USDA Natural Resources Conservation Service

Ecological site F127XY005WV
Alluvial Land

Last updated: 9/27/2024
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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): 127X–Eastern Allegheny Plateau and Mountains

This site occupies alluvial lands in the Allegheny Mountain Section of the Appalachian Highlands of the Appalachian Plateau Province. The deeply dissected plateau in this area terminates in a high escarpment, the Allegheny Front, in the eastern part of the area. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in the northern part of the area.

This ecosite is found in better developed alluvial plains, and river valleys within hills, mountains and plateaus in MLRA 127 Eastern Allegheny Plateau and Mountains.

Classification relationships

USDA-NRCS (USDA, 2006):
Land Resource Region (LRR): N—East and Central Farming and Forest Region
Major Land Resource Area (MLRA): 127—Eastern Allegheny Plateau and Mountains
USDA-FS (Cleland et al., 2007)
Province: 211 – Northeastern Mixed Forest Province (in Part)
Section: 211G - Northern Unglaciated Allegheny Plateau
Subsection: 211Ga – Allegheny High Plateau
211Gb – Allegheny Deep Valleys
Province: 221 - Eastern Broadleaf Province (in part)
Section: 221E - Southern Unglaciated Allegheny Plateau (in part)
Subsection: 221Ea - Pittsburgh Low Plateau
Province: M221 – Central Appalachian Broadleaf Forest – Coniferous Forest - Meadow Province (in part)
Section: M221B - Allegheny Mountains
Subsection: M221Ba – Northern High Allegheny Mountains
M221Bb – Western Allegheny Mountains
M221Bc – Southern High Allegheny Mountains
M221Bd – Eastern Allegheny Mountain and Valley
M221Be – Western Allegheny Mountain and Valley
M221Bf – Allegheny Mountain Plateau
Section: M221C - Northern Cumberland Mountains
Subsection: M221Ca – Western Coal Fields

This site crosswalks to Landfire biophysical setting (BpS) Central Interior and Appalachian Riparian Systems. Not all the component associations are applicable to MLRA 127.

NatureServe (2007) describes this as an aggregated system including the following standard ecological systems

(for MLRA 127):

• Central Appalachian Stream and Riparian (CES202.609)
Component Associations (all not applicable to MLRA 127)
Association Unique ID Association Name
CEGL003896 *Platanus occidentalis* - *Betula nigra* - Salix (caroliniana, nigra) Woodland
CEGL003901 *Salix nigra* Temporarily Flooded Shrubland
CEGL004031 *Platanus occidentalis* / Dichanthelium clandestinum - Festuca subverticillata Woodland
CEGL004033 Southern Appalachian Bedrock Scour Herbaceous Vegetation
CEGL004073 *Platanus occidentalis* - *Acer negundo* - Juglans nigra / Asimina triloba / Mertensia virginica Forest
CEGL004103 *Carex torta* Herbaceous Vegetation
CEGL004286 *Justicia americana* Herbaceous Vegetation
CEGL004331 Podostemum ceratophyllum Herbaceous Vegetation
CEGL006004 Pinus strobus - Betula populifolia / Comptonia peregrina / *Schizachyrium scoparium* Woodland
CEGL006065 *Salix nigra* / Phalaris arundinacea - Apocynum cannabinum Temporarily Flooded Shrubland
CEGL006232 Hudsonia tomentosa - Paronychia argyrocoma Dwarf-shrubland
CEGL006251 *Alnus serrulata* - Physocarpus opulifolius Shrubland
CEGL006255 *Liriodendron tulipifera* - *Platanus occidentalis* - Betula lenta / *Lindera benzoin* / Circaea lutetiana ssp. canadensis Forest
CEGL006283 *Andropogon gerardii* - *Panicum virgatum* - *Baptisia australis* Herbaceous Vegetation
CEGL006284 *Andropogon gerardii* - Campanula rotundifolia - Solidago simplex Sparse Vegetation
CEGL006391 Pinus rigida - Hudsonia tomentosa - Pityopsis falcata Sparse Vegetation
CEGL006406 *Acer rubrum* - Fraxinus (pennsylvanica, americana) / *Lindera benzoin* / Symplocarpus foetidus Forest
CEGL006447 Carex trichocarpa Herbaceous Vegetation
CEGL006461 Leersia oryzoides - Sagittaria latifolia Herbaceous Vegetation
CEGL006476 *Platanus occidentalis* - Acer saccharinum - *Betula nigra* - *Fraxinus pennsylvanica* / *Boehmeria cylindrica* - Carex emoryi Woodland
CEGL006477 *Panicum virgatum* - *Andropogon gerardii* Gravel Wash Herbaceous Vegetation
CEGL006478 Fraxinus americana / *Andropogon gerardii* - *Sorghastrum nutans* - *Schizachyrium scoparium* - Pycnanthemum tenuifolium Herbaceous Vegetation
CEGL006480 Verbesina alternifolia - Elymus riparius - Solidago gigantea - (Teucrium canadense) Herbaceous Vegetation
CEGL006481 Eupatorium serotinum - Polygonum (lapathifolium, punctatum, pensylvanicum) Herbaceous Vegetation
CEGL006483 Eragrostis hypnoides - Ludwigia palustris - Lindernia dubia - Cyperus squarrosus Herbaceous Vegetation
CEGL006492 *Liriodendron tulipifera* - Acer (rubrum, negundo) - (*Platanus occidentalis*) / *Carpinus caroliniana* / Polygonum virginianum Forest
CEGL006497 Quercus palustris - Quercus bicolor / Carex tribuloides - Carex radiata - (Carex squarrosa) Forest
CEGL006536 *Carex torta* - Apocynum cannabinum - Cyperus spp. Herbaceous Vegetation
CEGL006554 Lysimachia ciliata - Apocynum cannabinum Sparse Vegetation
CEGL006598 *Rhododendron arborescens* / Marshallia grandiflora - Triantha glutinosa - Platanthera flava var. herbiola Herbaceous Vegetation
CEGL006624 Pinus virginiana - (Pinus rigida) - Nyssa sylvatica / *Xanthorhiza simplicissima* / Euphorbia corollata Forest
CEGL006969 Deschampsia caespitosa - Carex viridula Herbaceous Vegetation
CEGL007056 Pinus rigida / Osmunda cinnamomea - Carex stricta - Eriophorum virginicum / Sphagnum spp. Woodland
CEGL007853 *Acer rubrum* - Nyssa sylvatica / Ilex verticillata - Vaccinium fuscatum / Osmunda cinnamomea Forest
CEGL008416 *Acer rubrum* - Fraxinus americana - Fraxinus nigra - Betula alleghaniensis / Veratrum viride - Carex bromoides Forest
CEGL008533 Tsuga canadensis - Betula alleghaniensis / Veratrum viride - Carex scabrata - Oclemena acuminata Forest

• South-Central Interior Small Stream and Riparian (CES202.706)(all not applicable to MLRA 127)
Component Associations
Association Unique ID Association Name

CEGL002086 *Betula nigra* - *Platanus occidentalis* Forest
CEGL002263 Carex crinita - Osmunda spp. / Sphagnum spp. Herbaceous Vegetation
CEGL002386 Nuphar advena - Nymphaea odorata Herbaceous Vegetation
CEGL002392 Carex crinita - Osmunda spp. / Physocarpus opulifolius Seep Herbaceous Vegetation
CEGL003725 *Platanus occidentalis* - *Betula nigra* / *Cornus amomum* / (*Andropogon gerardii*, *Chasmanthium latifolium*) Woodland
CEGL003836 Arundinaria gigantea ssp. gigantea Shrubland
CEGL003866 Scirpus cyperinus Seasonally Flooded Southern Ruderal Herbaceous Vegetation
CEGL003894 *Alnus serrulata* Interior Shrubland
CEGL003895 *Alnus serrulata* - *Xanthorhiza simplicissima* Shrubland
CEGL003896 *Platanus occidentalis* - *Betula nigra* - Salix (caroliniana, nigra) Woodland
CEGL003901 *Salix nigra* Temporarily Flooded Shrubland
CEGL004031 *Platanus occidentalis* / Dichanthelium clandestinum - Festuca subverticillata Woodland
CEGL004098 Quercus (alba, coccinea, falcata, velutina) / Kalmia latifolia Temporarily Flooded Forest
CEGL004103 *Carex torta* Herbaceous Vegetation
CEGL004112 Juncus effusus Seasonally Flooded Herbaceous Vegetation
CEGL004145 Alnus maritima ssp. georgiensis - (Decodon verticillatus) / Hibiscus moscheutos - Sparganium americanum Spring-run Marsh Shrubland
CEGL004149 (Salix spp.) / *Andropogon gerardii* - *Panicum virgatum* - Salvia azurea Cahaba Riverwash Herbaceous Vegetation
CEGL004285 *Hymenocallis coronaria* - *Justicia americana* Herbaceous Vegetation
CEGL004286 *Justicia americana* Herbaceous Vegetation
CEGL004290 Polygonum (hydropiperoides, punctatum) - Leersia spp. Herbaceous Vegetation
CEGL004331 Podostemum ceratophyllum Herbaceous Vegetation
CEGL004418 *Liquidambar styraciflua* - *Liriodendron tulipifera* / *Lindera benzoin* / Arisaema triphyllum Forest
CEGL004425 *Acer rubrum* var. trilobum - Nyssa sylvatica / Rhododendron canescens - Viburnum nudum var. nudum / Woodwardia areolata Forest
CEGL004510 Sparganium americanum - (Sparganium erectum ssp. stoloniferum) - Epilobium leptophyllum Herbaceous Vegetation
CEGL004620 Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Successional Vine-Shrubland
CEGL004626 *Salix nigra* - *Platanus occidentalis* Forest
CEGL004690 *Acer negundo* - (*Platanus occidentalis*, *Populus deltoides*) Forest
CEGL004691 *Platanus occidentalis* - *Liriodendron tulipifera* - Betula (alleghaniensis, lenta) / *Alnus serrulata* - Leucothoe fontanesiana Forest
CEGL004725 Potamogeton spp. - Ceratophyllum spp. - Elodea spp. Permanently Flooded Herbaceous Vegetation
CEGL005014 *Fagus grandifolia* - Quercus spp. - *Acer rubrum* - Juglans nigra Forest
CEGL006283 *Andropogon gerardii* - *Panicum virgatum* - *Baptisia australis* Herbaceous Vegetation
CEGL006463 *Salix nigra* - *Betula nigra* / Schoenoplectus pungens Wooded Herbaceous Vegetation
CEGL006480 Verbesina alternifolia - Elymus riparius - Solidago gigantea - (Teucrium canadense) Herbaceous Vegetation
CEGL006483 Eragrostis hypnoides - Ludwigia palustris - Lindernia dubia - Cyperus squarrosus Herbaceous Vegetation
CEGL007059 *Alnus serrulata* Saturated Southern Interior Shrubland
CEGL007143 Tsuga canadensis - *Liriodendron tulipifera* - *Platanus occidentalis* / Rhododendron maximum - *Xanthorhiza simplicissima* Temporarily Flooded Forest
CEGL007312 *Betula nigra* - *Platanus occidentalis* / *Alnus serrulata* / *Boehmeria cylindrica* Forest
CEGL007330 *Liquidambar styraciflua* - (*Liriodendron tulipifera*) Temporarily Flooded Ruderal Forest
CEGL007340 *Platanus occidentalis* - *Liquidambar styraciflua* / *Carpinus caroliniana* - Asimina triloba Forest
CEGL007373 *Salix caroliniana* Temporarily Flooded Forest
CEGL007443 *Acer rubrum* var. trilobum - Nyssa sylvatica / Osmunda cinnamomea - Chasmanthium laxum - Carex intumescens / Sphagnum lescurii Forest
CEGL007546 Pinus taeda - *Liriodendron tulipifera* / *Lindera benzoin* / Carex crinita Successional Forest
CEGL007696 Peltandra virginica - Saururus cernuus - *Boehmeria cylindrica* / Climacium americanum Herbaceous Vegetation
CEGL007709 Quercus alba - Carya (alba, ovata) - *Liriodendron tulipifera* - (Quercus phellos) / Cornus florida Forest
CEGL007880 *Liquidambar styraciflua* - *Liriodendron tulipifera* - (*Platanus occidentalis*) / *Carpinus caroliniana* - Halesia tetraptera / Amphicarpaea bracteata Forest

