

**NONTECHNICAL SOIL DESCRIPTIONS**  
**UPSHUR COUNTY, WEST VIRGINIA**  
**AGRONOMIC (AGR)**  
**Basic Soils (SOI)**  
**GRASSLAND SUITABILITY GROUPS (GSG)**

**Atkins silt loam - At**

**AGR** This soil is not suited to cultivated crops unless artificial drainage was installed prior to 1985 as a management practice. The soil is better suited to water-tolerant hay or pasture plants or wildlife habitat in a natural state. Using conservation tillage systems and a crop sequence that includes hay, delaying tillage until the soil is reasonably dry, and returning crop residue to the soil help to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** These Atkins soils are deep (40 to 60+ inches to bedrock), poorly drained (seasonal high water table at or near the surface) soils that have formed in alluvial sediments along streams or drainage ways. They have medium textured surface and subsoil. The soil permeability is moderate (estimated at 0.6 to 2.0 inches per hour). Natural fertility is moderate and available water capacity is high. These soils are usually located on the landscape along drainage ways in depressions or low swamp like areas with poor drainage. These Atkins soils are usually considered as hydric soils and usually found in wetlands in a natural undrained site.

**GSG - Wetlands -** Very deep, poorly and very poorly drained soils with low to moderate natural fertility. High soil moisture holding capacity and pH ranges from 4.0 to 6.0. Annual precipitation is 41 to 50 inches.

**Buchanan and Ernest very stony silt loams, 3 to 15 percent slopes - BeC**

**AGR** This very stony map unit is not suited to cultivated crops or hay, and has limited suitability for pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected areas, is a major management concern. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** These Buchanan and Ernest soils are mapped as one soil unit because of their similar physical properties and interpretations in land use. These very stony soils have surface stones covering from 1 to 3 percent of the surface and ranging in diameter from 10 to 25 inches. Buchanan soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured channery surface layers and medium textured channery or very channery subsoil. Buchanan soils have a firm and brittle fragipan layer 20 to 36 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 60 percent

rock fragments. They generally have a seasonal high water table starting at 16 to 30 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is low to moderate and available water capacity is moderate. These soils can have a slip hazard on slopes exceeding 10 to 15 percent.

The Ernest soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured surface layers and medium to moderately fine textured subsoils with a rock fragment content ranging from 0 to 30 percent in the upper part of the subsoil. Ernest soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 40 percent rock fragments. They generally have a seasonal high water table starting at 16 to 26 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate and available water capacity is moderate to high. These soils have a slip hazard on slopes exceeding 10 to 15 percent.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Buchanan and Ernest very stony silt loams, 15 to 25 percent slopes - BeD**

**AGR** This very stony map unit is not suited to cultivated crops or hay, and has limited suitability for pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected areas, is a major management concern. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** These Buchanan and Ernest soils are mapped as one soil unit because of their similar physical properties and interpretations in land use. These very stony soils have surface stones covering from 1 to 3 percent of the surface and ranging in diameter from 10 to 25 inches. Buchanan soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured channery surface layers and medium textured channery or very channery subsoil. Buchanan soils have a firm and brittle fragipan layer 20 to 36 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 60 percent rock fragments. They generally have a seasonal high water table starting at 16 to 30 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is low to moderate and available water capacity is moderate. These soils can have a slip hazard on slopes exceeding 10 to 15 percent.

The Ernest soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured surface layers and medium to moderately fine textured subsoils with a rock fragment content ranging from 0 to 30 percent in the upper part of the subsoil. Ernest soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 40

percent rock fragments. They generally have a seasonal high water table starting at 16 to 26 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate and available water capacity is moderate to high. These soils have a slip hazard on slopes exceeding 10 to 15 percent.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Chavies loam - Ch**

**AGR** This soil is well suited to cultivated crops and to hay and pasture. Cultivated crops can be grown continuously, but the soil needs the protection of a cover crop. Working the residue from the cover crop into the soil helps to maintain fertility and tilth. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** These Chavies soils are very deep (greater than 6 feet to bedrock), well drained soils that formed in alluvial high bottom sediments. They have medium to moderately coarse textured surface layer and coarse textured subsoil. Estimated permeability is moderate (2.0 to 6.0 inches per hour). These soils have a rare flood hazard in areas not protected from flooding. They are flooded only when flood waters are at their highest. Consult the Army Corps of Engineers for more specific information on flooding frequency. Natural fertility is moderate and available water capacity is moderate to high.

**GSG** - Fertile Loams - Moderately deep, deep, and very deep moderately well and well drained soils with moderate natural fertility. Moderate soil moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Dekalb channery loam, 8 to 15 percent slopes - DaC**

**AGR** This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some

siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Dry Uplands - Moderately deep, well drained soils with low natural fertility. Low moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent or 0 to 15 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Dekalb channery loam, 15 to 25 percent slopes - DaD**

**AGR** - This soil has limited suitability for cultivated crops and is better suited to hay and pasture. The hazard of erosion is severe in unprotected areas, and is a major management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil are practices that help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the soil is reasonably firm.

