

Ecological site F110XY028IL

Silty-Loamy Floodplain Forest

Last updated: 4/22/2020
Accessed: 08/22/2026

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): 110X–Northern Illinois and Indiana Heavy Till Plain

The Northern Illinois and Indiana Heavy Till Plain (MLRA 110) encompasses the Northeastern Morainal, Grand Prairie, and Southern Lake Michigan Coastal landscapes (Schwegman et al. 1973, WDNR 2015). It spans three states – Illinois (79 percent), Indiana (10 percent), and Wisconsin (11 percent) – comprising about 7,535 square miles (Figure 1). The elevation is about 650 feet above sea level (ASL) and increases gradually from Lake Michigan south. Local relief varies from 10 to 25 feet. Silurian age fractured dolomite and limestone bedrock underlie the region. Glacial drift covers the surface area of the MLRA, and till, outwash, lacustrine deposits, loess or other silty material, and organic deposits are common (USDA-NRCS 2006). The vegetation in the MLRA has undergone drastic changes over time. At the end of the last glacial episode – the Wisconsin glacialiation – the evolution of vegetation began with the development of tundra habitats, followed by a phase of spruce and fir forests, and eventually spruce-pine forests. Not until approximately 9,000 years ago did the climate undergo a warming trend which prompted the development of deciduous forests dominated by oak and hickory. As the climate continued to warm and dry, prairies began to develop approximately 8,300 years ago. Another shift in climate that resulted in an increase in moisture prompted the emergence of savanna-like habitats from 8,000 to 5,000 years before present (Taft et al. 2009). Forests maintained footholds on steep valley sides, morainal ridges, and wet floodplains. Fire, droughts, and grazing by native mammals helped to maintain the prairies and savannas until the arrival of European settlers, and the forests were maintained by droughts, wind, lightning, and occasional fire (Taft et al. 2009; NatureServe 2018).

Classification relationships

USFS Subregions: Southwestern Great Lakes Morainal (222K) and Central Till Plains and Grand Prairies (251D) Sections; Kenosha-Lake Michigan Plain and Moraines (222Kg), Valparaiso Moraine (Kj), and Eastern Grand Prairie (251Dd) Subsections (Cleland et al. 2007) U.S. EPA Level IV Ecoregion: Kettle Moraines (53b), Illinois/Indiana Prairies (54a), and Valparaiso-Wheaton Morainal Complex (54f) (USEPA 2013) National Vegetation Classification – Ecological Systems: North-Central Interior Floodplain (CES202.694) (NatureServe 2018) National Vegetation Classification – Plant Associations: *Quercus macrocarpa* – *Quercus bicolor* – *Carya laciniosa*/Leersia spp. – *Cinna* spp. Floodplain Forest (CEGL002098) (Nature Serve 2018) Biophysical Settings: Central Interior and Appalachian Floodplain (BpS 4914710) (LANDFIRE 2009) Illinois Natural Areas Inventory: Mesic floodplain forest (White and Madany 1978) Wisconsin Natural Communities: Floodplain forest (WDNR 2015)

Ecological site concept

Silty-Loamy Floodplain Forests are located within the green areas on the map (Figure 1). They occur on river valleys on floodplains. The soils are Mollisols and Entisols that are somewhat poorly to well drained and very deep, formed in alluvium. The historic pre-European settlement vegetation on this ecological site was dominated by a dense, closed canopy of deciduous trees and an understory of flood-tolerant, hydrophytic herbaceous plants. Sugar maple (*Acer saccharum* Marshall) and bur oak (*Quercus macrocarpa* Michx.) are common tree species present on the site. Other co-dominant tree species include American basswood (*Tilia americana* L.), white oak (*Quercus alba* L.), and American elm (*Ulmus americana* L.) (White and Madany 1978). The shrub layer supports woody shrubs, such as pawpaw (*Asimina triloba* (L.) Dunal). The understory is comprised of species tolerant of occasional flood disturbances such as Canadian woodnettle (*Laportea canadensis* (L.) Weddell) and Virginia bluebells (*Mertensia virginica* (L.) Pers. Ex Link). Brief, seasonal flooding is the primary disturbance factor that maintains this site, while damage from storms and periodic pest outbreaks are secondary disturbances (LANDFIRE 2009).

