ENVIRONMENT

BACKGROUND

Woodstock's location along the North Fork of the Shenandoah River between the Blue Ridge and Allegheny mountain ranges makes the natural environment one of the Town's most important assets. These natural features add to the visual beauty of the area as well as provide unique opportunities for exposure to the natural environment within the town limits.

It is essential to study Woodstock's unique environmental assets in order to understand how they will affect various types of land uses. Citizen concern for the protection of the environment is evidenced by the involvement of local interest groups in various environmental issues and future growth must protect the area's sensitive features.

A discussion of the sensitive environmental characteristics in the Woodstock area follows. These environmental characteristics include steep slopes, soil types, sinkholes, the floodplain, and vegetation. We also take a look at our local climate and our water quality.

CLIMATE

We enjoy a moderate climate with seasonal variations in temperature and precipitation. The average monthly temperature varies from 32.0 degrees in January, to 74.7 degrees in July. The rainfall is generally ample, and most rain falls in the summer and spring. The average annual precipitation is 35.21 inches annually. The average annual snowfall is 26.9 inches, with most snow falling during the months of January, February and March. See figure below.

Climatological Normals (1961-90)
WOODSTOCK_2_NE , VA (449263) Percent Missing: 0.36

	MinTemp(F)	MaxTemp(F)	AvgTemp(F)	AvgPrcp(in)	AvgSnow(in)
Jan	21.0	43.1	32.0	2.38	8.7
Feb	23.5	46.7	35.1	2.30	8.5
Mar	31.7	57.5	44.6	2.75	4.0
Apr	40.2	67.6	53.9	2.70	0.5
May	49.4	76.7	63.1	3.42	0.0
Jun	57.4	84.3	70.9	3.25	0.0
Jul	61.9	87.6	74.7	3.68	0.0
Aug	60.5	86.5	73.5	3.16	0.0
Sep	53.9	80.2	67.0	3.25	0.0
Oct	42.1	69.5	55.8	3.15	0.1
Nov	34.3	58.1	46.2	2.77	1.1
Dec	25.7	46.9	36.3	2.40	4.0
Ann	41.8	67.1	54.4	35.21	26.9

Source: Microsoft Internet Explorer

SENSITIVE ENVIRONMENTAL FEATURES

SINKHOLES AND GROUNDWATER

David A. Hubbard, Jr. of the Division of Mineral Resources has done extensive research on sinkholes and has developed an informational brochure entitled *Sinkholes.* The following is an excerpt from that brochure:

> *In Virginia the formation and modification of sinkholes is a natural process in areas underlain by limestone and other soluble rock. The location and rate at which sinkholes form can be affected by man's activities. Sinkholes are basin-like or funnel-shaped depressions in the land surface. Where sinkholes and caves have formed by the dissolution of soluble rock, such as limestone, dolomite, and gypsum, surface water is uncommon and streams may sink into the ground. This type of topography, formed by dissolution, is referred to as karst terrain. In karst terrain, sinkholes are input points where surface water enters the groundwater system. Although the formation of sinkholes is a natural process in karst terrains, man-made modifications to the hydrology of these areas commonly results in the acceleration of this process. Disposal of stormwater in sinkholes or shallow dry wells can induce subsistence (gradual sinking or an instantaneous collapse). Adjacent to the drainage input additional sinkholes may form. Sinkhole flooding can develop from a number of conditions, but two man-made conditions are the most common causes in Virginia: the plugging of natural sinkhole drains by sediment and the overwhelming of natural sinkhole drains by increases in runoff due to artificial surfaces.*

Inadequate erosion control during construction can result in the plugging of natural sinkhole drains by sediment-laden runoff. The accompanying restriction of subsurface drainage causes an increase in ponding or flooding. Increased runoff from roads, parking lots, and structures is the most significant cause of sinkhole flooding. Much of the precipitation that would have percolated through a vegetated soil cover is introduced rapidly into surface and subsurface drainage networks.

