

Ecological site F127XY007WV

Wet Uplands

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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 ecosite is found in mountains, plateau in MLRA 127: Eastern Allegheny Plateau and Mountains. This site occupies 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. The area is dominantly forest, containing large blocks of state forest, game lands, and national forest. Less than one-tenth of the MLRA consists of urban areas.

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 Unglaciaded Allegheny Plateau Subsection: 211Ga – Allegheny High Plateau 211Gb – Allegheny Deep Valleys Province: 221 - Eastern Broadleaf Province (in part) Section: 221E - Southern Unglaciaded 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 These wetland ecological sites coincide with High Allegheny Wetland (CES202.069) and North-Central Appalachian Acidic Swamp (CES202.604). Not all of the component associations are applicable to MLRA127. High Allegheny Wetland (CES202.069) CEGLO06592. *Abies balsamea* - *Picea rubens* / *Danthonia compressa* - *Lycopodium* spp. / *Sphagnum* spp. Swamp Forest CEGLO06591. *Abies balsamea* - *Picea rubens* / *Ilex verticillata* / *Sphagnum* spp. Swamp Forest CEGLO06132. *Acer rubrum* - *Nyssa sylvatica* High Allegheny Plateau-Central Appalachian Seep Forest CEGLO07163. *Alnus incana* - *Cornus sericea* Midwest Shrub Swamp CEGLO06839. *Alnus incana* Shrub Swamp CEGLO06546. *Alnus incana* - *Viburnum recognitum* / *Calamagrostis canadensis* Shrub Swamp CEGLO06589. (*Andromeda polifolia* var. *glaucophylla*) / *Polytrichum strictum* - *Cladonia* spp. - *Sphagnum* spp. Acidic Peatland CEGLO06545. *Aronia arbutifolia* - *Ilex verticillata* - *Ilex mucronata* / *Osmunda cinnamomea* Acidic Peatland CEGLO05449. *Calamagrostis canadensis* North-Central Wet Meadow CEGLO06549. *Carex canescens* - *Eriophorum virginicum* / *Sphagnum* spp. Fen CEGLO08534. *Carex echinata* - *Solidago uliginosa* / *Sphagnum* spp. Seepage Meadow CEGLO07771. *Carex gynandra* - *Scirpus cyperinus* - *Eriophorum virginicum* - *Osmunda cinnamomea* Herbaceous Seep CEGLO02256. *Carex lacustris* Midwest Wet Meadow CEGLO06412. *Carex stricta* - *Carex vesicaria* Wet Meadow CEGLO02257. *Carex utriculata* - *Carex stricta* - *Carex lacustris* - *Carex vesicaria* Wet Meadow CEGLO06193. *Chrysosplenium americanum* Seepage Meadow CEGLO06552. *Dulichium arundinaceum* - *Carex folliculata* - *Juncus* spp. Seepage Meadow CEGLO06570. *Eriophorum virginicum* - (*Carex folliculata*) / *Sphagnum* spp. - *Polytrichum* spp. Fen CEGLO06003. *Fraxinus nigra* - *Abies balsamea* / *Rhamnus alnifolia* Swamp Forest CEGLO06464. *Hypericum densiflorum* / *Rubus hispidus* Scrub CEGLO02472. *Larix laricina* / *Aronia melanocarpa* / *Sphagnum* spp. Swamp Forest CEGLO06461. *Leersia oryzoides* - *Sagittaria latifolia* Wet Meadow CEGLO06556. *Picea rubens* - *Acer rubrum* / *Ilex verticillata* Swamp Forest CEGLO06590. *Picea rubens* / *Carex trisperma* / *Sphagnum* spp. - *Polytrichum* spp. Swamp Forest CEGLO06588. *Picea rubens* / *Rhododendron maximum* - *Kalmia latifolia* / *Eriophorum virginicum* / *Sphagnum* spp. Swamp Forest CEGLO06277. *Picea rubens* - (*Tsuga canadensis*) / *Rhododendron maximum* Swamp Forest CEGLO06593. *Picea rubens* / *Vaccinium erythrocarpum* / *Sphagnum* spp. - *Bazzania trilobata* Swamp Forest CEGLO06594. *Populus tremuloides* / *Vaccinium myrtilloides* / *Solidago uliginosa* Swamp Forest CEGLO06305. *Salix sericea* Shrub Swamp CEGLO06275. *Schoenoplectus (tabernaemontani, acutus)* Eastern Marsh CEGLO06349. *Scirpus cyperinus* Wet Meadow CEGLO06568. *Solidago rugosa* - *Euthamia graminifolia* Wet Meadow CEGLO04510. *Sparganium americanum* - (*Sparganium erectum* ssp. *stoloniferum*) - *Epilobium leptophyllum* Seep CEGLO06595. *Spiraea alba* Wet Shrubland CEGLO06571. *Spiraea tomentosa* - *Rubus* spp. / *Phalaris arundinacea* Ruderal Wet Shrubland CEGLO06596. *Vaccinium myrtilloides* / *Pteridium aquilinum* / *Polytrichum* spp. Acidic Peatland CEGLO07856. *Vaccinium oxycoccos* - (*Vaccinium macrocarpon*) / *Rhynchospora alba* - *Drosera rotundifolia* / *Sphagnum* spp. Fen North-Central Appalachian Acidic Swamp (CES202.604). CEGLO06105. *Acer rubrum* /

Carex lacustris Wet Woodland CEGLO06119. Acer rubrum / Carex stricta - Onoclea sensibilis Wet Woodland CEGLO06406. Acer rubrum - Fraxinus (pennsylvanica, americana) / Lindera benzoin / Symplocarpus foetidus Swamp Forest CEGLO06220. Acer rubrum / Ilex mucronata - Vaccinium corymbosum Swamp Forest CEGLO06014. Acer rubrum - Nyssa sylvatica - Betula alleghaniensis / Sphagnum spp. Swamp Forest CEGLO06132. Acer rubrum - Nyssa sylvatica High Allegheny Plateau-Central Appalachian Seep Forest CEGLO07853. Acer rubrum - Nyssa sylvatica / Ilex verticillata - Vaccinium fuscum / Osmunda cinnamomea Seep Forest CEGLO06156. Acer rubrum / Rhododendron viscosum - Clethra alnifolia Swamp Forest CEGLO06380. Betula alleghaniensis - Acer rubrum - (Tsuga canadensis, Abies balsamea) / Osmunda cinnamomea Swamp Forest CEGLO06588. Picea rubens / Rhododendron maximum - Kalmia latifolia / Eriophorum virginicum / Sphagnum spp. Swamp Forest CEGLO06277. Picea rubens - (Tsuga canadensis) / Rhododendron maximum Swamp Forest CEGLO06226. Tsuga canadensis - Betula alleghaniensis / Ilex verticillata / Sphagnum spp. Swamp Forest CEGLO08533. Tsuga canadensis - Betula alleghaniensis / Veratrum viride - Carex scabrata - Oclema acuminata Swamp Forest CEGLO06279. Tsuga canadensis / Rhododendron maximum / Sphagnum spp. Swamp Forest

Ecological site concept

The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003) and Landfire. The wet uplands occur as extensive, wet lowland sites in depressions, backwaters, and other wetland conditions including the presence of a fragipan. These wetland ecological sites coincide with two ecological systems: High Allegheny Wetland (CES202.069) and North-Central Appalachian Acidic Swamp (CES202.604). From NatureServe (2007): High Allegheny Wetland (CES202.069) This system occurs along the high plateau of the Allegheny Mountains, immediately west of the Allegheny Front at elevations between 730 and 1430 m. Wetlands in this system are drained by low-gradient, meandering, intermittent to small headwater streams. Drainage is impounded in high, flat-lying basins by natural dams or "knickpoints" of resistant sandstone. In addition to poor moisture drainage, cold air drains from the surrounding uplands to pool in the flat basins, which function as frost pockets. Rainfall is plentiful, averaging about 1300 mm/year. Communities in this system may have substrates of shallow to deep peat or, less commonly, mineral soil. Soils are acidic to circumneutral. These high Allegheny wetlands form complex mosaics ranging in size from a few hectares to 6000 hectares. Forested swamps occupy the less disturbed margins or slightly higher "islands." This system has a distinctly northern character in its resemblance to bogs and swamps of New England. However, the striking absence of Chamaedaphne calyculata and Picea mariana, two abundant and common species of northern bogs and swamps, as well as the presence of species characteristic of the Southern Appalachians, such as Hypericum densiflorum, Vaccinium erythrocarpum, and Rhododendron maximum, distinguishes this system from its northern counterpart. From NatureServe (2007): North-Central Appalachian Acidic Swamp (CES202.604). These swamps are distributed from central New England through the Central Appalachians south to Virginia and west to Ohio. They are found at low to mid elevations (generally 700 m) in basins or on gently sloping seepage lowlands. The acidic substrate is mineral soil, often with a component of organic muck; if peat is present, it usually forms an organic epipedon over the mineral soil rather than a true peat substrate (although peat layers up to 1 m deep have been found in some of these swamps). Tsuga canadensis is usually present and may be dominant. It is often mixed with deciduous wetland trees such as Acer rubrum or Nyssa sylvatica. Sphagnum is an important component of the bryoid layer. Basin swamps tend to be more nutrient-poor and less species-rich than seepage swamps; in some settings, the two occur adjacent to each other with the basin swamp vegetation surrounded by seepage swamp vegetation on its upland periphery.

Associated sites

F127XY013WV	Divergent Uplands
	Divergent Uplands

Table 1. Dominant plant species

Tree	(1) Acer rubrum (2) Tsuga canadensis
Shrub	(1) Ilex verticillata (2) Rhododendron maximum
Herbaceous	Not specified

Physiographic features

This ecological site exists in unique landform positions: footslope, summit, and toeslope

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain (3) Plateau
Runoff class	Very high
Flooding frequency	None
Ponding duration	Brief (2 to 7 days) to very long (more than 30 days)
Ponding frequency	None to frequent
Elevation	310 – 950 m
Slope	0 – 10 %
Ponding depth	0 – 40 cm
Water table depth	0 – 40 cm
Aspect	N, S

Climatic features

The climate is characteristic 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)	90-130 days
Freeze-free period (characteristic range)	120-160 days
Precipitation total (characteristic range)	1,170-1,470 mm
Frost-free period (actual range)	70-130 days
Freeze-free period (actual range)	120-170 days

Precipitation total (actual range)	1,140-1,550 mm
Frost-free period (average)	100 days
Freeze-free period (average)	140 days
Precipitation total (average)	1,300 mm

- (1) DAVIS 3SE [USC00462211], Davis, WV
- (2) GLADY 1 N [USC00463464], Gladys, WV
- (3) KUMBRABOW [USC00464971], Huttonsville, WV
- (4) FLAT TOP [USC00463072], Flat Top, WV
- (5) KANE 1NNE [USC00364432], Kane, PA
- (6) GLEN HAZEL 2 NE DAM [USC00363311], Wilcox, PA
- (7) CLERMONT 1 NW [USC00361526], Kane, PA

Influencing water features

These soils are hydric.

Soil features

The soil series associated with this site are: Palms, Nolo, Lickdale, Freetown, Brinkerton, Armagh. They are Moderately deep to very deep, very poorly drained to poorly drained, with very acidic to strongly acidic soil reaction, that formed in colluvium, herbaceous organic material, residuum, slope alluvium, and woody organic material from clayey shale, sandstone, sandstone and shale, shale, shale and siltstone.

Table 4. Representative soil features

Parent material	(1) Residuum – sandstone and shale (2) Colluvium – siltstone
Surface texture	(1) Mucky loam (2) Silt loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Slow to rapid
Soil depth	50 – 230 cm
Surface fragment cover <=3"	0 – 10 %

Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	10.92 – 39.88 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	4.3 – 5.3
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

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: PA,WV

The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003) and Landfire (2009). The wet uplands occur as extensive, wet lowland sites in depressions, backwaters, and other wetland conditions including the presence of a fragipan. These wetland ecological sites coincide with two ecological systems: High Allegheny Wetland (CES202.069) and North-Central Appalachian Acidic Swamp (CES202.604).

High Allegheny Wetland (CES202.069) (from Landfire, 2009):

The more central, flood- or beaver-influenced portions contain shrub swamps, sedge fens, wet meadows, and open marshes. Forested swamps are dominated by *Picea rubens*, with varying cover by *Acer rubrum*, *Tsuga canadensis*, and *Betula alleghaniensis* var. *alleghaniensis*. Where limestone or calcareous shale influences seepage water, *Abies balsamea* and *Fraxinus nigra* are typical canopy dominants. Common shrub species are *Viburnum nudum* var. *cassinoides*, *Rhododendron maximum*, *Vaccinium myrtilloides*, *Alnus incana* ssp. *rugosa*, *Hypericum densiflorum*, *Ilex verticillata*, and *Photinia melanocarpa*. Herbaceous species frequently include *Rubus hispidus*, *Solidago uliginosa*, *Juncus effusus*, *Eriophorum virginicum*, *Osmunda cinnamomea* var. *cinnamomea*, *Polygonum sagittatum*,

Carex folliculata, Carex gynandra, Leersia oryzoides, Galium tinctorium, Solidago rugosa, Symplocarpus foetidus, Lycopus uniflorus var. uniflorus, Scirpus cyperinus, Carex scoparia var. scoparia, and Carex trisperma var. trisperma. Sphagnum spp. and Polytrichum spp. dominate the bryophyte layer. This system is maintained by a spatially complex mix of seepage, low-energy flooding, beaver activity, and rainfall. Beaver activity encourages the cycling of early- to mid-successional types. In the rare ombrotrophic bogs, rainfall is the only source of moisture. Many of the forested swamps in this system were logged during 1880-1920, and some were subsequently burned and/or heavily grazed. Undisturbed examples exist (e.g., Cranberry Glades), where old-growth swamp buffers the central peatlands, which have been dated to 10,000 years.

A representative Plant community is Picea rubens - Acer rubrum / Ilex verticillata Forest, (Red Spruce - Red Maple / Winterberry Swamp Forest).

North-Central Appalachian Acidic Swamp (CES202.604) (from LandFire 2009).

These swamps are distributed from central New England through the Central Appalachians south to Virginia and west to Ohio. They are found at low to mid elevations (generally

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.2 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height M	Canopy Cover (%)	Diameter Cm	Basal Area (square M/hectare)
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Table 8. Community 1.2 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (m)	Canopy Cover (%)
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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>)

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K., Snow, and J.Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

Landfire <http://www.landfire.gov/index.php>

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 15 April 2007.

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).

Hemlock – Mixed Hardwood Palustrine Forest <http://www.naturalheritage.state.pa.us/Community.aspx?=16029>

Contributors

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	09/22/2026
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:
