All stormwater runoff calculations/reports and design of stormwater management facilities shall be prepared by a registered Professional Engineer licensed in the Commonwealth of Pennsylvania.

Section 306. Standards During Land Disturbance

- A. Whenever vegetation and topography are to be disturbed, such activity must be in conformance with Chapter 102, Title 25, Rules and Regulations, Part 1, Commonwealth of Pennsylvania, Department of Environmental Protection, Subpart C, protection of Natural Resources, Article II, Water Resources, Chapter 102, "Erosion Control," and in accordance with the Bucks Conservation District and the standards and specifications of the Municipality.
- B. Additional erosion and sedimentation control design standards and criteria that must be applied where infiltration BMPs are proposed include the following:
 - 1. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.
 - 2. Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.
- C. Peak discharges and discharge volumes from the site shall comply with the appropriate sections above, with the following additions:
 - 1. For purposes of calculating required detention storage during land disturbance, peak discharges and discharge volumes shall be calculated based upon the runoff coefficients for bare soils during the maximum period and extent of disturbance which shall be clearing, indicated on the development plan. Controls shall insure that the

difference in volume and rate of peak discharges before disturbance and during shall not exceed those peak discharges and discharge volumes required in Section 303 of this Ordinance. Detention storage during the period of land disturbance and prior to establishment of permanent cover may require additional facilities on a temporary basis. Such measures shall be located so as to preserve the natural soil infiltration capacities of the planned infiltration bed areas.

- 2. Wherever soils, topography, cut and fill or grading requirements, or other conditions suggest substantial erosion potential during land disturbance, the Township may require that the entire volume of all storms up to a 2-year storm from the disturbed areas be retained on site and that special sediment trapping facilities (such as check dams, etc.) be installed.
- D. Areas of the site to remain undisturbed shall be protected from encroachment by construction equipment/vehicles to maintain the existing infiltration characteristics of the soil.

ARTICLE IV. STORMWATER MANAGEMENT PLAN REQUIREMENTS

Section 401. General Requirements

For any of the activities regulated by this Ordinance, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity may not proceed until the property owner or developer or his/her agent has received written approval of a stormwater management plan from the municipality.

Section 402. Stormwater Management Plan Contents

The stormwater management plan shall consist of all applicable calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sedimentation control plan by title and date. The cover sheet of the computations and erosion and sedimentation control plan shall refer to the associated maps by title and date. All stormwater management plan materials shall be submitted to the municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the stormwater management plan shall be disapproved and returned to the applicant.

The following items shall be included in the stormwater management plan:

- A. A feasibility analysis that evaluates the potential application of infiltration, flow attenuation, bioretention, wetland, or wet pond BMPs must be submitted with the stormwater management plans required in Article IV for those developments not intending the use of such facilities. This analysis shall provide:
 - 1. A general assessment of the anticipated additional runoff based on the design storm and post-development condition and utilizing the calculation procedures required in Section 305;
 - 2. indication of drainage areas on the development site resulting in impervious, pervious, and rooftop runoff;
 - 3. indication of type of land use (residential, non-residential) generating the impervious surface runoff;
 - 4. delineation of soils on the site from the SCS, Soil Survey of Bucks and Philadelphia Counties and onsite soil study. Soil study shall be conducted by a soil scientist and shall include sufficient probes/deep holes to evaluate application of BMPs;
 - indication of soils generally suitable for infiltration and/or wet pond/artificial wetland BMPs as shown in the table entitled: "General Soil Suitability for Infiltration, Wet Pond and Artificial Wetland Best Management Practices With Consideration to Runoff Point of Origin and Land Use Type", including specification of those soils requiring modifications;
 - 6. calculated acreage of suitable soils for infiltration BMPs and wet pond or artificial wetland BMPs and percentage of suitable soils based on total site acreage;
 - 7. calculated acreage of suitable soils for infiltration BMPs and wet pond or artificial wetland BMPs made unavailable due to proposed development layout and justification

that alternative development layout which would reduce impact on suitable soil availability is unfeasible;

- 8. analysis of potential infiltration or wet pond or artificial wetland BMPs which could be implemented to manage the projected post-development runoff with consideration of suitable soil availability runoff point of and type of land use (items 2. and 3. above) and the general design standards and maintenance issues included in this Ordinance including an indication of how most post-development runoff can be managed by these BMPs (e.g. the entire post-development runoff or partial amount of runoff expressed as a percentage); and
- 9. rationale for the decision to not proceed with implementation of infiltration BMPs or wet pond or artificial wetland BMPs such as excessive cost of implementation, insufficient soil suitability, and development constraints.

The feasibility analysis must allow the municipality to review the general soil characteristics of a site and the proposed development for that site and determine if infiltration BMPs or wet pond or artificial wetland BMPs could have been more thoroughly pursued for use by the developer. The information required in the analysis is detailed enough to determine the potential applicability of these BMPs for a proposed development, but general enough not to force a developer into incurring excessive cost associated with conducting laborious field and/or laboratory soil testing for a site which ultimately may not be suitable for infiltration or wet pond or artificial wetland BMP implementation. However, with the requirements for conducting a feasibility analysis, developers will be aware that they are expected to use these BMPs wherever possible and are required to provide adequate justification if these BMPs are not to be implemented. Essentially, all developers will be conducting feasibility analysis since such analysis would become the preliminary step in evaluating the potential for implementation of these mandatory BMPs where possible. Developers for those sites that are determined to be generally suitable from these analysis (taking into consideration the areal extent of suitable soils necessary to accommodate an infiltration or wet pond or wetland BMP for the type and size of development proposed) are required to conduct the detailed soil testing and other feasibility testing required in other sections of this Ordinance which contain the description and additional design criteria of these BMPs.

- B. A detailed geologic evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a qualified geologist and/or soil scientist, and a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability.
- C. Whenever a stormwater management facility will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent ground water contamination and, where necessary, sinkhole formation. Soils used for the construction of basins shall have low-erodibility factors ("K" factors). Installation of an impermeable liner shall be required in detention basins.

It shall be the developer's responsibility to verify if the site is underlain by limestone. The following note shall be attached to all stormwater management plans and signed and sealed by the developer's professional engineer "I, _____, certify that the proposed detention basin (circle one) is/is not underlain by limestone."

D. General

- 1. General description of project.
- 2. General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.
- 3. Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.
- E. Map(s) of the project area shall be submitted on 24-inch x 36-inch sheets and shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Bucks County. The contents of the maps(s) shall include, but not be limited to:
 - 1. The location of the project relative to highways, municipalities, or other identifiable landmarks.
 - 2. Existing contours at intervals of 2 feet. In areas of steep slopes (greater than 25 percent), 5 feet contours may be used.
 - 3. Existing streams, lakes, ponds, or other bodies of water within the project area.
 - 4. Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, wetlands, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.
 - 5. The locations of all existing and proposed utilities, sanitary sewers, and water lines located on the site and/or within 50 feet of property lines.
 - 6. An overlay showing soil names and boundaries. This overlay shall include a table on the map showing the recharge capabilities of each soil represented onsite in inches per hour and describe their recharge or infiltration capabilities.
 - 7. Proposed changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.
 - 8. Proposed structures, roads, paved areas, and buildings. Where pervious pavement is proposed for parking lots, recreational facilities, non-dedicated streets, or other areas, pavement construction specifications shall be noted on the plan.
 - 9. Final contours at intervals at 2 feet. In areas of steep slopes (greater than 25 percent), 5-feet contour intervals may be used.
 - 10. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.
 - 11. The date of submission.
 - 12. A graphic and written scale of one (1) inch equals no more than fifty (50) feet. For tracts of twenty (20) acres or more, the scale may be one (1) inch equals no more than one hundred (100) feet.
 - 13. A North arrow.
 - 14. The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
 - 15. Existing and proposed land use(s).

- 16. A key map showing all existing man-made features beyond the property boundary that may be affected by the project.
- 17. Horizontal and vertical profiles of all open channels, including hydraulic capacity.
- 18. Overland drainage paths.
- 19. A twenty-feet wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.
- 20. A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off-site. All off-site facilities shall meet the performance standards and design criteria specified in this Ordinance.
- 21. A construction detail of any improvements made to sinkholes and the location of all notes to be posted, as specified in this Ordinance.
- 22. An agreement executed between the landowner, and municipality acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the municipality.
- 23. The location of all erosion and sedimentation control facilities.
- F. Supplemental Information
 - 1. A written description of the following information shall be submitted.
 - a) The overall stormwater management concept for the project.
 - b) Stormwater runoff computations as specified in this Ordinance.
 - c) Stormwater management techniques to be applied both during and after development.
 - d) Expected project time schedule.
 - 2. A soil erosion and sedimentation control plan, where applicable, including all reviews and approvals, as required by PADEP and/or Bucks Conservation District.
 - 3. A geologic assessment of the effects of runoff on sinkholes as specified in this ordinance.
 - 4. The effect of the project (in terms of runoff volume and peak flow) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.
 - 5. A Declaration of Adequacy and Highway Occupancy Permit from the PADOT District Office when utilization of a PADOT storm drainage system is proposed.
- G. Stormwater Management Facilities
 - 1. All stormwater management facilities must be located on a plan and described in detail.
 - 2. When groundwater recharge methods such as seepage pits, beds, or trenches are proposed, the locations of existing and proposed septic tank infiltration areas, and wells must be shown. A separation distance of no less than 20 feet shall be provided between any septic system and any facility used for stormwater management.

3. All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown. If multiple facilities are proposed in conjunction with each other, such as infiltration Best Management Practices with vegetation based management practices, a summary narrative, shall be included describing any sequence and how the facilities are meant to function with each other to manage stormwater runoff.

Section 403. Plan Submission

For all activities regulated by this ordinance, the steps below shall be followed for submission. For any activities that require a PADEP joint permit application and regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of PADEP's Rules and Regulations, require a PADOT highway occupancy permit, or require any other permit under applicable local, state, or federal regulations, the permit(s) shall be part of the plan.

- A. The stormwater management plan shall be submitted by the developer as part of the Preliminary plan submission for the regulated activity.
- B. A minimum of three (3) copies of the stormwater management plan shall be submitted.
- C. Distribution of the stormwater management plan will be as follows:
 - 1. One (1) copy to the municipality accompanied by the requisite municipal review fee, as specified in this Ordinance.
 - 2. Two (2) copies to the Municipal Engineer.

Section 404. Stormwater Management Plan Review

- A. The Municipal Engineer shall review the stormwater management plan for consistency with the adopted Watershed Act 167 Stormwater Management Plan and applicable municipal ordinances. The municipality shall require receipt of a complete plan, as specified in this Ordinance.
- B. The Municipal Engineer shall review the stormwater management plan for any subdivision or land development against the Subdivision and Land Development Ordinance provisions not superseded by this Ordinance.
- C. For activities regulated by this Ordinance, the Municipal Engineer shall notify the municipality in writing, within 45 calendar days of receipt, whether the stormwater management plan is consistent with the adopted Watershed Act 167 Stormwater Management Plan. A copy of the Municipal Engineer's review letter shall be forwarded to the developer.
- D. Any disapproved stormwater management plans may be revised by the developer and resubmitted consistent with this Ordinance.
- E. For regulated activities specified in Sections 104.C and 104.D of this Ordinance, the Municipal Engineer shall notify the Municipal Building Permit Officer in writing, within a time frame consistent with the Building Code and/or Subdivision and Land Development Ordinance, whether the stormwater management plan is consistent with the adopted Watershed Act 167 Stormwater Management Plan and forward a copy of the review letter

to the developer. Any disapproved stormwater management plan may be revised by the developer and resubmitted consistent with this ordinance.

- F. The municipality shall not approve any subdivision or land development for regulated activities specified in Sections 104.A and 104.B of this Ordinance if the stormwater management plan has been found to be inconsistent with the adopted Watershed Act 167 Stormwater Management Plan. All required permits from PADEP must be obtained prior to, or as a requirement of, final approval.
- G. The Municipal Building Permit Office shall not issue a building permit for any regulated activity specified in Section 104 of this Ordinance if the stormwater management plan has been found to be inconsistent with the *adopted Watershed Act 167* Stormwater Management Plan, as determined by the Municipal Engineer, or without considering the comments of the Municipal Engineer. All required permits from PADEP must be obtained prior to issuance of a building permit.
- H. The developer shall be responsible for completing an "as-built survey" of all stormwater management facilities included in the approved stormwater management plan. The as-built survey and an explanation of any discrepancies with the design plans shall be submitted to the Municipal Engineer for review. In no case shall the municipality approve the as-built survey until the municipality receives a copy of an approved Declaration of Adequacy, Highway Occupancy Permit from the PADOT District Office, and any applicable permits from PADEP.
- I. The municipality's approval of a stormwater management plan shall be valid for a period not to exceed two (2) years. If stormwater management facilities included in the approved stormwater management plan have not been constructed, or if an as-built survey of these facilities has not been approved within this 2-year time period, then the municipality may consider the stormwater management plan disapproved and may revoke any and all permits. Stormwater management plans that are considered disapproved by the municipality shall be resubmitted in accordance with Section 407 of this Ordinance.

Section 405. Modification of Plans

A modification to a submitted stormwater management plan for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or redesign of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the stormwater management plan as determined by the Municipal Engineer, shall require a resubmission of the modified stormwater management plan consistent with Section 403 of this Ordinance and be subject to review as specified in Section 404 of this Ordinance.

A modification to an already approved or disapproved stormwater management plan shall be submitted to the Municipality, accompanied by the applicable review. A modification to a stormwater management plan for which a formal action has not been taken by the municipality shall be submitted to the municipality, accompanied by the applicable municipal review fee.

Section 406. Resubmission of Disapproved Stormwater Management Plans

A disapproved stormwater management plan may be resubmitted, with the revisions addressing the Municipal Engineer's concerns documented in writing, to the Municipal Engineer in

accordance with Section 404 of this Ordinance and be subject to review as specified in Section 405 of this Ordinance. The applicable municipal review fee must accompany a resubmission of a disapproved stormwater management plan.

ARTICLE V. INSPECTIONS

Section 501. Schedule of Inspections

- A. The Municipal Engineer or his assignee shall inspect all phases of the installation of the permanent stormwater management facilities.
- B. During any stage of the work, if the Municipal Engineer determines that temporary or permanent erosion and sedimentation control or stormwater management facilities are not being installed in accordance with the approved stormwater management plan, the municipality shall revoke any existing permits until a revised stormwater management plan is submitted and approved, as specified in this Ordinance.

ARTICLE VI. FEES AND EXPENSES

Section 601. Stormwater Management Plan Review Fee

The Municipality shall establish a review fee schedule by Resolution of the governing body to defray review costs incurred by the municipality, any outside review agencies or entities necessary to review submitted plans, and the municipal engineer. The municipality shall periodically update the review fee schedule to ensure that review costs are adequately reimbursed. The applicant shall pay all fees.

Section 602. Expenses Covered by Fees

The fees required by this Ordinance shall, at a minimum, cover the following:

- A. Administrative costs.
- B. Review of the stormwater management plan by the municipality and the Municipal Engineer.
- C. Site inspections by the municipal staff and/or Municipal Engineer.
- D. Inspection of stormwater management facilities and stormwater management improvements during construction.
- E. Final inspection upon completion of the stormwater management facilities and stormwater management improvements presented in the stormwater management plan.
- F. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations, and ensure proper completion of stipulated remedial actions.

ARTICLE VII. MAINTENANCE RESPONSIBILITY

Section 701. Performance Guarantee

The applicant shall provide a financial guarantee to the municipality for the timely installation and proper construction of all stormwater management controls as required by the approved stormwater management plan and this Ordinance equal to the full construction cost of the required controls plus construction contingency and construction inspection costs.

Section 702. Maintenance Responsibilities

- A. The stormwater management plan for the development site shall contain an operation and maintenance plan prepared by the design engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to insure proper operation of the facility(ies).
- B. The stormwater management plan for the development site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control facilities, consistent with the following principles:
 - 1. If a development consists of structures or lots that are to be separately owned and in which streets, sewers, and other public improvements are to be dedicated to the municipality, stormwater control facilities may also be dedicated to and maintained by the municipality, if accepted by the municipality.
 - 2. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities shall be the responsibility of the owner or private management entity.
- C. The governing body, upon recommendation of the Municipal Engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the stormwater management plan. The governing body reserves the right to accept the ownership and operating responsibility for any or all of the stormwater management controls.

Section 703. Maintenance Agreement for Privately Owned Stormwater Facilities

- A. Prior to final approval of the stormwater management plan, the property owner shall sign and record a maintenance agreement covering all stormwater control facilities that are to be privately owned. Said agreement, designated as Appendix C, is attached and made part hereto.
- B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the Municipal Solicitor and governing body.

Section 704. Municipal Stormwater Maintenance Fund

- A. If stormwater facilities are accepted by the municipality for dedication, persons installing stormwater storage facilities shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined by Resolution of the Board of Supervisors and as follows:
 - 1. If the storage facility is to be owned and maintained by the municipality, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The municipal engineer will establish the estimated costs utilizing information submitted by the applicant.
 - 2. The amount of the deposit to the fund shall be converted to present worth of the annual series values. The municipal engineer shall determine the present worth equivalents, which shall be subject to the approval of the municipal governing body.
- B. If a storage facility is proposed that also serves as a recreation facility (e.g., ball field, pond), the municipality may, but is not required to, reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.

ARTICLE VIII. ENFORCEMENT AND PENALTIES

Section 801. Right-of-Entry

Upon presentation of proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

Section 802. Notification

In the event that a person fails to comply with the requirements of this Ordinance, or fails to conform to the requirements of any permit issued hereunder, the municipality shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Failure to comply within the time specified shall subject such person to the penalty provision of this Ordinance. All such penalties shall be deemed cumulative. In addition the municipality may pursue any and all other remedies. It shall be the responsibility of the owner of the real property on which any regulated activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance.

Section 803. Enforcement

The governing body is hereby authorized and directed to enforce all of the provisions of this Ordinance. All inspections regarding compliance with the stormwater management plan shall be the responsibility of the Municipal Engineer or other qualified persons designated by the municipality as directed by the Board of Supervisors.

- A. A set of design plans approved by the municipality shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the municipality or designee during construction.
- B. Adherence to approved plan

It shall be unlawful for any person, firm, or corporation to undertake any regulated activity under Section 104 on any property except as provided for in the approved stormwater management plan and pursuant to the requirements of this Ordinance. It shall be unlawful to alter or remove any control structure required by the stormwater management plan pursuant to this Ordinance or to allow the property to remain in a condition which does not conform to the approved stormwater management plan.

- C. At the completion of the project, and as a prerequisite for the release of the performance guarantee, the owner or his representatives shall:
 - 1. Provide a certification of completion from a professional engineer verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.
 - 2. Provide one reproducible and two paper prints of as-built drawings.

- D. After receipt of the certification by the municipality, a final inspection shall be conducted by the governing body or its designee to certify compliance with this Ordinance.
- E. Prior to revocation or suspension of a permit, the governing body will schedule a hearing to discuss the non-compliance if there is no immediate danger to life, public health or property.
- F. Suspension and revocation of permits
 - 1. Any permit issued under this Ordinance may be suspended or revoked by the governing body for:
 - a) Noncompliance with, or failure to, implement any provision of the permit.
 - b) A violation of any provision of this Ordinance or any other applicable law, Ordinance, rule, or regulation relating to the project.
 - c) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others, or as outlined in Article IX of this Ordinance.
 - 2. A suspended permit shall be reinstated by the governing body when:
 - a) The Municipal Engineer or his designee has inspected and approved the corrections to the stormwater management and erosion and sediment pollution control measure(s), or the elimination of the hazard or nuisance, and/or;
 - b) The governing body is satisfied that the violation of the Ordinance, law, or rule and regulation has been corrected.
 - c) A permit that has been revoked by the governing body cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.
- G. Occupancy Permit

An occupancy permit shall not be issued unless the certification of compliance pursuant to Section 803.D has been secured. The occupancy permit shall be required for each lot owner and/or developer for all subdivisions and land developments in the municipality.

Section 804. Public Nuisance

- A. The violation of any provision of this Ordinance is hereby deemed a public nuisance.
- B. Each day that a violation continues shall constitute a separate violation

Section 805. Penalties

- A. Anyone violating the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine of not more than \$1,000 for each violation, recoverable with costs, or imprisonment of not more than 10 days, or both. Each day that the violation continues shall be a separate offense.
- B. In addition, the municipality, through its solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Section 806. Appeals

- A. Any person aggrieved by any action of the municipality or its designee, relevant the provisions of this Ordinance, may appeal to the Zoning Hearing Board within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Zoning Hearing Board, relevant to the provisions of this Ordinance, may appeal to the County Court of Common Pleas in the county where the activity has taken place within thirty (30) days of the Zoning Hearing Board's decision.

ENACTED and ORDAINED at a regular meeting of the Haycock Township Board of Supervisors on the 7 th day of October, 2002. This Ordinance shall take effect immediately.

Chairperson

Vice Chairperson

Supervisor

ATTEST:

Manager

I hereby certify that the foregoing Ordinance was advertised in The Intelligencer on September 23 and 30, 2002, a newspaper of general circulation in the municipality and was duly enacted and approved as set forth at a regular meeting of the Haycock Township Board of Supervisors held on October 7, 2002.

Manager

APPENDIX A STORMWATER MANAGEMENT DESIGN CRITERIA

. .

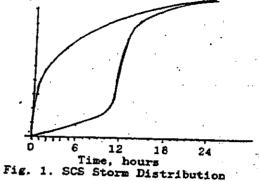
. |

FIGURE A-1. NRCS (SCS) TYPE II RAINFALL DISTRIBUTION

Scaled SCS Type II Design Storm by Gert Aron Penn State University

The SCS Type II storm distribution is widely accepted for the construction of a design storm. A problem in the practical application of the distribution, however, is the steepness of the SCS curve, shown in Figure 1, which makes it difficult to read relative rainfall amounts at short time intervals.

For the purpose of developing a systematic procedure to generate design



(1)

(2)

storms of any desired time interval, equations were fitted to the SCS Type II storm distribution. A method for constructing a center peak storm is described below. To develop a useful equation, the storm distribution was rearranged to an early peaking pattern, starting with the steepest portion of the SCS curve and progressively decreasing in slope with time. The rearranged distribution is also shown in Figure 1, and can be expressed by the equations

 $P_t = 2.25 P_{24} (t/24)^{0.46}$

for t < 1/2 hour

 $P_t = P_{24} (t/24)^{0.25}$

for t > 1/2 hour

where P = total precipitation in duration t
 t = storm duration in hours

Design Storm Construction.

The design storm construction procedure is best described by an example, as follows:

A 25-year design storm of 2 hours duration, expressed in 15-minute intervals, is needed. From an appropriate source, like TP-40 or similar maps, the corresponding 24-hour rainfall amount is 4.0 inches. A table with five columns is required.

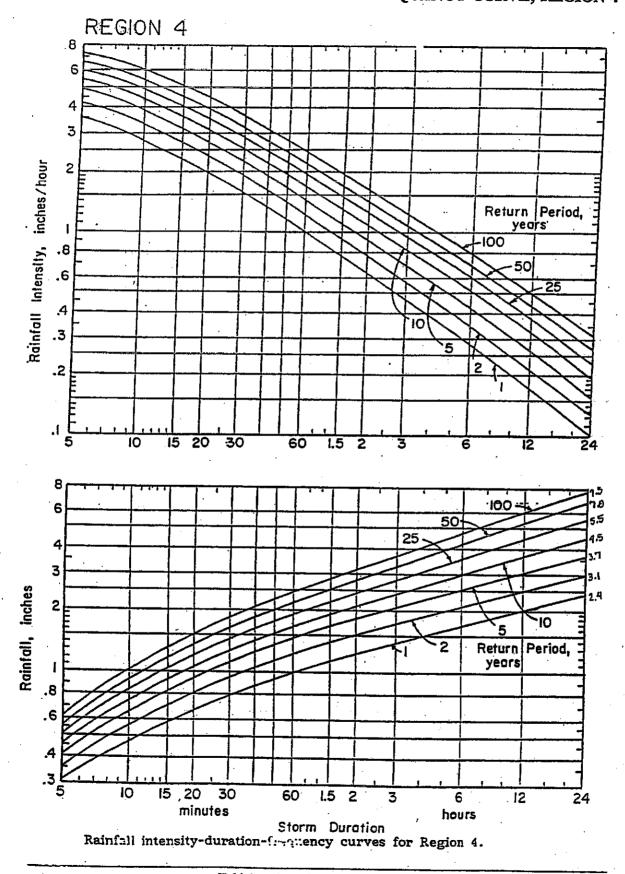
1) Col. 1 is time t in minutes or hours. In column 2 the relative rainfall P $/P_{24}$ is shown as computed by eq.'s 1 or 2 for durations t.

2) In column 3, the relative amounts from column 2 are multiplied by
 4.0, the 24-hr rainfall. These values represent the storm amounts from the steepest portions of the SCS curve, of duration t.
 3) The rainfall increments between successive durations are computed

from column 3 and listed in column 4. These values would constitute the successive rainfall increments, and thus the hyetograph for an early-peaking

4) To generate a center-peaking, roughly symmetrical storm, the increments in column 4 are rearranged in column 5, placing the largest increment, of 1.10 inches in the 5th time interval, the second largest in the 4th time interval, the third-largest in the 6th time interval, the fourth-largest in the 3rd time interval, and so forth until a rainfall increment is assigned to each time interval.

FIGURE A-2. PENNDOT STORM INTENSITY-DURATION-FREQUENCY CURVE, REGION 4



Tohickon Creek Watershed Stormwater Management Plan-Volume II

TABLE A-2. **RUNOFF CURVE NUMBERS (FROM NRCS (SCS) TR-55)**

Cover description			Curve numbers for hydrologic soil group-						
Cover type and hydrologic condition	Average percent impervious area ²	A	В	с	D				
Fully developed urban areas (vegetation established)				· ·					
Open space (lawns, parks, golf courses, cemeteries, etc.) ² ;	• •	· •	· .						
Poor condition (grass cover < 50%)	۰,	68	79	86	89				
Fair condition (grass cover 50% to 75%)		49	6 9	79	84				
Good condition (grass cover > 75%)		39	61	74	80				
				••					
Paved parking lots, roofs, driveways, etc.									
(excluding right-of-way).		98	98	98	98				
Streets and roads:			20	20	20				
Paved: curbs and storm sewers (excluding			-						
right-of-way)		98	98	00.1					
Paved; open ditches (including right-of-way)		83 	. – –	98	98				
Or aver (including right-of-way)		83 76	89	92 ···	93				
Lurt (including right-of-way)	• •		85	89 ~~	• • • 91				
estern desert urhan areas		72	· 82	87	89				
Natural desert landscaping (pervious areas only M		~		•					
A culcul desert isnascebing (impervious wood		63	° 7 7 .	· 85	88				
Damer, desert shrub with 1- to 2 inch sand					. ·				
or gravel mulch and basin borders).		· · ·							
		96	96	96	96				
Commercial and business	~~								
	85	89	92	94	95				
sidential districts by average lot size:	72	81	88	91	93				
/8 acre or less (town houses)									
14 sere	65	77	85	90	92				
/4 acre	38	61	75	83	87				
/3 acre	30	57	72	81	86				
/2 acre	25	54	70	80	85				
acre	20	51	68	79	84 84				
acres	12	46	65	77	82				
veloping urban areas			••• ·	••	02				
wly graded areas (pervious areas only,									
o vegetation) ^s									
a lands (CN's are determined using cover types milar to those in table 2-2c).	• .	77	86	91	94				

Runoff curve numbers for urban areas1

Average runoff condition, and $I_{\mu} = 0.2S$.

¹Average runoff condition, and I_n = 0.2S. ^{*}The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4. ³CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type. ³CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN ⁴Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN ⁴Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, ⁴Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, ⁴Composite CN's for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, ⁴Composite CN's for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, ⁴Composite CN's for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, ⁴Composite CN's for the newly graded pervious areas.

(210-VI-TR-55, Second Ed., June 1986)

	Cover description				umbers for soil group	
Cover type	Treatment ²	Hydrologic condition ³	· A	B	C	D
Fallow	Bare soil	_	77	86	91	94
	Crop residue cover (CR)	Poor Good	· 76 74	85 83	90 88	93 90
Row crops	Straight row (SR)	Poor Good	72 67	81 78	88 85	91 89
·	SR + CR	Poor Good	71 .64	80 75	87 82	90 85
	Contoured (C)	Poor Good	70 65	79 75	84 82	88 86
	C + CR	Poor Good	69 · 64	78 74	83 81	87 85
	Contoured & terraced (C&T)	Poor Good	66 62	74 71	80 78	82 81
	C&T + CR	Poor Good	65 61	73 70	79 77	81 80
mall grain	SR	Poor Good	65 63	76 75	84 83	88 [/] 87
	SR + CR	Poor Good	64 60	75 72	83 80	86 84
	C	Poor Good	63 61	74 73	82 81	85 84
•	C + CR	Poor Good	62 60	73 72	81 80	84 83
	C&T	Poor Good	61 59	72 70	79 78	82 81
	C&T + CR	Poor Good	60 58	71 69	78 77	81 80
os e see ded or broadcast	SR	Poor Good	66 58	77 72	85 81	89 85
egumes or otation	C	Poor Good	64 55	75 69	83 78	85 83
neadow	C&T	Poor Good	63 51	73 67	80 76	- 83 80

Runoff curve numbers for cultivated agricultural lands¹

¹Average runoff condition, and $I_{\mu} = 0.25$.

*Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

^aHydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

linkt. Fuctors encourage average and better than average infiltration and tend to decrease runoff.

(210-VI-TR-55, Second Ed., June 1986)

Cover description				numbers for ic soil group	
Cover type	Hydrologic condition	A	B	С	Ď
Pasture, grassland, or range—continuous forage for grazing. ²	Poor Fair Good	68 49 39	79 69 61	86 79 74	89 84 80
Meadow-continuous grass, protected from grazing and generally mowed for hay.	· ·	80	. · 58	71	78
Brush-brush-weed-grass mixture with brush the major element. ³	Poor Fair Good	48 35 4 30	67 56 48	- 77 70 65	83 77 73
Woods-grass combination (orchard or tree farm). ^s	Poor Fair Good	57 43 32	73 65 58	82 76 72	86 82 79
Woods.*	Poor Fair Good	45 86 480	66 60 55	77 73 70	83 79 77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	_	59	.74	82	86
Average runoff condition, and $I_a = 0.2S$. Point: <50% ground cover or heavily grazed with no mulch. Faint: 50 to 75% ground cover and not heavily grazed. Good: >75% ground cover and lightly or only occasionally grazed.					· ·
Poor: <50% ground cover. Fair: 50 to 75% ground cover. Gund: >75% ground cover.	•	•	•		

Runoff curve numbers for other agricultural lands¹

"Actual curve number is less than 30; use CN = 30 for runoff computations.

*CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

Poor: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
 Fair: Woods are grazed but not burned, and some forest litter covers the soil.
 Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

(210-VI-TR-55, Second Ed., June 1986)

Tohickon Creek Watershed Stormwater Management Plan----Volume II

Cover description		•	Curve n hydrologic	umbers for soil group	
Cover type	Hydrologic condition ²	A ^a	В	С	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor Fair Good	•	80 	87 81 74	93 89 85
Oak-aspen-mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor Fair Good		66 48 80	74 57 41	79 63 48
Pinyon-juniper-pinyon, juniper. or both; grass understory.	Poor Fair Good		75 58 41	85 78 61	89 80 71
Sagebrush with grass understory.	Poor Fair Good		67 51 35	80 63 47	85 70 55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor Fair Good	63 55 49	77 72 68	85 81 79	88 86 84 [!]
Average runoff condition, and $I_{*} = 0.25$. For range in humid regio from $\sim 30\%$ ground cover (litter, grass, and brush overstory). Fair: 30 to 70% ground cover. Fand: > 70% ground cover. Curve numbers for group A have been developed only for desert si				• •	
	•				
	.		•		

Runoff curve numbers for arid and semiarid rangelands¹

(210-VI-TR-55, Second Ed., June 1986)

RATIONAL RUNOFF COEFFICIENTS TABLE A-3,

0.40 0.50 0.20 0.42 0.40 0.31 8°.0 0.37 0.35 0.20 0.72 0.78 0.20 1 G 0.07 2-65 0.40 0.23 80 0.16 0.36 0.34 0.32 0.40 0.29 0.69 0.72 0.75 0.21 0.96 ۵ 0-25 0.18 0.30 27 0.30 0.15 0.33 0.30 0.28 0.36 0.31 0.69 0.72 0.89 0.73 0.16 0.22 0.05 0.26 14 0.44 0.36 0.16 0.20 0.30 0.36 0.34 0.32 0.40 0.69 0.72 0.7G 0.89 0.24 50 0.07 2-61 0.19 0.25 0.34 0.28 0.13 0.33 0.31 0.29 0.27 0.35 0.32 0.69 0.72 0.73 ò 0.17 0.23 Maroff Confilements for the Matland, Formula Dy Nydralogic Soli Group and Overland Siopo (5) 12-0 0.14 0.30 0.20 0.10 25.0 0.27 0.25 0.20 0.22 0.68 0.72 0.72 0.12 0.18 0.95 0.21 0.37 0.30 0.14 0.35 0.30 0.33 5 0.28 0.69 0.36 0.72 0.74 0.19 0.97 2-6X 0.15 0.28 0.22 9.15 5.0 2 2 0.29 0.26 0.23 0.21 5 0.68 0.72 0.89 0.82 0.13 0.98 8 a Runoff coefficients for storm recurrence intervals less then 25 years. b Runoff coefficients for storm recurrence intervals of 25 years or more 12 0.11 0.18 0.14 0.00 0.35 0.33 0.19 0.22 0.95 0.17 0.60 0.71 0.71 8.0 0.1 0.40 0.16 0.22 0.25 0.31 0.31 0.14 0.39 0.26 0.23 100 0.11 0.32 0.60 0.72 0.72 0.14 0.07. 2-61 0.13 0.20 0.15 0.22 0.00 0.26 0.37 0.19 0.26 0.23 0.20 0.69 0.85 .0 88-0 0.7 0.10 0.96 < 0.00 Ĩ 0.12 0.10 58.0 0.33 0.22 0.19 0.28 0.16 0.11 0.88 0.67 0¹³ 0.70 0.85 Lot Size 1/4 Acre Lot Size 1/3 Acre Lot Size 1/2 Acre Residential Lot Size 1/8 Acre Cultivated Land Lot size 1 Acre Open Space Industrial Commercial Land Use Pasture Parking Streets Meadow Forest

S.L. Word and R.H. McDuen, 1981, "Comparison of Urban Flood Frequency Procedures." Preliminary Draft, U.S. Opportment Conservation Sarvice, Baltsville, MD. Tohickon Creek Watershed Stormwater Management Plan-Volume II

Source: Nawls, W.J., of Agriculture, Soil

TABLE A-4.

MANNING ROUGHNESS COEFFICIENTS

Surface	Best	Good	Fair	Bad
Uncoated cast-iron pipe Coated cast-iron pipe	0.012 0.011	0.013	0.014	0.015
Commercial wrought-iron pipe, black Commercial wrought-iron pipe, galva-	0.012	0.013	0.014	0.015
nized Smooth brass and glass pipe	0.013	0.014	0.015	0.017
Smooth brass and glass pipe. Smooth lockbar and welded "OD" pipe Riveted and spiral steel pipe.	0.010 0.013	0.011*	0.013•	
Vitrified sewer pipe	f 0.010 \	0.013	0.017	0.017
Common clay drainage tile	0.011	0.012*	0.014*	0.017
Glazed brickwork Brick in cement mortar; brick sewers	$\begin{array}{c} 0.011 \\ 0.012 \end{array}$		0.013* 0.015*	0.015
Neat coment surfaces Cement mortar surfaces	0.010	0.011	0.012 0.013*	0.013
Concrete pipe	0.012	0.013	0.015*	0.015
Wood stave pipe Plank Flumes:	0.010	0.011	0.012	0.013
Planed	0.010 0.011			0.014
With battens Concrete-lined channels	0.012	0.015°	0.016	
Cement-rubble surface.	0.017	0.020	0.025	0.018
Dry-rubble surface. Dressed-ashlar surface.		0.030		0.035
Semicircular metal flumes, smooth Semicircular metal flumes, corrugated	0.011	0.012	0.013	0.015
Canals and Ditches:			[
Earth, straight and uniform Rock cuts, smooth and uniform		0.030	0.033*	0.025
Rock cuts. jagged and irregular Winding sluggish canals			0.045 0.0275 (0.030
Dredged earth channels Canals with rough stony beds, weeds				0.033
on earth banks.				0.040
Earth bottom, rubble sides Natural Stream Channels:	0.028	0.030*).033* (0.035
(1) Clean, straight bank, full stage, no rifts or deep pools	0.025	0.0275	.030	.033
(2) Same as (1), but some weeds and				
(3) Winding, some pools and shoals,			ł	.040
(4) Same as (3), lower stages, more	0.033	0.035 0	.040 0	.045
ineffective slope and sections (5) Same as (3), some weeds and	0.040	0.045 0	.050 0	.055
stones				.050
 (6) Same as (4), stony sections (7) Sluggish river reaches, rather 	0.045	0.050 0	.055 0	. 060
weedy or with very deep pools (8) Very weedy reaches				.080
(o) reij weeuj reaches	0.010		.120 0	. 100

Values of n to Be Used with the Manning Equation

• Values commonly used in designing.

Tohickon Creek Watershed Stormwater Management Plan-Volume II

TABLE A-5

1: Hydrologic soil groups for United States soils

AABAB	D	LADAVEN					•		
AABERG			c	AHREN	e	Í ALDING		D I ALSEA	
AARON		ADDICKS	D	AMANKLIN	c		•		
AASTAD	ç		e	AHRS	`€	J ALEDO			
	e			I AHTANUH	ō	ALEGROS		C ALSTAD	
AAZDAHL	9	L ADEK	8	AHTANUH' DRAINE				C ALSTONY	
ABAC	D	A DEL	,	AMAANNEE		ALEKNAGIK		< [ALSUP	
OLABA	c	ADEL WET	. 0		A	ALEHEDA		C ALTAMONT	
ABALOSADIAH	3	ADELATOR			¢	· I ALEX		B ALTADEAK	
ABARCA	8	ADELANTO	. 0	AICO	C	I ALEXANDER		C ALTAR	•
ABBAYE	8		e	1 AIKEM	÷₿.	I ALEXANDRIA			
31664	-	ACELINO	́ В	[AIKHAN	0	ALFIR	•••		
	e	ADELING.	c	I AIKMAN STONY	c	ALFLACK			•
ABBOTT	. 0	SALINE-ALKALI		1 AILFY	. P			C I ALTHOUSE	
- ABBOTTSTOWN	. C	A DELPHIA	870	I ATVELTIN	-	ALFORD		8 ALTICREST	
ABCAL	J	ADEN	c	I AINAKEA	ť	ALGANSEE		2 FALTITA	
ABEGG	3.	ADENA	č		6	ALGARACED		A LALTMAR -	
ABELA	3	ADGER	-	AINSLEY	8	· I ALGERITA		B I ALTO	
ABELL		I ADIEUX		A INSWORTH	E	I ALGIERS	•	C/DI ALTOGA	
ABERDEEN	č	1 ADILIS		AIRMONT	ç	1 ALGOA		C I ALTON	
AGERONE			. 6	LAIPPORT -	C	ALGOMA			
ARERSITO	15	ADIN .	Ð	F AITS	P	I ALHAMEPA		E/D ALTOONA	
	c	ADIOS	D'	I AJC	č	I ALHARK		B L ALTUDA	
ABERT		ADJUNTAS	ċ	1 AUGLITO	č			B ALTURAS	
ABES	D	ADKINS		I AKAD		ALICE	1	B ALTUS	
ABGESE		ADKINS. ALKALI	-	AKAKA	¢	ALICEL	1	8 J ALTVAN	
ABILENE	c	AOKINS. BET	-	, some te	*	I ALICIA		9 I ALUF	
ABIGUA	₽	ADLER			5/1	DI ALIDA			
ABIQUA. FLOODED	÷ ē	1 ADMAN		AKASKA	e	I ALIKCHI			
ABITA	÷č		C ·		. D	I ALINE	· .		
ABO	-	I ACOBE	ç	AKERCAN	e	ALKIPIDGE			
ABOR	С	A SOFSH	9/D	AFEPUE .	r.	ALKO			
	D	1 4005	c	AKINA	Ē		·. 0		
ABORIGINE	0	AORIAN		AKLEF	-		· 6	' I ALVISO	· · _ ,
ABOTEN	D.	I ADVOKAY	0	ALACDIN	D	ALLAHORE	0	I ALVODEST	
ABRA	9	I AECET	č		<u>e</u>	ALLANTON		701 ALVOP	
ABRAHAŇ	s.	AENEAS	-	ALACSHI	F	I ALLANTON.	D		
ABRAZC	່ ວົ	I AFFEY	P.		- A	I CEPRESSIONAL	· · -	ALVOR PROTECT	
ABRAZO. GRAVELLY	č		C 1	ALAELOA	ŧ	I ALLARD	. 8		ED (
ABREU		AFLEY	5 J	ALAGA		I ALLDOWN	-	I ALWILDA	6
ABRIGO	Ð	AFTADEN.	21	ALAKA]	c	ALLEGHENY			
	. 8	I AFTON	C/D	ALAMA	È		8		2
ABSAPCKEE	c	I AGA	5 1	ALAMADITAS		ALLEMANDS	D	l ALZOLA	c
AGSCUTA	A	AGAIPAH	ōi	ALAMANCE	•	ALLEN	8	I AMADOR	
ABS-IER	0	AGAN	ō i			ALLENDALE	. 5	I AMAGON	5
ABSTED	с	I- AGAR	8 1		B .	I ALLENDORF	8	J AMALIA	ē
ABSTED, FLGDDED	ō	1 4GA3512		ALAMO	÷С ,	ALLENS DARK	8	I AMALU	
AOSTON		AGATE	0 1	ALAMCGORDO	P	ALLENS PARK.	STONY C	AMANA	0
ACACIC	8		C	ALAHOSA -	e (ALLENTINE	D	I AMANGA	8
ACADENY	-	I AGATHA	÷ 1	ALAMOSA. DRAINED	. E	ALLENHOOD	-		· C
ACADIA	Ċ	AGAWAN	P	ALAPUCHEE		ALLEY	5	I AMARILLO	в
	2	AGENCY	C 1	ALANGS			9	AMASA	6
ACANA	D	I AGER	D i	ALAFAHA	D 1	ALLHANDS	C	AMASA, NODERATE	LY C
ACANOD	· C	AGF A YAN	Đ I	ALAPAI		ALLIANCE	5	I WET, SANCY	• -
ACASCO	5	AGNAL	δi	ALAZAN	. A [ALLIGATOR	D	I SUPSTRATUM	
ACCELERATOR	8	AGNESTON	E 1		2 J	ALLIS	. 0	AMAER	a
ACEITUNAS	6	AGNESTON. COBBLY		ALEAN	e (ALLISON	e	ANGIA	
ACEL .	ē	SUBSTRATUM	_ c }	ALBAND	0 1	ALLKEP	2	AMEGAT	· D
ACHIMIN	. č		1	ALEANY	C I	ALLOR	a	A4907	c
ACKEF		AGNESTON. CORBLY	c)	ALEATON	DI	ALLOUFZ	. a		c
ACKERHAN	A		< 1	ALEEE	- č i		· · ·	AMORANT	9
	A/0	NONGRAVELLY	- 1	ALSENARLE	ē i	ALMANOR	8	AMBRAW	6/
ACKEPVILLE	i c I	AGNEW	c i	ALSERTON	6 1		e	I AMELIA	C.
ACKETT	I	, 4 GN 0 S		ALFEFTVILLE	c í		D	AHENE	Ð
ACKLEY	9	AGON		ALCINAS .		ALMENA	c	AMENTA	8
ACKMEN	F. j			-	e (ALMERIA	D	AMENSON	õ
ACKMORE	_ e _ i			ALPTON	6	ALMIRANTE	8	AMERICANOS	
ACKWATER	D i	AGUA	r 1	ALEF IGHTS	C 1	ALHO	Ď	I AMERICUS	E
ACHE	č i			ALFUGZ	C]	ALMONT	Ċ	I AMERY	
ACO		AGUA BULCE	E	ALBURZ, DRAINED	e i	AL-OTA			<u>, e</u>
ACOHA	8 1	AGUA FRIA		ALBUS	a i	ALHY	c	AHES	. C/
	C I	AGUA FRIA. HIGH		ALCAN		ALNITE	e e	AMESMA	8
ACORO	- Ç	RAINFALL .		ALCESTER		-	D	I AMESMONT	c
ACOVE	C 1	AGUA FRIA, STONY		ALCOA	e	ALD	0	AMHERST	Þ
ACFEDALE	o'i	AGUADILLA	•			ALCHA	с	A AMISTAD	ő
ACREE		AGUALT	•	ALCONA		ALOMAX	D	AMITY	
ACRELANE		AGUEDA		ALCOT	A 1	ALONA	8	I AMMON	P
ACTON				ALCOVA '		ALONSO	ē	I AMEDAC	· 2
ACUEF		AGUILARES		ALC#		ALOVAR			c
ACUNA		AGUILITA	B 1 4	ALDA . SALINE		ALPENA	¢	1 AHGLE	A.'
ACY		AGUIRRE		LTAX				I AMOP	8.
	C 1	AGUSTIN	,	LDEN		ALPHA	e	I AMORUS	D,
ADA .	c i	ANART				ALPIN	· •	1 AMOS	č
ADATH		AHL		LUFP		ALPON		AMOSTOWN	
· 404HS		AHLSTROM		LCEFDALE		ALPONA	P	1 AMPAD	ç
ADAHSON	e i	ANHEEK		LCEAPAND	e	ALRED,		AMPHION	ç
ACANSVILLE				LDEFWOOD		ALROS			¢
ADATON		AHOL T	D A	4.01		ALS		AMSDEN	9
	9 I	AHPAH		LDINE	-	ALSCO		AMSTERDAM	5
					- • •		8 -	I AMTOFT	0

TWO HYDROLOGIC SOIL GROUPS SUCH AS D/C INDICATES Hodifiers shown, F.C., yedrock substratum, refer

H AS DIC INDICATES THE DRAINED/UNDRAINED SITUATION Substratur, refer to a specific soil series phase DUND IN SOIL HAP LEGEND

(210-VI-TR-55, Second Ed., June 1986)