WATER QUALITY

Woodstock is committed to providing the town with a safe and dependable water supply of drinking water. Our water is surface water obtained from the North Fork of the Shenandoah River. The Safe Drinking Water Act applies to all public water systems regulated by the state department of health. The goal of the Environmental Protection Agency is that by the year 2005, 50 percent of the population served by the public water systems with source Water Protection programs in place under both the Wellhead Protection and Watershed Protection programs.

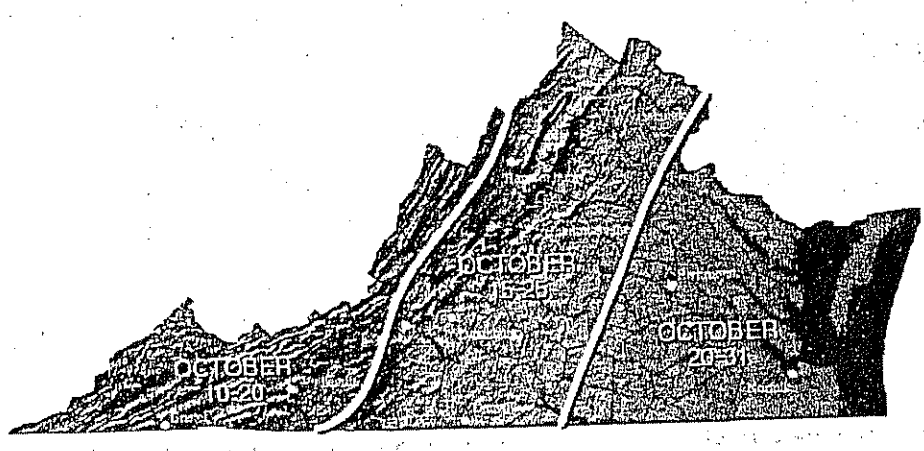
The pollution of groundwater resources is an ever present problem in karst areas. Sinkholes have long been used as dumps for waste materials. The dumping of solid wastes such as dead animals, garbage, and refuse, into sinkholes is a major hazard to groundwater resources. It is also prohibited by existing State law. Liquid wastes dumped into sinkholes can enter the groundwater system undiluted through the underground drainage routes or conduits. An excellent principle is to never put anything in a sinkhole that you would not want in your drinking water.

Ordinances designed to protect the groundwater supply through strict enforcement of materials allowed to fill and drain into sinkholes should be encouraged. The Town of Woodstock currently has a policy in its Drainage Manual that stormwater may not be diverted into a sinkhole unless the pollutants have been removed. Control over development in and around sinkholes should be exercised.

VEGETATION

Trees, shrubs and ground cover are considered significant environmental features because they protect the environment by retaining rainwater, controlling erosion, cleansing the land of pollutants, and providing wildlife habitats and visual relief in more urbanized areas.

We are fortunate to have many broad leaf deciduous trees in our surroundings, making Woodstock in autumn a spectacular place to be. The peak of fall color for Woodstock is typically October 15-25th. See figure below.



Typical Dates of Peak Fall Foliage Colors in Virginia

Existing trees in Woodstock are primarily hardwoods, with scattered evergreens. Landscaping plans are being developed for the downtown area and trees have been planted along the major corridors leading to the downtown area, (Route 11 and Route 42). In order to retain the green spaces, each of the Town's zoning districts requires a certain percentage of the lot to remain open (without parking lots, streets, or buildings).

The existing zoning ordinance requires landscaping plans to be submitted as part of site plans and special use permits.

State legislation permits localities to adopt ordinances providing for the planting and replacement of trees during the development process. Site plan controls for new developments should encourage preservation of existing vegetation. Because trees hold the soil to prevent erosion, filter pollutants, provide visual relief in developing areas, add value to properties, and provide homes for birds and other creatures, the Town of Woodstock should consider adopting an ordinance requiring the planting and replacement of trees during the development process.

FLOODPLAIN AND WATERSHEDS

The 100 year flood plain in the Woodstock areas as defined by the Federal Emergency Management Administration is illustrated in Map 2-1. It has been determined by FEMA that the shaded areas have one chance in a hundred of being flooded in any year; an average of once every hundred years. Hundred year floods cannot be relied to occur on a scheduled basis of once every hundred years. Some areas in the 100 year flood zone may experience flooding several years in a row; other areas may stay dry for several hundred years. The map developed by FEMA was produced in 1984. Since that time, the Town's boundary lines have been expanded to encompass approximately 250 additional acres. As development pressures increase both within and outside the existing Town boundaries, areas in the floodplain may be affected. In addition, the existing floodplain map is inadequate in that it does not indicate the elevations, widths, depths or velocities of the areas shaded as floodplain. The Town currently places the burden on developers to determine the exact location of the floodplain before developing in areas in close proximity to the shaded areas. The Town should continue to request FEMA to update the Town's floodplain map and to conduct a detailed study of the floodplains within the Town's existing boundary and those areas adjacent to the Town. This study should include engineering calculations to determine elevations, widths, depths, and velocities of the floodplain area. The land within the 100 year floodplain must be protected from excessive and unusual development in areas deemed undesirable for development due to inherent natural drainage conditions and topographical features. Characteristics typical of floodplain lands are where:

- inhabitants are most likely to incur danger to safety, health, and welfare due to flooding conditions beyond the individual property owner's or tenant's control, and
- development is more likely to measurably alter existing drainage and watercourses such that neighbors upstream and downstream are affected, and
- collective unregulated actions are more likely to endanger the public health, particularly as related to water supply and drainage.

The Town of Woodstock currently has an overlay Floodplain Conservation District, the boundaries of which are designated on the flood hazard map. The ordinance, approved by FEMA, prohibits the construction of buildings within this area, however, the

Town Council may authorize the issuance of a zoning permit if adequate building methods are used to eliminate the dangers of flooding. This ordinance should be reviewed periodically to ensure its conformance with FEMA regulations.

STEEP SLOPES

There are only a few areas of steep slopes within the town, a topo map for the Town of Woodstock is shown on Map 2-2. Steep slopes, including slopes of 15% or greater, are considered sensitive environmental features because development in these areas can cause loss of soil stability and increased erosion; increased stormwater runoff and downstream flooding; and loss of aesthetic benefits of undeveloped hillsides as attractive backdrops for development.

SOIL TYPES

The Natural Resources Conservation Service (formally the Soil Conservation Service) has identified the following soil types in and around the Woodstock corporate limits:

- Carbo-Silty Clay Loam
- Carbo-Endcav Complex (Very Rocky)
- Chilhowie Silt Clay Loam
- Edom Silty Clay Loam
- Endcav Silt Loam
- Endcav Silt Loam (Rocky)
- Frederick & Poplimento Silt Loams
- Frederick and Poplimento Gravelly Silt Loams
- Frederick and Poplimento Silt Loams (Very Rocky)
- Nomberville Loam
- Opequon Silty Clay Loam (Very Rocky)
- Rock Outcrop-Carbo Complex

Summary descriptions of these soil types are listed in the appendix 2-1. Detailed descriptions are found in the Shenandoah County Soil Survey.

Soils range in depth to bedrock from 35 to 68 inches. When erosion and sediment control plans and stormwater management plans are reviewed during the development review process, the soil type and depth are important in determining the rate of stormwater infiltration into the soil and the amount of runoff that may result from development.

APPENDIX 2-1
DESCRIPTION OF SOIL TYPES IN THE WOODSTOCK AREA

4B Blairton silt loam, 2 to 7 percent slopes. This soil is moderately deep, gently sloping and somewhat poorly drained. The seasonal high water table, the moderate depth to bedrock, and the potential for frost action are the main limitations affecting community development. The seasonal high water table and the depth to bedrock are limitations on sites for septic tank absorption fields, sewage lagoons, and sanitary landfills. The high water table is a limitation in shallow excavations and on sites for dwellings. The potential for frost action is a limitation on sites for local roads and streets.