**SOI** - These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Dry Uplands - Moderately deep, well drained soils with low natural fertility. Low moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent or 0 to 15 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Dekalb channery loam, 25 to 35 percent slopes - DaE**

**AGR** - This soil is not suited to cultivated crops or hay but is suited for pasture. The hazard of erosion is very severe in unprotected areas. If this soil is used for pasture, overgrazing is a major management concern. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the soil is reasonably firm are major pasture management needs.

**SOI** - These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Dry Hills - Moderately deep, well drained soils with low natural fertility. Low moisture holding capacity and pH is normally less than 5.3. Slope ranges from 25 to 45 percent or 15 to 35 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Dekalb channery loam, 35 to 70 percent slopes - DaF**

**AGR** - This soil is not suited to cultivated crops or hay and is difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas.

**SOI** - These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Dry Hills - Moderately deep, well drained soils with low natural fertility. Low moisture holding capacity and pH is normally less than 5.3. Slope ranges from 25 to 45 percent or 15 to 35 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Dekalb extremely stony loam, 3 to 15 percent slopes - DmC**

**AGR** - This extremely stony soil is not suited to cultivated crops or hay, but is somewhat suited to pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected areas, is a major management concern. If this soil is used for pasture, the major management needs include removal of surface stones, proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Dekalb soils have an extremely stony surface with an occasional rock outcrop. These soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Dekalb extremely stony loam, 15 to 35 percent slopes - DmE**

**AGR** - This extremely stony soil is not suited to cultivated crops or hay, but is somewhat suited to pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected

areas, is a major management concern. If this soil is used for pasture, the major management needs include removal of surface stones, proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Dekalb soils have an extremely stony surface with an occasional rock outcrop. These soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Dekalb extremely stony loam, 35 to 70 percent slopes - DmF**

**AGR** - These soils are not suited to cultivated crops, hay, or pasture because of slope, surface stones and inclusions of rock outcrops that generally make these soils unsuitable for farming.

**SOI** - These Dekalb soils have an extremely stony surface with an occasional rock outcrop. These soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Dry Hills - Moderately deep, well drained soils with low natural fertility. Low moisture holding capacity and pH is normally less than 5.3. Slope ranges from 25 to 45 percent or 15 to 35 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Ernest silt loam, 3 to 8 percent slopes - EnB**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is moderate in unprotected areas, is a management concern. If this soil is cultivated, farming on the contour, using a crop sequence that included hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Ernest soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured surface

layers and medium to moderately fine textured subsoils with a rock fragment content ranging from 0 to 30 percent in the upper part of the subsoil. Ernest soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 40 percent rock fragments. They generally have a seasonal high water table starting at 16 to 26 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate and available water capacity is moderate to high. These soils have a slip hazard on slopes exceeding 10 to 15 percent.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Ernest silt loam, 8 to 15 percent slopes - EnC**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Ernest soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured surface layers and medium to moderately fine textured subsoils with a rock fragment content ranging from 0 to 30 percent in the upper part of the subsoil. Ernest soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 40 percent rock fragments. They generally have a seasonal high water table starting at 16 to 26 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate and available water capacity is moderate to high. These soils have a slip hazard on slopes exceeding 10 to 15 percent.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Ernest silt loam, 15 to 25 percent slopes - EnD**

**AGR** - This soil has limited suitability for cultivated crops. It is better suited to hay or pasture. The hazard of erosion, which is severe in unprotected areas, is a major management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to

maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Ernest soils are very deep, moderately well drained soils on colluvial foot slope areas. They have medium textured surface layers and medium to moderately fine textured subsoils with a rock fragment content ranging from 0 to 30 percent in the upper part of the subsoil. Ernest soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow to moderately slow (estimated 0.06 to 0.6 inches per hour) permeability. The fragipan has from 5 to 40 percent rock fragments. They generally have a seasonal high water table starting at 16 to 26 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate and available water capacity is moderate to high. These soils have a slip hazard on slopes exceeding 10 to 15 percent.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Fluvaquents and Udifluents, frequently flooded - Fu**

**AGR** - Frequent flooding makes these soils unsuitable for cultivated crops or hay. These soils are suited to pasture. If these soils are used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soils are reasonably firm.