CEGL008404 *Osmunda regalis* var. spectabilis Seepage Scour Herbaceous Vegetation
CEGL008428 Quercus alba - (*Liriodendron tulipifera*, *Liquidambar styraciflua*) / Calycanthus floridus / Athyrium filix-femina Forest
CEGL008429 *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - Arundinaria gigantea / Amphicarpaea bracteata Forest
CEGL008433 Juncus effusus - Chelone glabra - Scirpus spp. Southern Blue Ridge Beaver Pond Ruderal Herbaceous Vegetation
CEGL008449 Pinus virginiana - Juniperus virginiana var. virginiana - Quercus stellata / Amelanchier stolonifera / Danthonia spicata / Leucobryum glaucum Woodland
CEGL008455 *Schizachyrium scoparium* - Andropogon ternarius - Liatris microcephala - (Pityopsis ruthii) Herbaceous Vegetation
CEGL008474 *Alnus serrulata* Southeastern Seasonally Flooded Shrubland
CEGL008480 *Orontium aquaticum* Permanently Flooded Herbaceous Vegetation
CEGL008487 Quercus shumardii - *Quercus michauxii* - Quercus nigra / Acer barbatum - Tilia americana var. heterophylla Forest
CEGL008496 *Schizachyrium scoparium* - Schoenoplectus americanus - Juncus marginatus - Eupatorium serotinum Herbaceous Vegetation
CEGL008551 *Fagus grandifolia* - Quercus alba / Kalmia latifolia - Rhododendron canescens - Symplocos tinctoria Forest

Ecological site concept

This site contains moderately well, well, and somewhat excessively drained soils on alluvial land deposited during the Quaternary period. The flooding frequency ranges from rare to frequent.

From Landfire http://www.landfire.gov/index.php:

These riverscour-influenced systems occur on moderately to very high-gradient streams over a wide range of elevations. It develops on small floodplains and shores along river channels that lack a broad, flat floodplain due to steeper sideslopes, higher gradient, or both (NatureServe 2007).