Surface layer: 0 to 9 inches, brown silt loam; Subsoil: 9 to 31 inches, yellowish brown silty clay loam; Substratum: 31 inches, acid shale bedrock.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: Low

4C Blairton silt loam, 7 to 15 percent slopes. This soil is moderately deep, strongly sloping, and somewhat poorly drained. The seasonal high water table, the moderate depth to bedrock, the slope, and the potential for frost action are the main limitations affecting community development. The seasonal high water table and the depth to bedrock are limitations on sites for septic tank absorption fields, sewage lagoons, and sanitary landfills. The seasonal high water table and the slope limit construction and the use of this soil as a site for dwellings and local roads and streets. The potential for frost action is a limitation on sites for local roads and streets.

Surface layer: 0 to 9 inches, brown silt loam; Subsoil: 9 to 31 inches, yellowish brown silty clay loam; Substratum: 31 inches, acid shale bedrock.

Surface runoff: Rapid; Erosion potential: High; Shrink-swell potential: Low

8B Carbo-silty clay loam, 2 to 7 percent slopes. This soil is moderately deep, gently sloping, and well drained. The depth to bedrock, the slow permeability, the high shrink-swell potential, and low strength are the main limitations affecting community development. The depth to bedrock and the slow permeability are limitations on sites for septic tank absorption fields. The depth to bedrock is the dominant limitation in shallow excavations and on sites for sanitary landfills. The high shrink-swell potential generally is the main limitation on sites for dwellings. The low strength and the high shrink-swell potential are limitations on sites for local roads and streets.

Surface layer: 0 to 8 inches, yellowish brown silty clay loam; Subsoil: 8 to 18 inches, strong brown clay; 8 to 37 inches, yellowish brown clay; Substratum: 37 inches, limestone bedrock.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: High

9C Carbo-Endcav complex, 2 to 15 percent slopes, very rocky. These are moderately deep and deep, undulating to strongly rolling or sloping, well drained soils on the side slopes and the summits of hills and ridges. The depth to bedrock, the rock outcrop, the slow permeability, the high shrink-swell potential, and low strength are the main limitations affecting community development. The depth to bedrock and the slow permeability limit the use of these soils as sites for septic tank absorption fields. The depth to bedrock is the dominant limitation in shallow excavations and on sites for sanitary landfills. The high shrink-swell potential is the main limitation on sites for dwellings. The low strength and the high shrink-swell potential are limitations on sites for local roads and streets.

Surface layer: 0 to 8 inches, yellowish brown silty clay loam; Subsoil 8 to 18 inches, strong brown clay; 18 to 37 inches, yellowish brown clay; Substratum: 37 inches, limestone bedrock.

Surface runoff: Medium or rapid; Erosion potential: Medium; Shrink-swell potential: High

9D Carbo-Endcav complex, 15 to 35 percent slopes, very rocky. These are moderately deep and deep, hilly to very steep, well drained soils on the side slopes of hills and ridges. The depth to bedrock, the rock outcrop, the slope, the slow permeability, the high shrink-swell potential, and low strength are limitations affecting community development. They especially limit the use of these soils for building development, sanitary facilities, and construction materials.

Surface layer: 0 to 8 inches, yellowish brown silty clay loam; Subsoil 8 to 18 inches, strong brown clay; 18 to 37 inches, yellowish brown clay; Substratum: 37 inches, limestone bedrock.

Surface runoff: Very rapid; Erosion potential: High; Shrink-swell potential: High

11B Chilhowie silty clay loam, 2 to 7 percent slopes. This soil is moderately deep, gently sloping, and well drained. This soil is moderately deep, gently sloping, and well drained. The moderate depth to bedrock, the slow permeability, and the high shrink-swell potential in the subsoil are the major limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface layer: 0 to 6 inches, dark yellowish brown silty clay loam; Subsoil: 6 to 18 inches, strong brown clay; Substratum: 18 to 35 inches, strong brown extremely channery clay; 35 inches, calcereous shale bedrock.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: High

11C Chilhowie silty clay loam, 7 to 15 percent slopes. This soil is moderately deep, strongly sloping, and well drained. The moderate depth to bedrock, the slope, the slow

permeability, and the high shrink-swell potential in the subsoil are the major limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface layer: 0 to 6 inches, dark yellowish brown silty clay loam; Subsoil: 6 to 18 inches, strong brown clay; Substratum: 18 to 35 inches, strong brown extremely channery clay; 35 inches, calcereous shale bedrock.