Associated sites

R110XY027IL	Ponded Floodplain Marsh Very poorly to poorly drained alluvium and organic material that experiences flooding and ponding including Houghton, Millington, Sawmill, and Walkkill soils
R110XY029IL	Wet Floodplain Sedge Meadow Very poorly to poorly drained alluvium that experiences rare to frequent flooding including Ambraw, Comfrey, Millington, Sawmill, Sawmill variant, Titus, and Zook soils

Table 1. Dominant plant species

Tree	(1) <i>Acer saccharum</i> (2) <i>Quercus macrocarpa</i>
Shrub	(1) <i>Asimina triloba</i>
Herbaceous	(1) <i>Laportea canadensis</i> (2) <i>Mertensia virginica</i>

Physiographic features

Silty-Loamy Floodplain Forests occur on river valleys on floodplains. They are situated on elevations ranging from approximately 443 to 1499 feet ASL. The site experiences rare to occasional flooding.

Figure 1. Representative block diagram of Silty-Loamy Floodplain Forest and associated ecological sites.

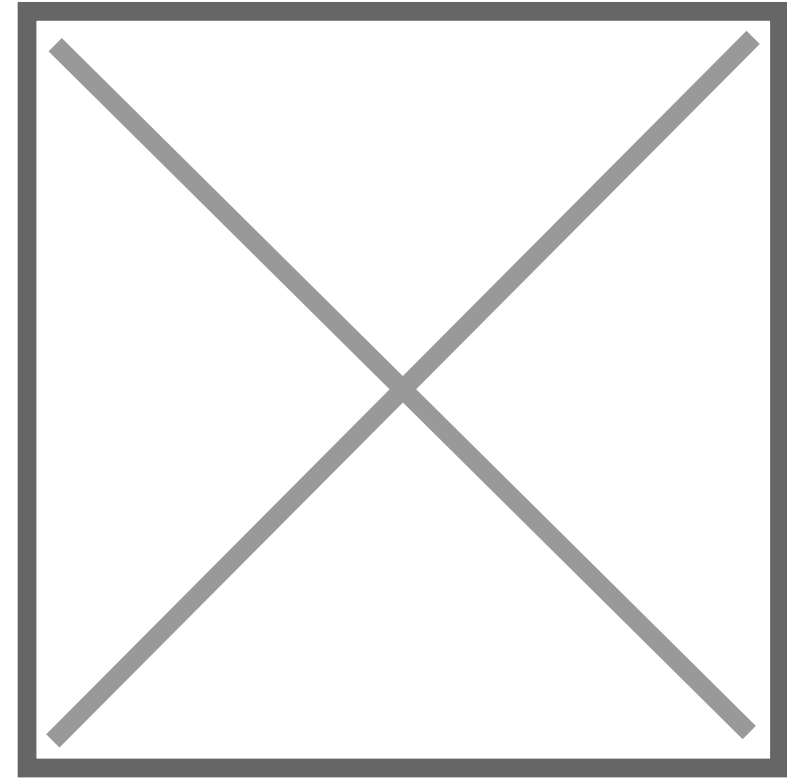


Figure 2.

Table 2. Representative physiographic features

Slope shape across	(1) Linear
Slope shape up-down	(1) Linear
Landforms	(1) River valley > Flood plain
Runoff class	Negligible
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Rare to occasional
Elevation	140 – 460 m
Slope	0 %
Water table depth	50 – 200 cm
Aspect	Aspect is not a significant factor

Climatic features

The Northern Illinois and Indiana Heavy Till Plain falls into the hot-summer humid continental climate (Dfa) and warm-summer humid continental climate (Dfb) Köppen-Geiger climate classifications (Peel et al. 2007). The two main factors that drive the climate of the MLRA are latitude and weather systems. Latitude, and the subsequent reflection of solar input, determines air temperatures and seasonal variations. Solar energy varies across the seasons, with summer receiving three to four times as much energy as opposed to winter. Weather systems (air masses and cyclonic storms) are responsible for daily fluctuations of weather conditions. High-pressure systems are responsible for settled weather patterns where sun and clear skies dominate. In fall, winter, and spring, the polar jet stream is responsible for the creation and movement of low-pressure systems. The clouds, winds, and precipitation associated with a low-pressure system regularly follow high-pressure systems every few days (Angel n.d.).