The fluvial features (river terraces, oxbows, alluvial flats, point bars, and streamside levees) typical of river floodplains occur less frequently and on a smaller scale along these small streams. Fine-scale alluvial floodplain features are abundant. In pre-European settlement forests, community diversity in these streamside systems was much more complex than in the modified landscapes of today. Fire, beaver activity, and flooding of varied intensity and frequency created a mosaic whose elements included canebrake, grass and young birch / sycamore beds on reworked gravel or sand bars, beaver ponds, and grass-sedge meadows in abandoned beaver clearings, as well as the streamside zones and mixed hardwood and/or pine forests that make up more than 95% of the cover that exists today.

These systems have little to no floodplain development (i.e., floodplains, if present, are not differentiated into levees, sloughs, ridges, terraces, and abandoned channel segments) and are typically higher gradient than larger floodplains, experiencing periodic, strong flooding of short duration (NatureServe 2007).

Associated sites

F127XY004WV	**Wet Alluvial Lands** Wet Alluvial Lands

Table 1. Dominant plant species

Tree	(1) *Platanus occidentalis* (2) *Acer rubrum*
Shrub	(1) *Ostrya virginiana* (2) *Carpinus caroliniana*
Herbaceous	(1) *Sorghastrum nutans* (2) *Toxicodendron radicans*

Physiographic features

This area is generally composed of mountain ranges oriented in a northeast-southwest direction, with deep valleys intervening. The area of the site terminates in the eastern part in a high escarpment known as the Allegheny Front. Steep slopes are dominant but level to gently rolling plateau remnants are present.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Mountain valley (3) Alluvial fan
Runoff class	Very low to medium
Flooding duration	Extremely brief (0.1 to 4 hours) to long (7 to 30 days)
Flooding frequency	Rare to frequent
Ponding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Ponding frequency	None to frequent
Elevation	30–914 m
Slope	0–8%
Ponding depth	0–38 cm
Water table depth	46–152 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is characteristic of of other ecological sites of high elevation areas in the Eastern Allegheny Plateau and Mountains with a warm to hot, humid summers climate with cold winters and moderate snowfall. Rainfall occurs mostly as high intensity convective thunderstorms.

Table 3. Representative climatic features

Frost-free period (characteristic range)	105-133 days
Freeze-free period (characteristic range)	139-161 days
Precipitation total (characteristic range)	1,041-1,346 mm
Frost-free period (actual range)	86-143 days
Freeze-free period (actual range)	128-182 days
Precipitation total (actual range)	965-1,448 mm
Frost-free period (average)	119 days
Freeze-free period (average)	151 days
Precipitation total (average)	1,219 mm

