

Ecological site F128XY520WV

Mesic High And Intermediate Stream Terrace Alluvium

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 128X–Southern Appalachian Ridges and Valleys

MLRA 128 falls into the East and Central Farming and Forest Region. This MLRA is in Tennessee (36 percent), Alabama (27 percent), Virginia (25 percent), and Georgia (12 percent). It makes up about 21,095 square miles (54,660 square kilometers). Most of this MLRA is in the Tennessee Section of the Valley and Ridge Province of the Appalachian Highlands. The thin stringers in the western part of the area are mostly in the Cumberland Plateau Section of the Appalachian Plateaus Province of the Appalachian Highlands. A separate area of the MLRA in northern Alabama is in the Highland Rim Section of the Interior Low Plateaus Province of the Interior Plains. The western side of the area is dominantly hilly to very steep and is rougher and much steeper than the eastern side, much of which is rolling and hilly. Elevation ranges from 660 feet (200 meters) near the southern end of the area to more than 2,400 feet (730 meters) in the part of the area in the western tip of Virginia. Some isolated linear mountain ridges rise to nearly 4,920 feet (1,500 meters) above sea level. The MLRA is highly diversified. It has many parallel ridges, narrow intervening valleys, and large areas of low, irregular hills. The bedrock in this area consists of alternating beds of limestone, dolomite, shale, and sandstone of early Paleozoic age. Ridgetops are capped with more resistant carbonate and sandstone layers, and valleys have been eroded into the less resistant shale beds. These folded and faulted layers are at the southernmost extent of the Appalachian Mountains. The narrow river valleys are filled with unconsolidated deposits of clay, silt, sand, and gravel.

Ecological site concept

This PES occurs primary on old alluvium on high and intermediate stream terraces associated with major rivers and streams. The Virginia Department of Natural Heritage (VA-DNH) had one plot available for this PES on a Shottower loam, 15 to 30 percent slopes mapunit. They characterized the vegetation community as Piedmont / Mountain Floodplain Forest. Although this site does not occur in the Piedmont, the vegetation community was mapped in some places in the Ridge and Valley by the VA-DNH, indicating that the community is similar enough to bear this classification. From their description: "These temporarily and intermittently flooded forests encompass most river floodplain habitats of the Piedmont and major mountain valleys, except those that are cleared or occupied by swamp forests." (REFERENCE)

Table 1. Dominant plant species

Tree	(1) <i>Acer saccharinum</i> (2) <i>Acer negundo</i>
Shrub	(1) <i>Asimina triloba</i> (2) <i>Lindera benzoin</i>
Herbaceous	Not specified

Physiographic features

This PES occurs primary on old alluvium on high and intermediate stream terraces associated with major rivers and streams.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Stream terrace (3) Interfluve
Elevation	190 – 1,070 m
Slope	0 – 40 %
Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation in most of this area is 41 to 55 inches (1,040 to 1,395 millimeters). It increases to the south and is as much as 66 inches (1,675 millimeters) at the highest elevations in east Tennessee and the northwest corner of Georgia. The maximum precipitation occurs in midwinter and midsummer, and the minimum occurs in autumn. Most of the rainfall occurs as high-intensity, convective thunderstorms. Snowfall may occur in winter. The average annual temperature is 52 to 63 degrees F (11 to 17 degrees C), increasing to the south. The freeze-free period averages 205 days and ranges from 165 to 245 days. It is longest in the southern part of the area and shortest at high elevations and at the northern end.

Table 3 Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,120 mm

- (1) LEBANON [USC00444777], Lebanon, VA
- (2) WYTHEVILLE 1 S [USC00449301], Wytheville, VA
- (3) TAZEWEILL [USC00408868], Tazewell, TN
- (4) STAFFORDSVILLE 3 ENE [USC00448022], Pearisburg, VA

Influencing water features

The extent this site is influenced by wetland or riparian water features is not known. Further investigation is merited.

Soil features

These soils formed primary in old alluvium on high and intermediate stream terraces associated with major rivers and streams. The slopes range from 0 to 65 percent. They are very deep (more than 60 inches) to bedrock, and well drained. The available water capacity of these soils ranges from low to high. The depth to a seasonal high water table is more than 6 feet. They are not subject to flooding or ponding. The soil reaction ranges from extremely acid to slightly acid (pH from 3.5 to 6.5).

The soil series associated with this site are: Braddock, Etowah, Holston, Nolichucky, Shottower, Unison, and Waynesboro.

Table 4. Representative soil features

Parent material	(1) Alluvium – limestone, sandstone, and shale (2) Colluvium – limestone
Surface texture	(1) Cobbly fine sandy loam (2) Gravelly loam (3) Very gravelly sandy loam
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	20 – 200 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	10 %
Available water capacity (0-101.6cm)	8.13 – 18.03 cm
Soil reaction (1:1 water) (0-101.6cm)	4.6 – 5.8
Subsurface fragment volume <=3" (Depth not specified)	0 – 60 %
Subsurface fragment volume >3" (Depth not specified)	0 – 20 %

Ecological dynamics

From The VA-DNH: "These temporarily and intermittently flooded forests encompass most river floodplain habitats of the Piedmont and major mountain valleys, except those that are cleared or occupied by swamp forests. From the James River north, sandy river banks and first-bottom terraces that are frequently (but shortly) flooded support forests dominated by silver maple (*Acer saccharinum*) and boxelder (*Acer negundo* var. *negundo*), with herb layers containing many broad-leaved forbs such as wood-nettle (*Laportea canadensis*), clearweed (*Pilea pumila*), and white snakeroot (*Ageratina altissima* var. *altissima*). Higher, better drained, sandy or silty river floodplains support mixed forests of sycamore (*Platanus occidentalis*), black walnut (*Juglans nigra*), hackberry (*Celtis occidentalis*), American elm (*Ulmus americana*), and boxelder, with understories of paw-paw (*Asimina triloba*) and spicebush (*Lindera benzoin* var. *benzoin*). Herb layers in the mixed floodplains are usually very lush with nutrient-demanding, early-season species such as Virginia bluebells (*Mertensia virginica*), Canada waterleaf (*Hydrophyllum canadense*), wild ginger (*Asarum canadense* var. *canadense*), yellow trout-lily (*Erythronium americanum* ssp. *americanum*), white trout-lily (*Erythronium albidum*), Potomac River only), wild blue phlox (*Phlox divaricata* ssp.

divaricata), miami-mist (*Phacelia purshii*), large solomon's-seal (*Polygonatum biflorum* var. *commutatum*), striped violet (*Viola striata*), and many others. Eastern cottonwood (*Populus deltoides* ssp. *deltoides*) is a frequent, early-successional pioneer of these habitats, while sycamore and river birch (*Betula nigra*) are pioneering invaders of stabilized depositional river bars." (REFERENCE)

How well this description actually fits this PES has not been determined. Further investigations are needed. In future projects, the reference community may need to be revised based on observations in the field.

The Official Series Descriptions for the soils included in this site indicate that while forest is an important land-use, a good deal of it is cleared and used as pasture. Crops include corn, small grain, hay, apple and peach orchards, berries, and vegetables.

State and transition model

Additional community tables

Other references

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Thornthwaite, Charles W. 1948. An approach toward a rational classification of climate. *Geographical Review* 38(1): 55-94.

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Contributors

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Approval

Matthew Duvall, 5/14/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	09/14/2026
Approved by	

Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