Surface runoff: Repid; Erosion potential: High; Shrink-swell potential: High

11D Chilhowie silty clay loam, 15 to 25 percent slope. This soil is moderately deep, moderately deep, and well drained. The slope, the depth to bedrock, the slow permeability, and the high shrink-swell potential in the subsoil are the major limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface layer: 0 to 6 inches, dark yellowish brown silty clay loam; Subsoil: 6 to 18 inches, strong brown clay; Substratum: 18 to 35 inches, strong brown extremely channery clay; 35 inches, calcereous shale bedrock.

Surface runoff: Very rapid; Erosion potential: High; Shrink-swell potential: High

16 B Edom silty clay loam, 2 to 7 percent slope. This soil is very deep, gently sloping, and well drained. The restricted permeability, the moderate shrink-swell potential, the clayey subsoil, and low strength limit the use of this soil for community development. The restricted permeability is a limitation on sites for septic tank absorption fields. The low strength and the moderate shrink-swell potential limit the use of this soil for roadfill, local roads and streets, and dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills, daily cover for landfills, and shallow excavations.

Surface layer: 0 to 3 inches, dark brown silty clay loam; 3 to 7 inches, dark brown, mottled silty clay loam; Subsoil: 7 to 18 inches, yellowish red clay; 18 to 34 inches, yellowish red, mottled clay; Substratum: 34 to 65 inches, yellowish red, mottled very channery silty clay.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: Moderate

16C Edom silty clay loam, 7 to 15 percent slopes. This soil is very deep, strongly sloping, and well drained. The restricted permeability, the slope, the moderate shrink-swell potential, and the clayey subsoil limit the use of this soil for community development. The restricted permeability of the subsoil is a limitation on sites for septic tank absorption fields. The low strength and the moderate shrink-swell potential limit the use of this soil for roadfill and local roads and streets. The slope and the moderate shrink-swell potential are limitations on sites for dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills and daily cover for landfills.

Surface layer: 0 to 3 inches, dark brown silty clay loam; 3 to 7 inches, dark brown, mottled silty clay loam; Subsoil: 7 to 18 inches, yellowish red clay; 18 to 34 inches, yellowish red, mottled clay; Substratum: 34 to 65 inches, yellowish red, mottled very channery silty clay.

Surface runoff: Rapid; Erosion potential: High; Shrink-swll potential: Moderate

17B Edcav silt loam, 2 to 7 percent slopes. This soil is deep, gently sloping, and well drained. The slow permeability, low strength, the high shrink-swell potential, and the clayey subsoil limit the use of this soil for community development. The slow permeability and the high content of clay in the subsoil are limitations on sites for septic tank absorption fields and shallow excavations. The low strength and the high shrink-swell potential limit the use of this soil for roadfill and local roads and streets. The high shrink-swell potential also is a limitation on sites for dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills and daily cover for landfills. The depth to bedrock limits the use of this soil as a site for trench and area landfills and shallow excavations.

Surface layer: 0 to 8 inches, dark brown silt loam; Subsoil: 8 to 16 inches, yellowish brown silty clay; 16 to 22 inches, strong brown clay; 22 to 33 inches, dark brown clay; 22 to 33 inches, dark brown clay; 33 to 58 inches, yellowish brown clay.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: High

17C Edcav silt loam, 7 to 15 percent slopes. This soil is deep, strongly sloping, and well drained. The slow permeability, low strength, the high shrink-swell potential, and the clayey subsoil limit the use of this soil for community development. The slow permeability and the high content of clay in the subsoil are limitations on sites for septic tank absorption fields and shallow excavations. The low strength and the high shrink-swell potential limit the use of this soil for roadfill and local roads and streets. The high shrink-swell potential also is a limitation on sites for dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills and daily cover for landfills. The depth to bedrock limits the use of this soil for trench and area landfills and shallow excavations.

Surface layer: 0 to 8 inches, dark brown silt loam; Subsoil: 8 to 16 inches, yellowish brown silty clay; 16 to 22 inches, strong brown clay; 22 to 33 inches, dark brown clay; 22 to 33 inches, dark brown clay; 33 to 58 inches, yellowish brown clay.

Surface runoff: Rapid; Erosion potential: High; Shrink-swell potential: High

17D Edcav silt loam, 15 to 25 percent slopes. This soil is deep, moderately steep, and well drained. The slope, the slow permeability, low strength, the high shrink-swell potential, and the clayey subsoil limit the use of this soil for community development. The slow permeability of the subsoil and the slope are limitations on sites for septic tank absorption fields and shallow excavations. The low strength, the slope, and the high shrink-swell potential limit the use of this soil for roadfill and local roads and streets. The slope and the high shrink-swell potential are limitations on sites for dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills and daily cover for

landfills. The slope and the depth to bedrock limit the use of this soil for trench and area landfills.

Surface layer: 0 to 8 inches, dark brown silt loam; Subsoil: 8 to 16 inches, yellowish brown silty clay; 16 to 22 inches, strong brown clay; 22 to 33 inches, dark brown clay; 22 to 33 inches, dark brown clay; 33 to 58 inches, yellowish brown clay.

Surface runoff: Very rapid; Erosion potential: High; Shrink-swell potential: High

18C Edcav silt loam, 7 to 15 percent slopes, rocky. This soil is deep, well drained, and strongly sloping. The slow permeability, low strength, the high shrink-swell potential, the rock outcrop, and the clayey subsoil limit the use of this soil for community development. The slow permeability and the high content of clay in the subsoil are limitations on sites for septic tank absorption fields and shallow excavations. The low strength and the high shrink-swell potential limit the use of this soil for roadfill and local roads and streets. The high shrink-swell potential also is a limitation on sites for dwellings. The clayey subsoil limits the use of this soil for trench type sanitary landfills and daily cover for landfills. The depth to bedrock limits the use of this soil for trench and area landfills and shallow excavations.

Surface layer: 0 to 8 inches, dark brown silt loam; Subsoil: 8 to 16 inches, yellowish brown silty clay; 16 to 22 inches, strong brown clay; 22 to 33 inches, dark brown clay; 33 to 58 inches, yellowish brown clay.

Surface runoff: Rapid; Erosion potential: High; Shrink-swell potential: High

20B Frederick and Poplimento silt loams, 2 to 7 percent slopes. These are very deep, gently sloping well drained soils. The restricted permeability, low strength, the high content of clay, and the high shrink-swell potential are limitations affecting building site development and sanitary facilities.

Surface layer: 0 to 4 inches, dark brown silt loam; Subsoil: 4 to 7 inches, yellow silt loam; 7 to 16 inches, yellowish red, mottled silty clay loam; 6 to 36 inches, red, mottled clay; 36 to 47 inches, yellowish red, mottled clay; 47 to 65 inches, mottled clay.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: High

20C Frederick and Poplimento silt loams, 7 to 15 percent slopes. These are very deep, strongly sloping, well drained soils. The restricted permeability, low strength, the high content of clay, and the high shrink-swell potential and the slope are limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface layer: 0 to 4 inches, dark brown silt loam; Subsoil: 4 to 7 inches, yellow silt loam; 7 to 16 inches, yellowish red, mottled silty clay loam; 6 to 36 inches, red, mottled clay; 36 to 47 inches, yellowish red, mottled clay; 47 to 65 inches, mottled clay.

Surface runoff: Rapid; ERosion potential: High; Shrink-swell potential: High

20D Frederick and Poplimento silt loams, 15 to 25 percent slopes. These are very deep, moderately steep, well drained soils. The restricted permeability, low strength, the high content of clay, the high shrink-swell potential, and the slope are limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface layer: 0 to 4 inches, dark brown silt loam; Subsoil: 4 to 7 inches, yellow silt loam; 7 to 16 inches, yellowish red, mottled silty clay loam; 6 to 36 inches, red, mottled clay; 36 to 47 inches, yellowish red, mottled clay; 47 to 65 inches, mottled clay.

Surface runoff: Very rapid; ERosion potential: High; Shrink-swell potential: High

21B Frederick and Poplimento gravelly silt loams, 2 to 7 percent slopes. These are very deep, gently sloping, well drained soils. The restricted permeability, low strength, the high content of clay, and the high shrink-swell potential of these soils are limitations affecting building site development and sanitary facilities. The gravel-sized rock fragments in the surface layer limit the use of these soils for lawns and recreational development.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: High

21C Frederick and Poplimento gravelly silt loams. These are very deep, strongly sloping, well drained soils. The restricted permeability, low strength, the high content of clay, the high shrink-swell potential, and the slope of these soils are limitations affecting building site development and sanitary facilities. The gravel-sized rock fragments in the surface layer and the slope limit the use of these soils for lawns and recreational development.

Surface runoff: Rapid; Erosion potential: High; Shrink-swell potential: High

21D Frederick and Poplimento gravelly silt loams. These are very deep, moderately steep, well drained soils. The restricted permeability, low strength, the high content of clay, the gravel content, the high shrink-swell potential, and the slope are limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface runoff: Very rapid; Erosion potential: High; Shrink-swell potential: High

21E Frederick and Poplimento gravelly silt loams. These are very deep, steep, well drained soils. The restricted permeability, low strength, the high content of clay, the gravel content, the high shrink-swell potential, and the slope are the major limitations affecting building site development, sanitary facilities, and most recreational uses.

Surface runoff: Very rapid; Erosion potential: High; Shrink-swell potential: High

23C Frederick and Poplimento silt loams, 2 to 15 percent slopes, very rocky. These are very deep, gently sloping to strongly sloping, well drained soils. The restricted permeability, the slope, the rock outcrop, low strength, the high content of clay, and the high shrink-swell potential are limitations affecting building site development, sanitary facilities, and recreational development.

Surface layer: 0 to 4 inches, dark brown silt loam; Subsoil: 4 to 7 inches, yellow silt loam, 7 to 16 inches, yellowish red, mottled silty clay loam, 16 to 36 inches, red, mottled clay; 36 to 47 inches, yellowish red, mottled clay, 47 to 65 inches, mottled clay.

Surface runoff: Medium or rapid; Erosion potential: Medium; Shrink-swell potential: High

46A Nomberville loam, 0 to 2 percent slopes, rarely flooded. This soil is very deep, nearly level, and well drained. The flooding is the major limitation affecting community development. It especially limits the use of this soil for sanitary facilities and building site development. It also is a limitation affecting camp areas and playgrounds.

Surface layer: 0 to 13 inches, dark brown loam; Subsoil: 13 to 50 inches, dark brown silt loam; Substratum: 50 to 62 inches, dark brown gravelly loam.

Surface runoff: Slow; Erosion potential: Low; Shrink-swell potential: Low

51D Rock outcrop-Carbo complex, 2 to 25 percent slopes. This map unit consists of moderately deep, gently sloping to moderately steep, well drained Carbo soil and outcrops of limestone bedrock. The depth to bedrock, the slope, the high clay contend, the high shrink-swell, low strength, slow permeability of the subsoil, and the Rock outcrop are limitations affecting community development, local loads and streets, and most recreational uses.

Surface layer: 0 to 8 inches, yellowish brown silty clay loam; Subsoil: 8 to 18 inches, strong brown clay; 18 to 37 inches, yellowish brown clay; Substratum: 37 inches, limestone bedrock.