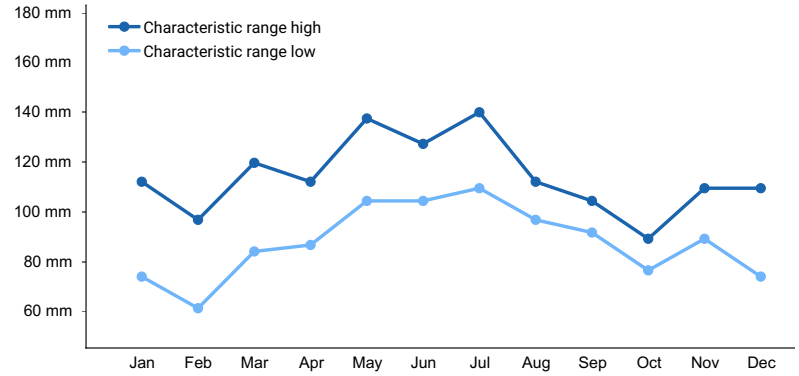


Figure 1. Monthly precipitation range

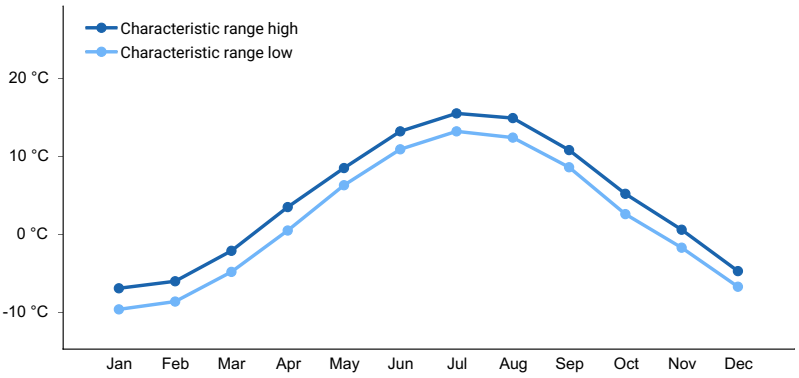


Figure 2. Monthly minimum temperature range

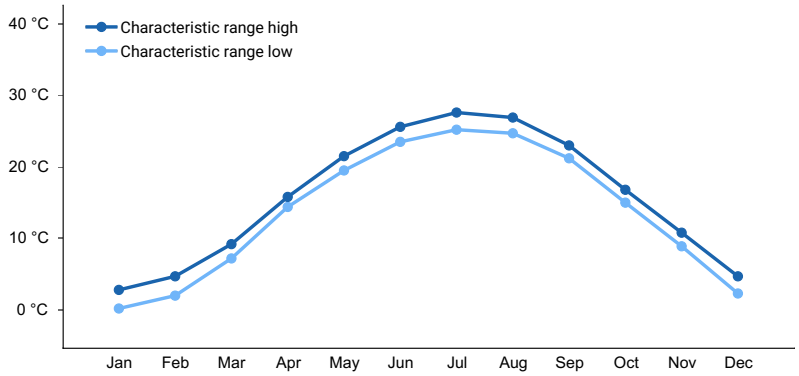


Figure 3. Monthly maximum temperature range

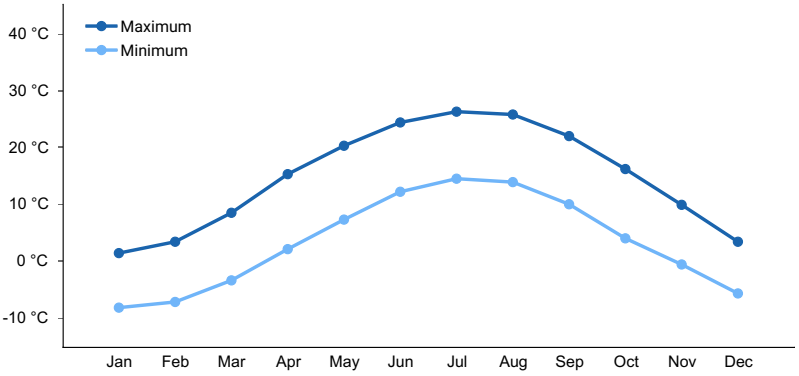


Figure 4. Monthly average minimum and maximum temperature

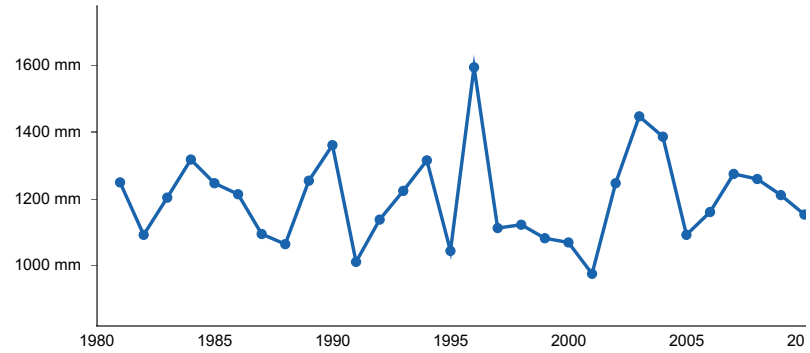


Figure 5. Annual precipitation pattern

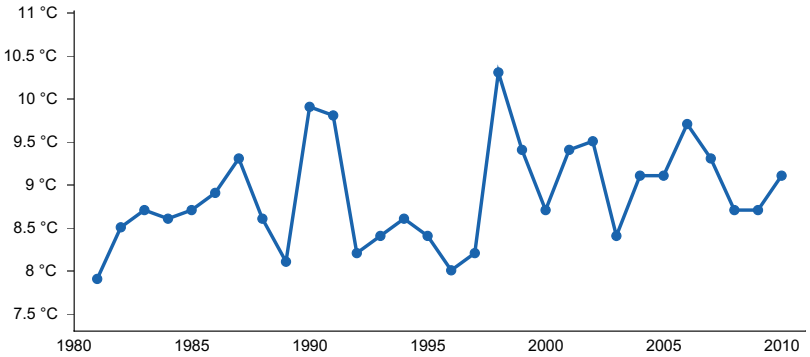


Figure 6. Annual average temperature pattern

Climate stations used

- (1) KANE 1NNE [USC00364432], Kane, PA
- (2) RIDGWAY [USC00367477], Ridgway, PA
- (3) EMPORIUM [USC00362629], Emporium, PA
- (4) CLEARFIELD LAWRENCE AP [USW00054792], Clearfield, PA
- (5) PRINCE GALLITZIN SP [USC00367167], Patton, PA
- (6) LAUREL SUMMIT [USC00364839], Boswell, PA
- (7) JOHNSTOWN CAMBRIA CO AP [USW00004726], Johnstown, PA
- (8) EBENSBURG SEWAGE PLT [USC00362470], Ebensburg, PA
- (9) TERRA ALTA #1 [USC00468777], Terra Alta, WV
- (10) MC HENRY 2 NW [USC00185832], Friendsville, MD
- (11) MT DAVIS [USC00366022], Fort Hill, PA
- (12) PARSONS 1 NE [USC00466867], Hambleton, WV
- (13) KUMBRABOW [USC00464971], Huttonsville, WV
- (14) RICHWOOD 1SSE [USC00467513], Richwood, WV
- (15) MCROSS 3 E [USC00465875], Charmco, WV
- (16) BLUESTONE LAKE [USC00460939], Hinton, WV
- (17) ATHENS [USC00460355], Athens, WV

Influencing water features

The plant community is influenced by water from streams associated with the site.

Soil features

The soils associated with this site are deep to very deep, somewhat poorly drained to excessively well drained, and moderately slow to rapid permeable soils, with very acidic to slighlty acidic soil reaction, that formed in Alluvium, Residuum from Acid shale, Interbedded sedimentary rock, Limestone and shale, Limestone, sandstone, and shale, Sandstone and shale, Sedimentary rock, Shale and siltstone.

Table 4. Representative soil features

Parent material	(1) Alluvium–sandstone and shale
Surface texture	(1) Cobbly fine sandy loam (2) Gravelly loam (3) Stony silt loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to well drained
Permeability class	Moderately slow to rapid
Soil depth	142–485 cm
Surface fragment cover <=3"	0–9%
Surface fragment cover >3"	2–9%
Available water capacity (0-101.6cm)	8.64–12.45 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.3–6.5
Subsurface fragment volume <=3" (Depth not specified)	0–50%
Subsurface fragment volume >3" (Depth not specified)	0–40%

Ecological dynamics

Ecological Dynamics: Information contained in this section was adapted from several sources. The information presented is representative of very complex vegetation communities. Key indicator plants, animals and ecological processes are described to help inform land management decisions. Plant communities will differ across the MLRA because of the naturally occurring variability in weather, soils, and aspect. The reference plant community is not necessarily the management goal. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.
State Correlation: This site will be correlated in: MD,NY,PA,WV

From Landfire http://www.landfire.gov/index.php:

Most of the system is forest vegetation. The succession of woody plants (particularly trees) is retarded by the force of "flashy," high-velocity water traveling down the stream channels (NatureServe 2007). The canopy is usually dominated by hardwoods, with pines a small component. Species may include sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), box elder (*Acer negundo*), eastern cottonwood (*Populus deltoides*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), Swamp Chestnut Oak (*Quercus michauxii*), Cherrybark Oak (*Quercus pagoda*), hackberry (*Celtis occidentalis*), hemlock (Tsuga Canadensis) or pines (Pinus spp).

Successional areas of zones are often dominated by sycamore (*Platanus occidentalis*) or box elder (*Acer negundo*).

Sub-canopy species included American holly (*Ilex opaca*), deciduous holly (*Ilex decidua* and *Ilex ambigua*), red mulberry (*Morus rubra*), ironwood (*Carpinus caroliniana*) and hop hornbeam (*Ostrya virginiana*). Shrubs such as spicebush (*Lindera benzoin*), beautyberry (*Callicarpa americana*) and yellowroot (*Xanthorhiza simplicissima*); cane

(Arundenaria gigantea) and other grasses; and false nettle (*Boehmeria cylindrica*) may be present. Caric sedges may dominate some areas.

NatureServe (2007) also notes the following common shrubs, occurring as forest/woodland understory or as non-forested shrublands: hazel alder (*Alnus serrulata*), common buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Cornus amomum*), coastal plain willow (*Salix caroliniana*) and other Salix spp., eastern poison ivy (*Toxicodendron radicans*), and, over parts of the range, mountain witchalder (*Fothergilla major*), Virginia sweetspire (*Itea virginica*) and smooth azalea (*Rhododendron arborescens*). More southern examples may contain oakleaf hydrangea (*Hydrangea quercifolia*), bushy St. John's wart (*Hypericum densiflorum*) and wax myrtle (*Morella cerifera*).

Forbs are diverse and variable from occurrence to occurrence. Some characteristic forbs are *Baptisia australis*, *Conoclinium coelestinum* (= Eupatorium coelestinum), *Coreopsis pubescens*, *Coreopsis tripteris*, *Elephantopus carolinianus*, *Helenium autumnale*, Hydrocotyle sp., *Ludwigia leptocarpa*, Lycopus spp., *Orontium aquaticum*, *Osmunda regalis* var. spectabilis, *Oxypolis rigidior*, *Phlox carolina*, *Pityopsis graminifolia* var. latifolia, *Rudbeckia laciniata* and *Vernonia gigantea*n (NatureServe 2007).

Periodically reworked gravel bars may be dominated by young black willow (*Salix nigra*), sycamore (*Platanus occidentalis*), or infrequently river birch (*Betula nigra*), or they may have sparse vegetation of a wide variety of annual and perennial herbs of weedy habits.

Canebrakes occurred in particular locations that had easy access for fire (i.e. bottomlands bordered by upland flats as opposed to steep slopes) and where the uplands experienced frequent fire as the result of a combination of lightning and Native American ignitions.

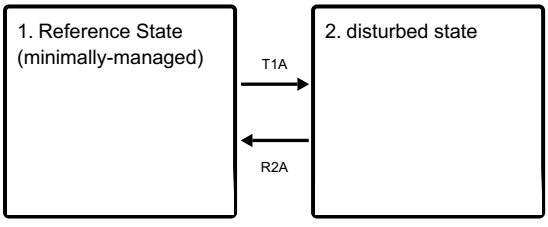
Natural levee forests form on ridges of silt and sand deposited on stream margins during flood conditions. A levee's width is related to the abundance of ground vegetation present to re-enforce sediment in future deposition events. They receive more light and may be dominated by stream margin specialists such as sycamore (*Platanus occidentalis*), willows (*Salix nigra*), river birch (*Betula nigra*), box elder (*Acer negundo*) and Eastern cottonwood (*Populus deltoides*). Streamside levees support a diverse flora of other bottomland graminoids and forbs.

Open, flood-scoured rivershore prairies feature *Andropogon gerardii*, *Sorghastrum nutans*, *Schizachyrium scoparium*,*Chasmanthium latifolium*, *Tripsacum dactyloides* and/or *Panicum virgatum*. *Carex torta* is typical of wetter areas near the channel (NatureServe 2007).

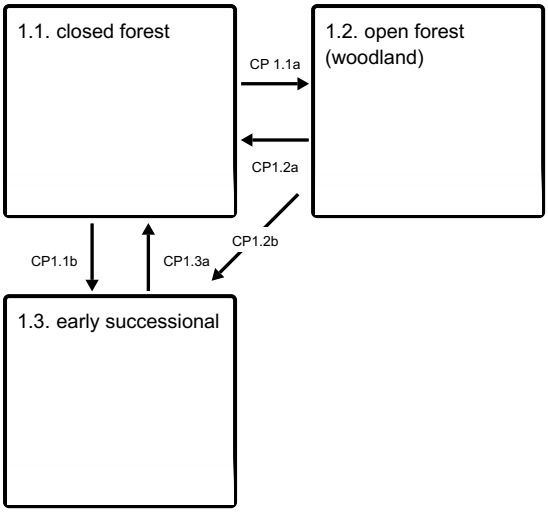
Distinctive shoals with *Hymenocallis coronaria* and/or *Justicia americana* may be present as well. Small seeps and fens can often be found within these habitats, especially at the headwaters and terraces of streams. These areas are typically dominated by primarily wetland obligate species of sedges (Carex spp.), ferns (Osmunda spp.) and other herbaceous species such as *Impatiens capensis* (NatureServe 2007).

State and transition model

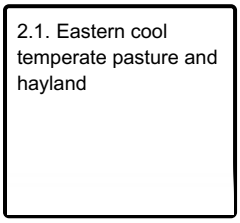
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Reference State (minimally-managed)

The reference state is a combination of several vegetation associations of the Central Appalachian Stream and Riparian (CES202.609) and (in part) South-Central Interior Small Stream and Riparian (CES202.706). Due to the heterogeneity and the broadness of this provisional ecological unit, the vegetation associations listed are not intended to cover every situation nor the full range of conditions and species. BpS Dominant and Indicator Species Symbol Scientific Name Common Name PLOC *Platanus occidentalis* American sycamore BENI *Betula nigra* River birch ACNE2 *Acer negundo* Boxelder ACRU *Acer rubrum* Red maple CELA *Celtis laevigata* Sugarberry LIQUI Liquidambar Sweetgum FRPE *Fraxinus pennsylvanica* Green ash LIRIO *Liriodendron tulipifera* Tuliptree Disturbance Description Flooding -- Flooding is the major process affecting the vegetation, with the substrate more rapidly drained than in flat floodplain areas. The distinctive dynamics of stream flooding and protected topographic position dominate the forming of the distinctive vegetation of this system. Not all of the factors are well known. Gradients of most of these rivers limit floods to fairly short duration. Flooding is most common in the winter, but may occur in other seasons particularly in association with hurricanes, tornados, or microbursts from thunderstorms. The sorting of plant communities by depositional landforms of different height suggest that wetness or depth of flood waters has significance. Flood waters have significant energy. Scouring and reworking of sediment make up an important factor in bar and bank communities. In addition to disturbance, floods bring nutrient input, deposit sediment, and disperse plant seeds. Most floods do not lead to canopy tree mortality. Flooding can act as a replacement disturbance in areas where beavers impounded a channel or in rare years with severe prolonged flood events. The most significant disturbance along small streams was wind. Two types of floods were modeled: occasional catastrophic floods due to beaver activity or other severe, prolonged floods, and more frequent repeated minor flooding (i.e., several minor floods within a 10 year period). Winds affect streamside forests because of wet soils, less dense soil, and trees that are shallow-rooted. Canopy tree mortality from more common windstorms would have resulted in tree by tree or small group replacement. Wind throw formed the primary cause of mortality in bottomlands. Major storms or even hurricanes occurring at approximately 20 year intervals would have impacted whole stands. Tornado tracks can be found passing across uplands and bottomlands. Ice damage is an infrequent but potentially catastrophic disturbance. Fire -- Fire regime group III (conspicuous and most frequent in stands with canebrake). Fire return interval varied highly. Except in canebrake, most fires were very light surface fires, creeping in hardwood or pine litter with some thin, patchy cover of bottomland grasses. Flame lengths were mostly 6 to 12 inches. Even so, fire-scarred trees can be found in most small stream sites except in the wettest microsites. Stand replacement fires are almost unknown in this type. Except where Native American burning was involved, fires likely occurred primarily during drought conditions and then often only when fire spread into bottomlands from more

pyrophytic uplands. Trees may be partially girdled by fire in duff, followed by bark sloughing. While fire rarely killed the tree, this allowed entry of rot, which, in the moist environment, often resulted in hollow trees, providing nesting and denning habitat for many species of birds and animals. Surface fires occurred on a frequency ranging from about 3-8 years in streamside canebrake, streamside hardwood/canebrake, or pine, to 25 years or more in hardwood litter. Low areas having a long hydroperiod, islands, and areas protected from fire by back swamps and oxbows were virtually fire free. Fire effects were largely limited to top kill of shrubs and tree saplings less than 2 inches diameter, and formation of hollow trees.

Community 1.1
closed forest

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 71 - 100% Upper Layer Canopy Height: Tree 25.1m - Tree 50m Tree Size Class: Large 21-33" DBH Indicator Species Symbol Scientific Name Common Name Canopy Position PLOC *Platanus occidentalis* American sycamore Upper CELA *Celtis laevigata* Sugarberry Upper FAGR *Fagus grandifolia* American beech Upper BENI *Betula nigra* River birch Upper Description Closed hardwood canopy. Extensive shade tolerant shrub understory and midstory. Major (stand-replacing) floods would occur from beaver activity or a major storm event. Repeated minor flooding that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

Community 1.2
open forest (woodland)

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 41 - 70% Upper Layer Canopy Height: Tree 25.1m - Tree 50m Tree Size Class: Large 21-33" DBH Indicator Species Symbol Scientific Name Common Name Canopy Position PLOC *Platanus occidentalis* American sycamore Upper CELA *Celtis laevigata* Sugarberry Upper FAGR *Fagus grandifolia* American beech Upper BENI *Betula nigra* River birch Upper Description Major (stand-replacing) floods would occur from beaver activity or a major storm event. Repeated minor flooding that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

Community 1.3
early successional

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 0 - 60% Upper Layer Canopy Height: Tree 0m - Tree 10m Tree Size Class: Pole 5-9" DBH Indicator Species Symbol Scientific Name Common Name Canopy Position ACRU *Acer rubrum* Red maple All LIST2 *Liquidambar styraciflua* Sweetgum All FRPE *Fraxinus pennsylvanica* Green ash All LIRIO Liriodendron Tuliptree All Description Tree fall gaps with saplings and small trees up to 30cm DBH. Potential canopy species are typically mixed with subcanopy species and herbs, and an occasionally short-lived early successional species such as willow (*Salix nigra*) or river birch (*Betula nigra*). This can include areas disturbed by flooding from drained wetlands when beaver dams fail. Also included are other disturbed areas such as windthrow and effects of tornados, hurricanes, thunderstorm microbursts, or ice events. Major (stand-replacing) floods (Optional 1) would occur from beaver activity or a major storm event. Repeated minor flooding (Optional 2) that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

Pathway CP 1.1a
Community 1.1 to 1.2

Major storms and beaver activity coupled with repeated minor flooding would open the midstory.

Pathway CP1.1b
Community 1.1 to 1.3

Major flood events and possibly high wind events can produce patches of early successional conditions.

Pathway CP1.2a
Community 1.2 to 1.1

Normal vegetation development during less disturbed periods.

Pathway CP1.2b
Community 1.2 to 1.3

Major flood events and possibly high wind events can produce patches of early successional conditions.

Pathway CP1.3a
Community 1.3 to 1.1

Normal vegetation development during less disturbed periods.

State 2
disturbed state

This state is predominately agriculture

Community 2.1
Eastern cool temperate pasture and hayland

From landfire existing vegetation type: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.

Transition T1A
State 1 to 2

Large scale native vegetation removal and planting selected forage grasses would create pasture or hayfields.

Restoration pathway R2A
State 2 to 1

Discontinue pasture/hayfield mgmt. discontinue any drainage systems. Allow native floodplain trees to self- restore or initiated planting of selected floodplain plant to facilitate the restoration

Additional community tables

Inventory data references

Site Development and Testing Plan
Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C.A. Carpenter, and W.H.McNab. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. [Map. presentation scale 1:3,500,000, colored; A.M. Sloan, cartographer] Gen. Tech. Report WO-76D. U.S. Department of Agriculture, Forest Service, Washington, DC. (https://www.fs.fed.us/research/publications/misc/73326-wo-gtr-76d-cleland2007.pdf)

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Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agricultural Handbook 296. (https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf).

Approval

Greg Schmidt, 9/27/2024

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	05/12/2025
Approved by	Greg Schmidt
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:**