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BCDC

	_								
ANWELL	ç	ANSELHO, BEDROCK	•	1 ARCH	8	APMYDRAIN-	. с	ASSUMPTION	В
ANY	<u>p</u>	I SUBSTRATUM		ARCHABAL	E	ARNEGARD	8	E ASTA	е
ANACAPA	8	ANSGAR		DI ARCHBOLD	A	ARNESS .	D	I ASTATULA	
ANACOCO	0	ANSPING	8	AACHER	ç	ARNHEIM	0	1 ASTOR	870
ANACONDA	9	ANT FLAT	C	ARCHEPDALE	c	ARNO	D	ASTOP, FLOODED	Ď
ANAHEIM	_ <u>c</u>	ANTEL	8	ARCHES	0	ARNOLD	*	ASTORIA	8
ANAHUAC	D	ANTELOPE SPRINGS	c	ARCHIN	D	ARNOT	C/0	ATARQUE	D
ANAMITE Anapra	Ď	ANTERO	. 0	ARCHIN, CODL	с	ARNTZ	c	E ATASCO	c
	B	ANTHO		ARCHULETA	Ð	AROL	D	I ATASCOSA	D
ANASAZI	ç	ANTHOLOP	0	ARCIA	¢	AROSA	ʻ c	1 ATATE	. B
ANATONE	D D	ANTHONY	8	ARCLAY	Þ	I ARP		I ATCHEE	Ð
ANAVEROE	9	ANTIGO -	8	ARCO	c	ARRADA	D	ATCO	8
ANAWALT	· 0	ANTILON ANTIOCH	C D	ARCO DRAINED	. 2	ARRASTRE	6	L ATENCIO	8
ANCHO	9	ANTLER	_	ARCOLA	ç	ARREDONDO		I ATEPIC	Ď
ANCHO SALINE	č	ANTOINE	ŝ	ARD	ç	ARRIDA	c	ATHELWOLD	8
ANCHOR POINT	õ	L ANTONITO	a c	ARDENMONT	ē	ARRINGTON	8	ATHENA	8
ANCHOPAGE	Å	ANTOSA	р - р	ARCENVOIR		ARRICLA	-	ATHERTON	8/0
ANCLOTE	8/0			ARDEP. WET	8	APRITOLA		ATHOL	8
ANCLOTE.	0	ANTWERP	č	I ARDILLA	c c	ARROLIME		ATKINS	D
DEPRESSIONAL		1 ANTY	ຣັ	ARDIVEY	8	ARROWHEAD		ATKINSON	9
ANCLOTE	0	1 ANUNDE	ē	1 ARDNAS	5 2	ARROYADA	-	I ATLAS	D
FREQUENTLY	-,	ANVIK	ē	AROTCO	8	ARROYO SECO		I ATLEE	· c
FLOODED		ANWAY		ARECIBO	Ă	ARSITE	-	ATLOW	0
ANCO	c	AQWA	ē	AREDALE	ê	I ARTA	-	ATHORE ATOKA	. 5/0
ANDERGEORGE	8	APACHE	Ē	ARENA	č	ARTESIA		ATONIC	ç
ANDERLY	<u>с</u>	1 APAKUIE	Ā	ARENA. ORAINED	č	ARTESIAN		AJRAC	8
ANDERS	c	APALACHEE	0	ARENALES	Ā.	ARTNOC	ē		5
ANDERSON	9	1 APALO	8	APENDISVILLE	9	ARTCIS	č	ATRING	ē
ANDOK	8	DLARAREJO	ē	ARENOSA	Ā	APUJO			5
TNDOALS	D	APELDORN	. 0	ARENZVILLE	8	ARUNDEL	- i		C/D
ANDRADA	0	I APEX	e	ARGALT	ō	APYA	ō		0
ANDREESON	c	1 APISHAPA	Ð	ARGENT	Ď	ARVADA	ē i	FLOODED	Ū
ANDREGG	9	APISON	8	APGENTA	ċ	ARVANA	ē i		0
ANDRES		APMAT	· 8	ARGONAUT	0	ARVESON	8/01	ATTER	Ā ·
ANOREWS	c	E APMAY	Ð	AFGORA	5	ARVILLA	A I	ATTEPBERRY	8
ANDRUSIA	A	1 APOLLO		ARGYLE	8	ARV EN	8		8
ANDRY	o	1 APOPKA		L ARIEL '	C	ARZO	0 1	ATTEVAN, WET	Ď
ANDYS	B	APPANOOSE	_	AR IKARA	6	ASA ·	- i - i	ATTICA	8
ANED	Þ	APPERSON	с	ARIMO		ASABEAN .	8 1	ATTOYAC	8
ANELA	9	APPIAN	θ.	I ARIPEKA	c	ASSILL	0 1	ATVATER	3
ANETH	8	APPIAN.	¢	ARIPINE	A	ASCALON	1 6	ATHELL	D
ANETH, DRY Angelica		SALINE -ALKALI		ARIS	D	ASCAR	C 1	ATHOOD	8
ANGELICA	8/0		, c	ARISPE	c	ASCHOFF	e	AU GRES	8
ANGELO	C	APPIAN. RECLAIMED	c	AFIZO		ASH SPRINGS	°⊂ I	AUA	e
ANGELUS	9	APPLEBUSH APPLEDELLIA	8	ARKABUTLA	ç	ASHART	D	AUBARGUE	D
ANGIE	Ö	APPLEGATE	c c	ARKANA	ç	ASHBON	01	AUBBEENAUBBEE	8
ANGLE	· •	APPLETON	c	ARKAQUA	C B	A SHCROFT		AUBERRY	B
ANGLEN	ĉ	APPLING	à i	AFKPORT	2	ASHOALE	e 1	AUBREY	c
ANGOLA		APPON		ARKSON	8	ASHE	8 1	AUBURN	D
ANGORA	8	-	ă i	ARKTON	Č	ASHER	. . .	AUBURNDALE	9/0
ANGOS TURA	_	APTAKISIC	ě	APLAND	8	ASHFORD		AUFCO	0
ANHAL T	ō		ĉ		č	ASHFORK		AUGGIE	8
ANTAK	D		Ā	ARLINGTON	è i	ASHGROVE		AUGSBURG .	B/C
ANTHAS	c i		ŝ	ARLINGTON. THICK	ē		C	AUGUSTINE	C, B
ANINTO	0 1	ARAERAD	ō	SOLUN	- 1	ASHIPPUN	č i	AULD	0
ANITA	o i	ARADA	8	ARLD		A SHKUN	8/01	AURA	8
ANKENY	8	ARAGON	Ĉ i	ARLOVAL			6 1	AUREL IE	D
ANKLAN	0	ARANOURU	.ē i	ARMAGH	ōi	ASHLEY	ei	AURELIUS	5/0
ANKONA	. D	ARANSAS	o j	APHCO	°ē i	ASHLO	ē, i	AURORA	c
ANNABELLA	8	ARAPAHOE	e/01	APMELLS	i		e i	AUSPUS	Ď
ANNANDALE	C 1	ARAFIEN	C 1	ARMENCARIS	c i	ASHMUN		AUSTIN	č
ANNAW	B	ARARAT	8 j	APPENIA	ōi	ASHOLLER	· ō i	AUSTINVILLE	ē
ANNEHAINE		ARAT		ARMESA	ēi		•	AUSTWELL	.0
ANNIS	C)		- i	ARMESPAN	a j			AUT	č
ANNIS. SALINE	8	ARAVE	0 [ARFIESBURG	0 1	ASHUE		AUTOHBA	8
ANNIS, DRAINED		ARAVETON	.8	ARMI JO	0 1	ASHUFLOT		AUTRYVILLE	A -
ANNISQUAN	C J		c i	ARMINGTON	C I			AUXVASSE	ō ·
ANNISTON	8 1		C I	ARMISTEAD	ć i			AUZOUI	8
ANNONA	P		c 1		ć i	ASOLT		AVA	č
ANDCON	C I	AREONE	8	ARMO	8	ASOTIN	c i	AVALON	ē
ANOKA	8	AREOR	9 I.		0	ASPARAS	6 1	AVANT	a
ANONES	<u>c</u> 1		8	ARMONA	c i	ASPEN	6 I	AVAR	D
ANOVELL	0	ARBUCKLE, WET	<u> </u>	ARMOUR	8	ASPERMONT	B į	AVAWATZ	A
ANSAR [ARBURUA	< 1	ARMPUP	c i	ASPERSON	c	AVENAL	8
ANSEL		ARBUS	e	APMSTER	C I	ASSATEAGUE		AVILLA	
ANSELHO	В.		8	ARMSTRONG	C I	ASSININS	8 1	AVIS	A
	1	ARCETTE	8 1	ARMUCHEE	·c I	ASSINNIBOINE	· B] .	AVOCA	8
								· .	

NOTES :

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in soil map legend.

· ·								•
AVON	с	ALDFIELD	c	I PAROLEY	c	BATESON	_	•
AVONBURG	D	I BALDHILL	ė	IBARELA	č	BATESVILLE		BEAVERTON
AYONDA		I BALDHOUNTAIN		BARF IELD	.õ	I BATH		
AVONDALE	5	BALDOCK	Þ	L BARFUSS	8	1. BATTERSON .	C D	
AAONA ILLE	8	I BALDOCK . GRAVELL	Y C	1 BARGE	Ē	BATTLE CREEK	c	
AVTABLE ,	. 0	SUBSTRATUM.		BARGER	č	LEATTLEMENT	. 5	
, AVORIG	Ď	DRAINED		I BARIO	8	- BATZA	. B C	
AXIS	°D	I BALODCK. SALINE	Ċ	L BARISHMAN	č	BAUDETTE	5	
AXTELL	. 0	BALDOCK SALINE	¢	BARKCAMP	, e	1 BAUER	ć	I BECKTON. WELL (
AYAR	, D'	I BALDOCK . DRAINED	c	1 BARKELEW		BAUMAN	2	
AYCOCK	🖗	BALDVIN	D	BARKERVILLE	°C	EAUMGARD		
AVDELOTTE	D	SALDY	. 8	I BARKLEY	č	BAUSCHER	ė	· · · · · · · · · · · · · · · · · · ·
AVERSVILLE	. 8	DALE		I BARKGF	D	BAUX	ž	I BECKNOURTH C
AYLMER		DALE. JET	D	SARLEYFIELD	ē	BAUXSON	6	I BECREEK B
AYNOR	6/0		Ð	BARLING	c	BAXENDALE	ň	LEEDELL e
AYON	в	BALLARO	. 8	J BARLOW .	8	BAXTER		I BEDEN D
AYDUB	ç	I BALLER	D .	BARNABE	C	BAXTERVILLE		I BEDFORD C
AYR Ayres	8	DALLINGER	D	† BARNARD	c	BAYAHON	ē	I BEDINGTONB
AYRSHIRE	P	BALLTOWN	Ð	I BARNELLCREEK	2	BAYARD		I BEDKE
AYSEES	- C	BALLYAR	8	DARNES	Ð	J BAYBORO	ō	I BEDNER C
AZAAR	ċ	I BALLY	С.	BARNESTON	Ð	1 BAYERTON	c	I BEDSTEAD C
AZELTINE	, i	I BALH	D	BARNESTON.		BAYFIELD	с	I BEDWYR D
AZTALAN	c	I BALHAN	Ð	NONGRAVELLY		I SAYFIELD. WET	.D	1 866 1
AZTEC	ā	ALMAN. SALINE.	c	BARNEY	₽,	A BAYHORSE	D	I BEEBE A
AZTEC. HIGH	č	I FLOODED	÷	SARNHARDT	8	1 BAYLIS	6	I BEECHER C
RAINFALL	•	BALHLAKE		DARNHOT	Þ	BAYMEADE		I BEECHGROVE B
AZULE	c '	BALMORHEA	ç	BARNSDALL	8	I BAYOU	٥	I SEECHWOOD C
AZVELL	č		a	DARNSTABLE		1 BAYOUDAN	D	1 BEEK C
BAAHISH	5	BALSORA	8	BARNUM	5	I BAYSHORE	D	I BEEKHAN .C
3430	·8	BALTIC	D	BARODA	Ð	BAYSHORE.	a	I BEELEN D
BABBINGTON		Î BALTINORE Î Bama	· B	BARGID		1 PODERATELY WET		L BEELINE D
BABEL THUAP		I BAHAC	B	BARGID. VET	D	1 BAYSIDE	° 0	- GEEMONT C
BACA	8	BANBER		BARRADA	Ŭ.	I BAYTOWN	в	BEENDH D
BACA, FLOODED	, e	I BANDEN		BARRE	¢	1 BAYUCOS	0	BEESKOVE B
BACH	i i žoj	I BANTUSH	· C	BARRETT.	Ċ	I DAYVI '	Ö	I REETVILLE B
BACHELOR			8	BARRIER		I BAYVIEW	΄ D	I BEIZEE 8
BACHO	0	SANAT	D	BARRINGTON	. e	I EAYWDDO	, 🔺	BEFAR D
BACHUS	č			BARRON	· 8	I BAZETTE	c	I BEGAY B
BACKBAY	D i	BANCAS		BARRONETT		BAZILE	1 8 -	E BEHANIN 6
BACKBONE	· 🚡 🛔	BANCKER	ç	BARRY	8/0		D	BEHEMOTOSH C
BACLIFF	ō i	BANCROFT	D	BARSAC		BEAD	c	DEHRING D
BACOB I	č	BANCY	Ď.	BARSHAAD ''	0	BEADLE	.c	I'B€IGLE B
BACONA	ē i	BANDAG	в		Ð	BEALAND	8	BEIRMAN D
BADAXE	· ē i	BANDERA		DARTINE	C	DEALES	8	BEISIGL A
BADÉNA		BANDID	-	BARTLE Bartley	-	BEAN.	D	lêEJE D
BADENAUGH	8 1	BANDON	ĉi	BARTLEY BARTO	C	BEANTON	C	BEJUCOS B
SADGE -		BANE	·	CARTOME	D	BEANBLOSSON	,B	BELAIN C
BADGERTON	8 Ì	BANGO		SARTON	D. 1	BEANFLAT	c	BELATE B
BADIN	c i	BANGOR		BARTONFLAT		BEANLAKE	·	1 BELCHER D
BADITO .	c i	BANGSTON	- T - I	BARYON	B	BEANO	•	BELDEN C
BADO	D.	BAN IDA	D I		- E - I			BELDING B
BADUS	C/01	BANKARD		BASCAL	6 1	BEAR CREEK	-	BELEN
BADWATER	8 1	BANKHEAD	- i i	BASCO	c i	BEAR LAKE	-	BELFAST B
BAGARD	- B - İ	BANKS	- i i	BASCOM	Ē	CEAN FRAINIE	-) SELFIELD C
BAGDAD	Bj	BANLIC	ĉi	BASCOVY	D 1	BEARDALL Bearden	¢.,	1 SELFORE
BAGGOTT	0 1	BANNEL	6 1	BASEHOR	Ď	BEARDELEY	c	BELGARRA
BAGLEY	8	BANNER	c i	BASH	č i	BEARDSTOWN	· C	BELGRADE B
BAHEN	- B	BANNING	εi	BASHAV	ō	SEARUSTUNN SEARGULCH	c	BELHAVEN D-
BAHIA	A Ì	BANNEON	ē i	BASHER		BEARMOUTH		BELINDA D
BAHL	c 1	BANNOCK		BASILE	0 1	BEARPAN		BELJICA
BAILE	D	BANTRY		BASIN	- C - 1	BEARSKIN	-	BELK
BAILEGAP	0 [BAPOS	0 1	DASINGER	a / n	BEARSPRING	.0	DELKNAP C
BAILEYCREEK	c j	SARABOO		BASINGER.	2701	BEARTRAP		BELLAVISTA C
BAILING	C	BARAGA	ζi	DEPRESSIONAL				BELLE B
BAINVILLE	C 1	BARANA		BASINGER. FLOODED	0	BEARVILLE		SELLECHESTER A
BAIRD HOLLOW	c i	BARATAR I		BASKET	8 1			BELLEHELEN D
BAIRD HOLLOW+		BARBAROSA		BASSEL		REASON		BELLENNINE D
EXTREMELY COBBLY	i.	BARBARY		BASSETT		BEATRICE		BELLEVILLE B/D
BAIRD HOLLOW.	8.1	DARDERT		BASSFIELD	- •			SELLEVILLE, PONDED D
GRAVELLY	1	DARBOUR		BASTIAN .		BEAUCOUP		PELLEVUE 8
DAJURA		BARBOURVILLE	- •	BASTON		BEAUFORD		BELLICUM 8
BAKEOVEN		BARCAVE		BASTROP		FEAUGHTON		BELLINGHAM D
BAKER .	-	BARCE		BASTSIL		BEAUMONT .		BELLINGHAN, C
SAKERSVILLE		BARCLAY	- •	GATA .	•	BEAUREGARD		DRAINED
BALAAM	•	BARCO	•	BATAN -		BEAUSITE		PELLPASS C
BALCOM	a j	PARCUS		BATAYIA		BEAUVAIS		BELLPINE C
BALD	- ,	BARD		BATEMAN		BEAVERCREEK	•	BELLVOOD D
BALDER		BARDEN		BATES		BEAVERDAN		BELHEAR D
	•				8 }	BEAVERELL	e ;	BELWILL 8

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DELHONT	. 8			I BILLINGS.	8	I BLACKNOLL	c	1 mil 1997 1 1 1997	
BELHORE			8	I HODERATELY SLOW		SLACKOAR			A
OELPRE	c	I BERVILLE	8.	DI PERM		ELACKPIPE		DI BLUE STAR	в
BELSAC	· 8	I SERVOLF		I BILLYCREEK	-		C	I BLUEBELL	c
BELTED	D		ĕ		c	BLACKPRINCE	. 8	BLUECHIEF	¢
BEL TON	č		-	I BILLYHAW	, P	BLACKPOCK	. 8	I BLUECREEK	D
BELTRAME	ō		0	BILTHORE		BLACKSAN	0	I BLUEDONE	č
BELTSYILLE	č			D BINHER	٥	L BLACKSPAR	D	I BLUEFLAT	č
BELUGA	-		×.	I FINCO	D	6LACKSPOT	n	1 BLUEGROVE	è
	0	, nesuen	5	BINDLE	5	BLACKSTON		I BLUEGULCH	
BELUGA. DRAINED	• C		c	6 INFORD		BLACKTHORN	ă		8
SLOPING		88551E	D	DINGER		BLACKTOP	-	BLUCHILL	¢
BELYO IR	c	BESTROM	c	BINGHAM	ň		0	I BLUEHON	с
DELZAR	c	I DETHANY	·ē	BINGHAMPTON		, endland	. 0	BLUEJOINT	8
SCH1DJI		I BETHEL	ē			PLACKWELL	D) ALVENOSE	
AEN LOMONO	5	DETHERA	Ď	I DINGHAMVILLE	D	BLADEN	ס	BLUEPOINT	A
BENCHLEY	č	I DETHESDA	-	C de Printene		E BLAG	0	BLUERIM	c
DENCLARE	č		ç	BINNSVILLE	Ô	ELAGO	D	BLUESLIDE	ō
BENCO			8	BINS	8	JULAINE	c	BLUESPRIN	č
BENGER		BETIS		8 INTON	с] SLAIR	ċ	BLUESTONE	ō
	8	I SETONNIE	8	I SINTON, RECLAIMED		1 BLAIRTON	č	BLUEWING	-
BENDIRE	c	I BETRA	c	I BIOYA		1 BLAKABIN	č		A
BENEVOLA	c	AIVARBTTER	c	BIPPUS		1 CLAKE		J BLUFF	0
BENEVAH	D	1 BETTS	8	BIRCHBAY	č		6	BLUFFDALE	c
aenfield	c	I SEULAH		BIRCHFIELD	õ			I BLUFFTON	¢/D
BENGAL	c	I DEVENT	Ă		-	BLAKENEY	¢	ELUFORD	c
BENGE		DEVERIDGE	ō	I BIRCHWODO	S	BLAKEVELL	c	BLUM	C
BENHAN	. 8	BEVERLY			5	1 PLALOCK	Ð	I BLY	
SENIN	. D .	BEVERLY, GRAVELLY		BIRDS	C/1		c	1 ALYBURG	8
BEN I TO	D	I GEW	A.	I BIRDSALL	Ð	I BLANCA		SLYTHE	0
BENJAMIN	· .		¢	I BIRDSBORD	6	I BLANCHARD	A	1 BOAROMAN	õ
BENKLIN		1 BEWLEYVILLE	a	1 BIRDSLEY	D	BLANCHE	8	BOARDTREE	č
DENHAN	C	DEXAR	, D	BIRDSVIEW	A	1 BLANCHESTER	8/0	• = = = = • • • • • • • •	
	C	1 8520	Ð	1 BIRKBECK	8	BLANCOT	B	1 BOAZ	D
BENNDALE	8	1 DEZZANT.	- 8	BIRM INGHAM	6	BLAND			C
BENNINGTON	c	0 188	с	STRNEY	ă	BLANDING	c	8088177	c
BENRIDGE	.8	FIBLESPRINGS	6		č		a	BOBILLO	A
BENSLEY		BICE		laisare		8LANEY	8	EDBN808	C
BENSON	D	1 BICKERDYKE	-	BISCARO	À	BLANKET	c		0
DENTEEN	Ċ	I BICKETT	D	I BISCAY	0	BLANTON	ă.	1 BOBTAIL	C
BENWY	ē.	BICKLETON	ă		e/0		8.	1 BOBTOWN	5
BENZ	ō	BICKHORE	-	I BISGANI.	8	HODERATELY VET		E BOCA	8/D
BEOR ·	ō	BICONDOA	Ç.	I NODERATELY WET		1 BLANYON	c		0
BEOSKA		BICONDOAL DRAINED	0	I BISGANI, FLOODED	c	I BLAPPERT	Ð	I BOCA. TIDAL	ō
BEOTIA	ă.		C	BISHOP	0	0LAQUIERE	-C		ā
SEGWAYE	-	I BIDDEFORD	D	1 BISHARCK	D.	BLASDELL			0
SEGUINN		BIDDLEMAN	- T .	1 9150001	D	BLASE	Ċ	I BOCKSTON	-
		BIDMAN	¢	BISPING	e :	OLAS INGAME	è	1 80DE	
BERCUMB	🖸	1 BIQVELL	8	I BISSELL	E .	BLAYDEN			8
BERDA	8	i aieber	0	DISSONNET	0 1		-	,	A
DEREA	C	I BIEDELL	D		č				0
BERENICETON	8	SIEDSAW	c	BITTER		SLEAKWOOD	-	1 800EN (c
BERGHOLZ	¢	1 BIENVILLE	A				¢.		8
BERGLAND	D	BIG BLUE	ō			SLEDSOE	¢	i BODINE t	9 .
SERGOUIST		I BIG HORN	ě		c I	BLEIBLERVILLE	Ð.	BODORVMPE (c .
BERGS TROM		I BIG TIMBER	0 1		6	5LENCOE	0	1 BODOT (c
BERGSVIK	ō	1 BIGARM		BITTON	6	BLEND	0	BOEL	
BERINO	ĕ	I BIGBEE	·8	BIVANS	0 1	BLENDON	- i i	BUEL. OVERWASH	-
BERIT	õ		A	9 IX8 A	8 1	BLETHEN		DOELUS	
RERKS		8 IGBEND	• I	BIXLER	C	BLEYINS	8 1	BOERNE	
aerksnire	ç.,	BIGOROVN	c l	8 JORK	c i	BLEVINTON		BOESEL	
	8		8	PLACHLY	8 İ	BLEWETT	ōi	- 1222227	-
OERLAKE	8		8 1	BLACK OUTTE	e i	BLICHTON	ŏi		,
BERLIN	C 🖓	E BIGFLAT .	0 1	BLACK CANYON	ōi	BLICKENSTAFF			
SERHESA	¢	BIGFOOT	ć i		či	SLINO		BOGAN C	
BERHUDIÀN	• 🖲 👘		ςΪ	DRAINED	~ ;	BLINSTER	6 1	BOGART 8	ŧ
BERNAL	0		ā, i		_ !		C I		
SERNALDO	8.1		. I		0 1	SLINN	- C	80GGY . C	
SERNARD				BLACKA	C 1	BLISS .	C 1	BOGRAP B	
BERNARDING	ē i		A I	OLACKOURN	8	BLITZEN -	. ¢	BOGUE D	
BERNARDS TON					D I	SLOCKHOUSE	D I	•	
SERNH ILL			C I		8	BLONFORD			
DERNICE	a i		5 j	BLACKFOOT	c i	BLOOM	0 1		
	A !		a t	BLACKFOOT. DRAINED		BLOOMFIELD	ă i		
BERNING	C I		D ł	** • • • • • • • •		BLOOMING			
BERNOW		BIGWIN	c i		c i	PLOOMSDALE		BOHNA B	
BERRYLAND	8/01			and a manager of the second second second second second second second second second second second second second				BOHNLY O	
BERRYMAN	c i					BLOOR	ςI	BOHNSACK B	
BERSON	ē i			A		BLOOR . GRAVELLY	0 1	BOISTFORT 8	
BERTAG	εi	BILSO				SUBSTRATUN	1	BOJAC B	
BERTELSON	ě.i			ELACKHORSE C		BLOUNT	c i	0 DL08	
BERTHOUD	ă i		•	BLACKLEED		6LOVERS		BOLAN	
BERTIE	•			BLACKLEG (: 1	BLUCHER	ē i	BOLAR C	
BERTO		BILLINGS C		BLACKLOCK 0		BLUE EARTH	8/01	· · · · ·	
	0		1	BLACKMAN C		BLUE EARTH.	D 1		
BERTCLOTTI	8		1	BLACKHOUNT		SLOP ING	- * }	BOLENT A	
					•	, , _		BOLES C	

NOTES

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(210-VI-TR-55, Second Ed., June 1986)

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Hydrologic soil groups for United States soils

· ·									
BOLFAR	c	BORGEAU	B	BRACEVILLE	c	I BREW	c	BROKENHORN	•
BOLICKER	8	i BORGES	Ð	I BRACKEN		I EREWER	č.	BROLLIAR	0
80110	D	BORTANA	D	BRACKETT	č	BREWLESS	č	1 BROMER	0
BOLIVAR	. 8	BORKY	с	EPAD	· 0	BREWSTER	. D.		ç
BOLLING	c	I BORNSTEDT	c	BRADDOCK	·	BREWTON	-	BROMIDE	8
BOLSA	с	a a a a a a a a a a a a a a a a a a a	ō	BRADEN	ě	BRIBUTTE	ç	BRDMO	8
BOLTON	6	I BORDBEY	č	BRADENTON	-		Þ	BRDNAUGH	R.
BOLTUS	D	BORREGO	õ	BRADENTON. FL		O BRICKEL	c	BRONCHO	8
BOMAR	č	BORREGUERD	č			BRICKHILL	c	TRADNCHO. LOAMY	
BOMBADIL	· 5	BORSKI	· · ·	BRADER	D	BRICKTON	c	SUBSTRATUM	
BOMBAY				ERADSHAW	B	BRICO	· c	I BRONELL	8
BOMOSEEN	c	BORTH	. C	BRADSON	. 5	BRIDGE	c	1 BRONSON	. 8
BON	8	1 BORUP	B/1		C	- DRIDGECREEK	C ·	BRONTE	, c
BONAIR		BORVANT	D	ERADY .	B	BPIDGEHAMPTON	8	I BROOKE	Ď
	0	BOSANKO	. D	I BRADYVILLE	c	BRIDGEPORT	8	I BROOKFIELD	
BONANZA	₿.	BOSCO	. 8	BRAFFITS		BRIDGER	Ē	BROOKINGS	ē
BONAPARTE		BOSKET	6	BFAGG	c	BRIDGESON	õ	I BROCKLYN	Č/D
BONCLAIR	В	1 BOSLER		L BRAHAM	· 8	BRIDGESON, DRAINE	D C	BRODKMAN	D
BOND	D	1 8050 .	D	88AILSFORD	ć	BRIDGET	Ĕ	BROOKSHIRE	
BONDFARM	D	805005	8	SRAINERD	Ċ	PRIDGEWATER		BROOKSIDE	<u> </u>
BONOMAN	0	BOSSBURG	D	BRALLIER	õ	BRIEDWELL	8.		C
BONDRANCH	· D	I BOSSBURG. DRAINED	c	BRAM	č	BPIEF			8/D
BONDUEL	i c	- POSTON	c	BRAMARD	Ē	I ORIER		I BROOKSTON . STONY	
BONE	Ð	BOSTRUM	ō	BRAMLETT	Ē	1 · · · · ·	D	1 BROCKSVILLE	Þ
BONEEK	6.	I BOSTWICK		ORANWELL	č	BRIGGS		BROOME	B
BONEYARD	č	1 BOSVILLE	č	BRANCH		ERIGGSDALE	c	1 BROPHY	A/D
BONFIELD	Å	1 BOSVELL	Ď	BRANCROFT	-	BRIGGSVILLE	. c	BROSE	D
BONERI	ē	I BOSYORTH	č		c	BRIGHTON	- e/D	I BROSELEY	8
BONG	· 👗	BOTELLA	8	BRAND	D	ARIGHTWOOD	8	BROSS .	B
BONHAM	ĉ	BOTHWELL		BRANDENBURG	, A	1 BRILEY	8	1 EROUGHTON	0
SONIFAY	. .	i BOTHWI	•	BRANDON	. 2	BRILL	e	SROWARD	c ·
BONILLA		1 80TON	ç	BRANDYWINE	с	I BRILLIANT	8	BROWER	
BONITA			8	BRANFORD	e	I ERIMFIELD	C/9	I BROWNBEAR	ċ.
BONJEA	-		¢ '	BRANHAM	c	I BRINLEY	5	I BROWNDELL	D
BONN	P	I BOTTLE	ç	BRANSCOME	8	1 BRINSTONE	D	1 EPOYNELL	
	Ð	BOTTLEROCK	С.	ERANTFORD		ERINEGAR .	E	I EROWNFIELD	· 👗
BONNEAU	. 4	BOULDER		I BRANTLEY	с	BRINGMEE	8.	I BROWNLEE	8
SONNELL	Ċ	BOULDER LAKE	0	BRANYON	D	BRINKER	ē	BROWNRIGG	° D
BONNER	8 ·	BOULDER POINT	ē.,	BRASHEAR	c	I BRINKERT	è	BROWNSCONBE	č
BONNERDALE		DOULDERCREEK	8 1	BRASSFIELD		BRINKERTON	0	BROWNSCREEK	. с в
BONNET	8 1	BOULDIN	8	BRATTON	ē	BRINNUM	Ď	BROWNSDALE	-
BONNEVILLE	*	BOULFLAT	ς I	BPAUN	Ċ.	BRINNUM. DRAINED	č	BROWNSTO	Ç.
BONNICK	A	BOUNCER	0	BRAVANE	· D	BRIDNES	8	BROWNSVILLE	8
BONNIE	C/D	BOUNDARY	. 8	BRAWLEY	-	URIOS	Ă		· C
BONNIE, PONCED	c I	BOURBON		BPAXTON	č	BRISBANE	ê	BROWNTON	C/D
BONNYOOON	D'	BOURNE	ē j			BRISCO		EROXON	e .
BONO	0 1	BOUSIC	D I		č	BRISCOT	e (BROYLES	•
BONSALL	0	BCV	ōi				0	BAUBECK	D .
BONTA	· B 1		c i			BRISCOT. DRAINED	C I	BRUCE	8/D
BONTI	c	COVELLS	8 1	BRAZITO, THICK		BRISKY	D I	BRUELLA	8
BONWIER	ċ i	60VD1SH	či	SURFACE		ORISTON	0	BRUELLA. HARD	·c
BONWIER, GRADED	ē i	BOWDLE	ìi			BRITTO	D I		
BONZ	c i	BOWDOIN	δi	BRAZITO, THICK	ંડા	BRITTON	D I	BRUFF Y	8
BOOFORD	. Či	BOVERE	či	SURFACE .	!	BRITWATER	e)	BRUHEL	в
BOOFUSS	0	BOWEN		SALINE-ALKALI		PROAD	C I	BRUIN	8
BOOKCLIFF		BOWERS	<u>c</u> i	BRAZON	C I	BROAD CANYON		BRUMAN	8
BODKER	o i		5 1	ERAZORIA	D	BROADALĢIN	ć j	BRUHBAUGH	c
BODKOUT		BOVES	e !	BRECKENR ID GE	6/01		• j	BRUNCAN	D
BOOKWOOD		BOWIE	8 1	BRECKNOCK	e	BRUADBROOK	C I	BRUNDAGE	Ď
BCOMER		BOWLAKE	c i	BRECKSVILLE	C I	PROADHEAD	c i	BRUNEEL	p
BOOMSTICK		BOWLUS	e 1	BREECE	8 ·]	BROADHURST	o j	BPUNELDA	ō
BOOMTOWN		BOWMAN .	C	EREGAR	D .	BRQADHOOR	c i	BRUNG	Ā
	0 1	BOWMANSVILLE	87b1	BREIEN	e 1	PROADUS	8 1	ERUNSWICK	8
BOONE	<u>≜</u> !	BOWNS	C	EREKO	8 1	BROADWELL	ēi	BRUNZELL	8
BOCNESBORO	B (BOWSTRING	A/01	BREMER	C 1	BROBETT	ē i	BRUSHCREEK	č
BOONEVILLE	F	BOXELDER	C I	EREMER, SANDY	E I			BRUSHCREEK	-
BOONTON	C I		c į	SUBSTRATUM	· - i		či		. B C
BOONVILLE	- C 1	COXVILLE	c i	BREND	ci				
BOONVILLE	Ρİ		εì	BRENS	À			BRUSSETT BRYAN	8
. 800TH	ci		- i	BRENDA					. <u>.</u>
BOOTHBAY	c í		iā	BRENHAM				BRYANT	8
BOOT JACK		·	õi	BRENNAN	-			BRYARLY	Ð
90075			e i	BRENNER				BRYCAN	8
BOQUILLAS	•				0 1			BRYCE	Ð,
BORACHO			8 1	BRENT	P 1		•	BRYMAN	9
BORAH				OFENTON			-	SRYSTAL .	6
BORAVALL				BRENTSVILLE	•		e (505	c
BORDA				BRENTWOOD	6		1 8	BUBUS	8
BORDEAUX	•			BRESSA			c i	BUCAN	ē.,
BORDEN				BRESSER	8 (c i	BUCAN, GRAVELLY	Ð
BORDER				BREVARD	e (*	BROE		BUCHANAN	č
				BREVATOR	C I	BROGAN		BUCHEL	Ď
BOREALIS	· 0	BRACE	: 1	BREVORT				BUCHENAU	c
						•			-

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BUCHENAU. THICK	5	1 BURCHELL	c	I CARD POJD	c	1	-		
SOLUM		BURDETT	č			I CALODO	c		8
BUCKAROO	c	BUREN	ē		B	CALOUSA	c	CANTEY	0
BUCKBAY	ċ	BURGESS	č		0	CALOUSE	e	I' CANTINA	с
BUCKCREEK	č	BUPGI	8		c	CALPAC	8	CANTON	9
BUCKEYE	ē	I AUATAURI			9	I CALPEAK	D	I CANTON BEND	Ċ
BUCKHALL	i i i	L EURKE	C C		Ð	L CALPINE	6	CANTRIL	ē
BUCKHOUSE	ă		ç		, c	I CALROY	e	CANTUA	
BUCKING	Ä	BURKETOWN	c		C	I CALUME		CANTUCHE	ŏ
		BURKEVILLE	¢	1 44444	D	I CALVERTON	ċ	CANUTIO	
BUCKLAKE	c	BURKHARDT	· 🛱	I CADEVILLE	D	I CALVIN	č	CANWALL	
BUCKLAND	ç	BURLEIGH	. A.	/DI CADILLAC	A	I CALVISTA	ō	I CANYON	ç
BUCKLE	B	AURLESON	0	1 CADIZ		CALVEODS	ŏ	CAPAC	. 0
BUCKLEBAR	5	BURLEWASH	D	I CADHUS	ē	CALZACORTA	ŏ		ç
BUCKLEY	0.	BURLINGTON	ʻ 🔺	I CADOMA	D	CAMAGUEY	Ď	CAPAY	D
BUCKLICK	Ċ,	BURMAN	D	I CAESAR	Ā	I CAMARGO		CAPE	Þ
BUCKLICK, THICK		BURNAC	D	CAGE Y	č	I CAMARILLO	č	CAPE FEAR	٥
SOLUH		BURNBORDUGH	8	I CACLE	č	I CAMARILLO. DRAINED		I CAPEHORN	0
BUCKLON	D	URNEL	Ċ	L CAGUARD	Ď	CAMAS	. 6	CAPERS	Ð
BUCKNELL	D	BURNETTE	· ē	CAGWIN	5		A	CAPERTON	Ð
BUCKNEY	8	JOURNHAM	ō	I CAHABA		CAHAS, STONY	. 8	L CAPHOR	8
BUCKPEAK	. a '	I BURNSIDE	ā	I CAHUNA	8	CANATTA	0	I CAPILLO	С
BUCKS	в	BURNSVILLE	ĕ	I CAID		CAMBARGE	ø	CAPISTRAND	8
BUCKSHOT		BURNSWICK			6	CAMBERN	¢	CAPITAN -	0
BUCKSKIN	č.	BURNT LAKE		CAINHOY		CANBERT	С	J -CAPJAC	с
BUCKTON	8	BURNTRIVER		I CAIRG	0	CANOETH	C .	I CAFLEN	ō
5UDE .	č		e	I CAJALCO	c	CAMBRIA	8	I CAPLES	Ď
BUDIHOL	õ		0	J DI BI BI BI BI BI BI BI BI BI BI BI BI BI	e	CAMORIDGE	С	I CAPLES. DRAINED	č
BUOLEHIS	č	I BURRITA	0	I CAJONA OVERWASH	A	J CAMOEN	8	I CAPONA	č.
BUELL		1 BURROUSVILLE	c	I CAJON, LOAHY	Á	CANEEK	5	I CAPODSE	č.
BUENA VISTA	9	1 BUSSLEY	D.	SUSSTRATUM		1 CAMELBACK	8	I CAPPS	6
BUFFARAN	э	BURSON	c	CAJON. SILTY	A	L CAMED	ē	I CAPSHAW	č
	Þ	BUPT	Þ	SUBSTRATUM		CAMEPON	ō	CAPTINA	
BUFFCREEX	• 8	BUSTON	8	1 CAUONS ALKALIS		CAMILLUS	8	I CAPTIVA	ç.
BUFFINGTON	- 5	I BURWELL	С	1 CVERWASH		I CANENO	č	1 CAPULIN	8/D
OUFFHEYER		BUSEY	7	CAJON	5	CAMPANA	ē	I CARACOLES	8
SUFFORK	c	t BUSE	8	SALINE-ALKALI	-	CANPOELL, HUCK	č	CARADAN	D
SUFTON	¢	DUSHER	8	I CAJON. COOL.		I SUBSTRATUM	٠.		Ð
BUHRIG	с	BUSHMAN	5	I CVERWASH		CAMPBELL . DRAINED	~	CARALAMPI	8
BUICK	C .	BUSHNELL	c	I. CAJON. GRAVELLY	· A	1 CAMPBELLION	8	CARBENGLE	8
BUIST	÷	1 BUSHVALLEY	D	CAJON. COOL		I CAMPOREEK	C	CAREO	c
anko .	8	BUSKA	5	CAJON. WARM		a service an an an a service and	ç .	CARBOL	D
BUKG: WET	C	BUSSY	ē	- CALABAR			8	L CARBONA	0
SUKREEK		1 BUSTER	ē	L CALAPASAS	-		ç	CARBONDALE	A/0
BULAKE	o	BUSTI	č	CALAMINE	8	CAMPONE	¢ .	I CARCITY	D i
BULKLEY	- C	1 BUSYWILD	8	1 CALAPITY	9	CAMPSPASS	8	CARDENAS	D
SULL RUN		EUTANO	č		-	• • · · · · · · · · · ·	8	CARDIFF	8
SULL RUM. HARDPAN	ē.	BUTCHE	è	I CALAMUS	- A - I		C	CARDIGAN	8
SUBSTRATUM	-	PUTLER	D	I CALAVERAS	8		Ċ.	CARDINGTON	c
BULL TRAIL	e	BUTLERTOWN	-	- CALAWAH	E		¢ i	CAPOON	C
5ULLARDS	ai	BUTTERFIELD	-	CALCO	2/0		8	CAREFREE	. 0
EVLLCREEK	o i		C	CALCOUSTA	8701	CANADICE	Ð	CAREY	B
BULLFLAT	8 1	BUTTERMILK	=	I CALCROSS	8 1	CANALOU	8	CAREY LAKE	8
SULLFOR		BUTTERS		I CALD	C 1	CANANDAIGUA	Ď	CARGENT	9
BULLION	<u> </u>	BUTTON	-] CALDER	0 1	CANASERAGA	Ĉ.	CARGILL	č
BULLNEL	0	EUTTONHOOK	8	CALDERMOOD	0 1		c .	CARISEL	8
	S I	EUTTONWILLOW	¢	CALDWELL	C i		Ď	CARIBOU	8
BULLOCK	0 1	EUXIN	Ð	I CALDWELL'S DRAINED	e i		9 · 1		
BULLREY	- a - 1	EUXTON. SOMEWHAT	Þ	I CALE	āi			CARICA	8
BULLUMP	- 5 i i	PODRLY DRAINED		CALEAST	ē i		- '		c
BULLVARO	P	EUXTON. STONY		CALEP	e i	CANDERLY (CARJO.	ç
OVLLY INKLE	0.1	BUXTON. MODERATELY	Ċ	CALEDONIA	e i				D
BULLY	8 (WELL DRAINED	-	CALENDAR	c i				С
BULOW	A	BUZZN		CALERA	λi		•	CARLISLE	A/D
S ANCO NRE	A 1	GYARS	0	CALHI	21			CARLITO	0
8UND0	8 Î	BYBEE	-	CALHOUN		CANEADEA			A/D
BUNDORF	ō i	EYINGTON		CALICO		CANEEK 8	: 1	CARLOTTA	8
SUNCY		SYLER			-	CANELO		CARLOW	D
BUNDYMAN	ē į			CALICOTT		CANEST D	1	CARLSBAD	c
BUNEJUG	či			CALIFON	C I	CANEYVILLE C	: I	CARLSEORG	Ā
BUNKER		EYRAM		CALINUS	6	CANEZ B	1	CARLSON	B
BUNKERHILL				CALITA	8	CANFIELD C		CARLSTROM	č
BUNKWATER				CALIZA	8 J	CANISTED		CARLTON	č
BUNKY		CABALLO		CALK INS	C I	CANISTED. STONY D		CARMACK	8
BUNNELL	<u>S</u> I	· · · · · · · · · ·	c 1	CALLAGO		CANINE B		CARMEL	
		CASBA	0 1	CALLAHAN		CANLON D			c
BUNSELNEIER		CAUBART	C. 1	CALLAN		CANNELL B		CARMICHAEL	8
BUNTINGVILLE		CASBART, STONY		CALLEGUAS	-	CANNING B			c
BUNYAN	5	CAPBART . KARM		CALL INGS			-	CARMODY	¢
BURBANK	A - 1	CABEZON		CALLISBURG					c
BURCH	8 I	CABIN		CALLEWAY				CARNEGIE	c :
BURCHAN	9 J	CASINET		CALMAR				CARNERO	с
BURCHAND		CABLE	- •	CALNEVA				CARNEY	D
	•				c I	CANTALA B	1	CAROLINE	¢

IO TES :

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	CAROLLO	B	CATALPA	c	CENCOVE	8	I CHARLOTTE	B /0	CHEVACLA	~
	CARON		CATAMOUNT		CENTZA	B	I CHARLION	8/0	1 CHEWELAH	c c
	CARDNA MARSHY	0	CATANO	•	CENTENARY	Ă	I CHARNOCK	-	CHEVELAN CHEVENNE	8
	CARPENTER	8	CATARACT		CENTER	ā	CHARNOCK .		I CHIA	Ď
	CARR	Ð	CATAPINA	-	CENTER CREEK	è	I HODEPATELY VET		I CHIARA	ŏ
	CARRACAS	D	CATASKA		CENTERBURG	ē	I CHARD	с	I CHICANE	č
	CARRANZA	в	I CATAULA	B	CENTERFIELD	e	I- CHASE		CHICHANTNA .	õ
•	CARRCREEK	в	CATCHELL	c	CENTERVILLE	D	I CHASEBURG		CHICKAHOMINY	ō.
	CARRIZALES	A -	I CATELLI	8	CENTISSIMA	e	CHASEVILLE		CHICKAMAN	8
	CARRIZO ·	A.,	I CATERL	6	CENTRAL PÜINT		I CHASKA	B/D	CHICKASAW	c
	CARROLLS	Ð	I CATH	Ċ	CENTRALIA	8	CHASTAIN	D.	CHICKASHA	e.
	CARRYBACK	c	CATHARPIN	· c	CENTRALPEAK	с	1 CHATBURN	8	CHICKREEK	D
	CARSITAS	-	I CATHAY		CEPBAT	C	CHATCOLET	Ġ.	I CHICOLETE	c
	CARSITAS. WET	9	CATHCART		CERESCO	8	I CHATEAU	0	5 CHICOTE	Ð
	CARSON	D	CATHEORAL	D		E	L CHATFIELD	8	I CHIEFLAND	8
	CARSTAIRS	Å	CATHEEN	e		ç	CHATHAM		CHIGLEY	c
	CART	-	I CATHERINE CATHLAMES		CERL IN	¢.	CHATSVORTH	-	L CHIKAMIN	с
	CARTAGENA	_	I CATHRO		CERRILLOS	E.	I CHATT		I CHILAD	c
	CARTECAY		I CATILLA	÷ 1	CERRC	ç	CHATUGE		CHILCOTT	c
	CARTER	-	I CATLA		CETRACK	2	CHAUMONT		CHILCOTT, GRAVELLY	
• •	CARTERET	-	I CATLETT		СНАСНА		CHAUTAUDUA	C I	I CHILCOIT, COOL Childs	D
	CARTHAGE		CATLIN	8 1	CHACON	č	CHAVIES	8 1		8 C
	CARUSG		L CATMAN	Ďİ	CHAD	ċ	CHAVIES	· č i		c
	CARUTHERSVILLE	-	I CATNIP	ē i		õ	CHAYSON	č i		a
	CARVER		CATOCT IN	či	CHAGFIN	Ē	I CHAZOS		CHILICGTAL	6
	CARVILE	D	1 CATOOSA				CHEADLE	ōi		D
•	CARYTOWN	0	CATPOINT	À	CHAIRES	E/0		ŏi		Ď
	CARYVILLE	3	I CATTCREEK	8	CHAIRES.	D	CHEROYGAN	- 9 1		8
	CASA GRANDE	c	I CATTOREEK.	A İ	DEPRESS IDNAL		I CHECHT	ρi	CHILMARK	č
	CASABONNE	8	3 GRAVELLY	1	CHAIX	e	I CHECKER	c í		Ď
	CASAGA	с	SUBSTRATUM	· F	CHALCO .	D	CHECKETT	DI	CHILPEP	D
	CASCADE		I CATTO	0	CHALFONT	с	L'CHEDATNA	e)	CHILSON	D
	CASCAJO	· · · · ·	CAUDLE	C	CHALKCREEK	E	CHEDEHAP	6 1	CHILTON	· e
	CASCAJO: COBBLY	_	I CAUSEWA	<u> </u>	CHALMERS		CHEDESKI	8 I		D
	CASCILLA	9 .	I CAUSEY	<u>e </u>	CHAHA, NODERATELY	-	CHEDSEY	C I		C
	CASCO	9 9	CAVAL		SLOW PERM		I CHEEBE	0 1		Ð
	CASEY	0] CAVANAUGH	ר ב היה	CHAMA, MODERATE	-	I CHEEKTDWAGA	P 1		
	CASHEL		CAVEGULCH		. PERMEABILITY	· •		- E - I		D
	CASHIERS		CAVENILL	Ē	CHAMA: COOL Chamate		CPEHALER CHEMALIS	S I		в.
	CASHION		CAVELT	5	CHAMBEAM	-	I CHEHULPUN	8 /		D
	CASHMEPE		CAVENDISH	BI	CHAMEERING		I CHELAN	с в	CHINCOTEAGUE	D
	CASHMONT		CAVO	Č I	CHAMEERLAIN .	-	I CHELSEA		CHINEN Chiniak	D
	CASITC	ρí	CAVODE	č i	CHAPISE		1 CHEMANA		CHIND	ĉ
	CASLO	ō i	CAVOUR	p i	CHAFEKANE	-	f CHEN		CHING DRAINED	۰ <u>8</u>
	CASLO, MODERATELY	c j		ō	CHAMPAGNE	ē	CHENA .		CHINODE	5
	NET	1	CAYAGUA	c i	CHAMPION	8	CHENANGO		CHINVAR	č
	CASHOS	D	CATTON	c í	CHANAC	8	CHENAULT	e 1	CHIPENDALE	D.
	CASPAR .	9	CAYUGA	c l	CHANCE	D (CHENEGA	A 1	CHIPENHILL	D
	CASPIANA	9 I	CAYUSE	8	CHANCELLOR	C I	CHENEY	e (CHIPETA	D
	CASS	- 5 - 1	CAZADERO	C I	CHANDLER	8 1	CHENNEBY	c 1	CHIFLEY	c ·
	CASSIA	c l		e i	CHANE Y	C I	CHENGWETH	_ 8 }}.	CHIPMAN.	Ð
	CASSIA. MODERATELY		CAZENOVIA	. 6	CHANNAHON	D	CHEDAH .	e. I	SAL INE-ALKAL I	
	WELL DRAINED			C I	CHANNING	8	CHEQUEST	c :	CHEPMAN+	C
	CASSIRO Cassiro, Stony			c l		P (CHERIONI	ΡI	MODEPATELY WET	
	CASSOLARY	C I		C I	CHANTIER	0 1	CHERCKEE	DI	CHIPMAN. DRAINED	D
	CASTAIC			C E B I	CHAPANOKE	<u> </u>		C I	CHIPOLA	
	CASTALIA	è i	CEDA	6 1	CHAPERTUN CHAPIN	¢ -	CHERRY. CALCAREDUS			C
	CASTANA	Ă Î	CEDAR BUTTE	õį	CHAPPEN	c 1 8 1	CHERRY, COOL Cherry spring	8	CHIPPENA	Ð
	CASTELL	έi	CEDAR HOUNTAIN	5 1	CHAFOT	8 8	CHERRYHILL			D
	CASTELLETA	ē i	CEDARAN	ρi	CHAPPELL		CHERVE	e (CHIRICAHUA CHIPPCHATTER	D
	CASTELLO		CEDARBLUFF		CHAPPUIS	ĉi	CHESAW	Ă Î		e D
			CEDARCREEK		CHAQUA		CHESHIRE		CHISPORE	D
	CASTILE		CEDARFALLS		CHAPCE		CHESHNINA	•	CHISOLM	Ă
•	CASTINO .		CEDARGAR	-	CHARCOL		CHESNIMNUS		CHISPA	ê
ł	CASTIND: NONSTONY	D [CEDAPHILL		CHARE	e i	CHESTATES	- •	CHISTOCHINA	B
	CASTLE	DI	CEDARPASS		CHARDOTON	- ,	CHESTER		CHITINA	č
	CASTLEVALE	o i	CEDUNIA		CHAPETTE	-	CHESTERTON		CHITTUM	Ď
	CASTNER .	D I	CEEK	6 İ	CHAR GO		CHESTNUT		CHITYOOD	0
	CASTO		CELACY	c i	CHARITON .		CHESTONIA		CHIVATO	č
	CASTON		CELESTE	0 1	CHARLE9013					8
	CASTRO		CELETON	ΡI	CHARLEBOIS. VET	c i	CHETCO		CHIWAWA -	8
	CASTROVILLE		CELINA	¢ [CHARLES	c İ	CHETEK	•		č
	ASUSE		CEL10				CHETWYND	e i		è
	CASVARE		CELLAR				CHEVAL			8/0
	LASWELL		CELSOSPRINGS				CHEVELON		CHOBEE .	D.
ç	TATALINA.	9	CEMBER	C I	CHARLOS, VET	0 I	CHEVIOT	8 1	DEPRESSIONAL	
										•

NOTES: TWO HYDROLOGIC SCIL GROUPS SUCH AS B/C INDICATES THE DRAINEC/UNDRAINED SITUATION. Hodifiers shown, E.g., Bedrock Substratur, Pefer to a specific soil sepies phase found in soil map legend.

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CHOSEE. LIMESTO	าหธ่อ	CLALLAM	¢	L ci inore				,		
SUBSTRATUM		CLAM GULCH	Ď	CLIPPER CLIPPER DRAINED			8		POLOWN-	c
, CHOCCOLOCCO	8	CLANO		O CLODINE) C		0			
CHOCK	D	CLAMP	0		ě	I COKESBURY I COKEVILLE	D	,		8/D
CHOCORUA	D	1 CLANA	Ä	CLOQUALLUM	č		8			e.
CHOICE	D	CLANALPINE	c	CLOQUATO	e	COLBAR	Ċ	/DI COLYER		D
CHOOP CHOPT 12	D	I CLANTON	c	I CLOQUET	В	COLBERT	ō			A C
CHORALMONT	0	CLAPPER	в	1 CLOSKEY	c	I COLBURN	ē			e
CHOSKA	8	CLAREMORE	D	CLOTHO	с.	/ol cousy		1 COM45		9
CHOTEAU		CLARENCE	D	CLOUD PEAK	C	I COLOCREEK	8	COMER		9
CHOVAN	· •	CLARESON	Ś	CLOUD RIM	2	COLDENT	с	COMETA		D
CHRIS	Ē	CLAREVILLE	С		Ð	COLE	¢	I COMFORT		0
CHRISMAN	ō	CLARINDA	õ	CLOUDLAND CLOUGH	ç	COLEMAN	¢	I COMPREY		8/0
CHRISTIAN	Ċ,	CLARION	5	CLOVELLY	0 0	COLEMANTOWN		DI COMPREY, PON	DED	D
CHRISTIANA	c	I CLARITA	D	CLOVER SPRINGS	5	I COLESTINE I COLFAX	C C	I COMITAS		A
CHRISTIANBURG	c	I CLARK	R	I CLOVERDALE	õ	I COLHILL	C S	I COMLY I COMMERCE		c
CHRISTINE	0	CLARK FORK		CLOVERLAND	ē	COLIBRO	8	I COMMSKI		С Б
CHRISTOFF CHRISTY	c	CLARKELEN	8	CLOVIS	8	I COLINAS	ē			8 A
CHRODER	C B	CLARKRANGE	c	CLOWERS	B	1 COLITA	ā	CONDRAGI		0
CHROME	ĉ	I CLARKSBURG	ç	CLOWERS. WET	c	COLLANER	c	I COMODORE		Ď
CHRYSLER	· č	CLARKSVILLE	Ć Đ	CLOWFIN	8	COLLARD	8	I COMORO	1	8
CHUALAR	8	CLARNO		CLUFF CLUNIE	<u>.c</u>	COLLAYOMI	ß	I COMPASS	1	Ð .
CHUBBS	ć	I CLATO	, B	I CLURDE	С Р	I COLLBRAN	D	I COMPTCHE		8
CHUCKANUT	8	I CLATSOP	Ď		5	I COLLBRAN - COBBLY	-	COMSTOCK		c
CHUCKAWALLA	8	I CLAUNCH	8	1 CLYDE	ē,		C D	COMUS		9
CHUCKLES	B .	CLAVERACK	c	1 CLYMED	e	I COLLETT		I CONABY		5
CHUCKRIDGE CHUGCREEK	0	CLAVICON	c	I CDACHELLA	8	I COLLETT. DRAINED	c	CONALE	8	270
CHUGTER	c a	CLAWSON CLAWSON	ç	COACHELLA. VET	¢	I. COLLIER	Ā	CONANT	Ċ	
CHUIT		CLAYSPRINGS	0 D	I COAHUILA	6	COLLINGTON	8	CONASAUGA	· 6	
CHUL I TNA		CLAYTON	8	Í CUAL CREEK Í CDALBANK	D	I COLLINS	с	CONATA	0	
CHUMALL	B	CLE ELUM	č	COALDALE	.# 0	COLLINSTON	. 8	CONBOY	Ď	
CHUMMY	D	I CLEAR LAKE	D	COALDRAW	ŏ	I COLLINSVILLE	c	CONCEPCION	D	
CHUMSTICK	D	CLEAR LAKE	С.	COALMONT	č	I COLMA		CONCHAS	c	
CHUPADERA Church	c	STRATIFIED		I CDAMO	ē	COLNOR	ĕ	I CONCONULLY	c a	
CHURCHILL	- D	SUBSTRATUM	_	COARSEGOLD	С.	I COLNEVEE		CONCORD	ő	
CHURCHYILLE	Ď	I MODERATELY WET	C j		D	1 COLO	8/0		0	
CHURN	5	CLEARGROOK	D	COBAT	8	I COLO. DRAINED	8	CONDIE	а	
CHUSKA	D	CLEARFIELD	c i		C B	1 COLOS NONFLOODED	. 8	CONDIT	D	
CHUTE		CLEARFORK	0 1		õ	1 COLOPA	e A	I CONDEN	c	
CINES	0	. CLEARWATER	0 1	COBEN	ō	COLOMBO	B	CONECUH	A 0	
CIBO		CLEAVAGE	0 1		8.	I COLONA	č	CONCLON	. 0	
CIBOLA	0 5	CLEAVER CLEAVMOR	0 1		Ð	COLONIE	A	CONEJD. WET	č	
CID	ĕ	CLEBIT		COBOC	ç	COLONVILLE	c	I CONEJO. GRAVEL		
CIDRAL	ē į	CLEGG	e i	CCEURG	c c	COLURADO	8	SUBSTRATUM		
CIENEBA	`⊂	CLEGHORN	ςί	COCHETOPA	è	COLOROCK	. D B	CONESTOGA	8	
CIEND	DI		B (COCHINA	ō	COLOSO	D D	CONESUS	8	
CIERVO, ALKALI CIERVO, ALKALI.		CLEMENTINE	C - -	COCHITI	Ċ,	COLOSSE	-	CONGAREE	. <u>A</u> . 8	
WET	. 0	CLEMENTINE.	8 1	COCHPAN	C ;	L COLP	c	CONGER	ċ	
CIERVO. RECLAIMED	-c	. DRAINED CLEMS	_ !	COCOA	A 1	COLRAIN	8 :	CONGER. COBELY		
CIFIC	- či	CLENVILLE		COCOLALLA	¢ I	COLSAVAGE	C i	SUBSTRATUM		
CIMARRON	c i	CLENDENEN	ōi	COCOLALLA. DRAINED	c	COLTER		CONGLE	8	
CINCINNATI	. C I	CLEONE	ei	CODLEY	à	COLTON	0	CONT'	G	
CINCO ·	- <u>+</u> !	CLEDRA	e 1	CODORUS	či	COLTROOP		CONIC CONLEN	c	
CINDERHURST CINEBAR	<u> </u>	CLERF	c 1	CODOUIN	o j	COLTS NECK	8 1	CONLEY	8 C	
CINNADALE	a 0	CLERGERN CLERMONT	8 1	CODYLAKE	8	COLUMBIA, MUCK	8 j	CONNEAUT	· č	
CENNAMON		CLEVELAND	0	COE	<u>A</u> 1	SUBSTRATUM	Í	CONNEL	ē	
CENTRONA		CLEVERLY	8 1	COERGCK	P 1	COLUMBIA. DRAINED.	- e - t	CONNERTON	8	
CEPR I ANO	ōi					CLAY SUBSTRATUN	1	CONOSTA	с	
CERAC	8	CLIFFOELL				COLUMBIA: Moderately wet	i >	CONDITION	8	
CIRCLEBACK		CLIFFOOWN				COLUNBIA, DRAINED	- i	CONOVER Conov Ingo	ç	
CIRCLEBAR .		CLIFFHOUSE				COLUMBIA. FLOODED		CONPEĂK	ç	
CIRCLEVILLE CISCO		CLIFFORD		COGSWELL		COLUMBIA. CLAY	•	CONRAD	D A/D	.
CISNE		CLIFSAND		COMAGEN	0 I	SUBSTRATUN	- i	CONROE		•
CISPUS		CLIFTERSON CLIFTON		A - 1 /	e (8	CONSEJO	. c	
CETADEL	•	CLIFTY				COLUMBINE	A [CONSER	Ď	
CITICO		CLIMARA	0 1		0	COLUMBUS		CONSTABLE	Å	
CITRONELLE		CLIMAX			. !	COLUSA		CONSTANCIA	Ο.	
CLACK AMAS	· ·	CLIME				COLVARD	8	CONSUMO	8	
CLAIBORNE		CLINETOP				COLVILLE. ORAINED		CONTACT		
CLAIRE CLAIREMONT		CLINT				COLVIN		CONTIDE	D B	
	e i	CLINTON	8 1 (COMEDALE. ORAINED				CONTINE	Č	
· · · · · · · · · · · · · · · · · · ·			-		-				. .	

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Nodifiers shown. E.g., bedrock substratum, refer to a specific soil series phase found in soil map legend. NOTES

(210-VI-TR-55, Second Ed., June 1986)

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Hydrologic soil groups for United States soils

	· · · · ·	•	· .			•				
CONTIN	ENTAL	c	1 CORRALITOS. SILT	Y 8'	I COVERS	8	I CREVA		1	_
CONTO		8	I SUBSTRATUM	• -	COVESTGLEN -	ă	CREVASSE	D	CUBCREEK	B
CONTRA	COSTA	¢	CORRECO	с	I COVETA	č	CREVISCREEK	*	CUBERANT	8
CONTRA	7Y -	8	CORRIGAN	Ď	CONGIL	, i	1 CREWS	C	CUCAPUNGO	. D
CONVEN	r	c	I CORSON	ē	I COVHORN		CRIDER	-	CUCHILLAS	ç
CODERS		. 8	I CORTA	ō	COVICHE		CRINS		CUCHO	c
COOK		D	I CORTADA	· .	I COWLAKE		CRINKER	D	CUDAHY	D
COOKPOR	at in the second second second second second second second second second second second second second second se	c	I CORTEZ	ō	1 COWLITZ	Å		¢	CUDAHY, DRAINED	c
COOLBRI	LTH	ċ	CORTINA	ň	CONCOR	D	CPIPPIN	e	I CUDDEBACK	c
COOLIDO	Ξ	8.	CORTINAL THIN	Ă	COWSLY	č	CRISFIELD	8	CUERDA	c
C001, V 11		ē	I SURFACE	-	CONTON.	. c	CRISTO	c	CUERO	8
COOMAS			CORUNNA		DI COX	-	CRISTO, LOAMY	_	CUERVO	c
COONSKI	N	ē	1 CORVIN	6	I COXLAKE	Ď	CRISTORAL	8	CUESTA	. с
COOPER		ě	1 CORVITH		COXVILLE	D	CRITCHELL	B .	I CUEVA	D
COOSAW			1 CORY	č	I COXAEFF	0	CRITTENDEN	8	1 CUEVITAS	Þ
CODTER		Ē	CORYDON	ŏ	1 COXVECT	c	CROATAN	D	I CUEYOLAND	6
COPAKE			I COSAD	č		D	CROCKER		E CULBERTSON .	. 8
COPAL IS		č	1 COSER	5	COYANGSA Coyata	D .	I CROCKETT	D	1 CULDESAC	
COPANO		D	I COSEY	ă		ç	CPDESUS	c	I CULLEN	c
COPASTO	N	ō	I COSH	ĉ	COYET		CROFTON	8	I CULLEOKA	8
COPELAN			I COSHOCTON	۰ <u>۲</u>	COYLE'	8	CROGHAN	8	I CULP	c
COPELAN		0	t cosx1		COYNE	8	1 CROKE	8) CULPEPER	_ C
DEPRES			I COSTILLA	• =	COYOTECREEK	E.	CROMMELL	1 A	I CULTUS	8
COPEMAN		8	I COSUMNES	ĉ		E.	I CRONKHITE	c	I CULVING	c
COPENHA		õ	I COTACO	č	COZBERG COZTUR	. 🖻	CRONKS	c	I CUMBERLAND	₿
COPITA		ă	I COTAIL	ě		p	CROOKED	D	CUMBRES .	c
COPPER	RIVER .	õ	I COTANT	D	CRAPTREE	ċ	CROOKED CREEK	D	I CUHLEY	с
COPPER		ē	J COTATI	č	CRACKERCREEK	8	I CROOKED CREEK,	· c	I CUMMINGS	· D
LACUST		-	COTEAU	č	CRACKLER	. H	[DRAINED		I CUMMISKEY	8
SUBS TR.			I COTHÀ	č		. 6	CROOKED CREEK.	ć	I CUNARD	8
	AIVER. TIL	LÀ	cotito		CRADLEBAUGH	2	I FLOODED		CUNDICK	D
SUBS TR			1 COTO		I CRADLEBAUGH.	c	CROOKSTON	8		· B
COPPER I		8	COTOPAXI		I CRADLEBAUGH.	-	I CROOM	¢	CUNNINGHAM	¢ 1
	USSTRATUM			8	DRAINED	¢	CROPLEY	D /	I CUPCO	c
COPPER #		в	COTTER	8	I CRAFT	. 8	CROPPER	D	I CUPOLA	9
GRAVELI	Y		COTTERAL	· 8	I CRAFTON	c			CUPPER	в
SUBSTRA	TUM	•		Ď	CRAGGEY	- ō ·	CROSBY	· C	CUPPLES	c
COPPERCA	EEK		COTTONEVA	č	I CRAGO	ĕ	CROSIER	ç	I CUPPY	Þ
COPPEREI	ID .	Ď	COTTONTHOMAS	š	I CRAGOLA	5	CPOSS CROSSPLAIN	0	CURABITH	
COPPERTO	114	8.	COTTONWOOD	č	I CRAGOSEN	Š		ç	CURANT	8.
COPPOCK		ā	COTTRELL		CRAIG		I CROSSTELL	D	I CURDLI	C.
COPSEY		ō	COTULLA	ò	I CRAIGNILE	-	CROSSVILLE CROSWELL	•	I CURECANTI	9
COQUAT	<i>.</i> •	D	COUCH	Ď.	I CRAIGSVILLE	8	I CROT	A	CURHOLLOW.	Þ
COQUILLE		D	COUGARBAY	Ď	CRAHER	D i	CRUTON	0	CURDE	Þ
CORA		D	COUGHANOUR	č	CRAMONT	_	CROUCH	· D	CURRAN	·c
CORAL		c	COULEEDAM		CRANE			8	CUPRIER	*
CORALLAK	ε	8 1	COULSTONE	Ē	CPANECREEK	Ċ	CROW CREEK	c	CURRITUCK	D
CORBETT			COULTERG	ē	CRANFILL		CROW HILL	8	CURTIN	D
CORBILT			COULTERVILLE	Ď	CRANNLER	ē i	CROWCAMP	Ś	CURTIS CREEK	D
CORBIN		8	COUNCELOR		CRANSTON	ē	CROWFLATS	0	CURTIS SIDING	
CORCEGA		C 1	COUNCIL		CRARY	ċ	CROWFOOT	8 2	CURTISTOWN	8
CORDELL		0	COUNTRYMAN	Ċ	CRASH	5 1	CROWHEART	с. С		8
CURDES		6 1	COUNTS	0	CRATEP LAKE	e i	CPOWLEY	ō	CUSHING	
CORDESTO	N	- 0 I	COUPEE		CRATERHO	či	CROWNEST	D	CUSHMAN	ç
CORDOVA		C/D	COUPEVILLE	c i	CRAVEN	- či	CROWSHAW	5	CUSHODL CUSICK	<u>c</u> _
CORDY	•	0 1	COURT	a i	CRAWFOPD	0	CPOYTHER	D	CUSTCD	D
CORIFF		5/01	COURTHOUSE	D. I	CRAWLEYVILLE		CROYDEN	8		5
CORINTH		C 1	COURTLAND		CREAL	Ē	CROZIER	Ċ	CUSTER	D
CORKS TON	2	DI	COURTNEY	ō i	CREASEY	.c./p1			CUSTER, DRAINED	C ·
CORLENA		A .	COURTROCK	i a i			CRUCKTON	ei	CUTAWAY	8
CORLETT		A	COURVILLE	ō i	CREED	č i	CRUICKSHANK	с I	CUTHAND	B
CORLEY		8/01	COUSE	Ē.i	CREEDMOOR	- è i	CRUISER		CUTHBERT	с
CORMANT	•	A/01	COUSHATTA	i i			CRUMAPINE			D
CORNELIA			COUTIS		CREEHON		CRUNE		CUTOFF	C
CORNELIV	5		COVE	ōi		- ĉi			CUTSHIN	8
CORNH ILL		8 İ	COVELAND		CREIGHTON		CRUMP. DRAINED		CUTZ	Ď
CORNICK		0 1			CRELDON		CRUNKER	<u> </u>		. 8
CORNING			COVELLO	ĉi	CREN		CRUNKVAR		CUYON	
CORNISH		c, i		Ā		ői			CYAN	8
CORNU TT			COVEYTOWN	ĉi					CYCLONE	€∕D
CORNVILLE	I .		COVILLE	-	CRESBARD		CRUTCHER		CYLINDER	8
COROLLA		•	COVING		CRESCO				CYMRIC	D
CORONA	,		COVINGTON	6		<u> </u>		<u> </u>		Û
CORONACA			COWAN	5			CRYLUHA		CYNTHIANIA	Ο,
COROZAL			COWARTS	ςi			CRYSTAL LAKE	-	CYPHER	D
COROZO	•	x	COWCD	8 1	CRESTLINE	· • • •			CYRIL	8
CORPENING	;	ρi	CONDEN		CRESTMAN		CRYSTALBUTTE		CZAR	8
CORRAL		c i	CONDREY	či			CRYSTALCREEK	0 1		A
CORRALITO	5		COVEEHAN		CRESIVALE	- •	CUATE	<u>c</u> i	DABOB	c
		•		~ 1	14 F 16 F 16	C I	CUBA	E	DACKER	с

SOIL GROUPS SUCH AS 6/C INDICATES THE DRAINED/UNDRAINED SITUATION 1, E.G., Bedrock Substratum, refer to a specific soil series phase NOTES : TVO HY MODIFI

OUND SOIL MAP LEGEND.

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DACONO	a	DARLAND	6	DECKERVILLE.	c	: DELLO. C					
DACONG. COBBLY	c		C.	I DRAINED		I SUSSTRA		8	1 DESCHELL	ε	
SUBS TRATUN	-	DARLING	9	1 DECLO	8			8	I DESCHUTES	9	
DACORE DACOSTA	8 0	DARNSTADT	D	I DECOLNEY	6			č	DESEED	e C	
DADE	Å	I DARNELL : I DARNEN	ç	DECORDOVA	8	1 DELLWOOD		Ā	DESERET	6	
DADINA	ô	DARCH	а С	I DECRAM	C			c	DESHA	- 0	
DAGAN		DARR	с 5-	I DECROSS	B			c	DESHLER	č	
DAGFLAT	Č.	DARRET	č	I DECT	E			8	I DESKAHP	Ğ	
DAGLUN	0	1 DARROCH		DEDHOUNT	D			c	DESHET	8	1
DAGOR	8	DARROCH. BEDROCH		I DEDRICK	ت 1			D	DESOLATION	8	
DAGUAO	c	SUBSTRATUR		OFE	č	OELP			DESPAIN	B	
DAGUE Y DAHAR	ç	CARROUZETT	¢	DEECREE		DELPHI		A 6	I DESTAZO	Ð	
DAHLQUIST	C B	1 DAPSIL	c	DEEFAN	C	DELPHILL		č	I DETER	ç	
DAICK	0	DARST	ç	DEEMER	8	DELPIEDRA	ί.	ō	1 DETOUR	с 8	
DAIGLE	č	DARTMOUTH	Â	I DEEPCUT	D	DELPLAIN		0	DETRA	8	
DAILEY	Ă	DARVEY		I DEEPEEK I DEEPWATER	0	DELPOINT		c 1	I DETROIT	ē	
DAILEY. LOAMY	8	DARWEN	ĉ	I DEER CREEK	e c	DELRAY		8/0		D	
SUBSTRATUM		DASHER	D	I DEER PARK		I DELRAY.	-	e	DEV		
DAINT	P	PASSEL	₿/D		ê	OELRIDGE	GRAC -		I DEVADA	0	
DAKENT Dakota	e	DAST	ā	DEERFORD		DELSON		ċ	I DEVEN) D	
DALOO		DATELAND	B	DEEPHORN	ċ	DELTAJO		č	I DEVILS	e C	
DALBY	D	DATEMAN DATIL	ç	DEERLODGE	i C	DELTON			DEVILSGAIT	с В	
DALCAN	č	DATING	Ë	DEERTON		DELWIN		Ā	DEVILSGAIT.	8	
DALCO	ō	1 DATING. STONY	0	DEEQTRAIL	ç	DELYNDIA	a -		I DRAINED,	-	
DALE	8.	DATWYLER	ĉ	CEEPWOOD Deetz		DI DEMAR			I OCCASIONALLY	•	
DALECREEK	с	DAULTON	č	DEFENEAUGH	A	1 DEMAST			OEVILSGAIT.	e	
DALEYILLE	D	DAVEY		DEFIANCE	· Ď	CEMENT		- 2	DRAINED		
DALHART	6	DAVEY- WARM	à	DEFLEP	ē	DENKY		-	Î DEVINE Î DEVISADERO	Ç.	
DALIAN DALIG		DAVIDELL	5	DEFGRO		DI DEMNER		8	DEVISADERO	. <u>c</u> '	
DALKENA	c -	I DAVIDSON	8	DEGARNO	D	I DEHOGUL		a	DEVOLGNES	0	
DALLAM	8	I DAVISON	8	DEGNER	В	I DEMONA	•	č	DEVOIGNES. DRAIN		
DALLARDSVILLE	č	I DAVTONE			. 8	1 DEMONTREVI	LLE	8	DEVOIGNES.	č	
DALLESPORT	e	DAWES	či	DEGRAND		DEMOPOLIS		c	PROTECTED	-	
DALTON	c	1 DAWHOO		DEHANA	· D 2	1 DEMOPOLIS.	COSSLY	D	DEVOL	8	
DALUPE	5	DAWSON		SEHART	Ē	I DEMOSS I DEMOX		0	OCTORE .	5	
DALZELL	ç	DAWTONIA	ej	DEHAVEN	· •	I DEMPSEY		8 (8)		ç	
DAMASCUS DAMERON	e/0		c j	DEMILL	8	DEMPSTER		8 1		c	
· DAMEYOOD	6 C	DAY	0	DEHL INGER	8	DENAUD		8/01		0 8	
DANLUIS	-	I DAYSCHOOL	A 1	DEJARNET	e	DENAY		8 1	DEVEYVILLE	Đ	
DAPON	õ	DATION	- B	DEKALP	¢	DENBAR		c í	DEWMINE	Ď	
DANA		DATTONA	8 1	DEKOBM		DENBY		c i	DEWVILLE	9	
DANAHER	c	DAYVILLE	či	DEL REY	· D	I DENCO		0	DEXTER.	8	
DANAVORE	8	DAZE	ēi		C E	CENHAWKEN DENISON		0	DIA	С	
DANCY	a /o		6 j	DELAMETER	Ă	DENMAN		c ł c ł	DIA. WET. SALINE	D	
DANDAN DANDREA		DEACON	0 j	DELANCO	ĉ	DENHARK	•	0 1	DIA. WET DIAGLO	0	۰.
DANDRIDGE	-	DEADFALL	C I	DELAND	Ä	DENNIS		či	DIAGULCH	0 6	
DANFORTH	0 a	DEADHORSE	<u> </u>	DELANEY		DENNOT		ē.i	DIAMANTE	8	
JANGBERG	0	DEADMAN .	B 1	DELANO	e	DENNY		ō į	DIAMOND	D	
DANTA		DEADYON	0 1	DELASSUS	c	DENROCK		Dİ	DIANOND SPRINGS	č	
DANJER	D			DELCOVE DELDCTA	D	DENTON		0	DIAMONDVILLE	ē	·
DANKO	0		8 1	OELECO	D D	DENURE	•	B 1	OLANEY	¢	
DANLEY	C 1	DEANDALE -	ōi	DELENA	-	I DENVER I DEPALT		< i	DIANGLÁ	0	
DANN	. C 1	DEARSORN	- e - j	DELECN	č	DEPCOR		0	DIASPAR	8	
DANNEMORA Dansk in	0 1		- C İ	OELEPLAIN	õ	DEPOE		6 D	DIATEE	8	
DANT .	9.1		< 1	QELETTE	c	CEPORT		•	DIBBLE	ç	
DANVERS	0 1 C 1	vester.	¢ i	DELFINA	5	DEPPY		ōi	DIBOLL	C D	
DANVILLE		DEBENGER		DFLFT		DEPUTY			DICK	Ă	
DAPHNEDALE		DEBEQUE		DELGADO		DERA		.e j	DICKERSON	Ď	
DAPOIN				DELHI DELICIAS		CERALLO			DICKEY	e	
DARBONNE	8 j			DELKS		DERS		C I	DICKINSON. MAP<25	в	
OARBY	c i	DEBS		DELL		DERBY DERECHO			DICKINSON. TILL	. 🔺	
DARCO	- A - 1			DELLEKER		DERINDA			SUBSTRATUN		
DARDANELLE Dárden	9		C I	DELLC. OVERVASH		CERLY			DICKINSON: MAAT>50 Dickinson: Maat<50	9 6	
DARDOOW		DECANTEL	0	OFLLC, SALINE		DEROUX			DICKINSON: MAATCSØ DICKWAN		
DARE	8 1		C	DELLC. GRAVELLY	- •	DERR		•	DICKSON	ć	
DARFUR		DECATUR DECCA		SUBSTRATUM, WET	Í	DERRICK		•	D100Y	с D	
DARGOL		DECCA. NONGRAVELLY		DELLO.		DES HOINES.	DRY	8 į i	DIEHLSTADT	č	
DARTEN	čił	DECHEL		SAL INE-ALKAL 1		DES MOINES.	COBBLY		DIERSSEN	Ď	
DARKEULL		DECKER		VELLO. HODERATELY	-	DESAN			DIETRICH	č	
DARKCANYON		DECKERVILLE		DELLO, DRAINED	. !				DIGBY	8	
DARL	c i		- i.		A 1				IGGER	C-	
			•	- · · · ·	1	VESCALABRADO		> 1.0	IGHTON	8	

OFES:

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Hodifiers shown, E.g., Bedrock substratum, refer to a specific soil series phase found in soil hap legend.

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Hydrologic soil groups for United States soils

DILANSON D DOLBEE C GOUGCITY B DUCKHILL D D DIL B DOLBEE SANDY DUGCLIFF D CUCKREE B D DILLARD C SUBSTRATUN DUGGAH D CUCKREE B D OILLARD C SUBSTRATUN DUGGAH D CUCKREE B D OILLARD C DOLERE B DUGA A D <th>DURFEE C DURHAM E DURKEE C DURST C DURST C DURST C DURST C DUSTON A UITCHESS B UITCHESS B UITCHESS B UITCHESS B UITCHESS C UITCHESS /th> <th></th>	DURFEE C DURHAM E DURKEE C DURST C DURST C DURST C DURST C DUSTON A UITCHESS B UITCHESS B UITCHESS B UITCHESS B UITCHESS C UITCHESS	
DILANSON D I DOLBEE C DOUGCITY B DUCKHILL D D D DILL B I DOLBEE SANDY B DOUGCLIFF D I DUCKHILL B D D DILLARD C I SUBSTRATUM I DUGAH D CUCKREE B D<	DURHAM B DURHAM E DURACC B DURSTEIN D DURSTEIN C DURST C DURST C DURST C DURST C DURST A UUSLER C UUTEK A UTEK A UTEK A UTEL C UVAL B UZEL C WIGHT D WORSHAK B WYER A YE D YLAN D YLAN D ACHUSTON D ACHUSTON D AGLECONE B AGLECONE B	
DIL B I DOLBEE.SANDY DUDUGLIFF D DUCKREE B D DILLARD C SUBSTRATUM DUDUGH D CUCKREE B D DILLEY B DOLEKEI B DOUGHERTY A DUCO D A/DI DILLARD C SUBSTRATUM B DOUGHERTY A DUCO D D DILLAYN A DOLEKEI B DOUGHERTY A DUCO D D DILMAN C DOLER B DOUGHERTY A DUCO D D DILMAN C DOLAR C DOUGHERTY A DUCO D D DILMAN C DOLAR C DOUGHY B DUCL A D DIMAL C DOLAR C DOUM DE D DULL A D DIMAL C DOLARK C DOUVER E DUFF M D D DIMAL C DOLARK C DOWRD B DUFF M D D DIMAL D DOLARA C DOWAR B DUFF M D	DURKEE C DURKSTEIN D DURSTEN D DURSTEN D USER C USLER C USTON A UTCHESS B UTEK A UTEK A UTEK A UTEL C WAL B UXBURY A UZEL C WIGHT D WORSHAK B WYER A YKE D YKE D VAND D ACHUS B AGAR B AGAR B AGLEDNE D	
DILLARD C SUBSTRATUM DOUGH D CUCKSTON A/DID DILLEY B DOUGKETI B DOUGHERTY A DUCO D D DILLAYN A DOGEN B DOUGHERTY A DUCO D D DILLAYN A DOLES C DOUGLAS M DUDGEN D D DILMAN C DOLES C DOUGLAS M DUDGEN D D DILTON D DOLLAR C DOUGVILLE E DUDLA A D DIMAL C DOLLARD C DOUGNO B DUEL A D DIMEBOX D DOLLARD C DOURD B DUELM A D DIMEBOX D DOLLARL C DOURA B DUFF B DUFF DIMESOX D DOLLARK C DOWRAY C/DO DUFF B DUFF DIMMICK D DOLLARK C DOWAGIAC B DUFFAU E DO DINA C DOLAN C DOWAGIAC B DUFFAU E DO DINA C DOME B DUFFERN A D DINA C DOME B DUFFAU E DO DINA C DOME B DUFFERN A D DINA C DOME B DUFFERN A D DINCO B DOMEN C DOWAGIAC B DUFFERN A D <td>DUROC B DURST C DURST C DURST C DURST C DUSLER C DUSLER C DUTCHESS B DUTCHESS B UUTEK A UUTCH B UXAURY A UZEL C WIGRHAK B WYER A YE D YKE S YLAN D YRENG D ACHUSTON D AD C AGAR B AGLEDNES D</td> <td></td>	DUROC B DURST C DURST C DURST C DURST C DUSLER C DUSLER C DUTCHESS B DUTCHESS B UUTEK A UUTCH B UXAURY A UZEL C WIGRHAK B WYER A YE D YKE S YLAN D YRENG D ACHUSTON D AD C AGAR B AGLEDNES D	
DILLEY B I DOLEKEI B I DOUGHERTY A I DUCO D I DOL OILLWYN A I DOLEN B DOUGHY B I DUDA A I D DILMAN C I DOLES C I DOUGLAS N I DUDA A I D DILMAN D I DOLLAR C I DOUGLAS N I DUDA A I D DILTON D I DOLLAR C I DOUGVILLE E I DUDLEY D I D DIMAL C I DOLLARNIDE D I DOURDO B I DUELM A I D DIMAL C I DOLLARNIDE D I DOURDO B I DUELM A I D DIMAL C I DOLLARNIDE D I DOURDO B I DUELM A I D DIMAL D I DOLLARNIDE D I DOURDO B I DUELM A I D DIMAL D I DOLLARNIDE D I DOURDO B I DUFFAU E I D DIMAL D I DOLLARNIDE C I DOWAR C/D DUFF B I D DIMG B I DOLLYCLARK C I DOWAR C/D DUFF B I D DINGO B I DOLPH C I DOWAR B I DUFFAU E I D DINGO B I DOMEL B I DOWAR B I DUFFAU E I D DINGO B I DOMEL B I D	DURRSTEIN D DURST C DUSLER C DUSLER C DUSLER C DUSLER C DUSLER C UUSTON A UUTEK A UTEN C UVAL B UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D ACHUS TON D ACHUS TON D AGAR A AGLECONE B	
OILLWAN A I DOLEN B DOUGHTY B DUDA A I D DILMAN C I DOLAR C I DOUGAS R I DUDA A I D DILTON D I DOLAR C I DOUGVILLE E I DUDGEN D D OILTS D I DOLLAR C I DOUGVILE E I DUDEL A I D DIMAL C I DOLLARHIDE D I DOURD B DUEL A I DD DIMAL C I DOLLARHIDE D I DOURD B DUEL A I DD DIMAL C I DOLARAN C I DOURD B DUETTE A I DD DIMMICX D I DOLARAN C I DOWR B I DUFFAU C I DD DIMAL C I DOWR B I DUFFAU E I DUFFAU E I DUF DIMAL C I DOWS C I DOWS C I DUFFER A I DD DING B	DUPST C DUPST C DUSTON A DUTCHESS B DUTCK A UTCK A UTCK A UTCK A UTCK A UTCK A UTCK A UVAL B UXBURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D ACHUS B ACHUS B AGLECONE B AGLECONE B AGLEPASS D	
DILMAN C DOLES C DOUGLAS P DUDGEN D OILTON D DOLLAR C DOUGVILLE E DUDLAY D D OILTS D DOLLARD C DOUMIDE D DUEL A D DIMAL C DOLLARND C DOUMIDE D DUEL A D DIMAL C DOLLARND C DOUMO B DUEL A D DIMAL C DOLLARND C DOUMO B DUEL A D DIMAL C DOLLARND C DOUPR E DUEL A D DIMAL D DOLLARND C DOVAR C DUFF E D	USLER C UUSTON A UUTCHESS B UUTCH A UUTCHESS B UUTCH A UUTCH B UXAL B UXAL B UXBURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D ACHUS B ACHUS D AD C AGAR B NGLECONE B	
DILTON D DOLLAR C DOUGLY D D D OILTS 0 DOLLARD C DOUGHIDE D DUEL A D DIMAL C DOLLARD C DOURO B DUEL A D DIMAL C DOLLARNDE D DOURO B DUEL A D DIMAL C DOLLARNDE D DOURO B DUEL A D DIMAL C DOLLARK C DOVRO B DUEL A D DIMA D DOLLYCLARK C DOVRO B DUFF C D DIMA D DOLNAN C DOWARY C/D DUFF C D D DIMA C DOUNS C DOWAGIAC B DUFFAU C D D DINA C DOME B DOWE E D DUFFAU B D DING B DOMEL B DOWER <td>INTERNATION A NUTCHESS B NGRSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUSTON D AGAR B AGLECONE B AGLECONE B</td> <td></td>	INTERNATION A NUTCHESS B NGRSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUSTON D AGAR B AGLECONE B AGLECONE B	
OILTS 0 DOLLARD C DOUNDE 0 DUEL A D DIMAL C 1 DOLLARHIDE D DOURD B DUEL A D DIMEBOX D 1 DOLLARK C DOVER E 1 DUEL A D DIMEBOX D 1 DOLLARK C DOVER E 1 DUEL A D DIMESOX D DOLLARK C DOVER E 1 DUFF A D D DIMICK D DOLANN C DOVER E 1 DUFF A D D DIMO B DOLPM C DOW B DUFFAU E D	UTCHESS B UUTCHESS B UUTCH C UTTON C UVAL B UXBURY A UZBURY A UZBURY A WIGHT D WORSHAK B WYER A YE D YKE S YLAN D ACHUS B ACHUS B ACHUS B AGAR B AGLE CONE B AGLEPASS D	
DIMAL C I DOLLARHIDE D DOURD B DUELM A D DIMEBOX D I DOLLYCLARK C I DOVR E I DUETYE A D DIMMICX D I DOLLYCLARK C I DOVRAY C/D DUFF A D DIMMICX D I DOLLYCLARK C I DOVRAY C/D DUFF B D DIMMICX D I DOLANN C I DOVRAY C/D DUFF B D DIMO B DOLPH C DOWAGIAC B DUFFAU B D DINA C I DOULS C I DOWAGIAC B DUFFAU B D DINA C I DOME B I DOWE B DUFFAU B D DINGU B DOMEL B I DOWAGIAC B DUFFAU B D DINGU B DOMEL B DOWER C I DUFFAUNT C D DINGLISINA D DOMERIE	UTEK A UTTEN C UTAL B UXBURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D ACHUS B ACHUS B AGAR B NGLECONE B LGLEPASS D	
DINEBOX D DOLLYCLARK C DOVER E DUELYCLARK A D DIMMICK D DOLLYCLARK C DOVER E DUETYE A D DIMMICK D DOLLYCLARK C DOVER E DUETYE A D DIMMICK D DOLLYCLARK C DOVER E DUFFAU E D DIMMY C DOLUS C DOWAGIAC B DUFFER C D DIMYAW C DOME B DOWER C DUFFER C D DINA C DOME B DOWER C DUFFER C D DINA C DOME B DOWER C DUFFER C D DINCO 8 DOMENGINE C DOWNATA D DUFFTON B D DINGLISHNA O DOMERGINE C DOWNATA D DUFFTON C D DINGLISHNA O DOMERGINE C DOWNATA D DUFFTON C D DINGLS B DOMEZ B DOWNEY B DUFORT B	UTTON C UYAL B UXBURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE 5 YLAN D YRENG D ACHUS TON D ACHUS TON D ACHUS TON D AGD C AGAR 5 AGLECONE B AGLECONE B	
DIMMICK D DOLNAN C DOUPA C DUETE A DUETE DIMO B DOLNAN C DOWAY C/D DUFF B DUFF DIMO B DOLNAN C DOWA B DUFFAU C DOU DIMA C DOLUS C DOWA B DUFFER C DO DIMA C DOME B DUFFER C D OINA C DOME B DUFFER A D DINCO B DOMELL B DOWELTON D DUFFER A D DINCO B DOMERGINE C DOWER E DUFFYMONT C D DINGLE G DOMEZ B DOWER E DUFFYMONT C D DINGLE C DOMEZ B DOWER E DUFFYMONT C D DINGLE C DOMEZ B DOWER E DUFFYMONT C D DINGLE C DOMEZ B DOWER E DUFFYMONT C D DINGLE C DOMINIC B <td>UVAL B UXAURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG B ACHUS TON D AGAR B AGLECONE B AGLECONES D</td> <td></td>	UVAL B UXAURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG B ACHUS TON D AGAR B AGLECONE B AGLECONES D	
DING B DOLPH C DOW B DUFFAU C D DINYAW C DOLPH C DOW B DUFFAU C D DINYAW C DOULS C DOWAGIAC B DUFFAU C D DINA C DOWEL B DOWDE E DUFFAU A D DINCO B DOMELL B DOWLELTON D DUFFERN A D DINES B DOMENGINE C DOWNATA D DUFFSDN B D DINGLE C DOMER E DUFFYMONT C D D DINGLE C DOMEZ B DOWNER E DUFFYMONT C D DINGLE C DOMEZ B DOWNERY B D	UXBURY A UZEL C WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS B ACHUS C AGAR B NGLECONE B LGLEPASS D	
DINYAW C DOLUS C DOWAGIAC B DUFFER C DO DINA C DOME B DOWAGIAC B DUFFER C DO DINA C DOME B DOWDE E DUFFER A DO DINCO B DOMENGINE C DOWATA D DUFFER A DO DINES B DOMENGINE C DOWATA D DUFFER A DO DINES B DOMENGINE C DOWATA D DUFFER B DUFFER A DO DINES C DOMERIE B DOWATA D DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B DUFFER B <td< td=""><td>UZEL C WIGHT D WORSHAK B WYER A YE D YKE D YKE D YRENG D ACHUS B ACHUSTON D AGAR B AGLECONE B GGLEPASS D</td><td></td></td<>	UZEL C WIGHT D WORSHAK B WYER A YE D YKE D YKE D YRENG D ACHUS B ACHUSTON D AGAR B AGLECONE B GGLEPASS D	
DINA C I DOME B I DOMEA C I DOMEA DINCO B I DOMEL B I DOMEC E I DUFFERN A I DOME DINCO B I DOMELL B I DOWELLTON D I DUFFERN A I DOME DINES B I DOMERGINE C I DUWATA D I DUFFIELD B I DO DINES B I DOMERGINE C I DUWATA D I DUFFWONT C I DO DINGLE C I DOMEZ B I DOWER E I DUFFWONT C I DO DINGLISHNA D I DOMINGUEZ C I DUWAY B I DUF B I DU DINGHAN C I DOMINGUEZ C I DUWAY B I DU DINGUA B I DU DINGUNA B I DU DINGUNA B I DU DI EA DINKELMAN B DOMINC C I DUNCE B I DU D I EA D I EA DINKELS B I DOMINSON <td>WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS TON D AGAR S AGLECDNE B AGLECDNE D</td> <td>•</td>	WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS TON D AGAR S AGLECDNE B AGLECDNE D	•
DINCO B DOMELL B DOWELLTON D DUFFENN A DOWEND DINES B DOMENGINE C DOWNATA D DUFFSDN B D DINES B DOMENGINE C DOWNATA D DUFFSDN B D DINES B DOMER C DOWNER C DUFFSDN B D DINGLE C DOMEZ B DOWNER C DUFFSDN B D DINGLISHNA O DOMINGUEZ C DOWNEY B DUFFSDN B D DINGLISHNA O DOMINGUEZ C DOWNEY B DUF B D DINGLISHNA O DOMINGUEZ C DOWNEY B DUF B D DINKELMAN S DOMINGUEZ C DOWNEY C DUGGINS C D DINKELS B DOMINSON A DOYCE, LOAMY C UGGINS C E DINNEN B DOMA B SUBSTRATUM DUKES A E DINUBA C DONALD C WET DULCE D E <td>WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS TON D AGAR S AGLECDNE B AGLECDNE D</td> <td>•</td>	WIGHT D WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS TON D AGAR S AGLECDNE B AGLECDNE D	•
DINES B DOMENGINE C DOMNATA D DUPFIELD B DO DINEYO 6 DOMENGINE C DOWNER D DUPFYMONT C D DINGLE C DOMERZ B DOWNER C DUPFYMONT C D DINGLE C DOMENZY B DOWNEY B DUPGAT B D DINGLISHNA D DOMINGUEZ C DOWNEYVILLE D DUFUR B D DINGMAN C DOMINGUEZ C DOWNEY B DUGGINS C OT DINKELMAN 8 DOMINGUEZ C DOWNEY C DUGGINS C OT DINKELS 8 DOMINGON A DOYCE DAMY DUKES A E DINSDALE 8 DOMA ANA 8 DOYCE MODERATELY C DUMES A E DINSDALE 8 DONALD C WET DULCE D E A E DINVER<	WORSHAK B WYER A YE D YKE S YLAN D YRENG D ACHUS B ACHUS D AD C AGAR B AGLECONE D AGLEPASS D	
DINEYO 8 COMERIE B DUNNER C DUPPSUN B D DINGLE C DOMERIE B DUNNER C DUPPSUN C D DINGLE C DOMINGUEZ B DUNNEY B DUPOPT B D DINGLISHNA D DOMINGUEZ C DUMNEYVILLE D DUPOPT B D DINGMAN C DOMINIC B DOWNEY C DUPORT B D DINKELMAN B DOMINIC C DOWNEY C DUGGINS C O DINKELMAN B DOMINO C DOYCE D DUGGINS C O DINKELS B DOMO A DOYCE DANY C E E DINSDALE B DOWA A DOYCE SANY C I DULAC C I EA DINSDALE B DOWA B DOYCE SANY C I DULAC C I EA DINUBA C<	YE D YKE S YLAN D YRENG D ACHUS B ACHUS TON D AG AGAR B AGLECONE B AGLECASS D	
DINGLE C DOMEZ B DOWNEY B DUFFYONT C DT DINGLISHNA D DOMINGUEZ C DOWNEY B DUFFYONT C DT DINGLISHNA D DOMINGUEZ C DOWNEYVILE D DUFFYONT C DT DINGLATSHNA D DOMINGUEZ C DOWNEYVILE D DUFFYONT C DT DINGLASHNA C DOMINGUEZ C DOWNEYVILE D DUFFYONT D DT DINKELMAN B DOMINC C DOWNEY E DUGGINS C D D DINKELS B DOMINSON A DOYCE, LOAMY C CUGUAY C E E DINNEN B DONA B SUBSTRATUM DUKES A E A E DINSDALE B DONAHUE C WET DULEC D E A E DINUBA C DONALD C DOYCE, SANOY C DULES D	YE D YKE 5 YLAN D YRENG D ACHUS B ACHUS TON D AD C AGAR B AGLECONE B AGLECASS D	
DINGLISHNA D DOMINGUEZ C DOMNETVILLE D DUFUR B DY DINGMAN C DOMINIC B DOMNE C DUGGINS C DY DINKELMAN B DOMINIC B DOVCE B DUGGINS C DY DINKELMAN B DOMINGO C DOVCE B DUGUT D E DINKELS B DOMINSON A DOYCE LOANY C C E DINSDALE B DONA B SUBSTRATUM I DUKES A E DINUBA C DONAHUE C WET DULES A E DINUBA C DONAHUE C WET DULE D E DINUBA C DONALD C DUYCE SANOY C DULES D E DINZER B DONALDSON B SUBSTRATUN DULES D E DINSUD C DUNAVAN B DOVESTOWN <t< td=""><td>YKE 5 YLAN D YRENG D ACHUS B ACHUS TON D AD C AGAR B AGLECONE B AGLEPASS D</td><td></td></t<>	YKE 5 YLAN D YRENG D ACHUS B ACHUS TON D AD C AGAR B AGLECONE B AGLEPASS D	
DINGMAN C I DOMINIC B I DUNGY TILLE D I DUNGY D I DUNGY DINKELMAN B I DOMINIC C I DUNGY C I DUNGY D I DY DINKELMAN B I DOMINIC C I DUYCE B I DUGOUT D I EA DINKELS B I DOMINSON A I DOYCE L DUGOUT C I EA DINNEN B I DOMO B I SUBSTRATUM I DUKES A I EA DINSDALE B I DOMA ANA B I DUYCE D I D I EA DINUBA C I DOMALD C I DUCE D I EA DINZER B I DONALD C I DUCES D I EA DIOBSUD C I DUNAUN <td< td=""><td>YLAN D YRENG D ACHUS B ACHUSTON D AD C AGAR B AGLE CONE B AGLE CONE B</td><td></td></td<>	YLAN D YRENG D ACHUS B ACHUSTON D AD C AGAR B AGLE CONE B AGLE CONE B	
DINGMAN C I DOMINIC B DOWNS E I DUGGINS C DOV DINKELMAN 8 DOMINO C DOVCE B DUGOUT D EA DINKELS 8 DOMINSON A DOYCE C DUGWAY C EA DINNEN 8 DOMO 8 SUBSTRATUM DUKES A EA DINSDALE 8 DOMA ANA 8 DOYCE MODERATELY C DULAC C EA DINUBA C DOMAHUE C WET DULCE D EA DINWODDY 8 DOMALD C DUYCE SANOY C DULLES D EA DINWODDY 8 DOMALDSON 8 SUBSTRATUM DULLES D EA DINSTRATUM DULLES D EA	YRENG D ACHUS TON D ACHUS TON D AD C AGAR B AGLECONE B IGLEPASS D	
DINKELMAN B DOMINO C DOYCE B DUGOUT D EA DINKELS B DOMINSON A DOYCE LOAMY C DUGAY C EA DINNEN B DOMO B SUBSTRATUM DUKES A EA DINSDALE B DONA ANA B DOYCE MODERATELY C DULAC C EA DINUBA C DONALDE C WET DULCE D EA DINZER B DONALDESON 6 SUBSTRATUM DULLES D EA DIOBSUD C DONALDSON 6 SUBSTRATUM DULLES D EA	ACHUS B ACHUSTON D AD C AGAR B AGLECONE B AGLEPASS D	
DINKELS B DOMINSON A DOYCE, LOAMY C DUGWAY C EA DINNEN B DOMO B SUBSTRATUM I DUKES A I EA DINSDALE B DOMO B SUBSTRATUM I DUKES A I EA DINSDALE B DOMA ANA B I DOWCE, MODERATELY C I DUAC C I EA DINUBA C I DOMAHUE C I WET I DULCE D I EA DINZER B I DOMALD C I DULES D I EA DIOBSUD C I DUNATAN B I DOULES D I EA	ACHUSTON D AD C AGAR B AGLECONE B AGLEPASS D	
DINNEN B DONG B SUBSTRATUM I DUKES A J EA DINSDALE B J.DGNA ANA B I DOYCE. HODERATELY C I DULAC C I EA DINUBA C I DONAHUE C I WET I DULCE D I EA DINWODDY 8 I DONALD C I DUYCE. SANOY C I DULEYLAKE C I EA DINZER B I DONALDSON 8 I SUBSTRATÚM I DULLES D I EA DIOSSUD C I DUNAVAN 8 I DOYLESTOWN D I DULLES B I EA	AD C AGAR B AGLECONE B AGLEPASS D	
DINSDALE 8 JOGNA ANA B POYCE, MODERATELY CIDULAC CIEA DINUBA CIDONAHUE CIVET JOULCE DIEA DINWODDY 8 JONALD CIDUCE, SANOY CIDULEYLAKE CIEA DINZER B DONALDSON 6 SUBSTRATÚM JOULLES DIEA DIOBSUD CIDUNAYAN 8 JOYLESTOWN DIOULES BEE	AGAR B AGLECONE B AGLEPASS D	
DINUBA C I DONALUE C I WET I DULCE D I EA DINWODDY 8 I DONALD C I DUYCE, SANOY C I DULEYLAKE C I EA DINZER 8 I DONALDSON 8 I SUBSTRATÚM I DULLES D I EA DIOBSUD C I DUNAVAN 8 I DOYLESTOWN D I DULLES 8 8 8	AGLECONE B	
DINWOODY 8 JOONALD CIDUYCE, SANOY CIDULEYLAKE CIEA DINZER 8 DONALDSON 8 SUBSTRATUN JOULLES DIEA DIOBSUD CIDUNAVAN 8 JOOYLESTOWN DIDULUTH 8 JEA	AGLEPASS D	
DINZER BIDONALDSON BISUBSTRATUN IDULLES DIEA DIOBSUD CIDUNAVAN BIDOYLESTOWN DIDULUTH BIEA		
DIOBSUD CIDONAVAN BIDOYLESTOWN DIDULUTH BIEA		
DIPMAN D LODURY C LODU		
DIRSEA B LOONTCA A LOOTOT		
DIQUE A DOMEGA LOANN A LOANNA DI COMPLETITION O LA		٠
DISABEL C LOONTOWAR	ACREE B	
DISANTEL B L'ONVENTIL O L'ORIGUE	PLE D	
	RLHGNT D	
DISHNER OLDOWNA	RLHONT, DRAINED C	
DISHPAN C J DOWNAM C L DOWNC C L EAS	· · · · ·	
DISTELL C L DOWNDOD	RSMAN . D	
DISTERNEFF C DOWNER B EAS	SBY D	
DISTON C DOWNELLY & EAST	SLEY C	
DISMOR DE DOWNER O ENDERE E DONCOM O EAS	SPUR B	
DITCHCAMP C I DOWNING DI CHESCEN E I DUNDAS B/DI EAS	ST FORK C	
DITHOD C LOUWYDDDDW A EAS	ST LAKE A	
DITNEY CI DODOUTINE DI DEPENING DI DUNDEE CI EAS	STABLE B	
OLVERS B LOODLEN B LEAS	STCAN 8	
C I DREAL E I DUNFUND C I EAS	STCHOP A	
DIVOT 5 LOGDUS 5 LOGDUS C/DI DUNGENESS 6 LEAS	STGATE S	
DIV BIONE CIDRIGUS BIDUNKIRK ELEAS	STLAND B	
DIVALETA CIEAS	STON D	
DIVERDED B EAS	STPORT A	
DIVIE DI DAIVER CI DUNMORE DI EAS	STWELL D	
A EAS	STW000 0	
DIVON CIDAUTAL CIDUNNING DIEAT		
DI DI EAU	JGALLIE 8/D)
OTVORVILLE C DORENTON 6 DRUMMER B/DI DUNNVILLE 6 EAU	MALLIE D	
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TOAKOM B I DOROSHIN D I DRY CREEK C I DUNPHY, DRAINED B I EBA		
DOBBINS C I DOROTHEA C I DRY LAKE C I DUNPHY. HARDPAN B I EBA		
DOBENT C I DORRANCE A I DRYDEN B I DUNSMUTR.		÷
DOBROW D DORS B DRYN C I MONGRAVELLY I THOU	•	
DOBY D DORSET B DRYVALLEY C LOUNTON		
DOCAS B DOSAMIGOS D I DU PAGE B I DUNUR	_	
DOCENA C I DOSE C I DUDE C I EBRO		
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DOCT C 1 DOTHAN D I ECHA		
DODES A LODIARE D CRAVELY IDUPREE D ECHE	ENGOR C	
DODGE B DOTERPO D L'OBRELLA CUBBLY C JOURADOS A L'ECKE		
DOOGEVILLE CIECKL	LEY g	
OTOCOU DI DURAND DI ECKN	HAN B	
DOFI C C DURANGU B CCKR		
DOGER C DURANT D ECKY		
DOGLA A DOUDLE 6 DUGLON E DURAZO A ECLI		
DOGLE CHECK B DOUDS B DUBDIS C DURBIN D ECOL		
DOGUE CIDOUGAL DIDUBUQUE BIDURELLE BIECOL		

TWO HYDROLOGIC SUIL GROUPS SUCH AS B/C INDICATES THE ORAINED/UNDRAINED SITUATION. Hodifiers shown, e.g., bedrock substratum, refer to a specific suil series phase found in soil map NOTES:

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Hydrologic soil groups for United States soils

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ECONFINA	٨	1 ELBOWLAKE	8	I ELAICK	8	I ENOCHVILLE.	c	LESTER	_
ECTOR	0	LOURN	ē	LELRIN	Ě	DRAINED	<u>د</u>		D ·
EDALGO	c	LSUTTE.	Ē.	IELPOSE	E E		-	ESTER. THAWED	c
EDOINGS		ELCO	e	I ELS	-		B	ESTERO	ο,
EDDS .	ā	1 FLO			<u>^</u>	ENDN	¢	ESTES	o
EDDY	Č.	ELDEAN		I ELSAH	e	ENOREE	0	ESTESLAKE	c
EDEN	č	1 ELDER	ť	1 ELSIE	C	I ENOS	c	I ESTHERVILLE	8
				1 ELSINGORG	9	L ENOSBURG	, c	I ESTO	. 8
EDENBOWER	0	ELDER HOLLOW	<u> </u>	ELSHERE		I ENSENADA	. 8	ESTRELLA	8
EDENTON .	ç	- ELDERON	8	ELSTON	6	I ENSIGN	D'	Í ETACH	c
EDFRO	5	I CLDERON. STONY	*	L ELTREE	9	I ENSLEY	6/0	DI ETCHEN	č
EDGAR	а.	ELDGIN		ELTSAC	D	ENS TPOM	8.	ETELKA	č
EDGE	D	ELDON	6) ELVE	8	ENTENTE .	8	LETHAN	8
EQGENILL	c	LDORADO	e	1 ELVEDERE	c	ENTERO	ē	ETHANIA	a
EDGELEY	C	ELDRIDGE	c	I ELVEPS	8/	DI ENTEPPRISE	, i	ETHELMAN	a
EDGEMONT	8	1 ELECTRA	c	Í ELVIPA		DI ENTIAT	õ	ETHETE	
EDGEWATER .	ç	I ELEROY	8	I ELVELL	č	ENTHODT.	č	I ETHETE, SALINE	ē.
EDGEWICK	¢	1 ELEVA	E	I ELNHA	ċ	ENVILLE	· č		ç
EDGINGTON	C/D	I ELFCREEK	c	I ELWOOD	č	ENVOL	-	ETHRIDGE	ç
EDINA	D	1 ELFRIDA	ē	ELY		I ENZIAN	0	1 ETIL	*
EDINSURG		LGEE	Ã	ELYSTAN			D	ETOE	8
EDISTO		ELHINA	- ĉ	1 ELZINGA	-		c	I ETOILE	D
EDL IN'		ELIJAH	č	I EPBAL	.	EOLA		HAVGT3 I	8 .
EDLOE		I ELINOIS	č		8	EPHRAIM	С	I ETOWN	8
EDHINSTER	ŏ	I ELIGAK		I EMPARGO	· c	EPHRATA	_	I ETSEL	D
EDMONOS	-	I ELIZA	<u> </u>	EMEDEN	в	EPIKOM		I ETTA	8
EDHORE	_		D	S EMBERTON	c	EPLEY	¢	I ETTER	8
EDHUND		• • • • • •	8	EHOLEH:	6 -	EPOKE	e	ETTERSBURG	8
EDMUNDSTON .	. 9	ELK HOLLOW	2	ENGDA	ę	EPOT	6	I ETTPICK	679
+ .+	18	ELK MOUNTAIN	8	EMBUDO	E	EPOUFETTE	870	1 EURANKS	5
EDNA	-	IELKA	c	EFOENT	Ð	ÉPPING		I EUCLID	č
EDNEYTOWN		ELKADER	8	I EMDENT+ BEDROCK	C	EPSIE	. D	I EUDORA	B
EDNEYVILLE	-	ELKCHEEK	c	SUBSTRATUM.		EPVIP	Ď	IEUER	ě
EDOM	C	ELKHART		DRAINED		ECUIS		EUFAULA	Ă.
EDROY	0 ·]	I ELKHILLS	8	I EMDENT. DRAINED	c	ERA	6	EUHARLEE	Ē
EDSON	C I	ELKHORN	ε	EMERALD	Ē	EPAKATAK	ē.		č
EDWARDS	870	ELKINS	0	EMERALDA	D	I ERAM	- è		č
EEL		ELKINSVILLE	e	EMERSON	Ē	I ERAMOSH	ō		
EELCOVE	0 /	ELKMOUND	ō	EMIGRANT	è	ERDER	č		. 0
EELPO INT	ວ່	ELKNER	8	EFIGRATION .	ř	ERCAN	E I		ç
EEP	c İ	ELKOL	D	EMILY	È	EPO ····			· A
EFF IC	c i			ENLIN	Ē	ERICSON			D.
EFFINGTON	0 1	ELKSEL	č	I EMMA				EVADALE	· • ·
EGAN	ē.i			I EMMERT			<u> </u>		с
EGAN	a'i	ELLABELLE	D D	EMMET		ERIN	e 1		8.
EGAS	õi	ELLEDGE			-	ERNEM	0 1	EVANSHAM	5
EGBERT	ōi		C F	EPHONS	Ē	ERNEST	. C [EVANSTON	8
EGBERT, STPATIFIED		ELLETT	-	I É MORY	-	ERNO	8	EVANSVILLE	870
SUESTRATUM.	~ !		-	I EMCT		I ERRAHGUSPE	< 1	EVANT	C .
EGBERT, MODERATELY		ELLIBER	A	EMPEORADO		EPVIDS	c i	EVARD	e
WET	<u>с</u> і	ELLICOTT	A	EMPEYVILLE	-	I ESCABOSA	C F	EVARO	8
EGBEPT. DRAINED	_ !	ELL INGTON	6	EMPIRE	8	I ESCALANTE	Б 🕴	EVART	D
	C I	ELLINOR	-	EMPORIA	с	I ESCAMBIA	ςι	EVENDALE	c '
EGBERT. SANDY	c i	ELLIGTT	c	EMRICK	в	ESCANARA	A 1		Ā
SUBSTRATUM	1	ELLIGTTSVILLE	₿.	EMRO .	c	ESCAND -	c i	EVERETT. HARD	
EGBERT, SLOPING	c ł	ELLIS	Ó	ENEAP	ε.	ESCARLO	ê i	SUESTRATUM	-
EGELAND	8 I	ELLISFORDE	8	ENBAG: WET	Ċ	ESCONDIOD	ċi	EVERGLADES	870
	< 1	ELLISVILLE	8	ENCAMPHENT	E		a i	EVERLY	8
EGLIN	A 1	ELLOAM	C C		8		öł	EVERMAN	ç
EGYPT	DI	ELLOPEE	0	ENCIEPEG		ESPERALDA	8	EVERSON	
E1C<5	c I	ELL SVOR TH	c		ē		e i		0
EIGHTLAR	οi	ELLUM	è		C I	ESPARTO	- •	EVERWHITE	c
EIGHTMILE	ō İ	ELLZEY	2/0		c i		e	EVESBORD	A
	8 i	ELM LAKE	A/01			ESPELIE	8/01		8
	ē i	ELMDALE	Б	ENCICOTT	E 1		с I	EWA	5
EKAH	ē i	ELMENDORF			c i		- A	EWA+ BEDROCK	c
	-	ELMINA				ESPINOSA	a (SUBSTRATUM	
				FNDS AV		ESPINT		EWALL	
		ELMIRA		ENERGY		ESPLIN '	D	EXCELSIOR	6
		ELMONT		ENET		ESPY	< I	EXCHEQUER	ō
		ELMORE		ENFIELD	8	ESQUATZEL		FXCLOSE	8
		ELMPIDGE		ENGELHARD	6/01	ESPO	i a		ē
		ELMVILLE		ENGETT	_ ≜]	ESRO: HOOERATELY		EXETER	è
	-	ELMWOOD	C I	ENGLE		VET		EXETER. THICK	a
		ELNIOU		FNGLEWOOD		ESS		SOLUM	.
	9 F	ELNORA	-	ENKO		ESSAL		EXETTE	
SUBSTRATUM	1	ELOCHOMAN		ENKO. OVERBLOWN		ESSEN		EXIRA	8
ELANOCO :		ELOCIN		ENLOS		ESSEX			5
ELBA .		ELDIKA		ENNING		ESSEXVILLE		EXLINE	D
		ELONA		ENNIS			A/01		D
		ELPAM		ENOCH		ESTACADO	6 1		c
PL		ELPEDRO				ESTACION	0 1		c
		ELRED		ENOCHVILLE		ESTATE		EYERROW	с
E	- •	C LA CO	8/01			ESTELLINE	6 I I	EYLAU	¢

NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Hodifiers shown, e.g.. Bedrock substratur, refer to a specific soil series phase found in soil map legend.

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Hydrologic soil groups for United States soils

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FORTYFOUR Forvic

FORWARD

FOSS ILON

FOSTER FOSTORIA

FOUNTAIN

FOURCHE

FOURLOG

FOURMILE

FOXHOME FOXHOUNT

FOXTON.

FRADDLE

FRAILEY FRAILTON

FRANCIS

FRANCISCAN

FRANCITAS

FRANDSEN

FRANK IRK

FRANKLIN

FRANKSTOWN

FRANK TOWN

FRANKVILLE

FRAZER

FRAZERION

FREDERICK

FREDONIA

FREDONYER FREE

FREEBURG

FREEDOM. SALINE

FREECE

FREEHOLD

FREELAND

FRECHAN

FREEDN

FREER

FREEMANVILLE

FREDENSBORG

FRATERNIDAD

FRAVAL FRAVAL - GRAVELLY

FRANKFORT

FRANCISQUITO

FRAM

FOXOL

FOXCREEK. DRAINED

FOX FOXCREFK

FOUR STAR

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FORTWINGATE

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TORSYTH

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EYOTA		FARRAGUT	c	I FETTIC	D	1 FLATRON	
EYRE	p	FARRAR		FETZER	. c	FLATTOP	Þ
EZDIN	8	FARRELL		FEZ	ē	FLAXTON	
FABIUS	8	FARRENBURG	8	FIANCER	D	I FLEAK	D
FACEVILLE	B	FARROT		FIANDER. DRAINED] FLEER	
FACEY		FARSON		[FIAT	¢	FLEISCHMANN	Ð
FACTORY Factory: Hoist	C B.	FARSON. WET		E E IDALGO	c	FLEHING	c
FADDIN	. 0	FARVA Farvant		FIDDLER	S	FLEHINGTON	• •
FADOLL		FASHING	•	FIDDLETOWN FIDDYMENT	-B . D	FLETCHER	2
FAGAN.	č	FASKIN	-	FIELD	č] FLEWSIE] flex	8
FAGASA	č	FATHOM	-	FIELDCREEK	ā	I FLO	Ă
FAHEY	8	FATIĤA		FIELDING	_	I FLOER	ō
FAIN	c	FATTIG	C	FIELDON	8/1	DI FLOKE	ō
FAIN, HOIST		FAUNCE		I FIFEP	· D	I FLOM	84
FAIRBANKS	6	FAUNSDALE		FIFIELD	c	FLOMATON	
FAIRBURN Fairchild	c	FAUGUIER FAUSSE		FILION	D	FLONOT	B
FAIRDALE	ň	FAUSSE		FILIRAN FILLHORE	0 0	FLOODWOOD	8
FAIRFAX	ă	FAVIN		FINCASTLE	Ċ	I FLORALA	A C
FAIRFIELD	ē	FAX		FINCH	č	FLORENCE	č
- FAIRHAVEN	8	FAXON		FINCHFORD	Ā	FLORESVILLE	č
FAIRLIE	Þ) FAYETTE	· • 1	FINDOUT	D	FLORIDANA	
FAIRLO	8	I FAYETTEVILLE		FINGAL	c	FLOR IDANA	D
FAIRHOUNT	0	A VANOOD		FINGEROCK	Q	DEPRESSIONAL	•
FAIRPLAY Fairpoint	C	I FE . I FEARS		F INLAND	C	I FLORIDANAS FLOODE	-
FAIRPOIN	č	I FEATHERLEGS	t 6 	FINLEY FINLEYPOINT		FLORIN	·c
FAIRWAY	è	FEATHERSTONE		FINNERTY	. D	FLORISSANT FLORITA	С. В
FAIRYDELL	ē	FEDJI		FINC	-	I FLOTAG	5
FAIRYLAWN	D	I FEDORA		FINCL	č	FLOWELL	ē
FAJARDO	c	I FEDSCREEK	∎ Ï	FIONE		FLOVEREE	
FALAYA	Q	FELAN	1 B 1		Ċ	1 FLOVD	Β.,
FALBA	D	FELCHER		FIREBALL	£	FLUETSCH	់ខ
FALCON	D.	FELDA	1	FIREBOX		FLUGLE	
FALFURRIAS	Ă	DEPRESSIONAL	- P. 1	FIRESTEEL FIPESTONE	B C	FLUKER	Ş
FALK	ē	1 FELICITY		FIRMAGE	6	I FLUVANNA I FLYBOW	Ċ
FALKIRK		I FELIPE	D I	FIRO	Ď	FLYGARE	
FALKNER	С.	1 FELIZ		FIROKE	-	FLYNN	ē
FALLBROOK		I FELKER		FIRSTVIEW		I FLYNNCOVE	
FALLCREEK	ç	1 FELLOYSHIP		FIATH	-	I FOAD	C
FALLERT		FELOR .		FIRTH. DRAINED		I FOARD	D.
FALLON, NONFLOODE	C D	I FELT		FISHERHAN	-	FOEHLIN	ė
FALLSAN		I FELTHAN		FISHERS FISHFIN	_	I FOIDEL I FOLA	8 8
FALLS INGTON		I FELTNER		F ISHHOOK		FOLDAHL	8
FALOMA		FELTON		FISHLAKE		I FOLEY	Ď
FALSEN	Α.	FELTONIA	e 1	FISHPOT	c	FOLLET	Ū.
FALULA	D	FENCE		FISHROCK	D	FONSENG	с
FANAL	ç	I FENDALL		FISHTRAP		FONDA	·D
FANCHER Fandangle		FENELON		FISK		FONDIS	c
FANDOW	_	FENN FENSTER		FITCHVILLE			. 8
FANG	ě	I FENWICK		FITZGERALD Fitzhugh	8 E	FONS Fontana	8
FANNIN	_	I FENWOOD		FIVEBLOCK		FONTREEN	
FANNO	с	FERA		FIVEHILE		FOPLAND	Ď
FANSHAW		FERDELFORD	c i	FIVEHILE. SALINE	c i	FORADA	8/0
PANTZ	-	FERDINAND		FIVEON	8	FORAKER	D
FANU		FEREDEE		FIVEPINE		FÜRBAR	D,
FAPS Faraway		FERGUS			- •	FORBES	Ċ
FARB	D	FERN CLIFF		FIVESPRINGS FLACO	S I	FORMESVILLE	ç
FARSER		FERNANDD FERNCREEK	•	FLAGG		FORBING	D
FARGO		FERNDALE		FLAGLER		FORDICE	Ð
FARISITA		FERNEY		FLAGSTAFF		FORDINEY	Ă
FARLAND	5	FERNHAVEN	•	FLAK		FORONEY. WET	ē
FARLOW		FERNLEY	· c	FLAMBEAU	8)	FORDTRAN	c
FARLOW. HIGH		FERNOV		FLAH ING		FORDUM	D
RAINFALL Farmell		FERNPOINT		FLANAGAN		FORDVILLE	B
FARMELL		FERNMOOD				FORELAND	D
FARMSNORTH		FERRELO		FLANE ·		FURELLE	8
FARMTON		FERROBURRO		FLANLY	-	FOPESMAN Forfstburg	8
FARNHAM		FERRON		FLAT HORN		FORESTDALE	A D
FARNHARTON		FERTALINE		FLATHEAD		FORESTER	č
FARNUF		FERTEG		FLATIRONS		FORESTON	č
FARNUE, VET	ci	FESTINA		FLATNOSE			
FARNUN		FETT		FLATONIA	8	, chow,	•

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TABLE A-5 CONTINUED Hydrologic soil groups for United States soils

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PREZNATEM B PREZNATEM C GENERAL C	FREETOWN	-				-		c		č
PREZZUMEN P PILLIDGE D Communication D Communication D Communication D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract D Contract <thcontract< th=""> <</thcontract<>	FREEVATER					-		.0	GILLENDER	ò
PRECZOUT 0 / JUNTER 0 / CARECON 0 CALEGON 0 CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL CALL	FREEZENER	-						. c	I GILLIAN	c
PRELSBURG D I GULAY B I GRISEN P G GLLSBU PREVENT G I GUISU D GAACCHO C I GUISU A I GLLSBU PREVENT G I PUSUU D GAACCHO C I GUISU A I GLLSBU PREVENT G I PUSUU FAA C I GAACCHO C I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU C I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A I GUISU A	FREEZEOUT	ě		-			• • • • • • • •			
PFECONT C PARAMES D PARENT B PARENT A PARENT A PARENT C PARENT PARENT PARENT PARENT PARENT PARENT PARENT PARENT PARENT PARENT PARENT	FRELSAURG			-				8		č
PREM B I SUBSULE D I ALCEND D I ALCEND PREMEXTCREER D PUNY, DRAIMED C GARCIA C GETE C	FREMONT								GILLSBUPG	ċ
PPENCH. C PURT D C <thc< td=""><td>FREN</td><td></td><td></td><td></td><td></td><td></td><td></td><td>. 6</td><td>GILHAN</td><td>8</td></thc<>	FREN							. 6	GILHAN	8
PREVENCEEEX 0 FUUT, DALIED C Canacta Canact	FRENCH			-				c	GILHORE	Ē
FFENCHAIR C INSULTAN C CARCITAS C	FRENCHCREE			-		-		8	GILPAR	
FRENCHMAN B INSUMAR C CALLON C <thc< th=""></thc<>	FRENCHJOHN	Č Č			2			c	GILPIN	. c
PREMCHTOWN D GALSTRAL C GALSTRAL GALSTRAL	FRENCHMAN	-		-				0	GILROY	
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EPONTFNAC9I GALISTEOCI GASIL9I GETAWAYBI GLENCARB.FPONTIESCI SALINE-ALKALII GASGUET5I GETCHELLCI SALINEFROSTDI GALLANOCI GASSVILECI GETCHELLCI SALINEFROSTDI GALLATINCI GASSVILECI GETTYSCI GLENCRE, IFROTARDCI GALLEGOSBI GATFI GETTYSCI GLENCALE,FRUITFIELDAI GALLIAEI GATESCNCI GETTYSCI GLENCALE,FRUITFIELDAI GALLIAEI GATESCNCI GIBODALE,FLODESONFRUITHANDTGALLIAEI GATESCNCI GIBODALE,FRUITHANDTI GALLIAEI GATESCNCI GLENCALE,FRUITHANDTGALLIAEI GATESCNCI GLENCALE,FRUITLAND,CI GALLIAEI GATESCNCI GLENDESONFRUITLAND,CI GALLIANBI GATEWAYCI GIBODANFRUTLAND, WETCI GALLANBI GATEWAYCI GLENDERNFRYFBURG9I GALUPEI GATINBI GIENEYCI GLENDENFRYFBURG9I GALVAPI GAULOY6I GIBODNCI GLENFORDFT. ORUMCI GALVAPI GAULOY6I GIBODNCI GLENFORDF						0		A		. D.
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FONTONCIGALLACIAIGASSAVAYCIGETRAILDGLENCOFFR05TOIGALLATINCIGASSVILLECIGETTYSCIGLENCOFFR02ARDCIGALLATINCIGASTONCIGETTYSCIGLENCOFFR01TABIGALLATINCIGASTONCIGETTYSCIGLENCOFFR01TABIGALLANBIGATESPIGETTSCIGLENCALE,FR01TANDAIGALLIAEIGATESCNCIGIBOLERCIGLENCALE,FR01TLANDAIGALLIAEIGATEVEWBIGIBONNBIGLENCALE,FR01TLAND,CIGALLANBIGATEVEWBIGIBONNBIGLENCALE,FR01TLAND,CIGALLANBIGATEVEWCIGIBONNGLENCALE,FR01TLAND,CIGALLANBIGATEVEWCIGIBONNGLENCALE,FR01TLAND,CIGALLANBIGATEVEWCIGIBONNGLENCALE,FR01TLAND,VETIGALLANBIGATEVEWCIGIBONNGLENCALE,FR01TLAND,VETIGALLANBIGATEVEW <td></td> <td></td> <td></td> <td>C 1</td> <td></td> <td>5</td> <td>I GETCHELL</td> <td>-</td> <td></td> <td>C .</td>				C 1		5	I GETCHELL	-		C .
FRGSTDGALLATINCGASSVILLECGETTYSCGLENCRE, fFRUZARDCIGALLATINCIGASTONCIGETZYILLEDIGENDALEFRUITABIGALLEGOSEIGATFIGETZYILLEDIGLENDALE,FRUITFIELDAIGALLENEIGATESFIGETSENCIGLENDALE,FRUITHURSTCIGALLIAEIGATESONCIGIBBONBIGALENDALE,FRUITLANDTIGALLIANEIGATEWAYCIGIBBONBIGLENDAPE,FRUITLAND,CIGALLANBIGATEWAYCIGIBBONSCREEKCIGLENDIVEMGD RATELY WETIGALLANBIGATEWAYCIGIBBONSCREEKCIGLENDIVEMGD RATELY WETIGALLANBIGATEWAYCIGIBBONBIGLENDAPEFRUTILAND, WETCIGALLANBIGATEWAYCIGIBBONIGLENDAPEFRUTRLANGGIGALVAPIGATTONCIGIBBONIGLENDAPEFRUTRLAND, WETCIGALLANCIGATTONCIGIBBONIGLENDAPEFRUTRLAND, WETCI	• =	-				c	GETRAIL	-		
FQCZARDCIGALLEGOSEIGATFIGEVTERCIGLENDALEFRUITABIGALLENEIGATESFIGEVTERCIGLENDALEFRUITFIELDAIGALLIAEIGATESFIGEVTERCIGLENDALEFRUITHURSTCIGALLIAEIGATESCNCIGIBBLERCIFLODEDFRUITLANDTIGALLIANBIGATEWAYCIGIBBCNSCREEKCIFLODEDFRUITLAND.CIGALLMANBIGATEWAYCIGIBBCSDIGLENDERSCFRUTTLAND.VETCIGALLOPEIGATLNANBIGIBBCSDIGLENDERSCFRUTTLAND.VETCIGALLOPEIGATLNANBIGIBBCSDIGLENDERSCFRUTTLAND.VETCIGALDOC/DIGATLONDIGIBBCSDIGLENDERSCFRUTTLAND.VETCIGALLONBIGATEWAYCIGLENDERSCDIGLENDERSCFRUTTLAND.VETCIGALLONCIGIBCSDIGLENDERSCDIGLENDERSCFRUTTLAND.VETCIGALDOC/DIGATEWAYC </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>c</td> <td>GETTYS</td> <td>-</td> <td>GLENCCE, PONDED</td> <td>8/0 D</td>						c	GETTYS	-	GLENCCE, PONDED	8/0 D
FRUITA B GALLEN E GAT F I GEVTER C I GLENGLE, FRUITFIELD A I GALLIA E I GATES F I GEVTER C I GLENDALE, FRUITFIELD A I GALLIA E I GATESC F I GEVTER C I GLENDALE, FRUITLAND, C I GALLIA E I GATESCN C I GENDALE, FRUITLAND, C I GALLIA E I GATESCN C I GIBBON B I GLENDALE, FRUITLAND, C I GALLIA B I GATEWAY C I GIBBONSCREEK C I GLENDERSCN FRUITLAND, C I GALLUP B I GATEWAY C I GBENSCREEK C I GLENDERSCN FRUITLAND, VET I GALLUP B I GATEWAY C I GBENSCREEK C I GLENDERSCN FRUTTLAND, VET I GALLOO C/DI GATOR D I GENDERSCN I GLENDERSCN FRYE C I GALV P I GATUP D I GISONVILLE D I G		-		•		c	I GETZVILLE			6
FRUITFIELD A GALLIA E GATES F GEYSEN C GLENDALE. FRUITHURST C GALLIME E GATESCN C GIBBLER C FLODALE. FRUITHURST C GALLIME B GATESCN C GIBBLER C FLODDED FRUITLAND 3 GALLION B GATEWAY C GIBBONSCREEK C GLENDERSON FRUITLAND. C GALLIAN B GATEWAY C GIBBONSCREEK C GLENDERSON FRUITLAND. C GALLUP B GATEWAY C GIBBONSCREEK C GLENDERSON FRUITLAND. VET C GALLUP B GATEWAY C GIBBONSCREEK C GLENDERSON FRUITLAND. VET C GALLUP B GATEWAY C GIBBONSCREEK C GLENDERSON FRUENCS C GALUP B GATEWAY C GIBBONSCREEK C GLENDERSON FRYE C GALUP B GATEND <				•			GEVTER	c		č
FRUITHURST C I GALLING E I GATESGN C I GIBBLER C I FLOODED FPUITLAND 3 I GALLING 6 I GIBBLER C I FLOODED FRUITLAND. C I GALLING 8 I GATEWREW 6 I GIBBCNSCREEK C I GLENDIVE FRUITLAND. C I GALLINAN 8 I GATEWROD C I GIBBCNSCREEK C I GLENDIVE MUDIPATELY #I GALUP #I GATEWROD C I GIBBCNSCREEK C I GLENDIVE FRUTLAND. WET C I GALUP #I GATEWROD C I GIBBCNSCREEK C I GLENDIVE FRUTTLAND. WET C I GALUP #I GATEWROD C I GIBBCNSCREEK C I GLENDIVE FRUTTLAND. WET C I GALUP #I GATEWROD C I GLENDIVE D I GLENDIVE FRUTTLAND. WET C I GALOD C/DI GATOP D I GLENDIVE D I GLENDIVE FRYEBURG 3 I GALVE A I GAULEY C I GLENMAL <td< td=""><td>FRUITFIELD</td><td>-</td><td></td><td></td><td></td><td>. e</td><td>GEYSEN</td><td>C</td><td>GLENDALE. RARELY</td><td>ેટ</td></td<>	FRUITFIELD	-				. e	GEYSEN	C	GLENDALE. RARELY	ેટ
FPUITLAND I GALLION B GATEVAY B GIBBON B GLENDERSON FRUITLAND. C GALLMAN B GATEVAY C GIBBONSCREEK C GLENDIVE MUDIRATELY WET J GALLUP E GATEVAY C GIBBONSCREEK C GLENDIVE FRUITLAND. VET J GALLUP E GATUN B GATEVAY C GIBBONSCREEK C GLENDORA FRUITLAND. VET J GALLUP E GATUN B GATEVAY C GIBBONSCREEK C GLENDORA FRUITLAND. VET J GALUP E GATUN B GATEVAY C GLENDERSON FRUITLAND. VET J GALVA P GATUN B GIBBONSCREEK C GLENDERSON FRYEBURG 9 GALVA P GAULDY B GIBBONSCREL C GLENELG FT. GRUM C GALVESTON A GAULEY C GIBON C GLENMAN FUBAR C GALVESTON A GAULEY C GIFFORO D GLENMAN FUBAR C GALVAY B GAVILY C GIFFORO D GLENMAN FUBAR C GALVAY B GAVINS D GILA B GENNALLEN FUBAR C GALVAY B GAVINS </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td>										-
FRUITLAND. C GALLMAN B GATEWAY C GIBBONSCREEK C I GLENDIVE MUDIRATELY WET I GALLUP B I GATEWODD C I GIBBONSCREEK C I GLENDIVE FRUITLAND. WET I GALLUP B I GATEWODD C I GIBBONSCREEK C I GLENDORA FRUE C I GALUP B I GATEWODD C I GIBBONSCREEK C I GLENDORA FRUE C I GALUD B I GATEWODD C I GIBBONSCREEK C I GLENDORA FRUE C I GALUD B I GATEWODD C I GIBBONSCREEK C I GLENDORA FRUE C I GALUD B I GATEWOD C I GLENDORA C I GLENDORA FT. ORUM C I GALVESTUN A I GAULEY C I GLENMALL C I GLENMALL FT. ORUM C I GALVESTUN A I GAULEY C I GLENMALL C I GLENMALL FT. ORUM C I GALVESTUN A I GAULY								8 (GLENDERSON	.
MGD SPATELY WETGALLUPEGATLINEGATLINBGIBPETOGLENDGRAFRUTILAND, WETCGALOOC/DIGATLINBGIBPETOGLENELGFRYECGALTOGATTCNCGIBVETOGLENELGFRYECGALTAOGATTCNCGIBVELLCIFRYECGALVAPGAULOYSIGIBVELLCIFRTEBURG3GALVESTUNAIGAULEYCIGLENMARLFT. ORUMCIGALVESTUNAIGAULEYCIGLENMARLFUBARCIGALVEZCIGAVELCIGLENMARLFUBARCIGALVAPIGAVILANCIGLENMARAFUEGJCIGALVAYSIGAVINSOIGLENNALLENFUEGJCIGAMELEPPIGAVINSOIGLENNALFUEGSTADIGAMEEPPIGAVINSDIGLENNALFUERACIGANGEECIGAVLESVILLEDIGLENPOGLFUGAVECSIGANGECIGAVLESVILLEDIGLENPOSTAIGLENPOSTFUGAVECSIGANCECIGAVLESVILLEDIGLENPOSTAIGLENPOST <td>FRUITLAND.</td> <td>_</td> <td></td> <td>•</td> <td></td> <td></td> <td></td> <td>C</td> <td></td> <td>8</td>	FRUITLAND.	_		•				C		8
FRUITLAND, WET C I GALOD C/DI GATOR D I GIENEY C I GLENEDEN FRYE C I GALT D I GATOR D I GIENEY C I GLENEDEN FRYE C I GALT D I GATOR D I GIENOVILLE D I GLENELG FRYE C I GALVA P I GAUDY E I GIENON C I GLENELG FRYE O I GALVESTUN A I GAULEY C I GIENMALL FT. GBEEN D I GALVEZ C I GIENMALL FUBAR C I GALVEZ C I GIENMALL FUBAR D I GALVEZ C I GIENMALL FUBAR D I GAVITA D I GAVELY C I GLENMALL FUBGD D I GALVAY <td>MODIRATELY</td> <td>HET -</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0 - j</td> <td>GLENDORA</td> <td>A/D</td>	MODIRATELY	HET -						0 - j	GLENDORA	A/D
FRYE C GALT D GATGM D GISSONVILLE D I GLENELG FRYEBURG 3 J GALVA P GAULDY E I GISSONVILLE D I GLENELG FT. ORUM C J GALVESTUN A I GAULDY E I GISSONVILLE C I GLENELG FT. GREN C J GALVESTUN A I GAULEY C I GIELMALL C I GLENMALL YT. GREN D J GALVEZ C I GAVEL C I GLENMAM FUBAR C I GALVAY S I GAVEL C I GLENMAN FUBAR C I GALVAY S I GAVILAN C I GLENMAL FUBAR D I GALVAY S I GAVILAN C I GLENMAL FUEGJ C I GALVAY S I GAVILAN C I GLENMAL FUEGJ C I GALVAY S I GAVINA D I GLENMAL FUEGJ C I GALVAY S I GAVINA D I GLENALL FUEGJ C<								È I	GLENEDEN	0
FRYEBURG 9 GALVA F GALUA F GALUA C GENTER FT. ORUM C GALVESTUN A GAULOY 5 GEDON C GENMALL FT. ORUM C GALVESTUN A GAULEY C GEDON C GENMALL FT. ORUM C GALVESTUN A GAULEY C GENMALL C GENMALL FUBAR C GALVEZ C GAVEL C GEFFORO D GLENMAN FUBAR C GALVAY B GAVIAN C GEGEP C GENMAR FUEGD C GALVAY B GAVINS D GILBA B GENMALLEN FUEGDSTA D GAMELEP B GAVINS D GILBA B GLENMALLEN FUEGASTA D GAMELEP B GAV B GLENMAL B GLENMAL FUEGASTA D GAMEEP B GAV B GLENMAL B GLENMAL FUERA								0 (ā -
FT. ORUM C I GALVESTUN A I GALLEY B I GDEON C I GLENMALL MT. GDEEN D I GALVEZ C I GALEY C I GIELON C I GLENMALL FUBAR C I GALVEZ C I GAVEL C I GIELON C I GLENMAN FUBAR C I GALVA D I GAVIAN C I GIEGEP C I GLENMAN FUEGD D I GALVAY B I GAVINS D I GILA B I GLENMALLEN FUEGD C I GAMBOA B I GAV D I GILBERT D I GLENMALLEN FUEGDSTA D I GAMBOA B I GAV B I GLENMAN FUERA C I GAMBOA B I GAV B I GLENMAN FUERA C I GAMBOA B I GAV B I GLENMAN FUERA C I GAMBOA B I GAV B I GLENPON FUERA C I GANGEE C I GAVLESVILLE D I G		э і	GALVA					C 1	GLENFORD	ē
FLB OBER D GALVEZ C I GAVEL C I GIFFORD D GLENMAN FUBBLE D GALVAY B I GAVILAN C I GIGGEP C I GLENMORA FUEGD C I GALVAY B I GAVINS D GILBERT B I GLENMORA FUEGD C I GAMBDA B I GAVIOTA D I GILBERT O I GLENMALLEN FUERA C I GANBDA B I GAV B / I GAV B / I GLENMALLEN FUERA C I GAMBDA B I GAV B / I GLENMAN B / I GLENMAN FUERA C I GAMBDA B I GAV B / I GLENMAN B / I GLENMAN FUERA C I GANBDA B I GAV B / I GLENMAN B / I GLENMAN FUGATEE D I GILBER D I GLENMIN B / I GLENMIN B / I GLENMIN FUGATEE B I GANADD D I GAVLERO C I GILCHPIST A / I GLENROSE FUGHES C I GANCE C <thi gavucro<="" th=""> <t< td=""><td></td><td>c i</td><td>GALVESTON</td><td></td><td></td><td></td><td></td><td></td><td></td><td>8</td></t<></thi>		c i	GALVESTON							8
FUBAR C I GALVIN D I GAVILAN C I GIFORD D I GENMEN FUBBLE D I GALWAY B I GAVILAN C I GIEP C I GLENMEN FUEGD C I GALWAY B I GAVINS D I GILA B I GLENMALEN FUEGD C I GAMELEN B I GAVINS D I GILBA B I GLENMALEN FUEGDSTA D I GAMEDA B I GAY B I GLENDA FUEGASTA D I GAMEE C I GANGEE C I GLENDA B I GLENDA FUGAWEE B I GANEE C I GANEE C I GLENDA B I GLENDA FUGHES C I GANADO D I GAYLERO C I GILCHPIST A I GLENDAS			GALVEZ					- C	GLENHAM .	8
FUBBLE D I GALVAY B I GAVINS C I GIGEP C I GENMORA FUEGD C I GAMELEQ B I GAVINS D I GILA B I GLENALLEN FUEGDSTA D I GAMEDA B I GAV B I GLENALLEN FUERA C I GAMEDA B I GAV B I GLENADA FUERA C I GANGEE C I GAVLESVILLE D I GILBOA B I GLENATO FUGAVEC B I GANCE C I GANCE C I GLENATO B I GLENATO FUGHES C I GANCE C I GANCE C I GLENATO										8
FUEGD C I GAMELER B I GAVIOTA D I GILBERT D I GLENDALLEN FUEGDSTA D I GAMBDA B I GAV D I GILBERT D I GLENDMA FUERA C I GANGEE C I GAVLESVILLE D I GILBERT B I GLENDMA FUGHES C I GANGO D I GAVLESVILLE D I GILCHPIST A I GLENRIOSE										Č ·
FUEGOSTA D I GAMBOA B I GAY D'I GILBENT D I GLENDMA FUERA C I GANGEE C I GAYLESVILLE D I GILBA B I GLENDOOL FUGAMEE 3 I GANADO D I GAYLESVILLE D I GILBAY B I GLENRIOSE FUGMES C I GANCE C I GAYLERO C I GILCHPIST A I GLENROSE							A			c
FUERA C I GANGEE C I GAVLESVILLE D I GILBOA B I GLENPOOL FUGAVEE B I GANADO D I GAVLESVILLE D I GILBY B I GLENPIO FUGHES C I GANCE C I GAVLORO C I GILCHPIST A I GLENROSE										
FUGAVEE B GANADO D GAYLORO C GILCHPIST A GLENRIO FUGHES C GANCE C GAYLORO C GILCHPIST A GLENROSE										Ā
FUGHES C I GANCE C I GILCHPIST A I GLENROSE										0
										8
FULCHER C GANDO DI GUNUTUR C GILCO DI GLENROSS										0
FULDA C/OI GANIS O L GATELLE DI GILCREST E I GLENSTED										D
FULLAM C I GANNETT O TANKEL O I GILEAD C I GLENTON				ō	GAZOS			C	GLENTON	8
FULLEP D GANSNER C FAIrent C GILES D GLENTON VI				č i z				. 0 1.	GLENTON. VET	ç
FULLERTON O GANENER POWDER D L GEORGE C I GILFORD B/DI GLENTOSH							GILFORD	8/01	GLENTOSH	- A
POLMER O J CANV D I GLENVIEV		n ,	GANY			- <u>-</u>	VILFURD.			8
FULMER, DRAINED C I CAPBUITE & GERGEN G I SIMATIFIED I GLENVILLE	FULMER, DRAIN	1 D 03	GAPSUTTE				STRATIF (ED			· c
NOTES: 1-0 HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE ORAINED/UNDRAINED SITUATION					e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de l			1	GLENYON	8

IND MYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE ORAINED/UNDRAINED SITUATION. Modifiers shown, E.g., Redpock substratum, refer to a specific soil series phase found in soil hap legend.

Hydrologic soil groups for United States soils

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GLOHM C	Í GODSEFLATS	D	I GRANGEVILLE.	e	GRELL TON	8	I GUAYABOTA	0
GLORIA D	G005HUS	8	I DRAINED		GRENADA	č	GUAYAMA	D
GLOUCESTER A	I GORDO	8	GRANGEVILLE.	Ē	GRENADIER	ē		
		_		E		-	GUPE	. с
		D	I DECASIONALLY		I GRENVILLE	E	I GUBEN	е
GLYNDON B	I GOREEN	D	1 FLOODED		GRESHAM	c	I GUCKEEN	ç
GLYNN C	GORGAS	٥	I GRANILE	P	GRETDIVIO	8	GUDGEL	ē
GLYNWOOD C	GORGONIO	Ā	GRANHOUNT	ċ	GREWINGK	Č, Č		
				-	• • • •	_	GUDGREY	9
	I GORHAM	8/0	• • • • • • • • • • • • • • • • • • • •	D	GREYBACK	e	I GUELPH	0
GOBAR ·B	GORIN	C	GRANSHAN	e -	GREYBO	6	I GUEMES	:e
GODERNADOR D	I GORING	ç	I GRANT		I GREYBULL	c	I GUENOC	č
GOBINE	I GORMAN	č	GRANTFORK	0	GREYEAGLE .	· .		
GOBLE						-	J GUENTHER	8
	I GORSKEL	D	GRANTHAM	Ď	GREYS	•	I GUERNSEY	с
GOBLIN D	GORST	Þ	GRANTSBURG	c	i gribele	D) GUERO	· c
GOCHEA 8	GORUS		I GPANTSDALE	6	I GRIDELL	D۰	I GUERRERO	
GODDARD 8	I GORZELL	6	GRANVILLE		GRIDGE	ō	I GUEST	ō
GODDE D	I GOSA	ē		-		_		-
	-	-	GRANYON	8	GRIDLEY	, c	GUFFEY	c
GDDŲ ING C	I GOSHEN	8	GRANZAN	.	GRIETA .	8	i GUFFIN	Ð
GODECKE D.	1 GOSHUTE	Ð	GRAPEVINE		GRIEVES		I GUGUAK	D
GODFREY D	I GOSINTA	c	GRAPIT		I GRIFFITH	D	1 GUILDEP	ē
GODWIN D	GOSLIN'	6	GRASHUL	è	GRIFFY	-	•	-
						6.	I GUISEP	8
	I GOSNEY	D	GRASPERE		GRIFTON	. C	1 GULER	e
GDESLING 8	GOSPER	· 8	GRÁSSNA .		GPIGSEY	B	I GULF	870
GDESSEL D	GOSPORT	с	GRASSVAL -	Ď	1 GRIGSTON	P	GULKANA	8
GOFFPEAK 8	G055	ē	GRASSVALLEY	ñ	GRINM	· •	GULNARE	D
GOGESIC S	1 GOSUNI	ŏ	GRASSY BUTTE	-	GRIMMA STONY	ŝ		-
						-	GUMBLE	D.
GOL D	GOTEBO		GRASSYCONE		GPINSLEY	, 8	I GUMBOOT	ם י
GDL C	F GOTHAN .	A 1	GRAT	Ð.	GRINSTAD	e	I GUMBOOT. DRAINED	c
GOL NONSTONY C	T GOTHARD	c	GRATTAN	-	I GRINSTONE	ē	GUNBARREL. SALINE	ō
GOL. GRAVELLY C	GOTHENBURG	. p	GRAUFELS	÷Ē		-		-
GOLCONDA C				-	I GRINA	D.	GUNBARREL, DRAINED	· · ·
	GOTHIC	C	GRAVDEN .	p.	GRINDALL	D	GUND ·	· C
GOLD CREEK D	I GOTHO	C,	GRAVELTON	- E/O	I GRINDBROOK	ς.	GUNDY	c
GOLDBERG D	. GOTHO. MODERATELY	8 1	GRAVIER	8	GRINDSTONE ·	· c	GUNLCCK	c
GOLDENDALE B	L wET -	i i	GRAYBERT		GFINK	-	GUNN	
GOLOF INCH D	GOTHO COOL	i in i	GRAYCALM		GRINROD			
							GUNNEL	D
		D I		8	GRISDALE	6] GUNSIGHT	5
GOLDHILL D	GOULDSEORO	D 1	GRAYLAND	Ð	I GRISVOLD	. 8 .	GUNSONE	D
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NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown. E.g., bedrock substratum, refer to a specific soil series phase found in soil map legend.

(210-VI-TR-55, Second Ed., June 1986)

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Hydrologic soil groups for United States soils

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TYO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE ORAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in soil hap legend.

(210-VI-TR-55, Second Ed., June 1986)

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Hydrologic soil groups for United States soils

HILLBRICK D HOGALA C HONOBIA C HOUSTAKE C HUMOUN HILLCD B HOGALAT D HONOLUA A A HOUSTON D HUME	•								
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NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Hodifiers shown, E_G., Bedrock substratum, refer to a specific soil series phase found in

(210-VI-TR-55, Second Ed., June 1986)

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ILACHETOMEL	9]	IPAVA	- B I .	ABU VET		JEFFREY		JONESVILLE

NOTES:

TWO HYOROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in soil map legend.

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TABLE A-5 CONTINUED Hydrologic soil groups for United States soils

• • • •									
JONNIC	. c	I KAHANA	9	KAPLAN	•				
JOPLIN	C	I KAHANUT	Ď	KAPOC .	.0 B	KEEI		O KERMIT	A
JOPPA	. 9			KAPCUSIN	-	KEEKEE		E KERNAN	c
JORAIBI		I KAHLOTUS	- 8		0	X EEL		C I KEPR	` e
JORDAN	Ď			KAPTURE	. 8	KEELDAR	1	Ø KERRDAM	c
JORGE	· .	KAHUA		KAPUHIKANI	· D	KEELE	. I	8 KERRFIELD	D
JORNAHAN	. 8		D	KARAMIN	· 🔺	KEELEA	1	B I KERRICK	· 8
JORY	. 8	I KAIDERS	. 6	KARANKAWA	0	KEELINE	i	B KERRVILLE	c
JORY. STONY	-	I KAIKLI	D	KARDANA	c	KEENE		KERSHAW	A
	c	I KATLUA		I KARCAL	0	KEENO	· · .		õ
JOSBURG	c	I KAINU	. A.	KARDE	8	I KEESE	. 1		-
JOSEPH	c	I KAINALIU	. 🔺	KARHEEN	. D	I KEESEHA	· · ē		A/0
JOSEPHINE	18	KAIPOIDI	. 8	KARLAN	ē.	KEESIAN			ç
JOSHUA	С.	I KAIWIKI	· .	KARL IN	Ā	KEETER			c
JOSIE	5	. I KALAE .	. 5	KARLO	õ	KEEVATIN	9		D
JOSLIN		KALALOCH		KAPL SBURG		KEG	2		D
JOSSET	c	KALAMA	. č	KARL SRUHE	e E		8		с
JOURDANTON	6	KALAMA ZOD		KARLSTAD	-	KEGEL	0		· 8
JOWEC	Ď	KALAPA	ē	KARLUK	<u>A.</u>	I KEGEL . DRAINED	¢	I KETCHUM	6
YOL		KALAUPAPA	0		D	I KEGONSA	8	I KETONA	D
JUAD	ē	KALEETAN	-	I KARMA		I KEHAR	D	I KETTENBACH	c
JUANA DIAZ	·ā	KALEETAN. TILL		KARNAK	· D	KEHENA -	c	1 KETTLÉ	· B
JUBILEE	Ď		· c	KARNES	e	I KEHGE	· 3	I KETTLEBELLY	6
JUBILEE. DRAINE		SUBSTRATUN		KAROC	B	KEIGLEY	e	I KETTLEMAN	č
JUDA		KALIFONSKY	D	KARPP	D	Í KEISER	. 8	KETTLEHAN,	e
	В	KALIGA	e/	ÖİKARRG -	ė	I KEITH	ė	GPAVELLY	
JUDD	C	KALIGA - FLOODED	0	I KARS		I KEITHVILLE	ē	KETTNER	· •
JUDELL	B	KALIHI	D	I KARSHNER	· · D	KEKAHA	ē		· 0
JUDICE	0	KALISPELL	8	I KARTA	· ē	1 KEKAKE	5	KEUTERVILLE	8
JUDITH	8	KALKASKA		I KARTAR		KEKAVAKA	5	KEVANTON	c
JUDKINS	·C	I KALLIO	c	I KASEBERG	D.	KELK		KEVIN	c
JUDSON	8	I KALMARVILLE	8/0		ŝ	I RELLER	: C	KEWACH	с
JUDY	c	1 KALHIA		I KASKI			c	I KEWAUNEE	. c
JUG	8	T KALD	ē	J KASOTA	-	KELLEROVITE	e	KEWEENAW	≜
JUGET	D	KALOKO	ò	I KASSLER	ç	I KELLY	. ວ	I- KEYA	B
JUGHANDLE		KALONA	č	I KASSON	4	KELSEY	. 8	KEYES	. D
JUGSON	č.	KALSIN	0		c	KELSO	. ¢	I KEYESPOINT	D
JÜLES	8	KALSTED	-	KATANA	8 .	KELTNER	8	I KEYNER	D
JULESBURG		. KAMACK	8	I KATENCY	. C	KELTYS	· 8	I KEYPORT	с
NILUL	0		-	KATHER	c	ł KELVIN	c] KEYSTONE	Ā
JUNEO .	-	I KAMAKUA		KATO -	E/0) D	I KEZAN	Ď
JUMPCREEK		KAMAN	D	KATSEANES	ם	KEMAN	. 8	I KEZAR	č
JUNPE	÷¢	KAMADA		E KATULA	¢.	KEMMERER	. c	1 KIAKUS	, č
JUMPER		I KAHADLE	8	I KATY-	D	KEHDO	8	KIAN	ć č
JUMPMORE	ç	L KAMATO	c	I KATYELAY	` 🛢 -	KEMP	· ē	KIAVAH	8/0
	.8	I KAMAY	P	I KAUDER	D	KEMPSVILLE	- ē	I KIBBIE	-
JUNPOFF	c	1 KAMELA	¢	KAUFHAN	o i	KENAT	· ē	I KIBESILLAH	8.
JUNALUSKA	8	I KAMTE	8	KAUKAUNA	с	KENANSVILLE	Ā	KICKAP00	ç
JUNCAL	c	I KAMPYILLE	c	KAUPO	Ā	KENDALA	ĉ	KICKERVILLE	8
JUNCOS	. D	L KAMRAR	e	KAUPPI	6	KENDALL	ā	KIDD	8
JUNCTION		1 KANACKEY	D	KAVETT	p i	KENDALLVILLE			D
JUNEAU	8	KANAKA		KAVON	e i	KENDRICK	-	I KIDDER	8
JUNG ,	0	J KANAPAHA	8/0		č.	KENEFICK	<u>.</u>	I KIDHAN	. 8
JUNGO ·		KANARANZI	B	KAWA IHAPAT	e 1	KENESAW	B	1 KIEHL	8
JUNIPERBUTE		KANARRA -	Ď	KANBANGAH	c i			I KIËSEL	c
JUNIPERG	8	KANASKAT	Ξ.	KAWICH		KENHOOR	8	I KIETZKE	D
JUNIUS	Ċ.	KANAWHA	B.	KAWKAWLIN		KENN		I KIEY	. В
JUNKETT	č	KANDALY			· <u> </u>	KENNAN	8	[_KIKI	c
JUNO	Ā	KANDIK	<u> </u>	KAYMINE	5 1	KENNEBEC	,6	I KIKONI	9
JUNQUITOS	ĉ	KANDOTA	- <u>-</u>	KAYO	· e	KENNER	Ű	I KILAGA	c
JUNTURA	ò	KANE	.0	KEAAU	0	KENNEWICK	. 8	1 KILARC	ō
JUPITER	. 8/0		6	KEAHUA	5 Į	KENNEY	A	KILAUEA	ě
JURÁ	. 870 I		C	KEAL AKEKUA	× 1	KENNEY LAKE	· c	I KILBURN	
JURVANNAH		KANEDHE		KEALIA .	C - 1	KENÖ	D	I KILCHIS	Ď
JUSTESEN	<u>c</u>	KANEPUU		KEANSBURG	. D 1	KENOMA .	D	KILDOR	č.
	<u> </u>	KANER	A 1	KEAPL	c	KENGTRAIL		I KILFOIL	c.
JUSTESEN. LOAMY		KANG	C I	KEARNS	6	XENRAY	_	KILGORE	0
SUBSTRATUM		KANGAS	A	KFARSARGE	. e i	KENSAL		KILKENNY	
JUSTIN		KANID	8	KEATING .	e i			KILLARNEY	8.
JUYA		KANIKSU	вј	KEAUKAHA	õi	KENSPUR	-	1	, C
NAVUL	0 1	KANIMA	c i	KEAWAKAPU	- e i	KENT			C/D
KAALUALU	A 1	KANKAKEE			e i	KENUSKY		I KILLDUFF	8
KACHEMAK	- B - J	KANLEE	-	KECH	0 1	KENYON		KILLEY	Ð
KACHESS	. 8	-		KECKO				KILLEY, HODERAT	ELY C
KADE		KANOSH		KECKSRUAD		KEC		I VET	
KADLETZ	8					KEOKUK		KILLINGTON	ο.
KADOKA	•	KANUTCHAN		KEDA		KEONAH		KILLPACK	ē .
KAENA	- ,	KANZA	0			KEDTA	. 8	KILNANAGH	è
KAFING		KAPAA		KEDRON		KEDWNS	6/D	KILNER	è
KAGMAN				KEE		KEPLER	ċ	KILHEROUE	č
KAGHAN. VERY		KAPAPALA		KEECHELUS		KERBER		KILN	ō ·
GRAVELLY	. 8			K FE CH I	S 1	KEPBY		KILDA	*
KAHALUU	_ !	SUBS TRATUM		KEEFA	` B	KERHAYDEN		KILOHANA	Â
	01	KAPIN .	¢ 1	KEEFERS .		KEPL		KILOWAN	-
•							- 1		¢

TWO HYDROLDGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in NOTES :

SOIL MAP LEGEND

(210-VI-TR-55, Second Ed., June 1986)

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Hydrologic soil groups for United States soils

-		·	·						•
KILWINNING	D	F KITTITAS	. C	KODRA	c	KRESSON	c	1 LACONNER	
KIM .	3	KITTITAS, DRAINE	o c	KJEHLER	č	KREYENHAGEN	ē		
KIM SALINE	c	I KITTREDGE		KOELE	B			LACODCHEE	
FIMAMA		I KITTSON	č				Ð	LACOSTE	
-					5	I KPIEST	e	LACOTA	
KINGALL	D	I KIVA	A	KCEPLING	. ¢	I KEON	D	I LACRESCENT	
KIMBERLINA ·	. 5	KIWANIS	· .#	I KCETHER	D	I KROTO	а	LACPOL	
KIMBEHLY	8	t KIZHUYAK	· 8	I KOFA	Ď	KRUBATE	-		
KIMBROUGH	ο.	LKJAR	Ď		-		Ŗ	LACY	
KIMMERLING	-			KOFA. SALINE	C	I KRUEGER	8	LADD .	
	Þ	KLASEP	C	i KCFFGg	· B	I XRUM	Ð	I LADELLE	
KIMO	c	KLAGER + ORAINED	с	\$ KOGISH	D	KRUSE	e	1 LADERLY	
KIMPER	a	KLADNICK	A	KOHALA	e	KUDE	-		
KINA	ō	I KLADNICK, STONY					2	LADNER	
				KCLAN		I KUBLER	ç	LADOGA	
KINAN	• 8	KLAMATH	0	I KOKEE	8	I KUBLI	e	LADRON	
KINCHELDE	Ċ.	KLANELNEE CHENA	D	I KGKERNOT	¢	I KUCERA	8	LADUE	
KINCO		KLANELNEECHENA.	ć	I KOKO	8	KUCK	-		
KINDER	c	LACUSTRINE	-				c	LADYCOMB	
KINDIG	š			KOKCKAHI	C	KUOLAC	C	I LADYSMITH	
		SUBSTRATUM		KOKOKAHI. STONY	в	KUHL	D	LAFE	
KINDY	-с.	I KLAPATCHE	с	K K K K K K K K K K K K K K K K K K K	8/1	DE KUKATAU		LAFITTE	
KINESAVA	- F	KLAUS	°C	KOLAR	0	I KUKAIAU. BEDROCK	-		
KINGDON	8	KLAVAST					۰C	LAG	
			-	I KOLSERS	ç	SUBSTRATUM		LAGITOS	
KINGFISHER	а	KLAWASE+	6) KOLEKOLE	c	I KULA	8.	I LAGLORIA	
KINGPORN	D	LACUSTRINE		KOLIN	c	1 KULLIT		LAGNAF	
KINGILE	c	I SUBSTRATUM		I KOLLS	6	KULSHAN .			
KINGINGHAM		KLAWATTI	~			1	c	LAGONDA	
				1 KOLLUTUK	•	KUMA	e	I LAGRANGE	
K ENGH AN		KLAWYOP	6	I KOLOA	c	KUNATON	D	LAGROSS	
KINGHONT	9	KLAYENT	c	1 KOLO8	B -	KUNAYOSH		LAGUNITA	
K INGS	5	KLECKNER	ċ	- KCLOB. STONY	ċ	I. KUNZA			
KINGSAURY	ē.	LE INBUSH	č		-		e	LAGUNITA. WET	
				I KCLOKOLO	8	I KUNUWEIA	8	I LAHAINA	
KINGSDOWN		KLEJ -	8	KOLOMOK1	E.	1 KUNZ	6	LAHONTAN	
Ķ INGS LAND	A/0	KLICKER	c	I KOPO		KUNZLER	8	LAMPLITY	
KINGSLEY	9	KLICKITAT	e	KCNA	Ď	KUPREANOF	8		
KINGSPOINT	. 8	KLICKSON	ē	I KONAVA	_		-	1 LAIDIG	
KINGS TON	· · .				. 6	I KUPREANOF .	с	LAIDLAW	
	9	KLINE, COBLY	e	KGNEPT	E	I HODERATELY WET		I LATL	
VINGSVILLE	×/D	KLINE. PROTECTED	C	KONEFT, DRAINED	c	I SURER		LALRD	
CINGTAIN	9	I KLINESVILLE	C/0			KURO			
LINKEAD	ē	KLINGER	a				D	LAIRDSVILLE	
INKEL				1 KONNEP . ORAINED	-	KURTH	_	I LAJARA	
	C		c	KONOCTI	c	J KURTZ	C	1 LAJITAS	
(INKEL, GRAVELLY	6		2	I KONDETI, STONY	2	KUSHNEAHIN	D.	LAKE	
INKOPA	0	KLONDIKE	ē	I FONSIL	ē	KUSKOKWIM	6		
(PIHAN	či		e.				_	1 LAKE, CLAYEY	
LINNE AR					-	KUSLINA	0	I SURFACE	
	· 3]		Ċ	I KOONICH		I KUTCH	С	LAKE CHARLES	
(INNEY	8]	KLUGICH	٠c	KOUNTZ	0	I KUTLER	c	I LAKE CREEK	
INROSS	A/D I	KLOOTCHIE	8	KOOSHAREY	Ē	KUY			
INSMAN	c i	KLOTEN						I LAKE JANEE	
			D	KCOSKIA	c	KYICHAK	8	Í LAKEFIELD	1
INSTON		KLUG	5	I KODTENAI	e	KWED	A .	LAKEHELEN	
ÎNTA	2 1	KĽUM	C	KOPIE ·	D	KYOURZ	e	LAKEHURST	•
INTON	- C	XLUMO .	5	1 KOPPEPL		KYDAKA	-		
INZEL	9.1					• • •	Þ	I LAKELAND	
			5	KOPPES	.▲	KYDESTEA	Ð	LAKEMONT	
IGHATIA	A [KNAPKE		KORCHEA .	P	KYLF	D	LAKEPCRT	j.
IONA	- 8 - 1	KNAPPA	в	KCRENT	£	KYLER	ē	LAKESHORE	
1015	i e	KNAPPTUN	9	KCRNPAN	ē			• • • • • •	
IPER	āi	-	_				-	LAKESIDE	. 6
			-	K CRG FAGO	C I	LA BAIER	Ð	LAKESCL	E
IPLING	0 1	KNEP	c	KORONIS	e (LA FARGE	8	LAKETON	Ċ
IPPEN .	A	KNICKEABOCKER		KORTTY	8 1	LA FONDA	E		
IPSON	o i	THIESLEY	ċ.	KOSCIUSKO				LAKEVIEW	
THEY			-		<u>t</u> [LA GRANDE	c	LAKEWIN	6
	A !	ENTERIN	c	KOSE TH	9 1		8	LAKENDOD	
INDAAIFF	1 8	KNIGHT	6/C	KESPOS	0 1	LA LANDE	, E · I	LAKI	
IRK	0 1	KNEK	8.	KOSSE	ei		Ē		
IRKENDALL	ēi	KNIKLIK	e		8701				
LAKHAM					,		B	LAKCA	e
	Ç İ	KNIPPA	ς.	KCSZTA		LA PRAIRIE	8	LAKGMA -	C
IRKLAND	0 1	KNOS HILL .	8	KCTO	0 1	LA 905E	e i		
IRKSEY ·	c' 1	KNOETOP	c	KCTZMAN	e j				
RKYTLLE	- či i	KNOCO							
RLEY			-		c i		C I		8
		KNOKE	E/0	SOVICH	0 1	LABISH	0	LALLIE	C
RTLEY	< I	KNOLLE	8 1	ACYEN		LABKEY		LALOS	a
RVIN		KNOSS		KOYNIK					
RVIN. GRADED	•	KNOTT				LABORCITA	-	LAN	C
				KOYUFUK		LABQU	C	LAMA	C
SATCHIE		KNCYLES	8 (KPACKLE	8 1	LABOUNTY	οi	LAMANGA	č
SHONA	0 1	KNOX		KPADE		LABRE			
		KNULL			- •			LAMAR	8
	- •			KFAK ON	•	LABSHAFT	0	LAMARSH	c
SHONA. ALKALI		KNUTSEN	B [KRAM .	0 1	LAQU		LAHARTINE	ē
SHONAL ALKALI Sring	0	KOBAR		KRANSKI		LAEUCK			
SHONA. ALKALI Sring		KOBEH						LAMATH	Ð
SHONA, ALKALI Sring Sring, Wet	I		- •	KRAN ZOURG		LACAMAS	D	LAMAWA	6
SHONA, ALKALI Sring Sring, vet Ssick			C 1	KRATKA	8/Dİ	LACERDA	0 1	LAMBERT	5
SHONA. ALKALI Sring Sring, wet Ssick Stirn	8 I	KCSEL							
SHONA, ALKALI Sring Sring, Wet Ssick Stirn	8 I			KRAUSE		TACHADELLA	A .		
ISHONA. ALKALI Isring Isring, Wet Issick Istirn Tchell	8 3	KOCH	¢ j	KPAUSE		LACHAPELLA		LAMBETH	8
ISHONA. ALKALI Isaing Isring, Wet Issick Istian Tchell Tchen Creek	8 3 3	KOCH DRAINED	с і с і	KREAMER	c i	LACITA	•	LAMBETH LAMBHAN	. a
ISHONA, ALKALI Isring, Vet Isrikg, Vet Isrik Istian Istian Ischel Isten Creek It	8 3 3 0	KOCH DRAINED Kochs Drained Kogak	с і с і	-	c i		e i	LANBHAN	. 0
SHONA. ALKALI SRING. VET SSICK STIRN TCHELL TCHEN CREEK	8 3 3 0	KOCH DRAINED	0 j 0 i 0 i	KFEAMER KR795	¢ i t i	LACITA	E I C I		

NOTES: TWO HYDROLOGIC SDIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNGRAINED SITUATION. Modifiers shown, E.g., Hedrock substratup, refer to a specific soil series phase found in soil hap legend.

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Hydrologic soil groups for United States soils

	LAMKIN	8	LARIAT	· 8.	I LAVINA	-				
	LANO	ē	LARIN	2		0	LEETONIA	c	1 LEW	E.
	LAMOILLE	ã	LARINER			ç	LEEVAN	<u>د</u>	I LEWBEACH	c
	LAMONDI	ē	LARIOSCAMP	-	LANAI		LEFOR	8	I LEVOLAC	0
	LAMONI	č		Ū,	LAVEN	8	I LEGALL	e	I LEVIS	Q
	LAMONT			13	L'LAWET	6/D	I LEGAULT	. D	LEWISCERRY	8
	LAMONTA	8	LARKSON	ç	I LAWEIP	B	ľ LEGGETT	c	LEWISDUPG	č
		D	I LARHINE	c	SALINE-ALKALI		I LEGLER	8	I LEWISTON	· č
	LAMODSE	. 0	LAROQUE	. 8	T LAWLER	E	1 LEGORE	. e	1 LEWISVILLE	· 5
	LAMOTTE	. 8	LAROSE	D	LAWNDALE	e	LEHEN	Ċ	LEWKALS	
	LAHOURE	ç	LARRUPIN	8-	- LAWNWOOD	5/D	LEHIGH	č	JLEX	. c
	LAMPASAS '	,D	I LARRY	D	LAWNWOOD,		LEHHANS	Ē		e
	LANPHIER	9 '	LARRY, DRAINED	c	EEPPESSIONAL	-	LEHR	Ĕ.	LEXINGTON	В
	LAMPSHIRE	. D	LARSON	D	LANRENCE	c	LEICESTER		LEXTON	ុខ
	LAMSON	B /	DI LARTON	Å	LAWRENCEVILLE		LEIDL	ç	I LEYBA	. ' 8
	LANARK	- 9	1 LARUE	Â	LAWSHE	Ď		<u> </u>	LEYDEN	· c
	LANCASTER	8	LARUSH	6	LANSON	č	I LEIGHCAN I LEILEHUA	e	LIBBINGS	r
	LANCE	6	LARVIE	ō	LAWTHER			e.	Į LIBEG 🔍	8
	LAND	č	LAS	č	LAWTON	0	LEISY	8	LIBERAL	D
	LAND, DRAINED		LAS ANIHAS	č		C I	LELA	Ð	LIPORY	
	LANDAVASO	B	I LAS FLORES		LANYER	e 1		Þ	L LIBRARY	D
	LANDCO	č	LAS LUCAS	Þ	LAX	C I	LEMAN		LIBUSE -	c
	LANDER	č	I LAS POSAS	E	[LAXAL	· (8, 1	LEMODS	C	I LICHA	в
÷.,	LANDES	8		C	LAXION	cι	LE¥CO ·	С.	I LICK	ê
	LANDLOW	_	LAS VEGAS	D	LAYCOCK	e (LEMERT	ρ	I LICKDALE	D
	LANDHAN	ç	LASA		I LAYCINT	c 1	LEMETA	D	I LICKING	Č
	LANDSEND	a	LASALLE	Þ	I LAYTON	- A	LEHING	c	I LICKSKILLET	D
		ç	I LASAUSES	Ð	LAYVIEW	· • 1	LENITAR	D	I LTDAN	. č
	LANE	c	LASCO	e	I LAZAN	01	LEMM	ð	I LIDDELL	
	LANESBORD	C.	LASIL	0	LAZEAR.	D I	LEMOLO	D	LIODIEVILLE	8
	LANEXA	Ð	LASKA	. e	LE BAR	i		-	I LICY	
	LANEY	5	LASSEL	c	I LE SUEUR	• i	LEMONEX	c	LIESERMAN	e -
	LANG	C.	LASSEN	Ο.	I LEA	ē i	LEMOORE	č		ð
	LANGFORD	¢	LASSITER	. e'	I LEADER	ēi	LENPIRA	e	1 LIEN	. D
	LANGHEI	9	LASTANCE	8	LEADCRE		LEN -	·ε	I. LIESNOI	
	LANGLADE	9	LATAH .	٥	LEADFOINT	č i	LENA		LIGGET	5
	LANGLOIS	o .	LATAH. HIGH	ć	I LEADVALE	è i			LIGHTNING	, D
1	LANGOLA	в	RAINFALL DRAINED		LEADVILLE	i i	LENA, FLOODED Lenapah		LIGNUM	c
1	LANGRELL	8	LATAN, DRAINED	. c	LEAF			D	LIGON .	. D
	LANGSPRING	в.	LATAHCO		LEAFRIVER		LENAVEE		LIGURTA	B
	ANGSTON	a	LATAHCON NET.	Ď	LEAFU	A/D1	LENAVEE, PONDED		L1HEN	
	ANGTRY	0	LATANIER	Ď	LEAGUEVILLE	C 1	LENBERG		LIHUE	8
	ANIER		LATCH				LENNEP	c	LIKES .	
Ĺ	ANIGER	A	LATENE		I LEAKSVILLE		LENGIP	D	[UILAH .	· · · · ·
	ANIGER. GRAVELLY		LATES		LEAL		LENZ	₿	Í LILBERT	8
	ANKBUSH	-	LATEX		LEALANDIC		LENZ, STONY	c	LILSOURN	· 9
	ANKIN	- T	LATHAM	C .	LEANNA		LENZ. VERY STONY	c	LILLINGS	8
	ANKTREE	-C		0	LEANTO		LENZBURG	8	LILLINGTON	R.
	ANDAK	8	LATHER	. D .	LEAPS		LEO		LILLYLANDS	ċ
	ANDNA	-	LATHROP	8	LEATHAM	c 1	LEOLA	9	LILTEN	č
	ANSDALE			6	LEATHERMAN	Đ	LEON	870	LILY	
	ANSOUVNE		LATINA	D	LEAVENWORTH	C	LEONARD	C i	LIM	Ċ
		¢ j	LATIUM	D	LEAVERS	e j	LEGNARDO			6
	ANSING	9 (LATON .	D	LEAVITT	e	LEDNARDTOWN	ō i		· 8
	ANTERN	8	LATONIA .	E 1	LEAVITTVILLE		LEONI		LIMERILN	. B D
	ANTIS	8	LATOUCHE	D I	LECAM		LEGUIEU	0 5	LIMERICK	
	ANTON	0 1	LATOUR	8	LEEANON		LERDAL	či	LIMERIDGE	c
	ANTON, LOW	C I	LATOURELL	8 1	LEBEAU		LERDO	ċi	LIMENIDGE .	. 0
	PRECIPITATION	I	LATTAS	o i	LEREC		LEROY			` ə
	ANTONIA	8	LATTY	o i	1.680		LERGON		LIMON	c
Ĺ,	ANTRY	3 · 1	LAUDERDALE	D I	LERSACK		LESHARA	c i		. 0
۴.,	ANTZ	D t	LAUDERHILL	•	LECK KILL	•			LIMONES	e
L	ANVER	c i		o i	LECRAG		LESHO		LIMPIA	c
L.	ANYON		LAUGENOUR. LOAMY	č. i	LEDFCAD		LESLIE		LINCO	9
	κP.	o i	SUBSTRATUM	S			LESON	·.D		*
· L.	APARITA	εi	LAUGENOUR, SILTY		LEDGEFORK		LESPATE	e i	LINDAAS	· C/C
L. J	APOUN	ē į	SUBSTRATUN	•	LEDHOUNT		LESTER	e	LINDALE	c
	PED	ō i	LAUGENOUR. DRAINED	- !	LEDON		LESWILL	e 1	LINDELL	Ċ
	PEER	BI			LEDAU		LETA	C I	LINDEN	6
	PHAN				LEQUE		LETCHER	0 1	LINDER	8
	PINE		LAUNAIA		LEDWITH	E/0 L	LETHA '	C 1	LINDLEY	č
	PLATTA	<u>A</u> [D	LEE	0 1	ETHENT	0 1	LINDRITH	e
		<u> </u>		8	LEEBENCH	D I L	ETHEY		LINDSIDE	č
		0 1		e	LEEDS :		ETON		LINDSTROM	
		<u> </u>		e I	LEEFIELD .		ETORT		LINDY	c
	· · · · ·	c I		6 I	LFEKO		ETRI	8/01		
	A A				LCEKO. WARM		ETTIA		LINEVILLE	. 5
			LAVATE		LEELANAU		EVASY		LINGANORE	c
LA	RCHHOUNT	8 J	· · · · · · · · · · · · · · · · · · ·		LEEMONT		EVELTON		LINGANURE	. 8
LA LA								U I		
LA LA LA	ROELL				LEEPER		EVEL TON . OD LINCS			A
LA LA LA	ROELL Redo		LAVEEN	8 1	LEEPER LEEPAN	D Í L	EVELTON. DRAINED	c i	LININGER	c
LA LA LA	REDO	c i	LAVEEN LAVENTANA	8 8	LEEPAY	DIL	EVERETT	c I c I	LININGER LINKER	с в
LA LA LA LA	ROELL Redo Res	c i a i c i	LAVEEN LAVENTANA LAVERKIN	6 6 1, 2		DIL	EVERETT	C C B	LININGER	c

B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Stratum. Refer to a specific soil series phase found AROUPS HYDROLDGIC TWO SUCH HODIFIERS SHOWN BEDROCK SUBSTRATUM. REFER IN SOIL LEGEND

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Hydrologic soil groups for United States soils

LYMANSON LYHE LYNCH

LYNCHBURG LYNDEN LYNN HAVEN

LYNNVILLE

LYNNWOOD

LYNXCREEK

LYONSVILLE

MACAPEENO MACE MACEDONIA

PACFARLANE MACHETE MACHIAS MACHUELD MACK. LOANY SURSTRATUM MACKEN

MACKERRICHER

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LINNE	c	1 600100	Ď	LOPYASH	C . P		8	LYL€S
LINNET	¢	1 L000		LORACK	-		_ 0 _	I LYMAN
LINNEUS	8	LOFFTUS	č	LORADALE			p	I LYMANSO
LING	· 8	LOFTON	ō	LORAIN	c c		. 8	I LYME
LINOYER	8	LUGAN	• D	LOPAN	E	/DI LUAP	c	1 LYNCH
LINRGSE.	ç	I LOGDELL	÷	LOPAY			8	I LYNCHBU
LINSLAW	3	1 LOGGERT	9	LURDSTOWN	A C	LUBRECHT	C.	LYNDEN
LINT	5	LOGHOUSE	ē	LOREAUVILLE	č	I LUCAS	0	I LYNN MA
LINTON		LOGRING	Ď	LORELLA	6	I LUCE	· c	I LYNNBDW
LINVELDT ,	<u>8</u>	I LOGY	. 8	LEPENA	č	LUCEDALE	8	LYNNOYL
LINVILLE	-3	i LOHLER	ċ	LCRENZO	5	LUCEPNE	e -	LYNNE
LINWELL	i c	LOHMILLEN	c	I LEPETTO		I LUCERO I LUCIEN	8	LYNNVILI
LINWOOD	A/	DILOHNES	4	LOFING	c		c	LANNAOOL
LIPAN	D	LOHSMAN	c	LCRMAN		LUCILE. NODERA	ITELY C	LYNX
LIPKE	0	I LOIRZ	, e	LORTA		1 bET		LYNXCREE
LIPPINCOTT		DI LOKEN	с	LOS ALAMOS	ັ້	LUCILES DRAINE		LYONMAN
LIPPITT	C.	LOKERN	c	LES BANDS	c		c	LYONS
LIRIOS	3	LOKERN.	D	LOS GATOS	č		D	LYONSVIL
LISADE	• д	I SALING-ALKALI.		I LOS GUINEOS	č	1 LUCKY	Ċ	LYRA
- LISAM	0	'I WET		LCS OSOS	- C	LUCKY STAR	ಕ	LYRE
LISBON	8	LOKERN.	Ľ,	I LOS ROBLES	8	LUCKYRICH	e	LYSTAIR
LISCO	С	I SALINE-ALKALI	-	LCS TANOS	č			LYTELL
LISCOME	9	LOKOSEE	871	DI LOSANTVILLE		LUO	P	I LYYILLE
LISK	8	LOLAK	D	1 LCSEF	. <u>c</u>	LUDDEN		LYX
LISHAS -	, D	LULALITA	ĕ	LCSTEASIN	5	LUCINGTON	e	L HABANK
LISMORE	8	I LOLEKAA	6	LOSTCREEK	c	LUDLOW	с	MAGEL
LITCHFIELD	A -	LOLETA	č	I LOSTINE	8	LUEDEPS	с	HAREN
LITHGÓW	, c	LOLITE	õ	LOSTFOINT	ć.	LUFKIN	Ð	E PADI.
LITIMBER	8	LOLO	ē	I LOSTSPAING	C	LUGERT	f	HABRAY
LITLE	D	LOLON	ē	I LOSTVALLEY		LUGOFF	e	I MACAR
LI790	D	LOLOPEAK		I LUSTVELLS	ç	LUHON	6	I MACAPEEN
LITTLE HORN	c	LONA		LOSTVELLS. YET		LUKE	· c	MACE
LITTLE POLE	. o .	LONAKT	-	I LOTHAIR	ç	LUKIN	c ,	ACEDONE
LITTLE WOOD	8	1 LUMALITA	-	LCTT	· c			I MACFARLA
LITTLEAXE	8	LUMART	ē	LCTUS	ç	LULING	0	MACHETE
LITTLEBEAR	-9	1 LOMAX		I LETUSPOINT	ç	LULUDE	C . (MACHIAS
LITTLEJOHN		LONETA		LOU	ç	LUMBER	8/0	MACHUELO
LITTLENAN	Ç.	I LONTLL		LOUDEPBACK	e	LUMBERLY	8	MACK
LITTLETON		I LOWIRA	-	LOUDEN	· C	LLAMER	8 1	MACK. LOA
LITTSAN	c	LONITAS		LOUCOWVILLE	C C	L LUMMI	0 1	SURSTRAT
LITZ	С.	LONGINE	ē	LOUTLLA	¢	LUMMI . DRAINED	C 1	MACKEN
LIV		LOPOND		LCUGHEGRO		I LUMMUS		MACKERRIC
LIVEOSK	5	LONCAR				LÜNA	C	MACKEY
LIVEPHORE	8	LONDO		LOUIECPEEK		LUNDER	01	PACKŠÐUQG
LIVIA	Π.	LONCONDERRY				LUNDS	. C 1	MACHEAL
LIVINGSTON	D	LONE		LOUISA		LUNDY	0	PACCMB
LIVONA	-8	LONE POCK	ē	LOUISEURS		LUNING	A	HACCMBER
LIZE	8	LONLGEAR	õ	LOUP		LUNT	< I	MACON
LIZZANT	8	LONELY		LCUPLOUP		LUPE	6	MADALIN
LLANDS	č	LONEPINE	ŝ			I LUPINTO	ej	MADAWASKA
LUARC	8	LONERIDGE	ċ	LOUSCOT		LUPINTO. SALINE	c i	FADDEN
L09751L	9 i	LONESTAR	E I		с	LUPOYONA	8	MADDOCK
LOGELVILLE		LONETREE		LOUVIERS LOVEJOY		LUPPIND	0 1	HADELIA
LOBERG		LONEWOOD	Ä	LOVELACE		LUPTON	A (0)	MADEL INE
LOBEPT	ā į	LONGCREEK	· 0 i		e	LUPTON. PONDED	0 1	MADERA
LOBITOS		LONGFORD	či			LURA	C/01	MADGE
LOAD	5 1		õi		0 1		C/01	HADILL
LOEURN		LONGLOIS	- •	CLEVATION>6500		LURNICK	C	HADISON
LOCANE	D I	LONGMARE	e i		0	LUSETTI	8 1	MADONNA
LOCEY	ē j	LENGNONT	C I	LEVELOCK	C		c i	HADRAK
LOCHLOOSA	- čí			LOVELOCK,	- C			HADRAS
LOCHSA		LONGVAL	9 1	SAL INE -ALKALI	- 1		6 1	MADRID
LOCKE		LONGVIEW	말 분	LOVELOCK. DRAINFO		LUTE		MADRONE
LOCKERBY	- 7	LONIGAN		LOVEWELL		LÜTH	c i	MADUREZ
LOCKERSY. COBBLY		LONIGAN, COBSLY		LOVL INE		LUTHER		MAES
LOCKHART				LCWFLL	- C - I	LUTIE	- •	MAGALLON
LOCKPONT		SUBSTRATUM		LCHERCREEK		LUTON		MAGDALENA
LOCKTON		LONICH		LOWNOUS		LUTIKELOH		MAGGES
LOCKYOOC		LONNA		LCHAY		LUVERNE		MAGEES Maggin
LCCKWOOD, WET		LONOKE		LOWS		LUXOR		
LOCO		LONTI	0	LOWVILLE		LUZENA		MAGHILLS
		LCOKINGGLASS		LCX		LYBROOK		MAGIC
	n t	LOGKOUT		LOXLEY		LYDA		PAGINNIS
LOCODÀ					A/U		0 1 2	MAGNA
LOCODÀ LOCUST		LOOMER		LOYAL		LUBICH		
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LOCODÀ Locust Localley		LOOMIS	0 0	LOYALTON	0 0		0 I D I	MAGNET

TWO HYOROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE CRAINED/UNDRAINED SITUATION. Modifiers shown. E.g., Bedrock Bubstratum, refer tj a specific soil series phase found in soil map legend. NOTES:

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Hydrologic soil groups for United States soils

MAGDATO C MAGDATO <thc< th=""> MAGDATO C</thc<>											
MARCAL 0 C MARCAL 0 MA	MAGOTSU		Ð	T HANAWA -	r		·	1			•
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Mathan C Amany B Amaly VILC D MASCAMP C Vareso MARASA C Amadorfy TLC S Mascart C						[MARIAS,	D	I MASARYK			
MARARA B MADDENIL C MADICAL B MADCRETAR C MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA MATERIA <td></td> <td></td> <td>C</td> <td>MANDAN</td> <td>. 8</td> <td>I MARIAVILLE</td> <td>p</td> <td>I HASCAMP</td> <td></td> <td></td> <td></td>			C	MANDAN	. 8	I MARIAVILLE	p	I HASCAMP			
MARGEA 0 MARGETELD 0 MARGETILD MARGETILD	HAHANA		8	MANDARIN	c		•		-		
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Mathing D MADDY C MADILLA C MADILLA D M	MAHÓGAN		c				-		-		D
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MALUBAD B MARSTER A MARSSA C MASSACTON D MAYD MALUBA C MARSSA C MASSACTON			-		c		. D	I MASONFORT	C	ANAYNARD LAKE	A ·
MAJADA B IMAITA C IMARCEAN D IMASSACK C IMASSACK D IM			6	1 MANISTEE	A	MARISSA	c	1 MASONTOWN			ā
MALUBA C IMANUEST B MARCET MASSACDMA			8	I MANITA	c	MARKES			•	1 · · · ·	-
MARALLE 9 I MAREY 8 MAREY C MAREST C M	HAJUBA		c	MANITOWISH	. P				-		
MALAN B MANUUS C PAREY A/D MAUDIA D MAUDIA D MALALDA D MAMA B MARLAN C MAUDIA D </td <td>MAKAALAE</td> <td></td> <td>è.</td> <td></td> <td>-</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>	MAKAALAE		è.		-		-				
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PREQUENTLY MANUEL B PARDA C/D MALON D MALADIN C MALON C MALADIN C MALACH C MAPDIZ S MALACH C MAPDIZ S MALACH C MAPDIZ C MATHERS B MACEETH D MALAGAN C MARDUELY C MARDUELY C MATHERS B MACEETH D MATHERS B MACEETH D MATHERSTON B MACETH D MATHERSTON B MACETHAN D MARSUELY C MARTHERSTON B MACETHAN D MAESTH D MARSUELY C MARSUELY C MARSUELY D MACETHAN D MARSUELY D MARSUELY D MACETHAN D MARSUELY D MACETHAN D MACETHAN D MACETHAN D MACETHAN D MACETHAN D MACETHAN D MACETHAN D MACETHAN <			n i		-					I HCALLISTER	c
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NGTES:

TWO HYDROLOGIC SC L GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, .g., Bedfock substratum, refer to a specific soil series phase found in soil map legend.

(210-VI-TR-55, Second Ed., June 1986)

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MCDERMOTT	. э	I MECKLENAURG	c	HEPDEN	D	HIKIN. VET	~	1		
HCDOLE	e	I HECOSTA		I HEPECITH		SUBSTRATUR	с	HINNEDSA	а	
HCDONALO	c	HEDA	E	I HERETA	, č	I MIKKALO	-	MINNEQUA	C	
HCDONALDSVILLE	£2	DI HEDANG	D	MERGEL	8		C	MINNETONKA	D	
HCDUFF	с	HEDAPY	, c	MEHIDIAN	-	I MILACA	, c	I HINNETONKA, SILI	JY C/D	
HCELHO	c	. MEDBURN		MERINO		HILAN	8	SUESTRATUM		
PCELROY	8	HEDCO	Ď	1 MERKEL	· •	MILCURY	c	I HINNEWÄUKAN	A/C	
NCEVEN		MEDFORD			6 (G	MINNIECE	ີ່	
HCFADDEN	18	MEDERA	c	MERLIN	0		c	HINNIEPEAK		
HCFA IN	č	PEDICINE	-	1 NERHENTAU	c i	MILOPED	c	MINNIEPEAK.	9	
HEFARLAND	a	HEDLEY	8	L MERHILL	6/01	MILES	9	OVERBLOWN.	-	
, HCFAUL	ċ		8	MEFNA	. e j	MILFORD	870			
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	ç	HEDORA	£	I MERRILL	C I	HILL HOLLOW	e i	MINNIEVILLE	c	
HCGARVEY	c	MEDWAY	e .	I MEPRILLAN	c i	MILLADORE	ċ i	MINNIPAUD		
MCGAR Y	c	HEEGERNOT		I PERRINAC	Aİ	MILLARD	ei		ç	
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MCGREW	ē	MEIKLE	ō.	I MESA	A/01		e (MINWELLS	c	
MCGUF FEY	ō,	MEISS	c		e	MILLGPOVE	8/01	MION	5	
MCGUIRE	5	I HEKINOCK	с В	HESACA	C I	MILLHEIM	c 1	MIPPON	c	
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4CK 4Y	. 0	I MELDER	6	I METAMORA	e î	MILL INGTON		MIRES	A L	
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HCKENNA, BRAINED	C	HELLORS STRAT	IFIFCC	NETRE	- •	MILLSAP	•	MISAD	8	
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MCKINLEY	8	I MELLOTT	8	MFXICO		FILLSHOLA		MISHAK	C -	
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MCLAIN	Ç	MELROSE	c i			PILLVILLE		P155150V01	A	
MCLAURIN	a ·		ō	MIAMI		MILLYOOD		MISSLEP	e `	
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	9	LACUSTRINE	ł	MIDDLEMARCH		INATARE	•	IVIDA	8	
MCPAUL	8	SUBSTRATUM	1	MIDOLETOWN		INCHEY		IZEL	-	
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TWO HYDROLOGIC SOIL GROUPS SUCH AS E/C INDICATES THE DRAINED/UNDRAINED SITUATION. Fodifiers shown, e.g., Hedrock substratum, refer to a specific soil sepies phase found in soil map legend. NOTES:

Hydrologic soil groups for United States soils

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MONDDVIBMOREHEADCNOWATADNUSKEGD, MARSHYDNANTAHALAMONEEDMOREHOUSEDKOWEBABMUSKEGD, MARSHYDNANTUCKETMONGAUPCMORELANDDKOWEBABMUSKEGD, CLAY LOAM DNANTUCKETMONGAUPCMORELANDDKOWERACSUBSTRATUMNANTUCKETMONICOCMORENDCMOVERCSUBSTRATUMNANTUKMONIDACMOREYDMOVERSCMUSKELLUNGEDNAPAMONITEAUC/DMORFITTBMOVERSONDKUSOFARECNAPAPANEEMONITORCMORGANFIELD6MT. AIRYAMUSSELSHELLBNAPANNEMONDCLINECMORICALCMT. GARROLL6MUSSELSHELLBNARANJITOMONDGRAMBMORICALCMT. MODD6MUSSEYB/ONARCISSEMONDGRAMBMORICALCMT. VERNONCHUSSEYB/ONARCISSEMONDGRAHELACMORLINGDMT. VERNONCMUSSEYB/ONARCISSE		õ
MONEE D MOREHQUSE D KOWEBA B MUSKEGD. CLAY LOAM D NANTUCKET MONGAUP C MORELAND D HOWER C SUBSTRATUM NANTUCKET MONICO C MORENO C HOWER C SUBSTRATUM NANUM MONICO C MORENO C NOVER D MUSKELUNGE D NANUM MONICO C MORENO C NOVER D MUSKELUNGE D NAPA MONICO C MOREY D NOVERS C HUSKIGUM C NAPA MONITEAU C/DI MORFIT B MOVERSON D MUSOUI2 C NAPOLEON MONITEAU C/DI MORGANFIELD 5 MT. AIRY A MUSSEL B NARANJITO MONDELAU O MORGANFIELD 5 MT. AIRY A MUSSELLE B NARANJITO MONOCLINE C MORICAL C MT. HOOD B MUSSELLE B NARANJO MONDGRAM		e
MONGAUP C MORELAND D MOWER C SUBSTRATUM INANUM MONICO C MORENO C MOWER C SUBSTRATUM INANUM MONICO C MORENO C MOWICH D MUSKELLUNGE D INANUM MONICO C MORET D NOXEE D MUSKELLUNGE D INAPA MONIERCO O MOREY D NOXEE D MUSKOEE C NAPALENE MONITEAU C/D MORGANTELD D MOYERS C MUSDUZ2 C NAPANEE MONITOR C MORGANTELD D MUTA MUSSEL D NAPANEE MONDEAU D MORGANTELD D MT- CARROLL B NAPANEE MONDGRAM B MORICAL C MT- CARROLL B NARANJITO MONDGRAM B MORICAL C MT- OLIVE C MARANJO MONDGRAM B MORICAL C MT- OLIVE C MARCISSE		ċ
MONICO C MORENO C MOVICH D MUSKELLUNGE D NAPA MONIDA C HORET D NOXEE D MUSKELLUNGE D NAPA MONIDA C HORET D NOXEE D MUSKELLUNGE D NAPA MONITEAU C/D MORFITT B MOYERSON D MUSOFARE C NAPA MONITEAU C/D MORGALA C NOYERSON D MUSOFARE C NAPANEE MONITOR C MORGANFIELD 5 MT- AIRY A MUSSELSHELL B NAPANEE MONDCLINE C MORICAL C MT- CARROLL 6 NUSSELSHELL B NARANJITO MONDGRAM B MORICAL C MT- VENDON C MUSSEY B/O NARCISSE MONDGRAM B MORLEY C MT- VENDON C MUSSEY B/O NARCISSE MONDGRAM B MORLEY C MT- VENDON C MUSSEY B/O NARC		8
MONIDA C MORET D NOXEE D MUSKINGUM C NAPIER MONIERCD 0 MOREY D MOVERSON C MUSKOGEE C NAPIER MONITEAU C/D MORFITT B MOVERSON D MUSOFARE C NAPOLEON MONITEAU C/D MORGALA C MOVERSON D MUSOFARE C NAPOLEON MONITEAU C/D MORGALA C MOVINA D MUSQUIZ C NAPOLEON MONOCLINE C MORIATY D MT-AIRY A MUSSELL B NARANJITO MONOGRAM B MORICAL C MT-MODO B NUSSERHILL C NARANJO MONOGRAM B MORICAL C MT-MODO B NARANJO MONOGRAM B MORICAL C MT-MODO B NARANJO MONOGRAM B MORICAL C MT-MODO B NARANJO MONOGRAM B MORICAL C MT-MODO		D
MONIERCO D MOREY D POYERS C MUSKOGEE C NAPLENE MONITEAU C/D MORFITT B MOYERSON D MUSOFARE C NAPOLEON MONITOR C MORGALA C NOVIERSON D MUSOFARE C NAPOLEON MONITOR C MORGALA C NOVIERSON D MUSOFARE C NAPOLEON MONITOR C MORGANFIELD 5 MT. AIRY A MUSSEL B NAPTOWNE MONOCLINE C MORICAL C MT. CARROLL B MUSSELSHELL B NARANJITO MONDGRAM B MORICAL C MT. HOOD B MUSSERHILL C NARANJO MONDGRAM B MORICAL C MT. HOOD B MORISER B/O NARCISSE MONOHA B MORLEY C MT. OLIVE C MUSSEY B/O NARCISSE MONOHA C MORLING D MT. VERNON C HUSTANG A/O NARCISSEE </td <td></td> <td>-</td>		-
MONITEAU C/D MORFITT B MOYERSON D MUSOFARE C NAPOLEON MONITOR C MORGALA C MOYINA D MUSOFARE C NAPOLEON MONJEAU D MORGANFIELD 6 MT. AIRY A MUSSEL B NAPTOWNE MONOCLINE C MORIARTY D MT. CARROLL 8 MUSSELSHELL B NARANJITO MONOGRAM B MORICAL C MT. HOOD 8 MUSSERHILL C NARANJO MONORA B MORLEY C MT. HOOD 8 MUSSERHILL C NARANJO MONORA B MORLEY C MT. HOOD 8 MUSSER B NARANJO MONORA B MORLEY C MT. VERNON C MUSSEY B/D NARCDISSE		8
MDNITOR C MORGALA C MOYINA D MUSQUI2 C NAPPANEE MONJEAU D MORGANFIELD 5 MT. AIRY A MUSSEL 5 NAPTOWNE MONOCLINE C MORIARTY D MT. CARROLL 5 MUSSELSHELL 6 NARANJITO MONDGRAM B MORICAL C MT. HOOD 6 MUSSERHILL C NARANJO MONDGRAM B MORLEY C MT. OLIVE C MUSSERY B NARANJO MONONA B MORLEY C MT. OLIVE C MUSSANG A/OI NARCDOSEE		8
NONJEAU D MORGANFIELD B MT. AIRY A HUSSEL B NAPTOWNE MONOCLINE C HORIARTY D MT. GARGUL B HUSSELSHELL B NARANJITO MONOGRAM B MORICAL C NT. HOOD B HUSSERHILL C NARANJO MONOGRAM B MORICAL C MT. HOOD B NUSSERHILL C NARANJO MONONA B MORLEY C MT. OLIVE C MUSSEY B/O NARCIDSE MONONA C MORLEY C MT. VERNON C HUSSANG A/O NARCIDSEE		4/0
MONOCLINE C MORIARTY D MT. CARROLL B MUSSELSHELL B NARANJITO MONDGRAM B MORICAL C F MT. HOOD B MUSSERHILL C NARANJO MONDONA B HORLEY C MT. OLIVE C MUSSEY B/D NARCISSE MONDNAA B HORLING D MT. VERNON C HUSTANG A/D NARCISSEE		e
MONOGRAM B MORICAL C [MT. HOOD B MUSSERHILL C NARANJO Monona b Morley C MT. Olive C Mussey B/D Narcisse Monongahela C Morling D MT. Vernon C Mustang A/D] Narcidssee		Ð
MONDNA B MORLEY C MT. OLIVE C MUSSEY B/D NARCISSE Monongahela C Morling D MT. Vernon C Mustang A/D Narcodssee		c
MONONGAHELA C MORLING D MT. VERNON C HUSTANG A/D NARCODSSEE		c
		¢
	ε.	c
		e
MONROEVILLE C/DI MOROGCO B MUCKALEE D I HUZZLER D I NAREL		8
MONSE B NORONI D NUO SPRINGS C HYAKKA B/D NARGAR	•	8
MONSERATE C MOROP C MUDCO D MAKKA, D NARK		č
MONSERATE. THIN D & MORPH B/D MUCLAVIA B DEPRESSIONAL MARLON		Ď
SUFACE MORPILL B MORPAY D MARKAN TIDAL D MARKET		
		5
C Printing D France		6.
		8
	IE P	0
		0
MONTAUK CIHORSE DINUGHOUSE CIHVLREA CINARTA		D
MONTSÓRNE C I MORSET 8 I MUGNUT C I MYOMA A. I NARU		c

NOTES:

TWO HYDROLDGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Mod IFIERS Shown, E.g., Bedrock substratum, refer to a specific soil series phase found in soil map legend.

(210-VI-TR-55, Second Ed., June 1986)

Hydrologic soil groups for United States soils

NASER	а	NEHALEN. FLOOD	ED C	I NEWALBEN, HUCK	_	•			
NASH	9	NEHAR		I NEVALBIN. MUCK	Ð	I NIKAL	9		, D
NASHMEAD	9	I NEHAR . STONY	Ē	NEWALBIN. PONDER	o o	I NIKEY	6		c
NASHOBA	c	NEIBER	č	NEWALLA	5 U 0	NIKFUL NIKISHKA	0		8
NASHV ILLE	6	I NEICE		NELAPNA	č	NIKLASON	8	NORAD	8
NASHWAUK	с	I NEILION	Ā	I NEWARK	. ē	I NIKOLAI	8 0	NORBERT	D
NASKEAG .	с	I NEISSENBERG	c	NEWARK . PONDED		NILAND	č	NORBORNE	8
NASON	с	1 NEK IA	ç	HEWARK, PONDED.	- -	I NILER	r r	NORCAN	· C
NASON & GRAVELLY	5	NEKKEN	6	I CODE		NILRAP		I NORO I NOROBY	a
NASS	. D	1 REKONA	5	NEWAUKUM	. 8	NIMORO	e	NORDEN	8
HASSAU !	ç	NELDORE	Ď	E NEWA YOU	5	NIMERICK	č	NOROIC	a
NASSET NATAGA	A	I NELLA	8	I NEVBELL	8	I NEHNO	Ď	NORDICOL	. B
NATAL	A	NELLIS	8	I NEVBEPG	ð	NIHROD ·	- č	INDRONESS	8
NATANK	0	NELNAN	c	. I NEWBERG. WET	¢	NIMS	č	NORFOLK	8
NATCHEZ	С, В	I NELSCOTT	C	NEWSFPN	c	I NIMUE	6	NORFORK	D
NATCHITDCHES		I NELSE . I NELSON	8	I NEWBERRY	c	I NINCH	e	NOPGE	ě
NATHALE	č	I NEMADJI	ç	NEWAON	. e	T NINEKAR ·	0	I NOR GO	ō
NATHROP	ē	I NEWAH	e	I NEWCO	C	NINEMILE	0	I NORKA	9
NATHROP, NONSTONY		I NEMAH DRAINED	D C	I NEWCOME	A	NINEPIPE	-8	1 NOPKOOL	8
NATHROP, COBBLY	8	I NEHICO	D D	I NENDALE I NEWELL	F	NINEVEH	8	1 NORLAND	8
NATI	¢	NENOTE	Ă	I NEWELLION	Ð	I NINIGRET	8	1 NORMA	D
NATIONAL	з	NEMOURS	ĉ	I NEWF IELDS	D B	NICOELL NICOELL	c	I NORMA + DRAINED	c
NATKIM	3	I NENANA		NEWFLAT	Ď	I NIOTAZE	D	NORMANGEE	D
NATOHAS	. 8	1 NENNO	č	I NEWFORK	Ĕ	INIPE	С В	I NORMANIA	2
NATROY	Þ	! NEGLA	0	1 NEWFOUND	č	NIPINTUCK	0	I NOROB	ç
NATUPITA	8	NEGTOHA	8	NEWGLARUS	Ē	I NIPPT	5	NORREST NORRIS	C.
NÀUKATI Naumeurg	D	I NEPALTO	A	NEWHAN	Ā	I NIPSUM	č	NORRISTON	D A
NACING NACING	ç	NEPESTA	Ð	NEWHOUSE .	8	ARIN	a	I NORTE	ĉ
NAVACA	8	I NEPHI	c	I NEWKIPK	0	INTRAC	ē	I NORTE2	Č.
OLAVAN	0	I NEPONSET	. <u>c</u>	I NEWLANDS		INIRE	ē	I NORTH POWDER	č
NAVAN	-	I NEPPEL I NEPTUNE	8	NEWLANDS, JARH	Ċ	I NISENE		I NORTHBERG	č
NAVASAN		I NEPTUNE I NERESON	<u> </u>	NEWLIN	8	NISHNA	C/(DI NORTHCASTLE	· 5
NAVIDAD	â	NESETT	8	NEWNAN	-	I NISHNA. PONDED	0	I NOFTHCOTE	C/D
NAVINA	5	I NESDA	E	NEWNATA NEWPASS	S	NISHON	0	I NORTHDALE	ç
CVAN	0	NESHANINY		NEWPORT	c	NISQUALLY	- A	I NORTHFIELD	Ð
NAWNEY	ō	NESHOBA	č	I NEWRY		I NISULA	e	NORTHMORE	c
NAWT	D	NESIKA	8	NEWSKAH		I NITCHLY I NITTAV	8	NORTHRUP	C.
NAXING	8	I NESIUS	Ā	NEWSON	-	I NIU	0 Đ	NORTHSTAR	c
NAVE	¢	NESKAHI	8	I NEVSPOCK	8	INTULII	č	NOT THWATER	8
NAYPED	8	NESKOWIN	с.	NEWSTEAD	ē	I NEWANA	E	I NOPTON	870
NAVRIE	5	NESO	Ð	I NEWTON	A/0		č	NORTONVILLE	ç
NAZATON	5 1	NESPELEN	, C	I NEWTONIA	Ð	I NIX	D	NORWELL	c c
NEADSCO	е с I	NESS	0	NEWTOWN	- C	NIXA	· ē	NORWICH	0
NEPAGO	c i	NESSEL	e	NEVULM	8	NIXON .	B	NORWOOD	ē
NEBEKER	è i	NESTER	¢	NEWVIENNA	. 9 1		8	HOSRAC	ē
NEBGEN	i i	NESTUCCA	C/6		0 1			I NOTAL	D
NEBISH	8	NET	C .	I NEYGAT. I NEZ PERCE	C I	NOARK	5	NOTCHEP	8
NEBONA	õ	NETARTS	e	I NGARDMAU	C e	NOBE	C	NOTE	Ð
NECANICUM	8 1	NETCONG		NGARCOK	6 1	NCELE	ę	NOTHED	8
NECESSITY	c i	NETO	 B	NGATPANG	c i	NOBLETON NOBUCO	ç	NOTSPIER	D
NECHE	c i	NETGHÀ	A 1		- ¥ - 1	NOBSCOT	e	NOTTAVA	. e
NECUNDA	C I	NETRAC		NGEREUUL		NGBUCK	ĉ	NOTTER	e.
NECTAR	c I	NETTLES	Ū į	NGERUNGOR	i i	NOCKEN	с с 1	I NGTUS I NGTUS, DRAINED	ç
NECA	<u>c</u> 1	NETTLETON	c (NIAGARA	ē i	NODAWAY		I NOVOVE	8
NEDERLAND	8	NEUBERT	Ð (NTAPADA	e i	NODEN	8.	NOVACAN	0
NEEDLE PEAK		NEUNS	C I	NIAPT	ΕÍ	NODINE	8	NOVARK	8
NEEDLE PEAK, LOANY	6	NEURALIA		N1285	- e - 1	NOELKE	Ď i	•	Ď
SUBSTRATUN		NEURALIA, SANDY	. 8 1	NIBLEY	C 1	NCGAL	ंटां	NOVATO	ō
NEEDLE PEAK.		SUBSTRATUM NEUSKE	_ !	NIBSCN	C	NCHILI	0	NOVINA	e
DECASIGNALLY	1	NEVADANILE	8 1	NICANOP	0 1	NGKA5 IPP I	8701	NOWATA	
FLOCOED	- i	NEVADOR		NICHOLFLAT		NOKAY	- C - J	NOWEN	8/0
NEEDLETON	e i	NEVAPC		NICHOLIA		NOKHU	⊂ { {	NOWBY	6
NEEDLEYE	•	NEVAT		NICHOLSON		NOLAH	- A		R
NEEDMORE		NEVEE		NICHCLVILLE		NOLICHUCKY		NOYES	·C/D
NEELEY		NEVERSINK		NICKEL		NCLIN MOLO	- •	NOYO	c
NEEN		NEVILLE		NICKIN		NCLTEN		NOYSON	c
NEEN. HET		NEVILLE. WET		NICKSVILLE		FOMARA			6
	8	NEVIN	9 1	NICODENUS		NONE		NUBY DOALWER	0.
		NEVINE	•	NICODEMUS. FLOODED		NOMIE		NUBY. DRAINED NUBY. PROTECTED	ζ.
		NEVKA		NICOLAS		NONDALTON		NUC PROTECTED	ç
HEECODALS		NEVOYER		NICGLLET	- 1 - E	NONOPAHU			C
		NEVTAH	C I	NIDO	•	NONPAREIL		NUCLA	8
NECLEN		NEVU		NIELSEN		NCOK		NUECES	e C
10		NEW CAMORIA		NIGHTHAWK		NOUKACHANPS		NUEVA	8
	3	NEVALBIN	e/01	NIHILL	e (NOURSACK		NUFF	č
0765: THO HYDROLDG	10 00	1		•	-	· · · · · ·			- -

NOTES: THE HYDROLOGIC SOIL GROUPS SUCH AS BYC INDICATES THE ORAINEC/UNDRAINED SITUATION. Modifiers shown, e.g., redrock substratum, refer to a specific soil series phase found in soil map legend.

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Hydrologic soil groups for United States soils

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NUGENT	A I DCONALUFTEE	8	I OLD CAMP	D		•	·	
NUKRUM				-	OPENLAKE	Ď	I OSAKIS	5
	- ,	c	1 OLDENBURG	· 8	I OPEQUON	c	1 OSBGRN	c
	B OCONTO	8	L OLDHAN	Ç/(DI OPHIR	c	I DSPORN. HODERATEL	YO
NULLIGAN	S LOCOSTA .	0	I OLDS	o o	I OPINIKAG	Ď	WET	
NUMA	a locaueoc	A 1	1 OLDSFERRY	č	OPLIN	-		
		·				¢	DSCAR	D
		9	OLDSMAR	B/C		0	1 OSCURA	c
	D HODERATELY WET		OLDSHAR.	D	DPPID. STONY	·c	1 056000	c
NUNICA	C OCRAÏG	D	1 DEPRESSIONAL		DQUAGA	c	I OSHA	8
NUNN	C OCTAGON		DLELO	. 8	I COUIN	Ē		
NUNN. HODERATELY	I OCTAVIA	ā					E OSHAWA	Ð
VET			OLENO	D	OPA	c	I OSHKOSH	c
	DDAS	D	I OLENTANGY	A/C	DRACLE	Ð	OSHONE	D
	CODELL	8	I OLEQUA	8	I ORAGRAN	D	I OSHTEKO	8
NUPART	D GOEM		I OLETE	ć	ORAID	č	I OSTER	-
NUPPER			OLEX	Ē				A/0
NURKEY		-	,	-	DRAN	8	1 05170	. с
-	, i energent	с.			ORANGE	0	I OSKA	с
NUSS	D ODERMOTT. STONY	8	OLGA	C C	DPANGEBURG	e	I OSMUND	8
· NUTALL I	CDESSA	Ð	1 01 1	· · 6	CRANGEVALE		1 050	č
NUTIVOLI	1 ODIN	ċ	I OLIAGA		DRCAP	č		
NUTLEY		ō.		-			l OSCEB	D
	•	-	I GLICAL	e	DRCAS	D	I OSOLL	o
		6	LOLIN	6 -	ORCHARD	8	I DSORIDGE	9
NUTRIOSO	COONNELL ·	с	CLINDA	e 1	ORCKY	8	I OSDITE .	D
NUVALDE	I OELOP	8	I DLIPHANT	. 🔳	I GRD		OSSIAN	
NUYDBE			I OLIVENHAIN	. 0	DRONA			9/6
NYALA	I DESTERLE	č		-		D	OSSIPEE	· 0
-		-	DLIVIER	c	ORDNANCE	с	I OST	Θ.
	DFFENBACHER	c	I OLJETC	A.	ORDWAY	D	I OSTLER	c i
NYJACK C		5	OLLEI	D	I OPEANA	6	OSTRANDER	Ē
NYNORE	CGAPTY	c	OLLIERIVAS	D	DPEANNA	: 6	I CSWALD	
NYSERVA		- a/b		Ď		-		. <u>C</u>
NYSSA				-,	OREJAS	Ċ	I OTANYA	8
		C/D		. 8	ORELIA	Ð	I DTEEN	c
NYSSATON B	OGILVIE	5/D	L OLMOS	C	ORELLA	. D	1 OTERO	6
NYSWONGER D	OGLALA ·	Ð	I OLMSTED	· 2/0	OFENDA	'n.	I OTHELLO	c/0
Q'BRIEN 8	IOGLE		CLNES		GRENEVA			
O'NEILL B	1 OGLESBY	D	DUNEY					.*
JAHE B	OGRAL	-		E 1	CRFDRD	B	I OTISVILLE	▲
		•	OLDAVA	18		D	I DILEY	6
CAK GLEN B	I DHACD	<u>, C</u>	I GLOKUI	C (ORICTO ·	8	1 01040	D
GAK GROVE B	DHANA	C I	I OLOHOUNT	ंटा	CFIDIA	D	OTOBLE	ċ
OAXALLA . 6	I DHIA	A	OLOMPAL I	Dİ	ORIF	Ā	IOTTER	
GAKBORG C	1 DHOP	c		ē i	ORIGD			BZD
DAKDALE	OHSCOW		,				OTTERHOLT	3
		D . 1		₽· }	ORINDCO	C.	DTTERSON .	A
	OIDEM	A		C 1	- CR10 -	870	OTTMAR	в
OAKES 5	GJATA .	DI	OLSON	. D	OFION	C i	OTTOKEE	
OAKHILL 8	CJEBWAY'	c i	OLTON	c i	ORITA		OTTOSEN	g.
OAKHURST D	1 0.1170	ēi	OLUSTEE	. 8/01		-		
DAKLAND C	OJITOS		,	,		C I	OTTUNWA .	· D .
			GLYIC .	a (ORIZABA. DRAINED		OTWAY	D
	DKANOG'AN	- Ø 1	CLYMPIC	∴ e (DRLA	9 · I	OTWELL	c
OAKLIMETER C	OKATON	υj	OMAD I	e 1	ORLAND	. B (OTWIN	c
QAKVILLE A	DXAW	o i	GMAK.	i o i	ORLANDD			
- 0ÅKVODD '8	OKAY	i i	OHEGA	i i i	DRLIE			c
DANAPUKA B	OKEE					C I	OUARD	C
		6 1	OMENA		ORMAS	. e t	OULA	0
DASIS S	I OKEECHOBEE	_8/0j	Q#10		ORMISTON	C 1	OVPICO	с
DATLANDS B	OKEELANTA	8/01	OMNI	0 1	ORMSBY	C I	OURAY	8
DATHAN - 8	OKEELANTA.	0 1	OMPO	è i	ORNSAUN	ē i	OUSLEY	č
CATUU D	DEPRESSIONAL		OFSTOTT	- •				C
OBAN' C	CREELANTA . TIDAL	. !		<u>c</u> - 1	ORD FIND	e I	CUTERKIRK	9
		0 1	BPULGA	c . I	DRG GRANDE	- D - F	OUTLET	c
	OKEELANTA, FLODDED		QNA	£/0	OPOGNEN	DI	OVTLOOK	D
05ARO 9	DKEETEE	οţ	GNAH IA	9	ORONOCO	` B	OUTLOOK. DRAINED	c ·
DBEN Ć	OKEMAH.	c i	DNAQUI	οi	ORDSE	ē i	OVALL	ř
OBISPO O	I OKIOTA	ōi	ONARGA	i i	OROVADA	EI	OVACL OVAN	2
OBRAST D	QKLARED							v
	• • • • • • • • • •		ONASON	<u> </u>	ORPARK	C 1	OVANDO	
	OKLARK	6		0	OPPHA .	A. I	DVERGAARD	с
OBSCURITY B	OKLAWAHA "	8/D	ONAWAY	e	ORPHANT	DI	OVERLAND .	č.
OBSERVATION C	1 OKO	οj	ONDAWA		ORR	. B. I	OVERLY	č
OSURN D	OKO. STONY	ςí	ONECO					-
DCALA C	OKOBOJI	1.1			ORR, GRAVELLY	- <u>P</u> - <u>P</u>		D
			DNEIL		SUBSTRATUM			8
•	OKOBOJI, PONCED				ORRUB	ΡI	0110	c
	. CKOLONA	D	DNITA	ΓI	ORRVILLE	. c i		9
6CC0QU N B	I D REEK	Dİ	NITÉ	6	O SA			
0CCUM ' 8	OKRIST	a i	ONKE YO		ORSET			c
DCEANET D	OKTAHA							D
		10 I	ONOTA		ORSINO	A	OWEN CREEK	¢ .
	OKTIBBEHA		ONSLOW	81	ORTEGA	A 1		0
OCHEYEDAN B	OLA	 I 	ONTARIO		ORTELLO		<u>-</u>	.
OCHLOCKONEE 8	L OLAA	Ă İ	ONTEORA	- •	OPTING			
осно о	OLAC		ONTKO		· .	-		8
		-			ORTIZ	-		0
	ULANCHA	e j	ONTONAGON		ORTON	6 I	OVLCAN	8
	DI DLANO	e	ONYX	6 1	ORWASH			e
0CIE C	I GLANTA	8)	OOKALA		ORWET			<u>e</u> .
DCILLA C	1 OLASHES	8 1	DOSEN		ORWIG			
OCKLEY	I GLATHE							e
	A MERINE .	0 1	OPAL	· D' 1.	CP¥COD	8 1	0X80¥ (¢
		•						
0COEE 8/1	I OLBUT		OPEL IKA		DSAGE			Ď

NOTES TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICAT THE DRAINED/UNDRAINED SITUATION. HODIFIERS SHOWN, E.G

BEDROCK SUBSTRATUM. REFER TO A SPECIFIC SOIL SERIES PHASE FOUND IN SOIL HAP LEGEND.

(210-VI-TR-55, Second Ed., June 1986)

OXENDINE	0	PALIX	e	PAPALOTE	c	PATIO		• I •••	_
OXERINE	c	PALLS	c	PAPTNEAU				C PELEE	. 0
GX FORO	D	PALM BEACH	Ă	PAPOGSE	¢.	I FATIT CREEK	-	B I PELELIU .	D
DXHEAD	ā	PALMA			e	PATNA	e	B PELHAM	870
OXLEY .	+		8	PAPA	8	PATOS		I PELIC	0
	ç	PALMAR	C	PARA CHUTE	8	[PATOUTVILLE	6	PELION	9/D
OXWALL .	- 0	FALMAREJO	¢	PARACISE '	C	PATRICIA	.e		
ÓYHU T	c	PALMER CANYON	ε.	I PARADOX	E	PATRICK			A .
OYLEN	c	PALMERDALE	е	PARANAT	č	PATROLE			8/0
OZA41S	0	PALHETTO		PARANAT DRAINED			c		8
0ZAN	D	PALHETTO.			. 2	PATTANI	0	I PELLICER	D
OZAUKEE	c.		υ.			PATTEE	8	PELONCILLO	· D
OZETTE		DEPRESSIONAL		PARASOL	5	I PATTENBURG	8	I PELTIER	ē
	, c	I PALMICH	Ð	I PARCELAS	0	PATTER	B		'è
CZIAS	0	1 PALMS & OVERWASH	A/0	FARCHIN	0	PATTERSON	ē		-
PAAIKI	9	I PALMS MAAT>50	A/0	H PARCHIN. COOL	č	PATTON			8
PAALOÀ	8	I PALMS - MAATCSO		PAPDALOE	ē			10 PEMENE	8
PAAUHAU		PALPS PONDED		I PARDEE	-	PAUL	5	I PENI	c
PASLO	D	DALMS. SANDY			6	PAULDING	D	I PENA	a
PACHAPPA	ă		A70	[PARDEEVILLE	e	PAULINA	0	PENAPON	8
PACHECO		SUBSTRATUM		I PAREHAT	с	PAULSON	. 9	PENASCO	Ď
	¢	PALMS. GRAVELLY	A/D	PARENT	2/0			PENCE	-
PACHECO, DRAINED		SUBSTRATUM		I PAPEATO	э	PAUMALU	8		8
PACIFICO	c	1 PALHYRA	е	I PARIETTE	ē			PEND OREILLE	e
PACK	c	I PALO	Ď	PARISA		PAUNSAUGUNT	D	I PENDANT	5
PACKARO	3	PALODURO	ě		-	PAUSANT	B	PENDARVIS	С
PACKER				PARISIAN	D	PAUWELA	. e	PENDEN	8
PACKHAM		PALOHARIN	e	I PARKALLEY	8	PAVAIAL	· c	I PENCER	č
	9	PALOMAS	9	PARKAY	e	PAVANT	Ċ	1 PENDERGRASS	õ
PACKTRALL	c	PALONING	0	PARKDALE	P :	PAVER	8		
PACKWOOD	D	J PALON	8	DARKE	в	PAVILLION	ē	PENDLETON	c
PACO	c	I PALOPENTO	ò	PARKER				PENDPOY	D -
PACOLET	9	I PALOS VERDES	ŏ	PAPKFIELD		PAYO.	e	PENELAS	Ð
PACTOLA		PALOUSE			C 1	PAVOHROO	e	I PENEY	0
FACTOLUS	Ă		-	PAPKHILL	8/C)	PANCATUCK	· D	I PENGILLY	5/0
PADDOCK		PALSGROVE	ð	PAPK INSON	- E	PAWHUSKA	. 0	1 PENGRA	c
	C/0		6 1	PARKS	e i	PAYLING	ē	PENINSULA	
PADEN	- C	PAMISON .	8	PARKVIEW	e 1		Ď	I PENISTAJA	. 6
PADILLA	c	PAMLICO	D	PARKVILLE	Ē	PAXICO			9
PADINA	8	PANGA .	e i	PAPK YOOD	8/01		8	I PENITENTE	Ð
PADRES	8	PARSDEL	Ē.	FARLEYS			c	PENLAW	с
PADRONES					- B - 1	PAXVILLE	8/	D1 PENN	c .
PADUCAH	e i		- e	PARL IN	C I	PAYETTE	8	PENNEKAHP	*
PADUS		PANA	e	PARLO	e j	PAYMASTER	8	PENNELL	Ð .
	르니	PANAEWA	D [PAFMELE	C 1	PAYNE	ē	PENNEY	
PAESL	8	PANAK		PARMELOW	c i	PAYNECREEK	ē	PENNICHUCK	
PAGAR I		PANAMA	3	PARMENTER	ē į		õ		8
PAGÉSROOK	· D	PANAMINT	- 5 j	PARMLEED	c i		-	PENNSUCO	e
PAGINA	c i	PANASOFFKEE	ČZO L			PEACHAN	D	PENO	c
PAGODA	c i	PANCHERI	5 1		C/01		D	PENOYER	5
PAGOSA	- či	PANDO		PARQUAT	e	PEARL	8	PENROSE	0
PAGUATE	či		9 1	PARR	8	PEARL HARBOR	Ð	I PENSORE	D
PAHAKA		PANDDAH	C I	PARRAN	e	PEARSOLL	0	PENTHOUSE	ō
	• • I	PANDOPA	8/01	PARRISH	c i	PEASLEY	_	PENTZ	ő
PAHOKEE	8701	PANOURA	· e	PARRITA	0 i	PEASPEAR	D		-
PAHRANAGAT	c 1	PANE	e 1	PARSHALL	i e	PEAVINE			*
PAHRANAGAT, VERY	0 1	PANGBURN	ō i	PARSIPPANY			c	PENNODD	A
POOPLY DRAINED	i	PANGUITCH	- 1	PARSONS	C/D]		D.	PENZANCE	с ,
PAHRANGE	c i	PANHANDLE			0	PEEBLEPOINT	C.	PEOGA	c
PAHREAH			e 1	PARTLOW	C	PECATONICA	e	PEON	0
PAMROC	<u> </u>	PANHILL	B [PARTCY	0	FECKHAN	c	PEON. DRAINED	č
	o i	PANEN	e	PTELET .	c i	PECKISH	ō.	J PEOLA	
PAHRUMP	C I	PANIOGUE	e j	PARTRIDGE	A J	PECOS	Ď	1 PEONE	Ċ
PAHSIMEFOI	8	FANIOGUE, WET	ςι	PASAGSHAK	0 1		-		D
PAIA	a i	PANITCHEN	- e i	PASCO	0 1	PECTURE	ę	PEONE, DRAINED	¢
PAICE	ō i	PANKY	-			PEDCAT	D	PEORIA	0
PALLO				PASCO. DRAINED		PEDEE .	c	I PEGTONE	8/0
PAINESVILLE		PANNOD	c i	PASO SECO	b I.	PEDERNALES	¢	I PEPAL	8
	ςι	PANOCHE	e i	PASQUETTI	0 1	PECIGO	č	1. PEPDON	-
PAINT	0	PANOCHE .	C 1	PASQUE TT I.	c i	PEDLEFORD	č		C
PAISLEY	- D _ J-	SALINE-ALKALI.	i	PODERATELY WET	-	PEDOL I		PEPPER	D
PALT	é î	WET	. i		- f		e	PEPTON	D .
PAJARA .		PANOLA	° 1	PASQUETTI. ORAINED		PEDRICK	19	PEQUANING	A
PAJAR I TO			•	PASQUOTANK	8/01	PEDRO	c	I PEQUEA	9
PAJUELA		PANOR			0	PEEBLES		} PEOUOP	e .
PAKA		PANOPAMA			c ł	PEEKO		PERALTA	č
		PÁNGZA	e . i			PEEL		PERAZZO	
PAKALA	1 6	PANSEY				PEELER			8
PAKINI	8 j	PANTANO						PERCETON	8
PALACIOUS		PANTEGO				PEERLESS		PERCHAS	0
PALAFOX		PANTERA				PFETZ	A	PERCILLA	0
PALANUSH						PEEVER	C I	PERCIVAL	č
PALAPALAI		PANTHER			C I	PEEVYWELL		PERCOUN	è
PALATINE		PANTON	D . -			PEGLEG		PERCY	
		PAGLA	A - 1 1			PEGLER	- •		8/0.
PALAU	9° 1	PAOLI		• • • • • • • • • • • • • • • • • • •				PERDIN	c
PALAZZO	c i	PAPAA				PEGRAM	8		B/D
PALODONE		PAPAC				PEKAY		PERELLA	8 .
PALINOR				PATHEAD C		PEKIN	C 1	HODERATELY WET	
PALISADE		PAPAGUA		PATILLAS E		PELAHATCHIE		PERHAN	. 8
	8 Į I	PAPAI	. ≜ }:₽	PATILO		ELAN		PERICO	8
					• •	Contract of the second s	- 1		

TWO HYDROLOGIC SOLL GROUPS SUCH AS 8/C INDICATES THE DRAINED/UNOPAINED SITUATION. Modifiers shown, e.g., gedrock substratum, refer to a specific soll series phase found in soll map legend. NOTES:

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			•							
	PERIDGE	8	I PHILO	-	t other is a	_				
	PERILLA	8	I PHILOHATH		PINELLAS	8	VD PLASKETT	C	I POKEGEPA	е
	PERINOS	č	1 PHING	D	PINELLI	9	PLATA	8	POKEHAN	č
	PERITSA			,Þ	PINE TOP	· C	PLATE -	Ē	I POKER	
	PERKINS	ç	PHIPPS	c	I PINETUCKY	P	PLATNER	č	POKERGAP	ç
		· C	I PHLISS	Ð	PINETUCKY, GRAD	ED C				9
,	PERKS	. A.	I PHOESE	8	PINEVAL			· C	I POXEY	Ģ
	PERLA	°C.	L PHOENIX	Ð	PINEVILLE			· 8	I POLACCA	÷ ¢
	PERLOR	0	I PHÝS			e		8	- I POLALLIE	ć.
	PERMA		PIANKESHAN		PINEZ	5	1 PLATTE. VET	b	POLAR	
	PEAN			-8	PINGREE	0	PLATTE. CHANNELE	DO	POLATIS	
	PERNITAS	8	PIASA	D	P INHOCK	В.	DI PLATTVILLE	8		¢
		c	PIBLER	Ð	PINICON	. 8	1 PLAYCO	e		
	PERNOG	D	I PICABO	Ċ	PINITOS	P	PLAYER	_	POLE	Ď
	PERNTY	0	I PICACHO	ć	PINKEL			D	Í POLECREEX	D
	PERQUINANS	D	PICANTE	D.	I PINKHAN	с	PLAYMOOR	C/	DI POLELINE	6
	PERREAU	8	I PICAYUNE	a			I PLAZA	c	I POLEPATCH	Ă
	PERRIN	ē	PICEANCE		PINKSTON	8	I PLEASANT	c	I POLEY	ĉ
	PERRINE	-			PINNACLES	· C	I PLEASANT, PONDED	Ď	I POLEY. COBBLY	
	PERRINTON	D	PICKAWAY	c	I PINNEBOG	· A/	DI PLEASANT GROVE	ē	I POLICH	5
		¢	PICKENS ·	Ď	PINNCBIE	5	I PLEASANT VALE	Â		c
	PERRY	·D	PICKETT	c	PINC	č	PLEASANT VIEW	-	POLKING	D
	PERRYPARK	· · 🖪	I PICKFORD	ð	I PINCLE			а	I POLLARD	C
	PERRYVILLE	8	PICKNEY	-	DI PINON	8	- PLEASANTON	в	I POLLASKY	` B
	PERSANTI	ċ	I PICKNEY. FLOODED			0	I PLEDGER	Ð	POLLUX	ē
	PERSAYO			0	PINONES	c	I PLEGOMIA	D.	I POLLY	
	PERSHING	-	PICKRELL	ם	PINRIDGE	È	I PLEINE.	D		В
		ç	PICKTON	A	PINSPRING	· c	I PLEIDVILLE		POLC. HODERATELY	c
	PERSIS	•	PICKUP	· C	P INTAS	ē	I PLSITC	C	SLOW PERM	
	PERT	D	PICKWICK	8	PINTLAR			c	I POLO. HODERATE	e
	PERU	Ċ	1 PICO	5	PINTO	. 8	PLEVNA	· C	1 PERMEABILITY	
	PERVINA	8	I FICOSA	-		C ·		e	1 POLONIO	
	PERWICK	č		c	PINTURA		1 PLITE	Ð	1 POLSON	
	PESCADERO		PIDCOKE	D	I PINTWATER	0	I PLOME	ē	I POLUM	5
	· • -	D	PIDINEEN	D	I PIOCHE	່ວ	I PLOYER			8
	PESCAR	c	PIE CREEK	D	I PIOPOLIS	-		¢	POMADE	0
	PESHASTIN	. B	I PIEGON	-	I PIPELINE		CI PLUCK	c	POMAN	с
	PESHEKEE	·D	I RIERIAN	ě		· C	I PLUMAS	8	E POMAT	ć
	PESMO	č	PIERKING		1 · · · · · · · · · · · · · · · · · · ·	c	Í PLUMMER	870	POMAT. DRY	
	PESHCRE			D	I PIPESTONE	e	PLUSH	e	F POMELLO	5
	PESO	ç	PIERPONT	C.	PIPPIN		' PLUTOS	8	POMERENE	c
		, C	PIERRE	D	PIRD	8	PLYMOUTH	e		с
	PESOWYO	c	PIERSONTE		I PIPODEL	P	PRALE	- A	POMFRET	
	PETACA	0	PIERZ	8	I PIROUETTE			c	PCM0	B
	PETAL	c	PIETOWN	ē		. 0	POARCH .	8 .	POMONA	8/0
	PETAN		I PIGTAIL			в	POSER -	c	I. POMONA.	0
	PETEETNEET			C	PISGAP	c	1 POCALLA		PEPRESSIONAL	
	PETERMAN				I PISHKUN	8	POCAN	6	POPPANO	
		· D	I PIKE	8	1 PISMO	D	I POCASSET			8/0
	PETERMAN, SANDY	c	I PIKEVILLE	8	I HIT	õ	POCATELLO	ē		0
	SUBSTRATUM,		I PILABO	e	I PITCHER	-		e	DEPRESSIONAL	
	ALKALI		PILCHUCK	Ē		8	PECATY	D	POMPANO. FLOODED	D
	PETERS	D	PILCHUCK.		91700	٥	POCKER	C	POMPEII	Ð
	PETERSON			*	PITNEY	<i>c</i> ,	POCOLA	0 1	POPPONIO	č
	PETESCREEK . STONY		PROTECTED		I PITTHAN	с	POCOMOKE, PONDED	8/01		
	PETESCREEK.		PILINE	D	I PITTSFIELD	e	POCOMOKE, ORAINED	8 1		6
		C 1 (1 PILLIKEN	19	PITTSTOWN	ç	I PCCONO		POMPOY	¢
	GRAVELLY		I PILLOT	8	PITZER	č		e	PONCA	8
	PETRIE	D I	Í PILLSOUPY	c	PIUTE		PCDEN	e	PONCENA	io -
	PETPOLIA	C/21	PILOT PEAK	ē	PIVOT	Þ	FOCHOR	- C	PONCHA	
	PETROS		PILOT ROCK	-			P000	Ŀ j	PONCIANO	c
	PETSPRING	õi		C ·	PIXLEY	D	PCDUNK .	8 1	POND	ò
	PETTICOAT			D		- 8	PCDUS	c i	POND CREEK	-
	PETTIGREW			8)		Ð	POE	èi		8
			FILTZ	C `	PLACENTIA -	o i	POGAL		PONDER	D
	PETTUS	- C	PINA	в	PLACERITOS.	, j	POGANEAB	<u> </u>	PONIL	D
	PETTY	a (PIMER		SALINE. DRAINED			C I	PONINA	D
	PEVETO	A 1	FINAL	0		!	POGANEA8. CLAYEY	D †	PONOZZO	c
	PEWAND.	- czo i			PLACERITOS.	< I	SUESTRATUM	1	PONTO	B
	PEYTON	8 1	PINALT				POGANEAB. SALINE	Dİ	PONTOTOC	9
	PFEIFFER			ę	PLACERITOS.	8 1	PCGANEAB. HIGH	DI	PONZER	
	PHAGE	8	PINATA	- C	MODERATELY WET	1	RAINFALL		POOCHAM	D.
		9	PINAVETES	A 1	01 4 4 4 B 1 B 4 4 4 4 4 5 5 5	.ci				8 '
	PHALANX	0' 1	PINBIT	8 1	PLACERITOS.	ei	POGANEA8. STRONGLY		POOKU	е .
	PHANTON	C 1	PINCHER		, CFAINED		SAL INE .	I	POOLER	0
1	PHARD	e i	PINCHOT		PLACID		POGANEAB.	0 1	POOLEVILLE	č
,	PHARR						FPEQUENTLY	1	POORCAL	e
	HEBA	či		c	PLACID.	0	FLOODED	ì	POORPA	8
	MEENEY				DEFRESSIONAL'	1	POGANE AB .	οi	POOSE	_
	HELAN	<u> </u>			PLACID. FREQUENTLY	0 1	SALINE-ALKALI			D
		0 1	PINEAL	1 9		- I			POOTATUCK	e
	HELPS	5 }	PINEBUTTE		PLACITAS	•	**		POPASH	Ð٠
	HERSON							9		8
F	HIFERSON		PINEDA		PLACK		PCIN			č ·
	HILBON				PLAINBO	A [Datum du ann	- •	666) C	
	HILDER	•	PINEDA.	0 (PLAINFIELD					C/D
		0 1	DEPRESSIONAL	ł	PLAISTED	•	0 0 0 x x x			c
P							· • • • • • • •	ς (POPOSHIA	8
P	HILIPPA	C I	PINEDALE	B	PLANK	n 1			•	
р Р	HILIPPA HILIPSBURG	C I			PLANK PLANK		POINT ISABEL		POPOTOSA	
	HILIPPA HILIPSBURG HILLCHER	C 8.	PINEGUEST	B	PLANKINTON	οı	POINT ISABEL POISONCREEK		POPOTOSA	а,
	HILIPPA HILIPSBURG	C 8 8	PINEGUEST	B ā t		0 E	POINT ISABEL POISONCREEK	0 1	POPOTOSA POPPLETON	

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDPAINED SITUATION. Hodifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found NOTES:

TH LEGEND

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				•					
POQUONOCK	·c	PREMIER		I PUNCHAQVL	Ď	I QUINLIVEN	2		
PORFIRIO	c	PRENTISS			č		¢	RAHROD	с
PORRETT	0		Ĩ				B/(D
PORRONE	6	PRESHER	ē		-	QUINNEY	C	RAMSDELL. DRAINE	50 C
PORT	. a		č		<u>A</u>	QUINTANA	8	I RAMSEY	Ð
PORT SYRON	8	PRESTON	, j		Ę,	1 GUINTO	. 0	RAMSHORN	9
PORTA GE	Ď		Ē		87		ç	RANA	D
PORTAGEVILLE	۰.	I. PREY	C		8	- QUITERIA	8	I RANCE	c
PORTALES		PRICE			8	I QUITHAN	C	RANCHOSECO	D
PORTALTO	ä	PRIDA	e		¢	QUIVERA	c	RANDADD	· c
PORTERFIELD	č	PRIDA	4		c	QUONSET		PANDALL	ō
PORTERS			0		Ð	OUDPANT	Ð	I RANDCORE	Ď
PORTERVILLE	5	PRIESTLAKE	5	PURETT	8	OUDSATANA	D	RANDHAN	0
PORTHILL	· D	I PRIČTA	D	PURGATORY	c	RABBITEX	6	RANDCLPH	č
PORTIA		PRIH	D	PURNER	D	RADER	ē	I RANDS	
	ç	PRIMEAUX	c	I PURDE	. D	AADIDEUX	8	RANDSEURG	ç
PORTINO	c	PRIMEN	0	I PURSLEY	5	RABUN		1 RANGEE	Ð
PORTLAND	D	PRINGHAR	5	PURVES	Ö	RACE	8		0
PORTHOUNT	8	PRINCETON	8	I PUSHHATAHA	č	RACINE	9	I RANGER I RANPUEF	ç
PORTNEUF	8	PRINEVILLE	c	I PUSTOI	Ē	RACKER	-		D
PORTOLA	8	PRING	8	PUTNAN	ō	1 RACOMBES		RANSLO	D
PORTSHOUTH	đ/	D PRINGLE	Ð	PUTNEY		I RACOON	e	RANSOM	e
PORUM	D	- PRITCHARD	ċ	PUTT	č	I RAD	C/D		B
POSANT	D	PRITCHETT	·ē	PUTTSTER	č		8	RANTOUL	0
POSEN	8	PROCHASKA	-		-	RAD. LACUSTRINE	C	RAPATEE	D
POSEY	8	PROCTOR	6	PUU OPAE	A	SUBSTRATUN	1	RAPELJE	9
POSEYVILLE	c	PROGRESSO	ē	PUU PA	-	1 PAD + FLOODED	¢	RAPH	е
POSITAS	Ď	1. PROMISE	ō		A	I RADOLE	8	RAPHO	e
POSKIN	ç	I PROHO	Ď	PUU PA. NONSTONY	•	RADER	0 [RAPIDAN	e
POSO	ē	PRONG	c		ç	ADERSBURG	. 8 1	RAPLEE	ē
POSOS	č	PROPHETSTOWN	-	PUVONE	-	PADFORD	8	RAPPAHANNOCK	Ď
POST	õ	I PROSPECT		DI PUYALLUP		I RADLEY	8	RAPSON	
POTANUS		PROSPER	8	PYOURN	-	RADNOR	i ci l	RAROEN	è
POTCHUB	č	PROSSER	8	PYLE	8	Î RAFACL	Ð		è
POTEET	č		c	PYLON	D	RAFTON	0 1	RARITAN	č
POTELL	8	PROTIVIN	ç	PYOTE	- A	RAFTRIVER	ē i	RASEAND	ē
POTH		I PROUT	c	PYRAPID	D	RAGLAN	8 1	PASILLE	8
POTLATCH	ç	PROUTY	c	PARMONT	0.4	PAGNAR	8 1	RASSER	6
POTOHAC	C .	PROVIDENCE	c	I PYRMONT. SEDROCK	C 1	AAGNEL	8 1	RASSET	e
POTOSI	A	PROVIG	c	I SUBSTRATUM	, i	RAGO	či	RASTUS .	
		PROVO	0	PARELL -	D I	RAGPIE	õi	RATAKE	. c
POTRATZ	¢,	PROVO BAY	D	GUAFENO	ci	RAGSDALE	8/0		D
POTSDAM	c	PROW	Ð	QUAKER	c i	RAGSDALE. OVERWAS		RATHORUM	S
POTTER	¢	PRUDY	8	1 QUAKERTOWN	ē i	RAGTOWN	Γ° Ι		8
POTTINGER	8	I PRUE	8	1 QUAM	e.oi			RATLAKE	D.
POTTS	8	PRUITTON	8	I QUAMON	A 1	RAHN		RATLEFLAT	8
POTTSBURG	8./0	PRUNIE	ø	GUANAH	. e i	RAMWORTH	i ⊆ I	RATLIFF	8
POUDRE	· •	PRYOR	c	I QUANDER	e 1	RAIL	. 9	RATON	D
POUJADE	D	PSUGA	8	J QUANTICO	8 1		D	PATSOW	¢ (
POVLSBO	D	PTARM I GAN	Ē	QUARLES		RAILCITY	A I	RATTLEP	D
POUNCEY	Ð	I PUAPUA	ō	I QUARTZBURG		RAENBOW	C	RATTO	¢.
POVERTY	D	PUAULU	Ĩ.	QUARTZVILLE	<u> </u>	RAINEY	c ()	RATTO. STONY	D
POVEY	8	J PUCHYAN	ê	I QUARZ	a 1	RAINLER	C I	RAUD	c
POWDER		PUDDLE	ě		<u> </u>	RAINO	0 1	RAUGHT	6
POWDERHORN	Ē	PUERCO	ō	QUATAMA	C I	PAINS	e/01	RAUVILLE	D
POWDERWASH	č	PUERTA	_	I QUAY	8 1	RAINS. FLOODED	D]	RAUZI	e
POVEEN	č	PUERTECITO	D.	I QUAZO	D	RAINSBORG	C I	RAVALLI	õ
POYELL	č	PUETT		QUEALMAN	C I	PAINSVILLE	` e	RAVALLI. BEDROCK	Ā
POVER		PUFFER	D	QUEALY	D'	RAIRDENT	. 8 1	SUBSTRATUM	-
POWERLINE	č		٥	QUEBRADA	. 🤇 🔳	RAISIO	C I	RAVEN	A
POWLEY		PUGET	D	I QUEENY	D]	RAKANE		RAVENDALE	Ê.
POWMENT		PUGET. PROTECTED	, C	I QUEETS	8	RAKE		RAVENELL	D
POWWAHKEE	<u>c</u>	PUGSLEY	C .	OUEMADO	C I	RAKIED		RAVENNA	
	. • [PUHI	8	QUENZER		PALEIGH		RAVENSVOOD	ç
POWWATKA	. < 1	PUHIMAU	D	QUERC	÷ ,	RALLOD			c
POY	D.1	PUICE	c	QUERENCIA		PALLS		RAVIA	c
POYGAN	D \$	PULA	c			RALPH		RAVOLA	8
POYNOR	8	PULANTAT		QUICKSELL		RALPHSTON		RAWAH	c
POZO	c i	PULASKI						9AWC	c ·
POZO BLANCO	8 i	PULCAN			-	RALSEN		RAWLES	8
PRAG		PULENU				RAMADERO	•	RAVLINS	8
PRAIRIEVILLE	i i			GUIDEN		RANGLA		RAVSON	8
PRAHISS	. či			QUIENSABE	C .	RAMBOUILLET	8 8	AWSONVILLE	č
PRATHER			0		C 1	RAMELLI		AYOURN	0
PRATLEY		PULPIT		QUIGLEY	. e . j .	RAMIRES		AYEX	0
PRATT		PULS		QUINI		RAMMEL		-	c
	A 1		0	QUILCENE		RAND .			-
PREACHER	0 1			QUILLAYUTE		AMONA			D
		PUMEL	ō i			AMONA. HARO			0
PREAKNESS							CIR	ATNE	8
PREATORSON	8 (PUMEL, NONGRAVELLY	CE	QUILT	n I	SURCTOATINA	• -		
PREATORSON		PUMEL, NONGRAVELLY PUMPER		GUIL T Guitma		SUBSTRATUM			8
PREATORSON Preðish Preðle	C/0 (8 İ	OUINA	e, 1 e	TANPART	8 R	AYNHAH	e c
PREATORSON	c/0	PUMPER	8 A		8, 1 F A 1 F		8 R 8 R	AYNHAH	

NOTES :

TWO HYDROLOGIC SOIL GROUPS SUCH AS 8/C INDICATES THE DRAINED/UNDRAINED SITUATION. Hodifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in soil hap legend.

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TABLE A-5 CONTINUED Hydrologic soil groups for United States soils

					•				-	
	RAYPOL	c	REDSTONE		RENOX		1 RICOT	-		-
	RAZ	D	REDSUN					c	\$ RITIDIAN	D
		-		, D	RENSHAW	8	I RICREST	8	A A A A A A A A A A A A A A A A A A A	c
	RAZITO	A.	I REDINAYNE	6	I RENSLOW	8	I RIDD	c	I RITO	8
	RAZOR	· C	REDTOM	5	I RENSSELAER	87	OI RIDDLES	ě	• • •	-
•	RAZORBA	8	REDVALE	č	RENSSELACR .			-	RITTER	8
	RAZORT	ē				Ç	R IDENBAUGH	D	1 RITTMAN	c
			REDVIEW	8	I NONSTRATIFIED		RIDGE	8	1 9172	D
	RAZSUN	D	I REDVIEW. WET	. C	I SUBSTRATUM		I RIDGEBURY	c	PITZ DRAINED	ċ.
	READING	5	REDVINE	c	I RENTILL	e	I RIDGECREST	č		
·	READINGTON	c	REDVASH	ō	•			•	RITZCAL	ē,
	READLYN	-		-	RENTON	D,	RIDGEDALE	, 8	I RITZVILLE .	8
			REE	6	I RENTON. ORAINED	c	RIDGELAND	5/1	DI RIVALIER	A
	REAGAN	· 8	REEBOK	. D	RENTSAC	D	RIDGELAWN		RIVERDALE	Ă
	REAKOR		I REED	. 0	RENTZEL	č		-		
	REAL	, D	REED. DRAINED	_			RIDGELAWN. WET	D	RIVERHEAD	8
		-		c	REPARADA	D	AIDGELITE	D	RIVEROAD	8
	REALLIS	a	I REED, PROTECTED	c	I REPP	8	RIDGEPORT	-8	1 RIVERSIDE	à.
	REAP	D) REEDER		I REPPART	8	RIDGEVIEW	B	AIVERTON	
	REARDAN	¢	I REEDER. COOL	č	REPUBLIC	a		-		8
	REAVILLE	č		-		-	RIDGEVILLE	· 8	RIVERVIEW	C .
			REEDSBURG	c	I RESCUE	· 8 ·	A IDGEVODD	c	RIVIERA	C/D
	REAVIS	8	REEDSPORT	с .	RESNER		I RIDIT	с.	AIVIERA.	· D
	REBA	c	I REEDY	Ð	I RESORT	D	I RIDLEY	č		•
	REBEL	8	REEFRIDGE	5		-			DEPRESSIONAL	
	RECAPTURE	5			I RESUTA		A 1DOTT	¢	RIVIERA. LIMESTONE	B/D
		_	REELFOOT	с.	RESTING ,	c	RIEDEL	c	SUESTRATUM	
	RECK	D D	I REEPO	c	RESTON	D	RIEDTOWN	· · c	AIVIERA. LIMESTONE	•
(RECLUSE	8	I REESE	· c	RET	. 5	I RIEPE	-		.0
1	RED BAY		REESER			-		. с	SUBSTRATUM.	•
				. C	ACTRIEVER	¢	RIESEL	¢	DEPRESSIONAL	
	RED BLUFF	. с	REESVILLE	С	RETROP	с	RIETBROCK	c	I RIVRA	Ο,
	RED BLUFF.		REEVES	, e	I RETRYDE	c	RIFLE	A/D		
	GRAVELLY		1 REFLECTION	Ē	I REVA	Ď	RIGA			: c
5	ED BUTTE		I REFUGE	č		+	7	Ð	RIXON	C
	RED HILL		• • • • • •	-	I REVEL	с	RIGDON	c	AIZ .	0
		-	1 REGAL	8/0	REVENTON	5	AIGGINS	D	I RIZNO	D
5	RED HOOK	c	T REGAN	Ê/C	I REVERE	8/0	I RIGGS	D	I RIZOZO	õ
- F	RED ROCK	· 8	REGENT	c	REVIT	c	FIGLEY	-		
5	ED SPUR		REGGAD	-				-	ROANE	ç
	EDARROW				REWARD	e	I RIGOLETTE	c	RUANHIDE	c
		<u>,</u> . D	REGGEAR	Ð	REXBURG	8	RILEY	Ó	ROANDKE	Ð
, F	EDBANK	8	I REGGEAR. COOL	c	I REXFORD	c	I RILLA	÷.		ē
F	REDBELL	8	I REGNAPS	c	REXPONT	0				
6	EDBIRD		REGNIER	õ			RILLIND	8		C
	EDOOW			-	REXOR	A -	RILLITO		ROBANA	e
			PENSURG	c	L BEATE -	. 8	RIMER	c I	ROBBS	D
- 8	EDSY.	8	REHFIELD	8	I REYĖS	0	RININI	i 👗 i	•	
R	EDCAMERON	D	REHFIELD		REYNOSA	ē	RINROCK			ç
	EDCAN		I REHM		REYWAT			PI	ROBER	c
		-		c		· P I	PINTON	. C 1	ROBERTSDALE	c
	EDCAP	8	REICESS	8	REZAVE	e)	RIN	8 1	ROBERTSVILLE	0
R	EDCHIEF	C	I REICHEL	в	RHAHE	е Г	RINCON	c i	ROBIN	ē
R	EDCLIFF	c i	1 REIFF	в	RHEA	i e i	RINDA			-
0	EDCLOUO		REILLY					0.1		9
	EDCD		•		RHINEBECK	Ρĺ	PINDGE	D · [ROBINSONVILLE	8
		D	REINA	Þ	RHOADES	וים	RINDGE, DRAINED	° C 1	ROBOZO	c
- R	EDCREEK	D (PEINACH		RHOAME	- c i	RINEARSON	e 1		8
8	EDDALE	0 1	REINER	8	RHDANETT	c i	RINEY			
R	EDDICK	8/01		-				8		D
	EDDING			D	RHOAMETT. STONY	C]	RING	C [RDBY	с
		. 0	RELAN	8	RHONE	8 1	RINGLE	6 1	ROCA	0
	EDEYE		RELAY	8	RIB	8/01	RINGLING	- A İ		0
R	EDFEATHER	l a	RELIANCE	ċ	RIBERA	C I	RINGO	õi		
R	EDFIELD			ō						¢
	COFIELD. WET	-		-	RIBHILL		RINGVOOD	8		9
		c i	RELLEY	B	RICCO	1 0	RINKER	C I	ROCHESTER	A
	EDFLAME	5	.RELSON	8	R ICEBORD	8/01	RIO	ōi		ĉ
RI	EDHOUSE	- B - Ž	RELUCTAN	c	RICECROSS	8 I	RID ARRIBA	- D I		
R	EDIG	ēi	REHAERT	òi	RICERT	- <u>-</u>			-	D
	DINGTON	0 1				9	RIO DIAGLO	c 1		8
			REMEDIOS	C I	RICETON .	P 1	RIO GRANDE	e (ROCKABIN (с [.]
	EDLAKE	D	REMLAP	c 1	RICEVILLE	c I	RID LAJAS	AÌ		ē
R	DLANOS	8	REMLIX	- A - İ	RICH	č i	PID PIEDRAS	B L		
RE	DLEVEL	- ē - i	REMNIT	ŝi	RICH. WET	D i		- •		9
	DLODGE						RIDBLANCHO	c i		> .
		D	REHNOY	D 1	RICHARDSON	0 i	RIDCONCHO	C I	ROCKOALE	4
	DHANSON		REMOTE		RICHENS	c ł	RIGLINDA	c i	ROCKDALE	
RE	DMONO	c i	RENSEN	ō i	RICHEY	Ξi	RION	· 2 - 1		
	DHOUNT .	āi	REMUNDA					6	ROCKERS	
	DNIK				AICHFIELD		RIPEC		ROCKFIELD	
		8		8 1	RICHFORD	. A. .	RIPLEY	8	ROCKFORD 8	
	DNIK. NONSTONY	C F	PENBAC	0 1	RICHLAND	e i	RIPLEY.			
RE	DNUN	ć.	RENCALSON		RICHHOND	D I				
RF	DOLA						SALINE-ALKALI.		ROCKINCHAIR C	
	DONA	-	RENCOT	D I	RICHSUM	8 I	VET .		ROCKLIN)
		8		01	RICHTER	6	RIPON		ROCKLY 0	
	DONDO	8 1	PENICK	D İ	RICHVALE		RIPPLE			
RE	DPOP	ξi	RENISH	či						
	DPORT				RICHVIEW		RIPPOWAH		ROCKTON .B	1
		.8	RENNER		RICHVILLE		PIRIE			20
	DRIDGE	8	RENNIE	0	RICHWOOD	8 1	RISBECK	ві	ala auto anno 1	-
RE	DRIVER	c i	RENNIE. DRAINED	ĉ i	RICKER		RISLEY			
	DROB	è i	RENNIE, PROTECTED						ROCKY FORD 8	
	OSPEAR				RICKETTS		RISLEY. STONY	C.	ROCKYBAR B	
			RENO	0 1	RICKHAN	< 1	RISUE	PI	RODAD D	
			· · · · · · · · · · · · · · · · · · ·							
RE	DSPRINGS	8	RENDHILL	C 1	RICKMORE	C 1	RISWOLD	A 1	2005-11 -	
RE							RISWOLD		RODELL D	
RE RE	DSPRINGS DSPRINGS, GRADED DSTDE	рİ	RENDHILL RENDL PENDVA	<u>c</u> i	RICKHORE RICKREALL RICKS	DI	RISHOLD Rita Ritchey	D 1	RODĖLL D RODEO D RODESSA D	

NOTES:

TWO HYDROLOGIC SOIL GROUPS SUCH AS 0/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratum, refer to a specific soil series phase found in soil HAP LEGEND .

Hydrologic soil groups for United States soils

RODIE	8	I ROSENDALE	-	1						
RODVAN	Å	ROSENWALL	. c	RUBY	10	SARENYO	8	SAWINIEGO	с	
RODROF	ົ້	ROSEVILLE	8	PUEYHILL	¢	SABINA	, c	[SAMTSH	D	
ROEBUCK	õ	I POSEWOOD			e	SADINE	, A	I SAMMAMISH	D	
ROSLLEN	້ວ້			DI RUCKER	Ę.	I SABLE	e/(DI SAHOIST	Ó	
ROEMER	č		0	AUCKLES	Ð	J SAC	8	SAMOR	D	
POETEX	2	PUSEWOATH	0	1 PUCLICK	c	SACHEEN		SAMPSEL	ē	
ROFISS		ROSHE SPRINGS	· D	RUDD	Ö	I SACHETT	c	SAMPSON) e	
RDGAN	9	ROSHE SPRINGS.	c	PUCOLEY	· D	SACO	p	I SAMSIL		
	9	DRAINED	•	I RUDEEN	c	I SACRAMENTO	Ď	SANSULA	· 8/0	~
POGERSON	D	ROSHOLT	5	RUGYÁRD	ຕ່	1 SACTUS	0	SAN ANDREAS	8	<i></i>
RCGERT	0	I ACSINE	e	I PUEDLOFF	Ë	1 SACUL	ĉ	SAN ANTON	8	
ROGRUBE	2	[ROSITAS	A .	1 RUELLA	8	SADOLE	č	SAN ANTONIO		
ROGUE		I ROSITAS, CLAYEY	с	ÁÚFUS	D D	SADDLEBACK	Č/0		c	
ROHAN	D	SUGS TRATUM		RUGAR	ē	SADDLEGAP	8	I SAN BENITO	. <u>c</u>	
RCHNERVILLE	5	I ROSITAS. LOAMY.	с	I RUGG	ē	I SAODLEROCK	D		8	
ROHONDA	¢.	I VET		RUGLES		I SADER	-		4	
POHRERSVILLE	D	ROSITAS. NET	c	RUHE	Ď	SADIE	. 0	SAN GERMAN	· · p	
ROIC	c	ROSLYN		PUIECSO	č	SAOLER	ç	SAN ISABEL		
8010	c	POSHAN		PUINPOINT			ç	I SAN JOAQUIN	D	
ROLETTE	. с	ROSNEY		LAUIZ	ŝ	I SAFFELL I SAG	e	SAN JON	с	
POLFE	c	1 6055	в	I RUKO	Ô		ុទ	SAN JOSE	8	
ROLIE	Э	PCSSBVPG	ě	I RULE	8	I SAGANING	A/D		*	
ROLISS	à/c		ă	RUMBLECREEK		I SAGASER	8	SAN LUIS	с	
ROLLA	c	ROSSHOOR	Š	1 RUMSO	B -	SAGE	D	I SAN MATEO	ð	
ROLL INGSTONE	č	POSSHOYNE	Ċ	I RUMFORD	ŝ	SAGECREEK		SAN HIGUEL	0	
ROLOC	. 0	1 POSWELL			. e	SAGEDALE	- C	I SAN SABA	D	
POLDEF	č	POSY		PUNLEY	.8	SAGEFILL	e	J'SAN SEBASTIAN	8	
RONBERG		ROTANER	8	RUNNEY	ç	SAGEMOOR	8	SAN SIMEON	0	
ROMBO	ç.	ROTAN	e	RUMPAN	C	I SAGERS	· 6	I SAN TIMOTED	ć	
ROME			c	RUMPLE	c	SAGERTON	с	SAN YSIDRO	Ď	
REMED	8	FOTHICAN	8	PUPUNG	с	SAGLE	c	SANCHEZ	ō	
ROMERO	D	POTHIENAY	`⊆	RUNE .	c	1 SAGO	0	SANCLEVENTE	Ď	
	D	POTHSAY	8	I PUNEEERG	C/0	SAGOUSPE	Ç.	I SANDALL	č	
RONGAN	ç	A BUTINON	÷	PUNGE	P	I SAGDUSPE . DRAINED		SANDBRANCH		
REMIA	8	l esta	C '	I RUNN	0	SAGUACHE	6.1	SANDCREEK	. 0	
ROMINE	9	I ROTTULEE	c	PUPLF	ć	I CAMALIE	ē i	SANDERSON	8	
ROWINELL	C	J ROUBIDEAU	C	I PUPLEY	Ă	SAHUARITA	อี่เ	SANDHILL		
ROMNELL	8/D		C	I RUSCO	Ċ	SAID	Ē	SANDIA	В	
ROMETOCK	8	ROUGHCREEK	0	I RUSCO. PONDED	Ď	SAIDO	- e i		B	
RCHÚLUS	D	1 FOUGHLOCK	e	IRUSE	Č.	SAILBOAT			A	
RCNAN	.5	FOUGHMOUNT	c	I PUSH	Ē	SAILSCAT. DRAINED	¢ 1	SANODVAL	· D	
P040	c	ROUND BUTTE	ο.	RUSHMORE	· E/D			SANOP IDGE	*	
PUNDEAU	A/D			RUSHTOWN			8 1		8	
RONDELL	Ð	I ROUNDBARN	Ē	PUSHVILLE	A	SAL .	0 1		5	
PONDOWA	9	I ROUNCHEAD				SALADAR	0 1		D	
HONNEBY	ċ	ROUNDOR		PUSON	8	SALACON	0 1	SANDVIEW	e	
RONSEL		FOUNDTOP	č.	RUSS	ç	SALAL	- C		, c	
RONSON		FOUNDUP	č.	RUSSELL		SALAMATOF	- D	SANDWICK	8	
ROONEY		A GUNDY	č	RUSSELL	e	SALANDER	R 1		D	
ROOSET	- či				Ε.,	SALAS	C I	SANFORD	8	
900SEVEL T	ē i	POUTON	ō	RUSSLER	c	SALCHAKET	8 1	SANGER	Ð	
RCOT	· 9/01		č	RUSTICO	P	SALCO	8 (SANGO	· c	
POOTEL	cĩ	POVAL	_	RUSTIGATE	C	SALEM	B]	SANHEDRIN	9	
ROPER	8/01		ç	PUSTON	e 1	SALERATUS	C . I	SANIBEL	8/0	
ROSALIE	8 1		~ C	PUSTY		SALERNO	6/01	SANILAC	8	
ROSAMOND			<u>9</u>	RUTAE	6 (SALGA	c i	SANJE	. 8	
RUSAMOND.			0	RUTERSVILLE	c i	SALIDA	i ki ji	SANLOREN	ĕ	
SALINE-ALKALI.	c i		0	PUTHEPEORD	- c 1	SALINAS	e 1	SANPETE	8	
FLOODED	· !	ROVENA	C I	PUTLAND	<. 1	SALISBURY	c i	SANPITCH	č.	
ROSANE	_ !	ROWLAND	¢ (RUTLEGE	8701	SALIX	8	SANPOIL	D	
RUSANKY	0 1	ROVLEY	< 1	RYAN	0 1	SALKU4	P I	SANSARC	Ď	
	<u> </u>		0	AYAN PARK	8 (SALLISAW	8	SANTA	Ď	
ROSARIO	<u> </u>	ROXANA	5	RYAPK	A 1	SALLYANN	c i	SANTA- CLARA	· č	
ROSCOE	0 1	RCXPURY	ьļ	9700	c i	SALMO		SANTA FE	. C	
RESCOMMEN		ROXER	3 1	FYDE	c i	SALHON		SANTA ISABEL	č	
ROSE CREEK	Ç	RCXTON	0	PYCEP	c i	SALONIE		SANTA LUCIA	-	
	. 8		5 1	8700LP4		SALT CHUCK		SANTA HARTA	Ċ	
ORAINED		RUYAL		RYEGATE		SALT LAKE		SANTA YNEZ	· c	
ROSE VALLEY	0]	POYCE		RYELL		SALTAIR			D	
	. o i	ROYGORGE		RYELL. SALINE		SALTER		SANTANA	D	
ROSEBLCOM	0	ROYOSA		PYERATCH		SALTERY		SANTANELA	,O	
ROSEBOROUGH		ROYST		RYER				SANTAQUIN	- A	
ROSEBUD		POYSTONE		RYKER		SALTESE		SANTAROSA	, e	
ROSERVRG		ROZA		RYNAR,		SALTINE		SANTEE	D	
ROSEDHU		POZELLVILLE		SYORP	. 5	SALTON		SANTTAGO	. 8	
ROSEGLEN	0/01	ROZETTA				SALUDA		SANTIAN	c .	
ROSEHAVEN		ROZLEE		RYPOC		SALVISA	C E		8	
ROSEHILL		FUARK	-	RYUS		SALZER	0 1 1	SANTO TOMAS	в	
ROSELAND				SAAR		SALZER. PROTECTED		SANTONI	0	
ROSELLA		PUBICON		SABA NA -	C. I	SAMBA	-	SANWELL	e	
ROSELMS		PUB10		SABANA SECA	C 1	SANGPITO		SAPEHA	ē	
	0 1	RUSSON	e 1	SATE -	e (SAMDAY		SAPELO	õ	
/							• •		· ·	

TWO HYDROLDGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, E.g., bedrock substratum, refer to a specific soil series phase found in soil map legend. NOTES:

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SAMPNING SAMPLY C SAMPS C SCOTO A SCUTA D SAMPSAGE SAMPSAGE 0							•			
SARPH C SARPS C SCOTO A SCOTO A SCOTO A SCOTO C SCOTO	SARINERO					_				
SLAPPINE C SLAPPINE C SLAPPINE D SLAPPINE SLAPPINE 6 SLAPPINE 0 SLAPPINE 0 SLAPPINE 0 SLAPPINE SLAPPINE 0 SLAPPINE 0 SLAPPINE 0 SLAPPINE 0 SLAPPINE SLAPPINE 0 SLAPPINE 0 SLAPPINE 0 SLAPPINE 0 SLAPPINE SLAPPINE 0 SLAPPINE SLAPPINE SLAPPINE 0 SLAPPINE SLAPPINE SLAPPINE SLA		-			• • • • • • • • • • • • • • • • • • • •					c
SARPINGTON S SARD C SCOTT O SERVE D SARLAGE SARA 0 SARDON 0 SCOTT 0 SERVE C SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE SARLAGE						-				2
SARA 0 SAR SAR SECTY LAKE 0 SECTY LAKE <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>8</td> <td>1 SHAKOPES</td> <td>c</td>						-		8	1 SHAKOPES	c
State Cost, State C								D	SHALAKE	c
SAMPAVYLLE D SAMPAVYLLE D SAMPAV C SAMPAV <thsampav< th=""> SAMPAV SAMPAV</thsampav<>		-						c	E SHALAKO	Ð
SARALEGOJ B SAVES A SCOTSVILLE C SLLENG D SARALEGO SARALEGOJ SAVES D SCOTT SUBSTRATON D SALELA C SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA SALELA		-						Ð	SHALBA	Ď
SARANAC C/D SAVESYLLE C SECURIT F SELIA C SAVESYLLE SAVESYLLE <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>C.</td> <td>SHALCAR</td> <td>0</td>		-						C.	SHALCAR	0
SALANAC, GAVELY C SATURE C SECTION C SATURE SATURE C SATURE <td></td> <td></td> <td></td> <td></td> <td></td> <td>c</td> <td></td> <td>D</td> <td>SHALCAR. ORAINED</td> <td>c</td>						c		D	SHALCAR. ORAINED	c
SUBSTRATUM I SAVARD C SAVARD SAVA				-		_ e	SELFRIDGE	.8	I SHALCLEAV	D
SARAPH D SAVE C SORAPD C SORAPD C SORAPD C SORAPD SARAPCA S SALT C SORTAL SO		.T C		_				c	I SHALET	٥
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SAVONA C SCITICO C SEENEE B SHADELLAND C SHELDIANA B SAVABE D SCITUATE C SEENEE B SHADELEAF C SHELDIANE C SAVABE D SCITUATE C SEENEE B SHADELEAF C SHELDIANE C SAVATCH B/D SCIDME B SEGIDAL D SHADYGROVE C SHELBYVILLE B SAVGREK B SCOAP B SEGIDAL D SHAFFIDN B SHELBYVILLE B SAVGREK C SCOBEY C SEGUIN B SHAFFIEN D SHELD B SAVGREK C SCOBEY C SEGUIN B SHAFFIEN D SHELL B SAVUST B SCOON D SENOME C SHAGMASTY C SHELLABARGER B SAVTELL C SCOOTENEY B SEHORN D SHAKAMAK C SHELLOFEEK C SAVTELPEAK	SAVOIA					-	•			-
SAVABE D SCITUATE C SEFFNER C SHADOW B SHELDUNE C SAVATCH B/DI SCLDME B SEGIDAL D SHADOW B SHELBY B SAVBUCK B SCOAP B SEGIDAL D SHADYGROVE C SHELBY B SAVGUCK B SCOAP B SEGIDAL D SHADYGROVE C SHELBY B SAVGUCK B SCOAP B SEGUN C SHAFFIDN B SHELD B SAVGUST B SCOGGIN D SEGURA D SHAGEL D SHELLBARGER B SAWTELL B/DI SCOON D SEHORE C SHAGEL D SHELLBLUFF B SAWTELL C SCOTENEY B SEHORN D SHAKAMAK C SHELLCREEK C SAWTELPEAK D SCOTENEY B SEHORN D SHAKAMAK C SHELLCREEK C	SAVONA						• • • • • •			
SAVATCH B/D SCLDME B SEGIDAL D SMADYGROVE C SHELBYVILLE B SAWBUCK B SCOAP B SEGIDAL D SMADYGROVE C SHELBYVILLE B SAWBUCK B SCOAP B SEGIDAL D SMADYGROVE C SHELBYVILLE B SAWCREK C SCOBEY C SEGUIN B SHELD B SAWDUST B SCGGGIN D SEGURA D SHAGEL D SHELLBARGER SAWHILL B/D SCOON D SEHDME C SHAGBASTY C SHELLBLUFF SAWTELL C SCODTENEY B SEHORN D SHAKAMAK C SHELLCREEK SAWTELPEAK D SCODTENEY B SEHORN D SHAKAMAK C SHELLCREEK	SAVABE									
SAWBUCK B SCOAP B SEGNORL D I SHAFFTON B SHELRYVILLE B SAWCREEK C I SCOAP B SEGNORL C SHAFFTON B SHELD B SAWOUST B SCOGGIN D SEGURA D I SHAFTER D I SHELL B SAWHILL B/D SCOON D I SEGURA D I SHAELABARGER B SAWTELL C I SCOTENEY B I SEGURA D I SHAKAMAK C I SHELLABARGER B SAWTELL C I SCOTENEY B I SEGURA D I SHAKAMAK C I SHELLABARGER B SAWTELL C I SCOTENEY B I SEGURA D I SHAKAMAK C I SHELLABARGER B SAWTELPEAK D I SHAKAMAK C I SHELLCREEK C	SAVATCH									
SAWCREEK C SCOBEY C SEGUIN B SHAFTER D SHELD B SAWDUST B SCOGGIN D SEGURA D SHAFTER D SHELL B SAWHILL B SCOGGIN D SEGURA D SHAGEL D SHELLABARGER B SAWTELL B C SEGURA D SHAGEL D SHELLABARGER B SAWTELL C SCOTENEY B SEHOPN D SHAKAMAK C SHELLCREEK C SAWTELPEAK D SCOTENEY B SEHOPN D SHAKAMAK C SHELLCREEK C								•		
SAWDUST B SCOGGIN D SEGURA D SHAFLE D SHELL F SAMMILL B/DISCOON D SEHDME C SMAGEL D SHELLBLUFF B SAMTELL C SCOTENEY B SEHDRN D SHAKAMAK C SHELLCREEK C									•	
SAMMILL B/DI SCOON D I SEGURA U I SMAGEL D I SHELLABARGER B SAWTELL C I SCOTENEY B I SEHOPN D I SHAKAMAK C I SHELLBLUFF B SAWTELPEAK D I SCOTENEY B I SEHOPN D I SHAKAMAK C I SHELLREEK C										
SAWTELL C I SCOTENEY B I SEMORE D I SHAKMASTY C I SHELLBLUFF B SAWTELPEAK D I SCOTENEY B I SEMORN D I SHAKAMAK C I SMELLCREEK C	+ -					, -				
SANTELPEAK DISCIDIUM CISCIC CISCULAR CI									• •	
THE PARTY AND A PA				- •						:
C I SHELLDRAKE A		~ i	J.UNUF	4 I	2612 (C 4	SHAKAN C	1 5	SHELLDRAKE A	4

NOTES: THE HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Redifiers shown, e.g., bedrock substratum. Refer to a specific soil series phase found in soil hap legend.

(210-VI-TR-55, Second Ed., June 1986)

		•								
SHELLROCK		1 SHOTGUN	· c	1 SIMON	•	8	I SKYHIGH			
SHELMAD INC	0	SHOTWELL	p	SINCNA		ē	SKYHIGH Skykomish	9		
SHELDCTA	₿.	SHOUNS	. 8	SIMONIN		ē	SKYLICK	8	i secondari arti	,
SHELTON	c	SHOWALTER	c	S IMONTON			SKYLINE	e		0
SHENA	0	I SHOWALTER ST	ONY 8	SIMPARK	ĩ		SKYMOR	D	1 SNOWLIN	8
SHENANDOAH	· D	5HOWLOW	c	I SIMPATICO	-		SKYROCK	0	SNOWHORE	
SHENK S		DI SHREE	2	SIMPSON		Ē	SKYVILLAGE	0	1 SNONSHOE	8
SHENON	8	SHREWDER	ື	SIPS		Š	I SKYWAY	0	SNOWSLIDE	. 8
SHENVAL	. 8	I SHREWSBURY	c/	DI SINAI	` <mark>.</mark>		SLAD	0	SNOWVILLE	0
SHEP	8	SHRINE	8	1 SINAHOX			SLACTOWN		SNUFFUL	¢
SHEPAN	c	SHROE	c	SINCLAIR	č		SLACKS	8	SOAKPAK	8
SHEPPARD	A	\$HROUTS	6	I SINGATSE			SLAGLE	ç	I SUAPCREEK	c
SHEPS TER	0	SHUGUTA	c	1 SINGERTON			SLAPJACK	c	SDAPLAKE	0
SHERANGO	8	I SHUE	ċ	SINGLETRE			SLATERY	6	I SOAR	0
SHERAR	c	1 SHUKASH	Ă.	SINGSAAS			SLAUGHTER	ç	SOBEGA	c
SHERBURNE	C	SHUKSAN	c	I SINKER	č			c	SOBOBA	
SHERIDAN	Θ.	I SHULE	ć	SINKSON			SLAUGHTERVILLE SLAVEN	8	J SOBOL	c
SHERLESS		I SHULLSOURG	č	SINLOC	· · · ·			E C	SOBRANTE	8
SHERLOCK	8	I SHUMLA	č	SIMNICE			SLAW CLANTON	c	SOBSON	c
SHERM	0	I SHUMWAY	Ď	1 SINNIGAM	0			D	SOCORRO	C C
SHERMORE	5	SHUPERT	ċ	SINTON	. 8	- ;	SLEEPER	Ç	SODA	8
SHERRY	8/0	I SHURLEY	Ă	SINUK	, . в	i	SLEETH	c	SODA LAKE	e
SHERRY, STONY	. D	SHUSTER	č	SION	5	i	SLICKROCK	. 8	SODA LAKE. WET	c
SHERRYL	8 ·	1 SHUTTLE	ē	STOUX	4		SLIDECREEK	6	SODABAY	8
SHERWOOD	· 8	1 51	č	SIOUXON	â		SLIDELL	D	500ASPRING	e
SHEYL IN	· c	I SIBELIA	Ē	I SIPPLE		. !	SLIGHTS	c	I SODERVILLE	۵
SHIDLER	0	1 STOLEY	ě	SIPSEY	. B		SLIGTING	¢	I SODHOUSE	D
SHIELDS	с	I STOLEYVILLE	ã.	SIPCPAK	-	· !	SLIKOK	D	Soous "	c
SHIFFER	. C	I SICKLES		SIRI	A .	_!	SLIMOUTTE	e	I SCELDERG	8
SHILLY	c	SICKLESTEETS		SIROCO		1	SLINGER	8	SOEN	C
SHILOH .	8/0		-	I SIRREF	¢	1	SLIPBACK	8	I SOFIA	с
. SHIMA	c	SIDELL	ē	SIRPETTA	0		SLIPPAN	6	I SOFTSCRABBLE	c
SH144ON		SIDLAKE		SISK	ç	1	SLOAN	8/0	OF SOFTSCRABBLE.	e
SHINAKU	0	5100N	č	SISKIYOU	c		SLOCAVE	0	RARELY FLOODED	
SHINGARA	D	SIEREN		SISSETON	· •		SLOCUM	c	SOGI	c
SHINDLER	c	SIEDERT		SISSON	6	. !	SLUICE	С.	SOGN	Ð
SHINER	c	SIECHE	ĉ	i STSTEPS			SLUKA	¢	1 5060	8
SHINGLE	ō	SIELO		SITAR	- · · · · · ·		SLY	8	I SOGZIE	8
SHINGLENTLL	ð	SIEROCLIFF	č		· 6		SMACKOUT	۰.	SOHAPPY	5
SHINGLETOWN	c	SIERRA	-	SITES			SMALL	c	1 SOJUA	D
SHINKEE	c	SIERRAVILLE	ē		· c		SHALLCONE	Ď	SOLAK	D
SHINNPEAK	0	SIESTA		SIXBEACON	, c		SMARTS	8	50LANO	0
SHINROCK	c	SIEVERS	Ē		E		SHAUG	8	I SOLDATNA	8
SHIDCTON	c		e i		<u>c</u>		SMEDLEY	Ð	SOLDIER	¢
SHIDYA		SIG	0 1	SKAGGS	, 0		SHEL TER	c	SOLOUC	8
SHIPLEY	В	SIGNAL	c.i		ç		SMILEY		I SOLEDAD	8
SHIPLEY.	c i	SIGURD	8 1		0		SMILEYVILLE	D	I SOLIER	Ð
SALINE-ALKALI		SIKESTON	8/01		c		SPILO) SOLIS	č
SHIPPA	0	SILAS		SKALAN	· •		SHITHEORO	-	I SOLLEKS	c
SHIPROCK	8 1	SILAS. VET	či	SKAMANIA	с • В		SPITHOALE	8	SOLLER	D
SHIPS	0	SILAS. GRAVELLY	- čí	-	č		SPITHNECK	c	SOLD	c.
SHIPSHE	8 1	SUBSTRATUM		SKANEE	-		SHITHNECK. DPAINED	_		0
SHIRK	c i	SILAWA	. n i	SKAN ID	C D		SHITHTON .	D		с
SHIRLEY	· 8	SILCOX	ă i	SKATE	-		SHITHVILLE	e.		8
SHIRO	c 1	SILENT	ōi	SKEDADDLE	8		SHITHWICK	0	SOMBORDORD	0
SHIGTTAIL	- 6 I	SILEP	ā i	SKEIN	. 0		MOCREEK	C]	www.undition.g	C
SHIVELY	8 1	SILERTON	ē i	SKELLGCK	D		HOKEY	C I	SOMERS	8
SHIVIGNY	- e i	SILHQUETTE	, ē i	SKELON	-		ACLAN	C I		́В.
SHIYLUM	8 1		i a i	SKEL TON	C C	-	MYRNA	0-0 I		с
SHOALS	C i	SILKIE		SKERRY			INAG	0 1	SONAHNP IL	a
SHOAT	Dİ	SILSTID		SKIED	C R		NAHOPISH	e , i		8
SHOBA	0 1	SILVA	ĉi	SKIDMORE	-		NAKE	C I	SONLET	D
SHQEPEG	c i	SILVER	- či	SKINNER	· 8		NAKE HOLLOW	A	SONOCAN	c
SHOES TRING		SILVER CREEK		SKIPANON	<u> </u>		NAKELUM		SONGITA	8
SHOKEN		SILVERADO		SK 1POPA			NAKER		SONOMA	c
SHONKIN		SILVERBELL		SKIYOU		• -	NAPP	c 1	SONOMA. HODERATELY	8
SHONTIK		SILVEROON		SKUKOMISH			NEAD	0 1	WET, SALINE	
SHOOFLIN		SILVERCHIEF			.0.	• • •	NEFFELS	c I	SCHOMA: SALINE,	8
SHOOFLY		SILVERCUIFF		SKCKOFISH. (c I	ORAINED	
SHOOK		SILVERDALE			_				SONOMA. STRATIFIED	Ð
SHOOKER	- •	SILVERN	-	SKOOKUM					SUBSTRATUM	
SHOREEK		SILVERTON		SKGS				< 1	SONOMA. DRAINED.	8
SHOREWOOD		SILVIES		SKOVHEGAN					SLIGHTLY SALINE	-
SHORIM		SIMAS		SKULL CREEK				c i	SONDHA. DRAINED.	ð
SHURT CREEK		SINCOE		SKULLGULCH				0 1	FLOODED	-
SHORTCUT		SINEON		SKULLWAK						е .
SHORTHORN				SKURPAH	e 1	SN				8
SHORTYORK		SIMEROI Simmont		SKUTUM	c 1	SN	TOWN			D
SHOSHONE		SIMODA		SKYPERG		SN	IOW I			8
	~ 1	STROOM	¢ I	SKYHAVEN	c 1	SN		- •		8
0756 . TUP								•		9

NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS 8/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown. E.g., Bedrock Substratum, Refer to a specific soil sepies phase found in

SOIL

MAP LEGEND.

s

Hydrologic soil groups for United States soils

		•							
SODNAKER	с	J SPINEKOP	8	1 STABLER	e	STEUBER			-
SDOSAP	¢	SPINEKOP. SALINE	·ē	STADY			8	STRELNA, SILTY	8
SOPER	- Č	SPINEKOP.			8	STEVENS	, 8	SUBSTRATUM	
			C	STAFFORD	c	STEVENSON	8	I STREVELL	8
SCOUEL	B,	MODERATELY VET		STAGECDACH	B	STEWART	Ö	STRICKER	e
SORENSEN	Ð	SPINKS	. 🔺	I STAHL	c	STERVAL	D	I STRICKLAND	c
SORF	c	SPINLIN	c	I STAKE	c	STICKNEY	c	STRINGAN	ē
SORRENTO	8	SPINNEY	8	1 STALEY	ě	STIDHAN		• - · · · • · · · · · · · · · · · · · ·	
SORTER	D	1 SPIRES	Ď	STALLING5	-			I STRINGTOWN	8.
SORUM	ō	SPIRIT	-		ç	STIEN	8	1 STRINGTOWN. GRAD	ED C
	-	• • • • • • •	С	STANBAUGH	8	STIGLER	D	1 STROLE	c
SOSA	C	SPIRO .	8	STAMFORD	D	STILES	c	I STROM	c
SOSTIEN	Ð	I SPIVEY	8	I STAMP	D	STILGAR	8	STROMAL	8
SOTIM	` B	I SPLAWN	c	STANPEDE	D	1 STILL	ā	STRONGHOLD	ē
SOUGHE	Þ	SPLENDORA	с	I STAN		I STILLMAN	ĕ	STRONGHURST	ē
SOULAJULE	c	SPLITEN	õ	STANDLEY	č.	STILLWATER	_		
SOUTHACE		SPLITRO	ō	STANDUP			D	STROUPE	¢
SOUTHAN	Ď		-		8	STILSKIN	c	1 STROZI	· C
	_	SPLITTOP	c	STANEY		STILSON -	8	STRYCH	9
SOUTHFORK	Ó	SPOFFORD	Ð] STANFIELD	С	STINCA	· .	I STRYKER	c
SOUTHGATE	0	I SPOFMORE	· C	STANISLAUS	c	1 STIMSON	Ð	I STUBBLEFIELD	ć
SOUTHMOUNT	c	SPOKANE	с	STANISLAUS. VET	Ð	STINES	8	1 STUBBS	č
SOUTHRIDGE	8	I SPOKEL	18	STANROD		STINGAL			
SOUTHWICK	C	1 SPONSELLER	Đ	1 STAPALOOP	-			I STUCKY	8
SOWCAN	Ā	I SPOOL	-		-	STINGDORN	D	STUDEBAKEP	B
SOUCAN+ SOME WHAT	-		-			1.STIPE	c	STUKEL	·Þ
	c	SPOONER	C/0		8	I STIRK	· D	STUMBLE	
POORLY DRAINED		SPOTSYLVANIA	c	I STAPP	C	STIRRUP	B	1 STUMPP	D
SPAA	D	1 SPOTTSWOOD	. 8] STARBUCK	D	STIRUN	875	STUMPTOWN	8
SPACE CITY	A	SPRABAT	8	I STARGO	2	STIRUN, PONDED	5	STUNNER	
SPADE		L SPRAY	8	I STARHOPE	+	STISSING	-	-	. 8
SPADRA	6	SPRECKELS	č	STARICHKOF			ç	I STUNTZ	¢
SPAGER	, Ď	SPRIGGS			· .D	STIVERSVILLE	a	STURGEON	8
			c	STARKEY	C	STOCKADE	8/0	STURGILL	Ο.
SPALD ING	D	SPR ING	C	STARKS	C	STOCKERIDGE	Ċ	1 STURKIE	8
SPANA	D	SPRINGDALE	A	I STARLEY	D !	STOCKEL	D	I STUTTGART	D
SPANAWAY		SPRINGDALE. STONY	8	STARMAN	D	STOCKLAND	8	I STUTZMAN	Ē
SPANEL	0	SPR INGER	8	STARR	c i		p	STUTZNAN. WET	õ
SPANG.	8	SPRINGERVILLE	Ď	STARVEOUT		STODA	5		
SPANGÈNBURG	č i	SPRINGFIELD	ŏ	STASER	ěi			STUTZVILLE	c
SPANGENBURG:	ō	SPRINGGUL CH	-			STODICK	Þ	STYERS	D
PONDED			-		린 !	STOHLMAN	D	STYX '	B
	- *	SPRINGLAKE		STATELINE	_ P	STOKES	D '	SUAK	c
SPANGLER	c	SPRINGMEYER	. 🗖 👔	I STATLER	e 1	STOKLY	· 8	I SUEACO	D
SPARANK	D	SPRINGSTEEN.	с i	STATZ	D I	STONAR	c	SUBLETTE	8
SPARHAM	D	SPRINGWATER	C i	STAVELY	5	STONEBERGER	0	SUBLIGNA .	в
SPARKHULE	0	L SPROUL	່ວ່	STAYTON	e i				-
SPARHO	8	SPRUCEDALE	ōi			STONEHAM	· •		8
SPARR	č	SPUD					. e .	SUCARNODCHEE	. D
SPARTA. SILTY CLAY		SPUDROCK	-				с	SUCCESS	
	•		<u> </u>	STECUM	्टा		8	SUCCOR	D
LOAN SUBSTRATUM		SPUKNUSH	8	STEED	A 1	STONELL	8	SUCHES	8
SPARTA. LOAMY	*	SPUR	B (STEEDMAN	0	STONER	8	SUDBURY	6
SU85 TRATUM		SPURGER	C . 1	STEEDMAN, STONY	c i	STONEYILLE	e	SUDOUTH	č
SPARTA: NAAT>50	A	SPURLOCK			ē i	STONEVALL	č	SUDLEY	-
SPARTA, NAATCSO	<u>م</u> ا	SQUALICUM	āi		- či	STONEVELL			8.
·	Ä	SQUALLY .	ă i	STEENS			A	SUDWORTH	8
SUBSTRATUM	<u> </u>	SQUAN			c i	STONG	B/Q (C
			8	STEEPCAN	.P. I	STONYFORD	0 1	SUEY	8
	C I	SQUAVCREEK	0 1	STEESE	a 1	STOOKHOOR	c 1	SUFFIELD	с [.]
	C .	SQUAWROCK	- C I	STEEVER	8	STORDEN	6 1	SUFFOLK	в
	A J	SQUANTIP	c ł	STEFF	c i	STORLA		SUGAKODL	ā
SPEARFISH .	οi	SQUIRES	c i	STEGALL	- či	STORMITT		SUGARBOWL	8
SPEARHEAD	e i	ST. ALBANS	ē i	STEIGER	i i	STOTT		. –	
SPEARMAN	i e	ST. ANTHONY	- <u>-</u>	STEILACOON	- 2 i		C I	SUGARDEE	B
	č i	ST. AUGUSTINE	c i		-	STOUGH	<u> </u>	SUGARLOAF	8
			c · l	STEINAUER		STOUT	DI	SUGLD	8
		ST. AUGUSTINE.	6 1	STEINBECK	- 8 J	STOVHO	- C 1	SUISUN	0
	D	ORGANIC	· 1	STEINSBURG	C L	STOVE	C 1	SULA	6
	c 1	SUBSTRATUN	- F	STEIVER	· c	STOWELL	Dr i	SULL I VAN	ē
SPECTER (¢- 1	ST. CHARLES	B 1	STELLA	c i	STOY	ē i	SULLY	-
SPEELYAI (b i	ST. CLAIR	D i	STELLAR		STRABER			8
		ST. ELMO		STEMPER	2 1			SULGAF	8
						STRAHAN		SULPHUPA .	D
				STEMILT				SULSAVAR	8
		ST. GEORGE, SALINE			c	STRANDLINE	8 I	SULTAN	c .
		ST. GEORGE, WET	D	STEMPLE	81	STRANDOUIST		SUMAN	8/0
	5 1	ST. HELENS		STENDAL		STRAT		SUMAS	0
SPENS A	N İ	ST. IGNACE		STEPHEN		STRATFORD		SUMATRA	
		ST. JOHNS		STEPHENVILLE		STRATION			8
		ST. JOHNS.						SUNINE	c
				STEPROCK		STRAW		SUMMERFIELD	Ð
		DEPRESSIONAL		STEPSTONE		STRAWN		SUNMERS	a
		ST. LUCIE	A	STEPTOE	•	STREATOR	8/01	SUMMERTON	8
		ST. MARTIN	D I	STERLING		STRELNA		SUMMERVILLE	5
	: 1	ST. NARYS	в	STERLINGTON		STRELNA		SUMMIT	
SPIKE B	i t	ST. NICHOLAS		STERRETT		LACUSTRINE		SUMMITVILLE	Ċ
SPILLCO		ST. ONGE	-	STETSON					c
		ST. PAUL						SUNPF	٥
				STETTER		STRELNA, TILL		SUNTER	c
SPILOCK D		ST. THOMAS	D	STEUBEN	_ B I	SUBSTRATUM .	1	SUNTERVILLE	c
								· · · ·	-

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Hydrologic soil groups for United States soils

SUM YA Sun		D I SWANTOWN	O	TACOMA -	E		•		
SUNAPEE		SWANVILLE	¢,	I TACONIC		ZDI TANSEM	E		c
SUNBURG		I SVANWICK	٥	TACOOSH		201 TANTALUS	· 6		
SUNBURST		SWAPPS	ς.	I TAOLOCK	8		-	TEIGEN	' C
SUNBURY	6	SWARTSWOOD	c	TAFFOM	ð		6		ο,
SUNCITY			D	L TAFCYA	c				D
SUNCODK		I SAMSET .	D	1° TAFT	c				8
SUND			Ç	TAFTOWN	6		Ë		в
SUNDANCE	. 8		0	TAFUNA		I TAPCO	D		c
SUNDAY			· C	TAGGART	¢	TAPIA	ē	1 120240104	*
SUNDELL			c	TAGLAKE	E	I TAPICITOES	D		C C
SUNDOWN	Ă		6	TAHKEN ITCH	e] TAPPAN		D STONY	LY B
SUNEV		ISWEENEY	c	TAHONA	. e	TARA	. 8	TELA	Ð
- SUNFIELD	ē	SWEET	a C	TAHOULA	D	TAPBOPO		TELCHER	8
SUNL IGHT	ō	SYEETAPPLE			8	TARGHEE	c	TELECAN	8
SUNNYHAY	D	SWEETGRASS	5	I TAINTOR		DI TARKINGTON	Ć C	TELEFOND	·č
SUNNYSIDE	8	1 SVEETWATER	ō	I TAKEUCHE	ç	TARKIO	Ð	TELEMON	Ď
SUNNYVALE	c	SWEITBERG	č	J TAKILMA	ç	I TARKLIN	c	TELEPHONE	ŏ
SUNRAY	ß	I SWEITING	č	I TAKOTNA	8	I TARLOC	8	1 TELESCOPE	Ā
SUNR ISE	c	I SWEM	Ē	TAKPOCHAD	e	TARNACH	0	1 TELFER	. A
SUNSET	8	SVENODA	ē	1 TALAG	0		6	L TELFERNER	Þ
SUNSHINE	c	I SWIFT	. 5	I TALAMANTES		I TAPPLEY	0	I TELL	8
SUNS WEET	c	SWIFT CREEK		TALANTE	÷ C	I TARR I TARRANT '	A	I TELLER	8
SUNUP		SWIFTON	8	TALAPUS		TARRETE-	0	I TELLICO	8
SUNY	Đ	SWINLEY	с	I TALBOTT	č	TARRYALL	D	I TELLMAN	8
SUOM I SUP	c	54145	8	1 TALCO	č	TARRYTOWN	ç	I TELLURA	с
SUPÁN	5	I . SWINGLER	e	I TALCOT	-	DI TASAYA	¢	I TELOS	c
SUPERIOR	5	I SWINGLER. WET.	ç	TALIHINA	0	TASCOSA	C B	J TELSTAD	¢
SUPERSTITION	-	STRONGLY SALINE		E TALKEETNA		TASSEL	0	I TEMAN I Templor	e
SUPERVISOR	A C	I SWENGLER: WET I SWENK		1 TALLA	c	TASSELMAN	ŏ	I TEMESCAL	D
SUPPLEE		SWINGHISH		I TALLAC		TASSO	ē	TEMO	D
SUR	č	SWINDALSA	c	TALLADEGA -	c	1 TATAE	ē	1 TEMPLE	ç
SURFS IDE		I SVISBOR	e	TALLAPOOSA	c	TATE	ā	TEMPLETON	С. В
SURGEN	Ē	SWISSHELM		TALLEYVILLE	₿.	TATERHEAP	8	1 TEMVIK	8
SURGH	ě	SWISSTAG	5	TALLOWBOX	c	I TATIYEE	č	TENABO	D
SURNUF	8	I SWESSVALE		TALLS TALLULA	E,	1 TATLUM	· •	1 TENAHA	·a
SURPLUS	c	SWETCHMACK	č		E	I TATOUCHE	0	1 TENAS	č
SUAPR ISE	8	1 SWITZERLAND	8 1		e	TATTON	Ð	1 TENCEE	õ
SURRENCY	Ó	STOPE	či		9	I TATUM		1 TENDOY	Ē
SURRETT	c	SWORMVILLE	è i			TAUNTON	c	TENERIFFE	Ā
SURVE YORS	8	SWYGERT	ĉi		-	I TAVARES	*	I TENEX	e
SURVYA	c	I SYELON	ōi	TALPA		TAWAH TAWAS		TENINO	c
SUSANNA	· c/9		- 8 j	TALQUEN	-	I TAWCAW		TENMILE	c
SUSANVILLE	Ð	MODERATELY WET.	. 1	TALUCE .		1 TAYLOR	ç	TENNO	. D
SUSIE CREEK SUSITNA	c	SALINE	1	TAMA	ē	TAYLOR CREEK		TENORIO	8
SUSTUEHANNA	8	SYCANORE.	< t	TAMAHA "		I TAYLORSFLAT	с в	I TENOT	c
SUTA	0	I HODERATELY WET.	1	TAHALCO		TAYLORSFLAT.	-	TENPIN TENPAG	Ο.
SUTCLIFE	a	1 CLAYEY SUBSTRATU		TAPALPAIS	c i		۰.		8
SUTHER	8 C	SYCANGRE.	C 1	TAMANEEN	ė	TAYLORSYILLE	c	TENSAS TENSED	D
SUTHERLAND	с D	I HODERATELY VET	· · · !	TANGA	0		À		<u>c</u>
SUTHERLIN	č	SYCAHORE, DRAINED		TAMELY	.e (TEAGULF	ĉ		9
SUTKIN	6	SYCANGRE, FLOODED	e i	TAPPLAT	o j	TEAKEAN			8
SUTLEY	-	I SYCANORE, CLAY	6 1	TAMFORD	0 1	TEALSON	õi		D B
SUTPHEN	Ē.			TAMMANY CREEK		TEALWHIT	ōi		8
SUTRO		SYCLE	8 1	TAPH ING	- M - I	TEANABAY	8 1		õ
SUTTLER		SYCOLINE	0 I 9 I	ТАМР	e '	TEAPO	c i		870
SUTTON		SYENITE		TAMPICO -	Q 1		e j		8
SUVER	σ.	SYLACAUGA	•	TANANA TANANA		TEASPOON .	D.İ	TERBIES	8
SUVANEE		SYLCO	•	TANANA . THANED	D I	TERAY	- # - I	TERENCE	9
SVEA	. 5				ë 1		e i	TERFSA	p
SVENSEN	■.	SYLVANIAM	č i	TANANA. MODERATELY		TEBO	8 J	TERINO	Ď
SVERDRUP		STLVESTER		TANASEE		TECHADO		TERLAN	D
SWAGER	ĊI	SYLVIA		TANAZZA		TECHICK		TERLCO	B
SWAINDW	а (SYNCO		TANBARK		TECD ·		TERL INGUA	D
SWAKANE		SYMEPTON		TANDY		TECOLOTE		TERMINAL	D
SWALER SWALER	0 1	SYNAREP		TANEUM		TECOMAR Tecoma		TERHO	0
SWALESILVER		SYPACUSE	8 j			TEDROW		TERCHOTE	8
SWAMPYDRAW		STRENE		TANGATH		*		TEROUGE	D
SWAN		SYPETT		TANGI		TEELER	8	TERRA CELA	8/0
SWANDAD		TABECHEDING	< 1 :	TANGLE		TEEMAT	a (TERRA CEIA+ TIDAL	D
SWANLAKE	9 1	TABERNASH	8 1 1	ANNA		****		TERRA CEIA.	0
SWANNER	9 1	TABLE HOUNTAIN		ANNAHILL		TEETERS		FREQUENTLY	
SWANSEA		TABLER	0 1	ANNER		-		FLOODED TERRAD	
SWANSCH		TABOR	0 1 1	ANNER LOW		TEFTON		TERRETON	¢ .
SWANTON		TACAN	a (PRECIPITATION		TEGURO	5	TERRETON STONY	D
	C/01	TACHE	0 (1				ě i	TEODIE	ç
NOTES: ING HYDA	OLOGIC SC	IL GROUPS SUCH AS 8					< 1	TERRIL	8

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION, Hodifiers shown, e.g., hedpock substratum, refer to a specific soil series phase found in soil map legend.

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•												
15080			с	THURLONI	с		TINTON	•	1	_		
TERRY			è	THURLOW	i B	1	TINYTOWN	<u>,</u>	I TELTEC	Ś	I TORSIDO	D
TERT			D		-	1		. е.	TOLUCA	8	I TORTUGAS	D
TERWILLIG	· ·			THURMAN	A		TICCANO	0	I TOLYAR	6	I TORULL	D
			ç	THURHONT	B		TIOGA	B	I TCMAH	e	I TOSCA	e
TESAJO			8	THUDOP		- 1	TIPPAH .	с	T TOWAHAWK	A	I TOSSER	8
TESSFIVE	•		0	Į TIAGOS	6		TIPPECANDE	e	J TOMALES	D	I TOSTON	c
TETHRICK			e	1 TIAK	¢	- E	TIPPER	c	I TOMASAKI	ç	TOTAVI	A I
TETON			c	TIBAN	f.	1	TIPPERARY	*	I TOMAST	с	TOTELAKE	В
TETONIA			S .	1 TIBBITTS	ė	1	TIPP1PAH	· · 8	1 TOMBAR	č	I TOTEM	
TETONKA			C/D	1 7155.	c	1	TIPPO	c	I TOMOSTONE	e	1 TOTIER	č
TETONVIEN			0	TISSON			TIPTON	Ē	I TONE			
TETONVILLE			Ď	I TIBURONES	ò		TIPTONVILLE	ē		2		8/D
TETONVILLE			č	1 TICA				-	I TOMEL	Ð	I TOTTEN	C/D
GRAVELLY	•				0		TIPTCP	. e .		C.	I TOUCHET	C ·
			-	I TICE	6		TIRO	C	I TOMERA. CEMENTED	C	1 TOUNEY	в
TETOTUM				TICELL	D		TISEURY	6	SUBSTRATUM	•	TOULA	c
TEVIS		•		TICHNOR	D		TISCH	0	1 TOMICHI		1 TOULAN	5
TEW			c	I TICINO	 C 	1	TISDALE	c	TCMOKA	8/0	TOURN	č
TEWA		·	8	TICKAPGO	D	1	TISHAR	. 6	I TOMOTLEY		I TOURNOUIST	5
TEX			8	I TICKASON	. в	1	TISONIA	ρ.	TOMS		I TOURS	<u>,</u>
TEXANA			D	TIDINGS	5		TISVORTH		TOMSHERRY	č		₽.
TEXARK			D	TIDWELL	Ď		TITUS					
TEXLINE				TIERRA .	õ			E/D		D	I TOUTLE. FLOODED	9
TEXPOY					-		TITUSVILLE	ç	TONALEA	c	I TOVAR	c
			8	TIERRANEGPE	2		TIVOLT	*	TONASKET	Ð	TOWAVE	8 /
TEZUMA			<u>ç</u> .	TIESIDE	₽.		TIVY	c	- TENATA	D	TOWHEE	
THACKER				TIETON.	e	1	T CA	e .	TONCANA	e	TOWNER	8
THACKERY			8	T TIFFANY	*** P70	21	TÇADLAKE	6	TONEY	Ď.	TOWNLEY	č
THADER			C i	I TIFTON	9		TOANC	ē	TONGUE RIVER	-	TOWNSEND	č
THAGE			с	TIGER CREEK	e		TOAND	è	TONIO	e		
THATCHER				TIGERON	e		100100	AZO			I TOWOSAHGY	8
THATUNA			-	TIGIT	č		CEIN			C/D-		8/D
THAYNE			9		8	•		6	TONKAVAR		ΙΤαγ	Ð
THEBES			-				00154	۲.	TCHKAWA	*	TOYAH	8 `
THEBO				TIGLEY	6	•	ICELER	e		8/0	TOYUSKA	8
			-	TIGDN	o		C9054) £	TONKIN	e -	TOZE	8.
THEDALUND			C		Đ	1 1	1084	17 F	TONKIN. MODERATELY	c	TRABUCC	Ċ.
THEEDLE			¢ .	TIJERAS	а.	1 1	OCAL	c i	VET		TRACHUTE	8
THENAS .			c	TIKI	D	1 1	OCALONA	- c · i	TONKS	.c	TRACK	Ď
THEODOR	•		0 1	TILFER -	8/C		CCAN	B j	TONOPAH			-
THEON			n 1	TILFORD			OCCEA	8.1				C
THERESA			e i	TILLEDA			CCK	c i	TONOVEK	¢ l	TRACOSA	D
THERIOT			ō	TILLICUM						8	TRACY	B
THERMO			b i				0001		TONRA	1 6	TRADEDOLLAR .	8
				TILLMAN	<u>c</u>		OCDLER	E	TONSINA	e 1	TRAER	8/0
THERMOPOLIS			<u> </u>		_		GDD STAV .	C [TONTI	C	TRAG	ອ່
THESS			9]		с	ŧτ	CDOVILLE	B · I	TONUCO	0	TRAG. CCOL	С
THETFORD.				TILMA	c	ł т	CDOS (c . I	TCOLES	0 1	TRAHAM	c ·
THETIS			6 1	TILSIT	c	Į. Т	DEHEAD	e .I	TOOLESGORD	6 1	TRAIL	Ā
THIEFRIVER			9/D	TILTON	C	I T	GEJA	8 1	TROMES	õi	TRAILAMP	ō
THIEL			8 t	TIMBALIER			DEM	ċ i	TGONE	ē . 1	TFAILCREEK	
THIESSEN			c i	TIMEERG			DECHA	8	TOONE, LOAMY			с
THIKE	•		ō İ		6		CGNON I			е (TRAILHEAD	8
THIOKOL		• •	ā i	TIMBERLY					SUBSTRATUM. STONY	. 1	THAINER	e
THIRST			ວ່າ		6, -	•	0GD	e	TOP	εı	TRAITORS	Þ.
				TIMBERVILLE			CGUS	Ö I	TGPEKI	D]	TRAMPAS .	c
THISTLEBURN				TIMBLIN	Ð,	• •	CHONA	C 1	TOPEMAN	G 1	TRAHWAY	e
THISTLEDEN			8 I	TIMBUCTOO	C	17	CIML	C 1	TOPIA	0, 1	TRANGUILAR	č
THOENY			ΡI	TIMENTWA	8	I T	DINE	e	TOPLIFF	e í	TRANSYLVANIA	è
THOMAS		0	8/D †	TINHILL	0	1 Т	CISNOT	6/D	TOPONCE	c i	TRAPPER	8
THOMHILL		. 4	9. I	TIPHUS	8	-	CISNOT, PONDED	. D 1		òi	TRAPPIST	-
THOMS			o i	TIMKEN	c		CIYABE	c i		č i	TRAPPS	C
THORNBURGH			9 İ	TIMMERMAN	5		CKAY	- e i				8
THORNDALE			5 i	TINHONS	3		OKEEN			e	TPASK	. C
THURNDIKE								<u> </u>		C I	TRAVELERS	0
THORNOCK					r		CKLAT	<u> </u>		D I	TPAVER	8
THORNTON				TIMPANOGOS			CKOPER	, P		D 1	TRAVERTINE	с.
	-		2 1		C I		CKUL	ic I		▲ †	TRAVESSILLA	D
THOROUGHEAR	۳.		3 1	MODERATELY WELL	: I		PLANY .	e	TCP .	οİ	TRAVIS	č
THORP				DRAINED	ł	T I	OLEY .	° 6		A I	TRAVSON	Ď
THOUT			: 1	TIMPEP			DLECO	0 1			TRAWLCK	9
THOW			5 1	TIMULA			DLSX				TRAY	
THOWSON				TINA	- •		DLICHA		and the second sec			ć ·
THRASH		ε		TINAJA	a . i						TREADWAY	P
THREADGILL		ē	•	TINAHOU							TREATY	8/3 ·
THREE CHOP	:	E					DLL.			DI	TREBLE	E
THREEDOT				TINDAHAY			CLLGATE			9 1	TREBLOC	o
				TINDAHAY. GRAVELLY	A 1	T	DLLFOUSE	Dİ	TORNING	∍ i	TREBOR .	č
THREEK		¢		TINE			DLWAN	Ρİ			TREEKOR	0 .
THREEFILE	•	ê	1	TINEMAN	8	11	LNA					ç
		C	1	TINEMAN. WET							TREEN	
THREETOP		· 6		TINGEY .			LONIER					D,
				TINKER			LSONA				TREGO	C.
THREETOP								DI	TCPREON COBBLY (2	TREMARNE	¢
THREETOP THROCK THULEPAH		C			-					-		<i>د</i>
THREETOP THROCK THULEPAH THUMBERLAND	-	8	, i	T INN 1	0	, TC	LSONA. TILL	8 1	TORRES	-	TRELK	8
THREETOP THROCK THULEPAH					0 A	, T (1 B.	TORRES	⊾, È		

TWO HYDPOLOGIC SOIL GROUPS SUCH AS BJC INDICATES THE CRAINEDJUNDRAINED SITUATION. Hodifists shown, e.g., bedrock substratum, refer to a specific soil series phase NOTES:

SERIES PHASE FOUND IN SOIL HAP LEGEND.

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TABLE A-5 CONTINUED Hydrologic soil groups for United States soils

				•					
TRENDLES	8	I TRUSCREEK	8	TURSON	c	1	_		
TREMOLES	c	I TRUSSEL	ē	TURTON			8	I UTABA	
HODERATELY WE	T	1 TRUVAR	Ď	TUSAYAN	č	UHLIG	a	I UTALINE	· 8
TREHONA	c	TRYON	ō	TUSCAN	-	UHLORN	¢	j UTE	D.
TREMPE	Ā	1 TSALI	ç	TUSCARAWAS	D	UENTA	. 8	I UTICA	B
TREMPEALEAU	8	1 TSCHICOMA	2	TUSCAWILLA	, c	UKIAH	D	1 UTLEY	8
TRENARY	8	I TSIRKU	č	TUSCOLA	C	ULA	¢	1 UTSO,	8
TRENHOLM	ō	TSOSIE	a		· 8	ULEN	8	L UTUADO	8
TRENT	ē	1 708		TUSCOSSO		LULIDA	·D	I UVADA	'D
TRENTON	0	TUBAC	ŝ	TUSCUMBIA	· D	I ULLOA	B	I UVALDE	ē
TREON	· 5		c	TUSEL	8	I ULM	ć	I UVI	. 8
TREP	_	TUBERET	с	TUSÍP	8	1 ULRANT	9	I UWALA	
TRES HERMANOS	8	TUCANNON	٠c	TUSK	6	ULRIC	ć	UWHARRIE	
	. 8	TUCKAHOE	6	TUSKAHOMA	0	ULRICHER	8	UZONA	Ď
TRESAND	. 0	TUCKER	с	I TUSKEEGO	c/	CI ULTRA	D	I VABEN	ŏ
TRESED	¢	TUCKERMAN	D	I TUSLER	8	ULUPALAKUA		VABUS	
TRESTLE	8	I TUCSON		TUSQUITEE		1 ULY		VACHERIE	ç
TRETTEN	8	I TUCUMCARI	8	TUSSY	. ō	ULYSSES		VADAHO	ç
TREVING	·Ð	1 TUPPIT	С	TUSTELL	Ē	I UHA	Å		D
TREVLAC	. 8	l turre .	D	1 TUSTIN	ē	UMAP INE		VADER	8
TREY .	` A	I TUGHILL	D	TUSTUMENA	ē	UMAPINE, DRAINE	0	VAONAIS	c
TRIANGLE	Ð	TUJUNGA	Ā	TUTE	. e	UNATILLA	-	VADO	8
TRIBEY'	с.	1 TUKEY	-c	TUTHILL			8	VAEDA	- D -
TRICON	c	TUKUHNIK	ē	TUTNI			c	VAIDEN	D
TRID	с	TUCHILA	ō	I TUTTLE	6	I UHBERLAND		VAILTON	0
TRID. NONSTONY		TUKWILA. DRAINED	č	I TUTUILLA	ç	I UHIAT	D,	- VAIVA	Ð
TRIDELL	ñ	TULA	è.	· · · · · · · · · · · · · · · · · · ·	c	I UMIKOA	. B	I VALOY	c
TRIGGER	D.	TULANA . DRAENED	•	TUTWILER	2	I UMIL	D	I VALCO	c
TRIGO	Ď	TULANA NONFLOODED	8	TUYEEP	· 5	UMPA	8	VALCREEK .	e
TRIMAD	6	I TULARE		TUXEKAN	6	UMPCDOS	D	VALCRES7	c ·
TRIMOLE	5		D	I TYEBA	D.	UHPUHP	8	I.VALDEZ, CLAYEY	D
TRIMMER	č	TULARGO	e	I TYEBA. MODERATEL	Y 8	UNA '	D	SUBSTRATUN	-
TRINIDAD		TULAROSA	8) WET .		UNADILLA	8	I VALDEZ, SALINE	o
TRINITY	D	TULASE	8	THEBA+ DRAINED	c	UNAKA	8	I VALDEZ. CLAVEY	. ē
TRIO	·D	ТИСН	8	I THEEDY	c	UNAKWIK	ō	SUBSTRATUR.	
	D	TULECAN	¢	Î TWEENER	Þ	UNAWEEP .	8	SALINE	
TRIOMAS	-9	TULELAKE	0	THICK	D	1 UNCAS	Ď	ALDEZ DRAINED	ċ
TRIPLT	. <u>c</u>	Į TUĻIA		I TWIG	Ð	UNCOMPANGRE	D	VALDOSTA	
TRIPLEN	8	TULIK	8	I TWILIGHT		UNDERWOOD	ā	VALE	 ∂
TRIPOLI	5/D		`C –	TWIN CREEK	. 8	UNDUSK	ă	VALENCIA	
TRIPP	8	I TULLER	0	TWINING	č	UNGERS	в.	YALENT.	
TRISTAN	8	TULLOCK	c	TWINSI		UNICOL	· 6		A
TRITON	• • D	1 TULLY	C	TWISSELMAN	č	I UNION	ć	VALENTINE	A
TRIX	. B	I TULDSO	0	I THISSELMAN.	ò	UNIONTOWN	-	I VALERA	c
TROCKEN	8	1 TUMAC		SALINE-ALKALI.		UNIONVILLE	Ð	I VALHALLA	. 🔺
TROJAN	8	TUMALO	č	I VET	•	UNISON	5	I VALKARIA	8/0
TROMP .	с	TUMARION	ō	TWISSELMAN.	D	UNIUS	8	I VALKARIA.	D
TRONSEN	9		č	1 SALINE-ALKALI		• • • •	D	I DEPRESSIONAL	
TROOK	8		č	TWOMILE		UNIVEGA		J VALLAN	D ·
TROOK, SALINE	c		č			UNLIC	8	I VALLE	8
TROPAL	D	·		TYEO	c	UNSEL	8	I VALLECITOS	D
TROPIC			ŏ		Ð	UNSON	-	I YALLEONO	8
TROSI	ō		-	TYEE	•	UPDEGRAFF	6	VALLERS	C i
TROSKY			0	TYGART	D	UPDIKE	D	VALLEYCITY	Ð
TROUGHS	0 1		¢	TYGH	c,	UPSATA .	6 1	Í VALHÁR	C,
TROUP			A		0	UPSHUR	oʻ (VALMONT	Ċ
TROUT CREEK		TUNKHANNOCK	A	TYNDALL	C I	UPSON	8	VALMY	8
TROUT RIVER	Ç I		8	THOREET DRAINED	6 3	UPSON. STONY	c i	VALNOR	č
TROUTDALE			0	TYNER	- A	UPSPRING	D' I	VALOIS	8
TROUTER	<u> </u>		8 I	TYONEK	0 1	UPSTEER	i e	VALPAC	č
	· C [TYRE	A/01	UPTHOR	Ċ i		
TROUTVILLE Trove			D	TYRONE	C I	UPTON	. ċ i	VALTO	Ď
		TUQUE		TYSON	- B - 1	UPVILLE	6	VALTON	8
TROXEL	0		5 F	TYZAK	ō i	URACCA	ā i	VALVERDE	8
TRUAX	6		: 1	UANA -	o i	URBANA	či	VAHER	0
TRUBLE	- C	TURBYFILL 6)	UBANK	i	URBO			-
TRUCE	્રા	TURK C	: 1	UBAR		UREAL		VAMONT	- P
TRUCHOT	i⊂ I	TURKEYSPRINGS B		UBEHFEE		UPICH		VANP	ç
TRUCKEE	- C	TURLEY B				URIPHES	-	VAN DUSEN	8
TRUCKEE . DRA INED	D	TURLIN	i	UELY				VAN HORN	9
TRUCKTON	a i			UCHEE		UREPNES - GRAVELLY		VAN NOSTERN	c
TRUDAU		TURMOUND	•	VCOLO		URLAND		YAN WAGONER	0
TRUCE	. ĂÎ	•	•		0.1			OLANAJO	0
TRUEFISSURE	6			UCUPIA UDAHO	1 2	•••••••		VANANDA	ο .
TRUESOALE	ĉi				- E - I	• • • • •	C I	VANBRUNT	ċ
TRUNDY				UDEL		URSINE	DÌ	VANCE	è
TRULAE	•	and a second as the second second second second second second second second second second second second second	-	UDELOPE	D į	URTAH	c i	VANDA	D
TRULON				UDOLPHO	8/01	URVIL	c i	VANDALIA	0
TRUHAN		TURNEY. B	•	UFFENS	6	USAL		VANDAMME	ă
TRUMBULL		TURRAH C		UFFENS, FLOODED	c į	USAL, GRAVELLY		VANDAHORE	8
TRUNP				UGAK		USHAR	- ,	VANDERGRIFT	ċ
		TURRIA 8	- 1	UHALDI		USINE		VANDERHOFF	-
TRUNK	0 I	TURRIA- VET C		UHL		USK		VANDERLIP	¢.
					•				A

TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., beorock substratum, refer to a specific soil series phase NOTESI FOUND IN SOIL

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NOTES: TWO HYDROLOGIC SDIL GROUPS SUCH AS BYC INDICATES THE DRAINED/UNDRAINED SITUATION. Modifiers shown, e.g., bedrock substratup, refer to a specific soil series phase found in soil map legend.

(210-VI-TR-55, Second Ed., June 1986)

Hydrologic soil groups for United States soils

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NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE GRAINED/UNDRAINED SITUATION. Modifiers shown, E.g., Sedrock substratum, refer to a specific soil series phase found in soil map legend.

Hydrologic soil groups for United States soils

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Hydrologic soil groups for United States soils

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LEGEND

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BASIN BERM CONSTRUCTION REQUIREMENTS

 Site preparation – Areas under the embankment and any structural works shall be cleared, grubbed, and the topsoil stripped to remove the trees, vegetation, roots or other objectionable material. In order to facilitate clean-out and restoration, the pool area will be cleared of all brush and excess trees.

2. Cut off trench – A cut-off trench will be excavated along the centerline dam on earth fill embankments. The minimum depth shall be two feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be eight feet but wide enough to permit operation of compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be kept free from standing water during the backfilling operations.

3. Embankment – The fill material shall be taken from selected borrow areas. It shall be free of roots, woody vegetation, oversized stones, rocks or other objectionable material. Areas on which fill is to be placed shall be scarified prior to placement of fill.

The fill material should contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction.

Fill material will be placed in 6 to 8 inch layers and shall be continuous over the entire length of the fill. Fill material must be compacted to a minimum of 95% of Modified Proctor Density as established by ASTM D-1557. Compaction testing by a certified soils engineer/geologist must be completed as directed by the Township Engineer to verify adequate compaction has been achieved.

APPENDIX B

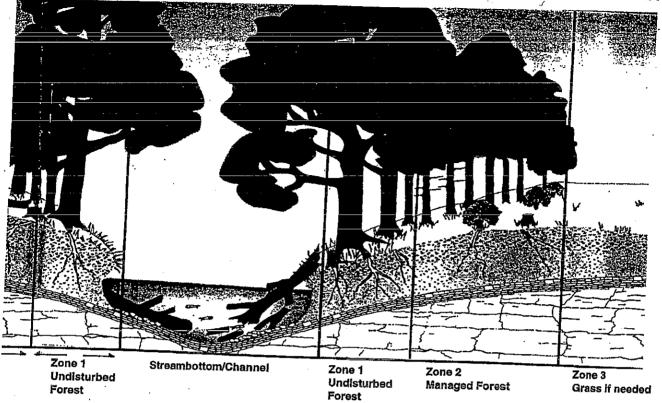


Figure 2. 3-Zone buffer for riparian forest buffer.

An accepted standard for riparian forest buffers is called the 3-zone buffer is illustrated in Figure 2 (USDA, NA-PR-07-90). The width of each of the zones may vary depending upon the size of the stream and its topographic setting. However, 85 feet is sufficient in most small and medium-sized streams to incorporate the functions of the three zones.

3-Zone Buffer

Zone 1 starts from the top of stream bank and typically is 15 feet wide, or wider. Vegetation in Zone 1 generally consists of trees and woody shrubs. Vegetation in the zone provides shade and detrital nutrients for aquatic organisms and stabilizes banks. Stabilization also may require additional techniques described in the STREAM BANK STABILIZATION BMP. Minimal disturbance is recommended for this area; however, vegetation structure must be maintained.

Zone 2 typically is 60 feet wide. The function of Zone 2 is to provide necessary contact time and material for buffering and filtering processes. Zone 2 cannot mitigate concentrated flow, therefore, for the buffer to be effective, only sheet or subsurface flow may reach this area. Vegetation in Zone 2 consists of trees and shrubs. Suitable nutrient filtering species are listed in Appendix H, *Plant Lists for Wetland Management*. The Pennsylvania State University's *The Agronomy Guide* should be consulted before establishing riparian forested buffers.

Zone 3 typically is 20 feet wide. The function of Zone 3 is to filter sediment, take up nutrients, and convert concentrated flow to sheet flow. Specifications for designing buffers in Zone 3 are discussed in the FILTER STRIP BMP.

NOVEMBER 14, 1997

Reference: Pennsylvania Handbook of Best Management Practices for Developing Areas

APPENDIX C PLANT LISTS FOR WETLAND MANAGEMENT

APPENDIX C PLANT LISTS FOR WETLAND MANAGEMENT

Table C-1 References to Wetland Author/Year		
	Title	Description
Dennison and Berry, eds. (1993)	and Technology	w, Regulatory definitions; general wetland ecology; types of wetland delineation; mitigation; risk assessment
Hammer (1992)	Creating Freshwater Wetlands	Handbook on types of wetlands wetland structure and function, wetland creation, and operation ar maintenance
Kadlec and Knight (1996)	Treatment Wetlands	Includes chapters on wetland ecolo including water quality, soils, vegetation, and fauna
Majumdar et al. eds. (1989)	Wetlands Ecology and Conservatio Emphasis in Pennsylvania	n: Collected chapters on wetland classification, hydrology, surface water quality, plant and animal communities, assessment and
Marble (1992)	A Guide to Wetland Functional Design	restoration, and recreation Guidebook to designing wetlands for habitat creation, restoration, and mitigation; describes wetland hydrology, chemistry, sediment interactions, foodchain support functions, and design for wildlife habitat
Merritt (1994)	Wetlands, Industry & Wildlife	Handbook on creating and managing wetlands for wildlife habitat in the context of industrial development
fitsch and Gosselink (1993)	Wetlands	Complete textbook covering all facets of wetland ecology; hydrology; biogeochemistry; biological adaptations; ecosystem-level processes; wetland types; wetland management
Niering (1985)		Audubon Society nature field guide to wetland ecology; types of wetlands; descriptions and photographs of wetland flora and fauna
Payne (1992)	Techniques for Wildlife Habitat Management of Wetlands	Guidebook to creation of wetlands with focus on creation of wildlife habitat

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Pennsylvania Handbook of Best Management Practices for Developing Areas

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able C-2 Aquatic	and Wetland Plants	That Can Be Used	I in Constructed W	etlands.			······			· · · · · · · · · · · · · · · · · · ·		
				Growth/Spread	Vegetative Growth			3		•		
Plant Species	Common Name	Growth Form	Persistence	Rate	Method	Spacing	Propagules	Habitat	Shade Tolerance	Wildlife Benefits	Water Regime	Salinity Tolerance
Acer negundo	Box elder	Tree	Perennial; deciduous	Fast; 4.5 to 6 m / 5 yrs	. ·	· · · · · · · · · · · · · · · · · · ·	Container	Forested wetlands	Full sun	Songbirds; waterbirds;	Irregular to regular	Fresh water; resistant
Acer rubrum	Red maple	Tree	Perennial: deciduous	Medium to fast; 5 to 7			Seed; whip; bare root	t Fresh marsh; swamp;	Partial shade	small mammais Gamebirds; songbirds;	inundation or saturation Irregular to seasonally	salt water Fresh water; < 0.5 ppt
	-			m/ 10 yrs				alluvial woods		browsers	Inundated or saturated	
Acorus calamus	 Sweet flag 	Emergent; herbaceous	Perennial; nonpersistent	Moderate; 15 cm/yr	Rhizome	0.3 to 0.9 m O.C.	Rhizome; bare root	Fresh to brackish marshes	Partial shade	Waterfowl; muskrat	Regular to permanent inundation; < 15 cm	Fresh to brackish; < 10 ppt
Alnus serrulata	Smooth alder	Shrub	Perennial; deciduos	Rapid; 60 cm/yr			Container	Fresh marshes and swamps	Full sun	Songbirds; gamebirds; ducks; woodcock; blackbirds; beaver	Seasonal to regular inundation; up to 7 cm	Fresh water; < 0.5 ppt
Carex spp.	Sedges	Emergent; herbaceous	Perennial; nonpersistent	Slow to rapid	Rhizome	0.15 to 1.8 m O.C.	Seed; bare root plant	Fresh marshes; swamps; lake edges	Full shade to full sun	Rails; sparrows; snipe; songbirds; ducks; moose	Irregularly to permanen 9 Inundated; <015 cm	dy Fresh water; <0.5 ppt
Cepahlanthus occidentalis	Buttonbush	Shrub	Perennial; deciduous	Medium; 30 to 60 cm/yr			Seedling; bare rootplant	Fresh marshes; swamps; edge of ponds	Full shade to full sun	Ducks; deer; rails; blackbirds; muskrats; beaver	Irregular to permanent inundation; up to 90 cm	Fresh water; tolerates infrequent salt water
Ceratophyllum demersum	Coontail	Submerged aquatic	Perennial	Rapid	Fragmentation		Whole Plant	Lakes; Slow Streams	· ·	Ducks; coots; geese; grebes; swans; marshbirds; muskrats	Regular to permanent inundation; 0.3 to 1.5 m	Fresh water; <0.05 ppt
yperus esculentus	Chufa	Emergent herbaceous	Perrenial; nonpersistent	Rapid	Rhizome		Seed; tuber	Fresh marshes; wet meadows	Full sun	Waterfowl; songbirds; small mammals	Irregular to regular inundation; <0.3 m	Fresh water; <0.5 ppt
chhornia crassipes	Water hyacinth	Non-rooted floating aquatic	Perennial; nonpersistent	Rapid	Stolons		Whole plants	Fresh water ponds and sluggish streams	Full sun	Coots; cover for invertebrates and fish	Permanent inundation	Fresh water; < 0.5 ppt
Hydrocotyle umbellata	Water-pennywort	Emergent to floating; herbaceous	Perennial; nonpersistent	Rapid	Stolons or rhizomes	·	Bare root plant; whole plant	Shorelines; shallow marshes	Partial shade	Wildfowi; waterfowl	Regular to permanent inundation;<30 cm	Fresh water; <0.5 ppt
Iris versicolor	Blue flag	Emergent; herbaceous	Perennial; nonpersistent	Slow; <60 cm/yr	Bulb	0.15 to 0.45 m O.C.	Seed; bulb; bare root plant	Marshes; wet meadows; swamps	Partial shade	Muskrat; wildfowl; marsh birds	Regular to permanent inundation; <15 cm	Fresh to moderately brackish
Juncus effusus	Soft rush	Emergent; herbaceous	Perennial; persistent	Slow; <6 cm/yr	Rhizome	0.15 to 0.45 m O.C.	Seed; rhizome; bare root plant	Marshes; shrub swamps; wet meadows	Full sun	Wildfowl; marshbirds; songbirds; waterfowl	Regular to permanent Inundation; <30 cm	Fresh water; <0.5 ppt
Lemna minor	Common duckweed	Non-rooted floating aquatic	Perennial; nonpersistent	Rapid	Fragmentation		Whole plant	Lakes and ponds	Partial shade	Ducks; gallinules; coots; rails; geese; beaver; muskrat; small mammals		Fresh water; <0.05 ppt
Nuphar luteum	Spatterdock	Rooted floating to emergent; herbaceous	Perennial; nonpersistent	Slow; <6 cm/yr	Rhizome	0.15 to 0.45 m O.C.	Bare root plant	Marshes; swamps; ponds	Partial shade		Regular to permanent inundation; up to 1.8 m	Fresh water to infrequent brackish
lymphea odorata	Fragent water lily	Rooted floating aquatic	Perennial; nonpersistent	· ·	Rhizome		Bare root seedling	Ponds and lakes	Partial shade		Permanent inundation; 0.3 to 0.9 m	Fresh water; <0.05 ppt
Nyssa sylvatica	Black gum	Tree	Perennial; deciduous	Slow	Suckers		Seed; bare root plant	Forested wetlands; swamps	Partial shade	Ducks; woodpeckers; songbirds; aquatic	Irregular to permanent inundation	Fresh water to infrequent brackish
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Plant Species	Common Name	Growth Form	l Persistence	Growth/Spread Rate	Vegetative Growth Method	Spacing	Propagules	Habitat	Shade Tolerance	Wildlife Benefits	Water Regime	Salinity Tolerance
Pontederia cordata	Pickerelweed	Emergent herbaceous	Perennial; nonpersistent	Moderate; 15 cm/yr	Rhizome	0.3 to 0.9 m O.C.	Rhizome; bare root plant	Fresh to brackish marshes; edges of ponds	Partial shade	Ducks; muskrat; fish	Regular to permanent; up to 30 cm	brackish; up to 3 ppt
Populus deitoides	Eastern cottonwood	Tree	Perennial; deciduous	Fast; 1.2 to 1.5 m/yr			Bare root plant; container	Forested wetlands	Full sun	Gamebirds; songbirds; waterfowl; aquatic furbearers; browsers	Seasonal inundation or saturation	Fresh water to infrequent brackish
Potamogeton nodosus	Long-leaved pond weed	Rooted submerged aquatic	Perreniat; nonpersistent	Rapid	Rhizome	0.6 to 1.8 m O.C.	Seed; bare root plant	Streams; lakes; ponds		Waterfowl; marshbirds; shorebirds; aquatic furbearers; moose; fish	Regular to permanent inundation; 0.3 to 1.8 m	Fresh water; <0.05 ppt
Quercus bicolor	Swamp white oak	Tree	Perennial; deciduous	Fast; 0.4 to 0.6 m/yr	- · · ·		Bare root plant; container	Forested wetlands	Partial shade	Waterfowi; marshbirds; shorebirds; gamebirds; songbirds; mammals	Irregular to seasonal inundation or saturation	Fresh water to infrequent brackish
Rosa palustris	Swamp rose	Shrub	Perennial; deciduous				Container	Fresh marshes; shrub swamps	Full sun	Songbirds; gamebirds	Irregular to regular soil saturation	Fresh water; < 0.5 ppt
Sagittaria latifolia	Duck potato	Emergent; herbaceous	Perennial; nonpersistent	Rapid; > 30 cm/yr	Runners; tubers	0.6 to 1.8 m O.C.	Tuber; bare root plant	Fresh marshes; swamps; edge of ponds	Partial shade	Ducks; swans; rails; muskrats; beaver	Regular to permanent inundation; up to 60 cm	Fresh water; <0.5 ppt
Salix nigra	Black willow	Tree	Perennial; deciduous	Fast; 0.9 to 1.8 m/yr	Suckers	· · ·	Bare root; container	Fresh marshes; swamps	Full sun	Gamebirds; ducks; songbirds; woodpeckers; aquatic mammals	Inundation	Fresh water; < 0.5 ppt
Scirpus acutus	Hardstern bulrush	Emergent; herbaceous	Perennial; persistent	Rapid	Rhizome	0.9 to 1.8 m O.C.	Seed; rhizome	Fresh tobrackish marshes		Ducks; geese; swans; cranes; shorebirds; rails; snipe; muskrats; fish	Regular to permanent; up to 90 cm	Fresh to brackish
Scirpus americanus	Olney's bulrush	Emergent; herbaceous	Perennial; semi- persistent	Rapid; > 30 cm/yr	Rhizome	0.6 to 1.8 m O.C.	Rhizome; bare root plant	Brackish and alkali marshes		Ducks; geese; swans; cranes; shorebirus; rails; snipe; muskrats; fish		Fresh to brackish water up to 15 ppt
Scirpus cyperinus	Wool grass	Emergent; herbaceous	Perennial; persistent	Moderate; 15 cm/yr	Rhizome	0.3 to 0.9 m O.C.	Rhizome; bare root plant	Fresh marshes; wet meadows; sloughs; swamps		Ducks; geese; swans; cranes; shorebirds; rails; snipe; muskrats; fish	Irregular to seasonal inundation	Fresh water; < 0.5 ppt
Scirpus validus	Soft stem bulrush	Emergent; herbaceous	Perennlal; persistent	Rapid; > 30 cm/yr	Rhizome	0.6 to 1.8 m O.C.	Rhizome; bare root plant	Fresh and brackish marshes				Fresh to brackish water up to 5 ppt
Sparganium eurycarpum	Glant bur-reed	Ernergent; herbaceous	Perennial; nonpersistent	Rapid; > 30 cm/yr	Rhizome	0.6 to 1.8 m O.C.	Seed; rhizome; bare root plant	Marshes; swamps; pond shorelines		Ducks; swan; geese; beaver; muskrat;	Regular to permanent inundation; up to 30 cm	Fresh water; < 0.5 ppt
axodium distichum	Bald cypress		Perennial; deciduous	Medium; 0.3 to 0.6 m/yr		·		Fresh water swamps; pond and lake margins		Perching and nesting site for birds	inundation	Fresh water; < 0.5 ppt
Typha angustifolia	Narrow-leaved cattail	Emergent; herbaceous	Perennial; persistent	Rapid; > 30 cm/yr	Rhizome	0.6 to 1.8 m O.C.	Rhizome; bare root plant	Fresh and brackish marshes; pond edges	Full sun	Geese; ducks; muskrats; beaver; blackbirds; fish		Fresh to brackish; up to 15 ppt
Typha latifolla	Broad-leaved cattail	Emergent; herbaceous	Perennial; persistent	Rapid; > 30 cm/yr	Rhizome	0.6 to 1.8 m O.C.	Rhizome; bare root plant	Fresh marshes; pond margins	Full sun	Geese; ducks; muskrats; beaver; blackbirds; fish	Irregular to permanent inundation; up to 30 cm	Fresh water; < 0.5 ppt

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Table C-3 Ecological Plant Name			gio					stics alue		<u> </u>		. D-	to				·	
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Highbush blueberry			+		+	<u> </u>						-	+	+		+		shallow
Elderberry		_	F	+	+	†		+		-+-	+		<u> </u> <u>−</u>					shallow
Virginia sweetspire			F	+			┢╌	- +				+	<u> </u>	- +		+		shallow
nkberry	1					+	f					+	+			-ŀ	+	shallow
Swamp leucothoe						┝━┅━	1	+	+-				+	╺┨╌╌			+	shallow
Pinxterbloom azalea	+							╉	•				+	· [<u>+</u>	shallow
Bayberry	+		+			+	-	┼╌╌╴					_ +		++	_		shallow
Silky dogwood	+-	╵┤╶╴		+	+	· · ·					<u> </u>	+			+			shallow
Common ninebark	++		_	- <u>r</u> -				╉──			+				+			shallow
Red chokeberry	┥┽	╧	+			·	+		_		<u>F · _</u>			 			+	shallow
picebush	+	+	+	÷			+	<u> </u>	╉	_	<u> </u>		+		_		+	shallow
arey dogwood	- T	$+\frac{1}{4}$	_	$\frac{1}{4}$	+		<u> </u>		┢──				+	 	+			deep latera
losebay Rhododendron	+		· · · · · · · · · · · · · · · · · · ·	_	+			 	 	_	<u> </u>	+		 	+	_		shallow
apleleaf viburnum	╉		_	+				+	┫		_ _		+	+	[_	shallow
ed osier dogwood		<u> +</u>	_	+	<u> </u>	+		i	 			+	+		+	_		shallow
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e Pye Weed	+	+	++				+			+					+		1	perennial
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d Bromegrass	=	+	+			+				+	†	1			- <u>-</u>	+		v. annual
vi Meadowgrass	=	+	+		_	┍╶┨─	-			 	<u> </u>	1-				+		cold, sod
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				t	$+^{+}_{+}$	_		-+-		+		_			+			rm, clump
Bluestem	=	+	+		· - →		1				+			+				rm, clump

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+ characteristic/preferred = tolerant Source: Adapted with modifications from Palone and Todd (draft).

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Table C-3 Ecological Plant Name	l	Re	gio	n		Vildi	ife V	SUCS		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	2200	wth R	ata	y		Size	- Deather	
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Silky dogwood			-	+	+			+			+		<u> </u>					shallow
Common ninebark	+		-				+	+	╈		+	1	1		+-	+	+	shallow
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Nanny berry		+		+		+								{	+		+	
Blackhaw viburnum			+		-+	+						[+++	
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owi Meadowgrass	=	+	+			-				+	.		-1			1 +		cold, sod
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tle Bluestem		<u> </u>		<u> </u>	<u> </u>							+ (- 1		+	1	varm, clump

NOVEMBER 14, 1997

APPENDIX D STORMWATER MANAGEMENT PLAN APPLICATION AND FEE SCHEDULE

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RESOLUTION # 02-15 HAYCOCK TOWNSHIP, BUCKS COUNTY

BE IT RESOLVED THAT THE FOLLOWING FEES/ESCROWS SHALL BE REQUIRED PURSUANT TO SECTION 601 OF THE HAYCOCK TOWNSHIP STORMWATER MANAGEMENT ORDINANCE NO. <u>91</u>

I. Plan Review: (per-lot for Subdivision Applications)

Fee:\$100.00Escrow:\$400.00 - for the first 5 lots plus\$100.00 - for each additional lot over 5 lots

II. Permit/Inspection:

Fee: \$25.00 Escrow: \$200.00

All fees are non-refundable. The applicant shall be responsible to reimburse the Township for all costs for plan review or administration/inspection which exceed the escrow amount established by this resolution. Any escrow remaining upon project completion will be returned to the applicant.

BE IT RESOLVED, by the Board of Supervisors of Haycock Township, Bucks County, this 7th day of 0 ctober, 2002.

HAYCOCK TOWNSHIP BOARD OF SUPERVISORS:

Ms. Kathleen M. Babb, Chairperson

Mr. Michael Lennard, Vice Chairman

Mr. Henry DePue. Supervisor

ATTEST:

Ms. Nancy M. Yodis, Secretary

APPENDIX E WATERSHED MAP

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