Surface runoff: Medium to very rapid; Erosion potential: Medium; Shrink-swell potential: High

56B Trappist silt loam, 2 to 7 percent slopes. This soil is moderately deep, gently sloping, and well drained. The restricted permeability, the moderate shrink-swell potential, the depth to bedrock, and the clayey subsoil are the major limitations affecting community development, especially sanitary facilities and building development, especially sanitary facilities and building sites. Low strength is a limitation on sites for local roads and streets. The restricted permeability, the depth to bedrock, and the slope limit most recreational uses.

Surface layer: 0 to 8 inches, yellowish brown silt loam; Subsoil: 8 to 15 inches, strong brown silty clay loam; 15 to 37 inches, strong brown clay. Substratum: 37 to 40 inches, weathered shale; 40 inches, shale bedrock.

Surface runoff: Medium; Erosion potential: Medium; Shrink-swell potential: Moderate

58 Udorthents - Urban Land Complex. This map unit consists of areas of Urban land and shallow to very deep soils that have been disturbed by excavation. The components occur as areas so intermingled that it was not practical to map them separately. The Udorthents consist of material that has been graded, cut, filled, or otherwise disturbed during urban development and highway construction. The Urban land consists of asphalt, concrete, or other impervious surfaces. Examples are highways, shopping centers, and industrial parks. The properties and characteristics of the Udorthents are so variable that onsite investigation generally is needed to determine the suitability of the unit for most uses.

GOAL, OBJECTIVES AND POLICIES

GOAL:

To preserve and enhance natural resources to the extent practical, consistent with the character of a Town which is growing.

OBJECTIVES:

- Preserve vegetation and sensitive environmental features through the regulation of the development process.
- Enhance the Town's aesthetic character through preservation of natural features through landscaping and tree planting in new developments.
- Preserve and use natural drainage ways wherever possible for stormwater management and nonpoint pollution control.

POLICIES:

These guidelines promote land development throughout the Town in keeping the Town's overall environmental, "to preserve and enhance natural resources to the extent practical, consistent with the character of a Town which is growing."

- Construction in an area immediately surrounding sinkholes should be regulated.
- Slopes greater than 25% should be preserved in their natural state to the maximum extent possible, allowing only appropriate uses such as passive recreation and necessary public facilities.

- Existing topography and tree cover should be used as key site planning elements in determining road layout, location and buffering of different land uses, stormwater management systems, and utility lines.

- The Town should minimize the loss of existing tree cover and promote the addition of new trees and shrubs during the development process in order to realize the air, noise and water quality benefits.

- The Town should protect residential areas from industrial and other noise.

- Continue to prohibit construction in the floodplain unless the Town Council deems that the building is so engineered to eliminate the dangers of flooding.

- Existing stream water quality should be maintained by encouraging the use of best management practices for stormwater management and nonpoint pollution control and by preserving natural drainage ways.

IMPLEMENTATION PROGRAM

- Adopt appropriate performance standards for development in sensitive environmental areas.

- Develop an ordinance defining the circumstances under which construction may or may not occur in and immediately surrounding sinkholes.

- Development proposed on slopes of 15% to 25% should be subject to appropriate performance standards, including grading and stormwater management requirements and vegetation protection to minimize environmental disruption.

- Adopt appropriate performance standards for areas with slopes greater than 25% in proposed developments.

- Continue to require landscaping plans as part of site plan and special use permit review. Consider adoption of an ordinance which would provide for the maintenance of the natural vegetative cover and prevent excessive erosion.

- Develop a list of recommended landscaping trees and shrubs for improving existing and new development areas.

- Continue to support the Town's erosion and sediment control and stormwater management programs.

ANNUAL REVIEW CRITERIA

In order to evaluate the effectiveness of town land use regulations in promoting environmentally sound development, annually:

- Review floodplain ordinance to ensure its conformance to FEMA regulations.

- Review erosion and sediment control ordinance to ensure its conformance to state regulations.
- Review Town's stormwater management system.
- Assess the effectiveness of the implementation/action program in achieving goals and objectives.