**SOI** - Udifluents and Fluvaquents loamy soil unit is intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. The Udifluents soils are extremely variable and are mostly excessively drained to moderately well drained soils on flood plains. Surface textures generally range from loamy sand to loam and subsoil textures are loamy sand or sandy loam to gravelly sandy loam to gravelly loamy sand. Soil permeability is moderate to moderately rapid (estimated at 0.6 to 6.0 inches per hour). Bedrock is at depths greater than 4 feet. The Fluvaquents soils are nearly level, poorly to somewhat poorly drained (seasonal high water table at or near the soil surface to a depth of 16 inches), deep soils and mainly on floodplains. They have a medium surface texture and medium to fine textured subsoil. These soils are too variable to estimate the permeability. Bedrock is usually at depths greater than 4 feet and is generally rippable with light power equipment. These soils are subject to frequent to occasional flooding. Natural fertility is high and available water capacity is high for both the Udifluents and Fluvaquents.

**GSG** - Wetlands (Fluvaquents only) - Very deep, poorly and very poorly drained soils with low to moderate natural fertility. High soil moisture holding capacity and pH ranges from 4.0 to 6.0. Annual precipitation is 41 to 50 inches.

**GSG** - Acid Loams (Udifluents only) - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin silt loam, 3 to 8 percent slopes - GaB**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is moderate in unprotected areas, is a management concern. If this soil is cultivated, using a conservation tillage system, farming on the contour, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes and rotational grazing.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin silt loam, 8 to 15 percent slopes - GaC**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin silt loam, 15 to 25 percent slopes - GaD**

**AGR** - This soil has limited suitability for cultivated crops and is better suited to hay and pasture. The hazard of erosion is severe in unprotected areas, and is a major management concern. Using a

conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil are practices that help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the soil is reasonably firm.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin channery silt loam, 8 to 15 percent slopes - GbC**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin channery silt loam, 15 to 25 percent slopes - GbD**

**AGR** - This soil has limited suitability for cultivated crops and is better suited to hay and pasture. The hazard of erosion is severe in unprotected areas, and is a major management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil are practices that help to control erosion and to maintain fertility and tilth. If this

soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the soil is reasonably firm.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin channery silt loam, 25 to 35 percent slopes - GbE**

**AGR** - This soil is not suited to cultivated crops or hay but is suited for pasture. The hazard of erosion is very severe in unprotected areas. If this soil is used for pasture, overgrazing is a major management concern. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the soil is reasonably firm are major pasture management needs.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin channery silt loam, 35 to 65 percent slopes - GbF**

**AGR** - This soil is not suited to cultivated crops or hay and is difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas.

**SOI** - Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin stony silt loam, 3 to 15 percent slopes - GcC**

**AGR** - This extremely stony soil is not suited to cultivated crops or hay, but is somewhat suited to pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected areas, is a major management concern. If this soil is used for pasture, the major management needs include removal of surface stones, proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - This stony unit has surface stones greater than 10 inches in diameter covering .1 to 3 percent of the soil surface. These Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin stony silt loam, 15 to 35 percent slopes - GcE**

**AGR** - These stony soils are not suited to cultivated crops or hay and are difficult to manage for pasture. The erosion hazard is very severe in unprotected areas.

**SOI** - This stony unit has surface stones greater than 10 inches in diameter covering .1 to 3 percent of the soil surface. These Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin stony silt loam, 35 to 65 percent slopes - GcF**

AGR 009FS These soils are not suited to cultivated crops, hay, or pasture because of slope, surface stones and inclusions of rock outcrops that generally make these soils unsuitable for farming.

**SOI** - This stony unit has surface stones greater than 10 inches in diameter covering .1 to 3 percent of the soil surface. These Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin-Dekalb complex, 15 to 35 percent slopes - GdE**

**AGR** - These soils are not suited to cultivated crops or hay, but are suited to pasture. The hazard of erosion is very severe in unprotected areas and is a major management concern. If these soils are used for pasture, overgrazing is a major management concern. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm are major pasture management needs.

**SOI** - This Gilpin-Dekalb complex consists of Gilpin and Dekalb soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate. The Dekalb soils are moderately deep, well drained soils on uplands. They have moderately coarse textured surface layers and moderately coarse to coarse textured subsoils. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid (estimated 2.0 to 6.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility of the Dekalb soil is low and available water capacity is very low to moderate.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin-Dekalb complex, 35 to 70 percent slopes - GdF**

**AGR** - This soil is not suited to cultivated crops or hay and is difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas.

**SOI** - This Gilpin-Dekalb complex consists of Gilpin and Dekalb soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate. The Dekalb soils are moderately deep, well drained soils on uplands. They have moderately coarse textured surface layers and moderately coarse to coarse textured subsoils. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid (estimated 2.0 to 6.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility of the Dekalb soil is low and available water capacity is very low to moderate.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin-Dekalb complex, stony, 3 to 15 percent slopes - GkC**

**AGR** - This very stony map unit is not suited to cultivated crops or hay, and has limited suitability for pasture. Stones restrict the use of farm machinery. The hazard of erosion, which is severe in unprotected areas, is a major management concern. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Gilpin and Dekalb stony soils are mapped in a complex on the landscape. These Gilpin and Dekalb soils were so intermingled that it was not practical to map them separately. Stones that are 12 to 24 inches in diameter cover from 1 to 3 percent of the surface. Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate. These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured

subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin-Dekalb complex, stony, 15 to 35 percent slopes - GkE**

**AGR** - These stony soils are not suited to cultivated crops or hay and are difficult to manage for pasture. The erosion hazard is very severe in unprotected areas.

**SOI** - These Gilpin and Dekalb stony soils are mapped in a complex on the landscape. These Gilpin and Dekalb soils were so intermingled that it was not practical to map them separately. Stones that are 12 to 24 inches in diameter cover from 1 to 3 percent of the surface. Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate. These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin-Dekalb complex, stony, 35 to 70 percent slopes - GkF**

**AGR** - These soils are not suited to cultivated crops, hay, or pasture because of slope, surface stones and inclusions of rock outcrops that generally make these soils unsuitable for farming.

**SOI** - These Gilpin and Dekalb stony soils are mapped in a complex on the landscape. These Gilpin and Dekalb soils were so intermingled that it was not practical to map them separately. Stones that are 12 to 24 inches in diameter cover from 1 to 3 percent of the surface. Gilpin soils are moderately deep, well drained soils formed in residuum from acid shale, siltstone and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. These soils generally

have 10 to 35 percent rock fragments in the subsoil. Estimate soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility is low or moderate and available water capacity is low or moderate. These Dekalb soils are moderately deep, well drained soils on uplands. They have a moderately coarse textured surface layer and moderately coarse to coarse textured subsoil. The subsoil has over 35% sandstone fragments. The subsoil has moderately rapid to rapid (estimated 2.0 to 20.0 inches per hour) permeability. They are underlain at 20 to 40 inches by sandstone, interbedded with some siltstone and shale. Natural fertility is low and available water capacity is very low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur silt loams, 8 to 15 percent slopes - GuC**

**AGR** - These soils are suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If these soils are used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm.

**SOI** - This Gilpin-Upshur silt loams soils unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have medium surface textures and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths ranging from 40 to 60 inches and rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. The subsoil is highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur silt loams, 15 to 25 percent slopes - GuD**

**AGR** - These soils have limited suitability for cultivated crops and are better suited to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a major management concern. Using a conservation tillage system, growing crops in contour strips, using a crop sequence that includes hay, and returning crop residue to the soil are practices that help to control erosion and to maintain fertility and tilth. If these soils are used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm.

**SOI** - This Gilpin-Upshur silt loams soils unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have medium surface textures and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths ranging from 40 to 60 inches and rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. The subsoil is highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur silt loams, 25 to 35 percent slopes - GuE**

**AGR** - These soils are not suited to cultivated crops or hay, but are suited to pasture. The hazard of erosion is very severe in unprotected areas and is a major management concern. If these soils are used for pasture, overgrazing is a major management concern. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm are major pasture management needs.

**SOI** - This Gilpin-Upshur silt loams soils unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power

equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have medium surface textures and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths ranging from 40 to 60 inches and rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. The subsoil is highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur silt loams, 35 to 65 percent slopes - GuF**

**AGR** - These soils are not suited to cultivated crops or hay and are difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas.

**SOI** - This Gilpin-Upshur silt loams soils unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have medium surface textures and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths ranging from 40 to 60 inches and rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. The subsoil is highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur complex, 8 to 15 percent slopes, severely eroded - GwC3**

**AGR** - These soils have limited suitability for cultivated crops and are better suited to hay and pasture. The hazard of erosion, which is very severe in unprotected areas, is a major management concern. Using a

conservation tillage system, growing crops in contour strips, using a crop sequence that includes hay, and returning crops residue to the soil help to control erosion and to maintain fertility and tilth. If these soils are used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm.

**SOI** - This Gilpin-Upshur complex soil unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Soil slips and shallow gullies are found in some areas of this severely eroded unit. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have moderately fine textured surface and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths of 40 to 60 inches and is rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. Their subsoils are highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded - GwD3**

**AGR** - These soils are not suited to cultivated crops or hay, but are suited to pasture. The hazard of erosion is very severe in unprotected areas and is a major management concern. If these soils are used for pasture, overgrazing can result in more severe erosion. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm are major pasture management needs.

**SOI** - This Gilpin-Upshur complex soil unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Soil slips and shallow gullies are found in some areas of this severely eroded unit. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered

from red and olive shale. They have moderately fine textured surface and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths of 40 to 60 inches and is rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. Their subsoils are highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Gilpin-Upshur complex, 25 to 35 percent slopes, severely eroded - GwE3**

**AGR** - These soils are not suited to cultivated crops or hay and are difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas. Bare areas are difficult to revegetate, but they should be seeded to permanent cover. Mulching will help protect seeded areas until the plants become established.

**SOI** - This Gilpin-Upshur complex soil unit consists of Gilpin and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. Soil slips and shallow gullies are found in some areas of this severely eroded unit. Gilpin soils are moderately deep, well drained soils which formed from acid shale, siltstone, and sandstone. They have medium textured surface and medium to moderately fine textured subsoil. Estimated soil permeability is moderate (0.6 to 2.0 inches per hour). Bedrock is at depths of 20 to 40 inches. The bedrock is generally rippable with light power equipment. Natural fertility of the Gilpin soil is low or moderate and available water capacity is low or moderate. Upshur soils are deep well drained soils which formed in limy material weathered from red and olive shale. They have moderately fine textured surface and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths of 40 to 60 inches and is rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. Their subsoils are highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Acid Hills - Moderately deep, deep, very deep moderately well and well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Lily loam, 3 to 8 percent slopes - LyB**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is moderate in unprotected areas, is a management concern. If this soil is cultivated, using a conservation tillage system, farming on the contour, using a crop sequence that

includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes and rotational grazing.

**SOI** - These Lily soils are moderately deep and well drained. They have formed in acid material weathered from acid sandstone found mostly on ridge tops. Bedrock is generally at depths of 20 to 40 inches. These soils have a moderately coarse textured surface layer and a medium to moderately coarse textured subsoil. The estimated soil permeability is moderately rapid (2.0 to 6.0 inches per hour). Natural fertility is low and available water capacity is moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Lily loam, 8 to 15 percent slopes - LyC**

**AGR** - This soil is suited to cultivated crops, hay, and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** - These Lily soils are moderately deep and well drained. They have formed in acid material weathered from acid sandstone found mostly on ridge tops. Bedrock is generally at depths of 20 to 40 inches. These soils have a moderately coarse textured surface layer and a medium to moderately coarse textured subsoil. The estimated soil permeability is moderately rapid (2.0 to 6.0 inches per hour). Natural fertility is low and available water capacity is moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Monongahela silt loam, 3 to 8 percent slopes - MoB**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is moderate in unprotected areas, is a management concern. If this soil is cultivated, farming on the contour, using a crop sequence that included hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Monongahela soils are very deep, moderately well drained soils on high stream terraces. They have medium textured surface layers and medium to moderately fine textured subsoils. Monongahela

soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow (estimated 0.06 to 0.2 inches per hour) permeability. They have a seasonal high water table at 18 to 30 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is low and available water capacity is moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Monongahela silt loam, 8 to 15 percent slopes - MoC**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Monongahela soils are very deep, moderately well drained soils on high stream terraces. They have medium textured surface layers and medium to moderately fine textured subsoils. Monongahela soils have a firm and brittle fragipan layer 18 to 30 inches below the surface, which has slow (estimated 0.06 to 0.2 inches per hour) permeability. They have a seasonal high water table at 18 to 30 inches below the surface. Bedrock is generally at depths greater than 5 feet. Natural fertility is low and available water capacity is moderate.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Orrville-Holly silt loams - Oh**

**AGR** - These soils are suited to cultivated crops, but the Holly soils are better suited to water-tolerant hay or pasture plants. Using conservation tillage systems and a crop sequence that includes hay, delaying tillage until the soil is reasonably dry, and returning crop residue to the soil help to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These soils are so intermingled that it was not practical to map them separately. Many areas are dissected by abandoned stream channels. The map unit is about 45 Orrville soils, 25 percent Holly soils and 30 percent other soils on nearly level flood plains. These Orrville soils are deep (generally greater than 60 inches to bedrock), somewhat poorly drained (seasonal high water table at a depth of 9 to 16 inches) soils that have formed in recent alluvial sediments. They have a medium textured surface layer and subsoil and coarse textured

substrata (material just below the subsoil). The estimated soil permeability is moderate (0.6 to 2.0 inches per hour) in the topsoil and subsoil and moderately rapid in the substrata (2.0 to 6.0 inches per hour). Natural fertility is high and available water capacity is high. These soils have an occasional flood hazard. These Holly soils are very deep (greater than 6 feet to bedrock), poorly drained (seasonal high water table at or near the surface) soils that have formed in alluvial sediments along streams and drainage ways. They have a silt loam surface layer and a medium textured subsoil. Estimated permeability is moderate (0.6 to 2.0 inches per hour). Natural fertility is high and available water capacity is high. These soils are usually located on the landscape in depression or low areas between better drained soils. These Holly soils are considered as hydric soils and usually found in wetlands in a natural undrained site. These Orrville and Holly soils have an occasional flood hazard, but may have included areas of frequent, rare or no flooding.

**GSG** - Moist Loams - Deep and very deep, well drained soils with high natural fertility. High moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Philo-Atkins silt loams - Pa**

**AGR** - These soils are suited to cultivated crops, but the Atkins soils are better suited to water-tolerant hay or pasture plants. Using conservation tillage systems and a crop sequence that includes hay, delaying tillage until the soil is reasonably dry, and returning crop residue to the soil help to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These soils are so intermingled that it was not practical to map them separately. The map unit is about 45 Philo soils, 30 percent Atkins soils and 25 percent other soils on nearly level flood plains. These Philo soils are very deep (generally greater than 5 feet to bedrock), moderately well drained (seasonal high water table at a depth of 16 to 24 inches) soils that have formed in recent alluvial sediments. They have a medium textured surface layer and moderately coarse to coarse textured subsoil. The estimated soil permeability is moderate (0.6 to 2.0 inches per hour) in the subsoil and moderately rapid (2.0 to 6.0 inches per hour) in the substrata below the subsoil. Natural fertility is moderate and available water capacity is moderate to high. These Atkins soils are deep (40 to 60+ inches to bedrock), poorly drained (seasonal high water table at or near the surface) soils that have formed in alluvial sediments along streams or drainage ways. They have medium textured surface and subsoil. The soil permeability is moderate (estimated at 0.6 to 2.0 inches per hour). Natural fertility is moderate and available water capacity is high. These soils are usually located on the landscape along drainage ways in depressions or low swamp like areas with poor drainage. These Atkins soils are usually considered as hydric soils and usually found in wetlands in a natural undrained site.

**AL3** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Pope sandy loam - Po**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. Cultivated crops can be grown continuously, but the soil needs the protection of a cover crop. Working the residue from the cover crop into the soil helps to maintain fertility and tilth. In places, crops are subject to damage from flooding. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Pope soils are very deep (generally greater than 5 feet to bedrock) and well drained soils. These soils have formed in acid alluvial floodplain sediments washed from soils underlain by sandstone, siltstone, and shale. They have a medium textured surface layer and moderately coarse to coarse textured subsoil. The estimated soil permeability is moderate to moderately rapid (0.6 to 6.0 inches per hour) in the subsoil. Natural fertility is moderate and available water capacity is moderate to high. These soils generally have an occasional flood hazard.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Tygart silt loam - Tg**

**AGR** - This soil without artificial drainage has limited suitability for cultivated crops and is better suited to water-tolerant hay or pasture plants. Using a conservation tillage system and a crop sequence that includes hay, delaying tillage until the soil is reasonably dry, and returning crop residue to the soil help to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Tygart soils have formed in acid silt and clay slack water terrace deposits and are very deep (greater than 60 inches to bedrock), and somewhat poorly drained (seasonal high water table less than 15 inches of the surface, just under topsoil). The soil permeability is slow in the subsoil (estimated at less than .2 inches per hour). This soil has a medium to fine textured surface and fine (clayey) textured subsurface. Natural fertility is low to medium and available water capacity is high. This soil may have included hydric soils with poor drainage.

**GSG** - Wetlands - Very deep, poorly and very poorly drained soils with low to moderate natural fertility. High soil moisture holding capacity and pH ranges from 4.0 to 6.0. Annual precipitation is 41 to 50 inches.

**Udorthents, loamy - Ua**

**AGR** - This soil is suited to hay and pasture. A compacted surface layer makes the soils generally unsuitable for cultivated crops. The hazard of erosion, which is moderate in unprotected areas, is a management concern. If the soil is cultivated, using a conservation tillage system, farming on the contour, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include rotational grazing and proper stocking rates to maintain desirable grasses and legumes.

**SOI** - This Udorthents, loamy unit is a miscellaneous area of disturbed soil material on nearly level slopes and consists of loamy sediments dredged from the Buckhannon River. This unit is mostly located on flood plains of the Buckhannon River and has a rare flood hazard, flooding only occurs after very heavy rains. The available water capacity, permeability and natural fertility of this unit are too variable to assign any specific values. Where unlimed, the soils are very strongly acid to slightly acid. The depth to bedrock is generally more than 60 inches. It is common to find other natural soils common to the area within this map unit.

**GSG** - Acid Loams - Moderately deep, deep, and very deep moderately well and well drained with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally less than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Udorthents, mudstone and limestone, high base - Ub**

**AGR** - These soils are not suited to cultivated crops, generally not suited to hay and are difficult to manage for pasture. Stones restrict the use of farm machinery. The hazard of erosion is severe in unreclaimed areas and soil slippage is very severe on slopes of 15 percent or greater. If these soils are used for pasture, a major management concern is overgrazing, which can result in severe erosion and loss of desirable grasses and legumes. The major pasture management needs are proper stocking rates, rotational grazing, application of fertilizer, and deferment of grazing in the spring until the soil is reasonably firm. These soils are better suited to woodland or wildlife uses.

**SOI** - These soils are well drained and very deep soils that have formed in disturbed calcareous rock and soil material resulting from the surface mining of coal. They have a medium textured channery surface and medium to moderately fine textured extremely channery substrata. The soil permeability is too variable to rate and slopes range from nearly level areas on benches to almost vertical high walls. These soils are subject to slippage on slopes of 15 percent or greater. Bedrock is generally at depths of greater than 65 inches except where bedrock escarpments are present along mining high walls and on bench areas where bedrock was excavated. Natural fertility is moderate to high and available water capacity is moderate. This unit may include areas of natural soils between strip benches or around edge of unit.

**GSG** - Limy Hills - Moderately deep, well drained soils with moderate to high natural fertility. Low moderate moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 25 to 45 percent or 15 to 35 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Udorthents, mudstone and sandstone, high base - Uc**

**AGR** - These soils are not suited to cultivated crops, generally not suited to hay and are difficult to manage for pasture. Stones restrict the use of farm machinery. The hazard of erosion is severe in unreclaimed areas and soil slippage is very severe on slopes of 15 percent or greater. If these soils are used for pasture, a major management concern is overgrazing, which can result in severe erosion and loss of desirable grasses and legumes. The major pasture management needs are proper stocking rates, rotational grazing, application of fertilizer, and deferment of grazing in the spring until the soil is reasonably firm. These soils are better suited to woodland or wildlife uses.

**SOI** - These soils are well drained and very deep soils that have formed in disturbed acid and calcareous rock and soil material resulting from the surface mining of coal. They have a medium textured channery surface and medium to moderately fine textured extremely channery substrata. The soil permeability is too variable to rate and slopes range from nearly level areas on benches to almost vertical high walls. These soils maybe subject to slippage on slopes of 15 percent or greater. Bedrock is generally at depths of greater than 65 inches except where bedrock escarpments are present along mining high wall and on bench areas where bedrock was excavated. Natural fertility is moderate to high and available water capacity is moderate. This unit may include areas of natural soils between strip benches or around edge of unit.

**GSG** - Limy Hills - Moderately deep, well drained soils with moderate to high natural fertility. Low moderate moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 25 to 45 percent or 15 to 35 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Udorthents, sandstone and mudstone, low base - Ud**

**AGR** - These soils are not suited to cultivated crops or hay and are difficult to manage for pasture. They are better suited to woodland or wildlife uses.

**SOI** - The Udorthents, sandstone and mudstone, low base is a miscellaneous area of disturbed soil material on an area that was surfaced mined for coal. This unit may include areas of natural soils between strip benches or around edge of unit. These soils are generally more than 3 feet to bedrock, loamy, rock fragments range from 30 to 80 percent, soil permeability is too variable to rate and slopes range from nearly level areas on benches to almost vertical high walls. These disturbed soils are too variable to assign specific soil properties. Natural fertility is low and available water capacity is low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Udorthents, sandstone and mudstone, very low base - Ue**

**AGR** - These soils are not suited to cultivated crops or hay and are difficult to manage for pasture. They are better suited to woodland or wildlife uses.

**SOI** - The Udorthents, sandstone and mudstone, low base is a miscellaneous area of disturbed soil material on an area that was surfaced mined for coal. This unit may include areas of natural soils between strip benches or around edge of unit. These soils are generally more than 3 feet to bedrock, loamy, rock fragments range from 30 to 80 percent, soil permeability is too variable to rate and slopes range from nearly level areas on benches to almost vertical high walls. These disturbed soils are too variable to assign specific soil properties. Natural fertility is low and available water capacity is low to moderate.

**GSG** - Very Rocky Acid Soils - Moderately deep, deep, and very deep well drained soils with low natural fertility. Moderate to high soil moisture holding capacity and pH is normally below 5.3. Slope ranges from 0 to 25 percent. Soils in this group have a very cobbly, very stony, or very rocky surface. Annual precipitation is 41 to 50 inches.

**Udorthents, smoothed - Uf**

**AGR** - These Udorthents are not suited to cultivated crops or hay, but have a limited suitability for pasture on some areas. They are better suited to woodland or wildlife.

**SOI** - This Udorthents, smoothed unit is a miscellaneous area of disturbed soil material that is too variable to assign any specific soil properties. The miscellaneous soil area ranges from dominantly clay to loam soil with or without rock material ranging from a few gravels to a massive bedrock escarpment.

**GSG** - Not Suited - All other soils that have a combination of soil properties and climate limitations that make them not suited for forage production because adequate growth for forage use plus soil stabilization is normally not possible.

**Vandalia silt loam, 8 to 15 percent slopes - VaC**

**AGR** - This soil is suited to cultivated crops and to hay and pasture. The hazard of erosion, which is severe in unprotected areas, is a management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational

grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Vandalia soils are well drained, red soils on colluvial foot slopes. They have a moderately fine textured surface and a fine textured subsoil. Estimated permeability is moderately slow to slow (0.6 to 0.06 inches per hour). Vandalia soils have a slip hazard, especially when slopes are greater than 8%. Their subsoils are highly susceptible to shrinking when drying and swelling upon wetting. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate or high and available water capacity is moderate or high.

**GSG** - Fertile Loams - Moderately deep, deep, and very deep moderately well and well drained soils with moderate natural fertility. Moderate soil moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Vandalia silt loam, 15 to 25 percent slopes - VaD**

**AGR** - This soil has limited suitability for cultivated crops. It is better suited to hay or pasture. The hazard of erosion, which is severe in unprotected areas, is a major management concern. Using a conservation tillage system, growing crops in contour strips, maintaining sod in shallow drainage ways, using a crop sequence that includes hay, and returning crop residue to the soil help to control erosion and to maintain fertility and tilth. If this soil is used for pasture, the major management needs include proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing in the spring until the soil is reasonably firm.

**SOI** - These Vandalia soils are well drained, red soils on colluvial foot slopes. They have a moderately fine textured surface and a fine textured subsoil. Estimated permeability is moderately slow to slow (0.6 to 0.06 inches per hour). Vandalia soils have a slip hazard, especially when slopes are greater than 8%. Their subsoils are highly susceptible to shrinking when drying and swelling upon wetting. Bedrock is generally at depths greater than 5 feet. Natural fertility is moderate or high and available water capacity is moderate or high.

**GSG** - Fertile Loams - Moderately deep, deep, and very deep moderately well and well drained soils with moderate natural fertility. Moderate soil moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 0 to 25 percent. Annual precipitation is 41 to 50 inches.

**Westmoreland-Upshur silt loams, 25 to 35 percent slopes - WuE**

**AGR** - These soils are not suited to cultivated crops or hay, but are suited to pasture. The hazard of erosion is very severe in unprotected areas and is a major management concern. If these soils are used for pasture, overgrazing is a major management concern. Proper stocking rates to maintain desirable grasses and legumes, rotational grazing, and deferment of grazing until the Upshur soil is reasonably firm are major pasture management needs.

**SOI** - This Westmoreland-Upshur silt loams soil map unit consists of Westmoreland and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. The Westmoreland soils are deep well drained brownish yellow soil found on uplands. Estimated permeability is moderate (0.6 to 2.0 inches per hour). These soils have a medium textured surface and subsurface with rock fragments increasing with depth. This soil is underlain by bedrock of shale, siltstone, sandstone or limestone at depths greater than 40 inches. Natural fertility is high and available water capacity is moderate to high. The Westmoreland soil have closely associated included soils on the same landscape and map unit that have a slip hazard on slope greater than 15 percent. Upshur soils are deep well drained red soils which formed in limy material weathered from red and olive shale. They have medium textured surface and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is slow to very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths of 40 to 60 inches and is rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. Their subsoils are highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Fertile Hills - Moderately deep, deep, and very deep moderately well drained soils with moderate natural fertility. Moderate soil moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.

**Westmoreland-Upshur silt loams, 35 to 65 percent slopes - WuF**

**AGR** - These soils are not suited to cultivated crops or hay and are difficult to manage for pasture. The hazard of erosion is very severe in unprotected areas.

**SOI** - This Westmoreland-Upshur silt loams soil map unit consists of Westmoreland and Upshur soils which are intermixed in such an intricate pattern that they cannot be separated in mapping at this scale. The Westmoreland soils are deep well drained brownish yellow soil found on uplands. Estimated permeability is moderate (0.6 to 2.0 inches per hour). These soils have a medium textured surface and subsurface with rock fragments increasing with depth. This soil is underlain by bedrock of shale, siltstone, sandstone or limestone at depths greater than 40 inches. Natural fertility is high and available water capacity is moderate to high. The Westmoreland soil have closely associated included soils on the same landscape and map unit that have a slip hazard on slope greater than 15 percent. Upshur soils are deep well drained red soils which formed in limy material weathered from red and olive shale. They have medium textured surface and fine textured subsoils which become sticky and plastic when wet. Estimated soil permeability is slow to very slow (less than 0.2 inches per hour). The depth to bedrock is generally at depths of 40 to 60 inches and is rippable with light power equipment. Natural fertility of the Upshur soil is moderately high and available water capacity is moderate to high. Upshur soils have a slip hazard, especially on slopes greater than 8 percent. Their subsoils are highly susceptible to shrinking when dry and swelling when wet.

**GSG** - Fertile Hills - Moderately deep, deep, and very deep moderately well drained soils with moderate natural fertility. Moderate soil moisture holding capacity and pH is normally greater than 5.3. Slope ranges from 25 to 60 percent or 25 to 45 percent if severely eroded. Annual precipitation is 41 to 50 inches.