The soil temperature regime of MLRA 110 is classified as mesic, where the mean annual soil temperature is between 46 and 59°F (USDA-NRCS 2006). Temperature and precipitation occur along a north-south gradient, where temperature and precipitation increase the further south one travels. The average freeze-free period of this ecological site is about 187 days, while the frost-free period is about 150 days (Table 2). The majority of the precipitation occurs as rainfall in the form of convective thunderstorms during the growing season. Average annual precipitation is 37 inches, which includes rainfall plus the water equivalent from snowfall (Table 3). The average annual low and high temperatures are 39.7 and 59.5°F, respectively.

Table 3 Representative climatic features

Frost-free period (characteristic range)	140-160 days
Freeze-free period (characteristic range)	180-190 days
Precipitation total (characteristic range)	910-970 mm

Frost-free period (actual range)	140-160 days
Freeze-free period (actual range)	180-190 days
Precipitation total (actual range)	910-970 mm
Frost-free period (average)	150 days
Freeze-free period (average)	190 days
Precipitation total (average)	940 mm

- (1) WATSEKA 2 NW [USC00119021], Watseka, IL
- (2) OTTAWA 5SW [USC00116526], Ottawa, IL
- (3) JOLIET BRANDON RD DAM [USC00114530], Joliet, IL
- (4) GLENVIEW NAS [USW00014855], Glenview, IL
- (5) HALES CORNERS-WHITNALL [USC00473391], Greendale, WI

Influencing water features

Silty-Loamy Floodplain Forests are classified as a RIVERINE: Occasionally Flooded; forested wetland under the Hydrogeomorphic (HGM) classification system (Smith et al. 1995; USDA-NRCS 2008) and as a Palustrine, Forested, Broad-leaved Deciduous, Temporarily Flooded wetland under the National Wetlands Inventory (FGDC 2013). Overbank flow from the channel and subsurface hydraulic connections are the main sources of water for this ecological site (Smith et al. 1995). Infiltration is moderate or very slow (Hydrologic Groups B and D) for undrained soils, and surface runoff is negligible to very high.

Wetland description

Primary wetland hydrology indicators for an intact Silty-Loamy Floodplain Forest may include: A1 Surface water, B1 Water marks, B2 Sediment deposits, B3 Drift deposits, and B9 Water-stained leaves. Secondary wetland hydrology indicators may include: D5 FAC-neutral test (USACE 2010).

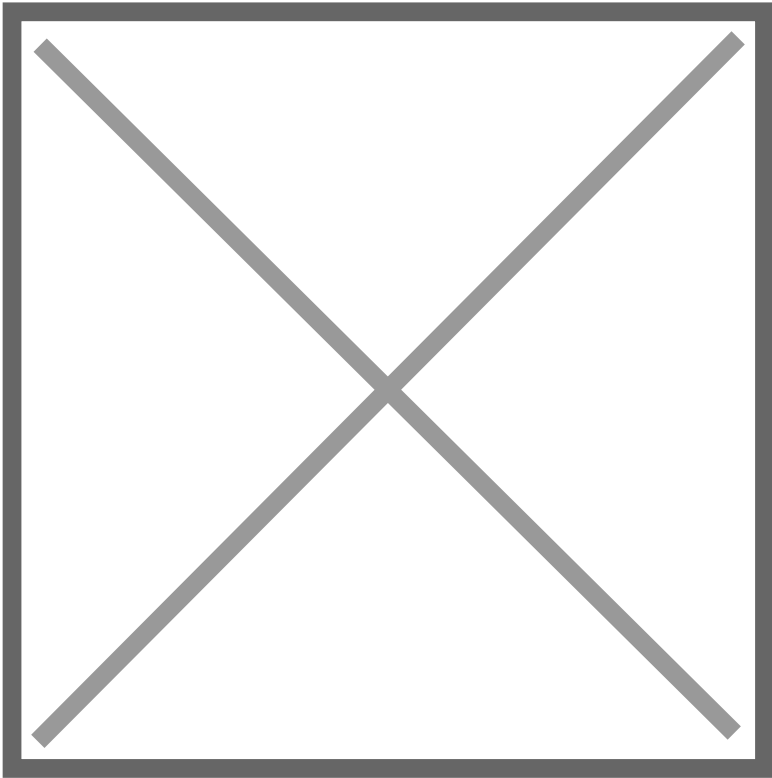


Figure 9. Hydrologic cycling in Silty-Loamy Floodplain Forest ecological site.

Soil features

Soils of Silty-Loamy Floodplain Forests are in the Mollisols and Entisols orders, further classified as Aquic Cumulic Hapludolls, Cumulic Hapludolls, Fluvaquentic Hapludolls, and Typic Udifluvents with very slow to moderate infiltration and negligible to high runoff potential. The soil series associated with this site includes Allison, Dorchester, Du Page, Lawson, Lawson variant, Ross, and Tice. The parent material is alluvium, and the soils are somewhat poorly to well drained and very deep. Soil pH classes are moderately acid to moderately alkaline. No rooting restrictions are noted for the soils of this ecological site.

Some soil map units in this ecological site, if not drained, may meet the definition of hydric soils and are listed as meeting criteria 4 of the hydric soils list (77 FR 12234).

Figure 10. Profile sketches of soil series associated with Silty-Loamy Floodplain Forest.

Table 4. Representative soil features

Parent material	(1) Alluvium
Family particle size	(1) Fine-silty (2) Fine-loamy
Drainage class	Somewhat poorly drained to well drained
Permeability class	Very slow to moderately slow
Depth to restrictive layer	200 cm

Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	15.24 – 22.86 cm
Calcium carbonate equivalent (Depth not specified)	0 – 40 %
Electrical conductivity (Depth not specified)	Not specified
Sodium adsorption ratio (Depth not specified)	Not specified
Soil reaction (1:1 water) (Depth not specified)	5.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The information in this Ecological Site Description, including the state-and-transition model (STM), was developed based on historical data, current field data, professional experience, and a review of the scientific literature. As a result, all possible scenarios or plant species may not be included. Key indicator plant species, disturbances, and ecological processes are described to inform land management decisions.

The MLRA lies within the tallgrass prairie ecosystem of the Midwest, but a variety of environmental and edaphic factors resulted in landscape that historically supported prairies, savannas, forests, and various wetlands. Silty-Loamy Floodplain Forests form an aspect of this vegetative continuum. This ecological site occurs on floodplains on somewhat poorly to well drained soils. Species characteristic of this ecological site consist of upland and hydrophytic woody and herbaceous vegetation.

Rare to occasional flooding is the dominant disturbance factor in Silty-Loamy Floodplain Forests, and storm damage and pests are secondary disturbances. Seasonal flooding occurs every two to twenty years, and flooding can persist for up to seven days at a time. Damage to trees from wind storms can vary from minor, patchy effects of individual trees to stand effects that temporarily affect community structure and species richness and diversity (Irland 2000; Peterson 2000). Trees are susceptible to a variety of pests (e.g.,

insects, fungi, cankers, wilts), therefore periodic insect and disease outbreaks play an important role in local canopy structure.

Today, many Silty-Loamy Floodplain Forests have been reduced as a result of conversion to agricultural or other human-modified lands. Remnant sites have been degraded due to significant changes to the natural hydrologic regime and diminished water quality in the watershed. A return to the historic plant community may not be possible due to significant hydrologic and water quality changes in the watershed, but long-term conservation agriculture or habitat reconstruction efforts can help to restore some natural diversity and ecological function. The state-and-transition model that follows provides a detailed description of each state, community phase, pathway, and transition. This model is based on available experimental research, field observations, literature reviews, professional consensus, and interpretations.

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 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 4.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 12. Community 4.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 13. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 14. Community 5.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Inventory data references

No field plots were available for this site. A review of the scientific literature and professional experience were used to approximate the plant communities for this provisional ecological site. Information for the state-and-transition model was obtained from the same sources. All community phases are considered provisional based on these plots and the sources identified in this ecological site description. • Vegetation described in the reference state was derived from unpublished cluster analyses performed by Illinois Natural Heritage Survey staff in 2012 for a draft Mesic Floodplain Forest ecological site description.

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Contributors

Lisa Kluesner
Kristine Ryan
Sarah Smith
Tiffany Justus

Approval

Chris Tecklenburg, 4/22/2020

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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	08/22/2026
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:
