USDA Natural Resources Conservation Service

Ecological site F154XA013FL
Histic Alluvial Forests

Last updated: 2/21/2024
Accessed: 05/03/2024

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): 154X–South-Central Florida Ridge

MLRA 154 is entirely in Peninsular Florida, and contains 8,285 square miles. The landscape of MLRA 154 is characterized by a series of parallel, prominent sandy ridges of Pleistocene marine origin, including the Brooksville and Mount Dora Ridges. These North to South oriented parallel ridges are interspersed with more low lying physiographic provinces, including: upland hills, plains, valleys and gaps (Puri and Vernon 1964). The extreme western portion of the MLRA consists of thin belt of coastal lowlands and marshlands.

Many of the soils of MLRA 154 are Pleistocene or Holocene sands that are underlain with older, loamy Pliocene marine sediments (Cypresshead formation) or the clayey Miocene marine sediments (Hawthorne formation). A combination of marine depositional events and the dissolution of underlying limestone (karst geology) is responsible for surficial topography throughout Peninsular Florida.

Classification relationships

All portions of the geographical range of this site falls under the following ecological / land classifications including:

-Environmental Protection Agency’s Level 3 and 4 Ecoregions of Florida: 75 Southern Coastal Plain; 75c Central Florida Ridges and Uplands (Griffith, G. E., Omernik, J. M., & Pierson, S. M., 2013)

-Florida Natural Area Inventory, 2010 Edition: Floodplain Swamp & Basin Swamp (FNAI, 2010)

Ecological site concept

The central concept of the Histic Alluvial and Forestlands includes deep, very poorly drained soils formed in organic material with a mineral substratum. These soils occur on low gradient alluvial floodplains with slopes less than 1%. This site includes map units of the Chobee, Demory, Everglades, Gator Maurepas, Myakka, Nittaw, Okeelanta, Pamlico, Shenks, and Terra Ceia series, and is situated primarily along low gradient rivers and streams in the Tsala Apopka Plain, Lake Harris Cross Valley, Central Valley, and Western Valley physiographic units.

Associated sites

F154XA014FL	**Histic Wetland Depressions** These are very poorly drained depressional concepts that will occur in organic soils, and will differ in physiographic positions, affect the types of vegetation and management strategies
F154XA015FL	**Mineral Depressional Wetlands** These are very poorly drained depressional concepts that will occur in mineral soils rather than organic soils, and will differ in physiographic positions, affect the types of vegetation and management strategies

F154XA016FL	**Wet Mineral Alluvial Forest And Marshlands** These sites are very poorly drained alluvial concepts that will occur on mineral soils rather than organic soils, resulting in different types and amounts of vegetation as well as management strategies
R154XX017FL	**Wet Saline Marshes And Swamps** These are very poorly drained tidal soils that will exist in intertidal landscape positions

Similar sites

F154XA014FL	**Histic Wetland Depressions** These are very poorly drained depressional concepts that will occur in organic soils, and will differ in physiographic positions, affect the types of vegetation and management strategies
F154XA015FL	**Mineral Depressional Wetlands** These are very poorly drained depressional concepts that will occur in mineral soils rather than organic soils, and will differ in physiographic positions, affect the types of vegetation and management strategies
F154XA016FL	**Wet Mineral Alluvial Forest And Marshlands** These sites are very poorly drained alluvial concepts that will occur on mineral soils rather than organic soils, resulting in different types and amounts of vegetation as well as management strategies

Table 1. Dominant plant species

Tree	(1) *Taxodium distichum* (2) *Nyssa biflora*
Shrub	(1) *Fraxinus caroliniana* (2) *Cephalanthus occidentalis*
Herbaceous	(1) *Saururus cernuus* (2) *Polygonum punctatum*

Physiographic features

The entire concept area is located within the Floridian Section of the Coastal Plain Province of the Atlantic Plain. Elevation of this MLRA sub-unit ranges from sea level to 260 feet (0 to 79 m). Elevations for this site varies between 3 to 100 feet (1 to 30 meters). This site occurs on low gradient alluvial flood plains in central and west-central Florida. Slopes are level and range from 0 to 1%. The site occurs on flood plains or in depressions on floodplains. Typically, the soils formed in organic material more than 16 inches thick and may be underlain with sandy, loamy, or clayey alluvial or marine deposits.

Table 2. Representative physiographic features

Landforms	(1) Marine terrace > Flood plain (2) Marine terrace > Flood plain > Closed depression
Runoff class	Negligible to very low
Flooding duration	Brief (2 to 7 days) to very long (more than 30 days)
Flooding frequency	Occasional to very frequent
Ponding duration	Very brief (4 to 48 hours) to very long (more than 30 days)
Ponding frequency	None to frequent
Elevation	1–30 m
Slope	0–1%
Water table depth	0–15 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is characterized by humid subtropical with long hot summers and mild winters. In the winter months, Canadian air masses move across Peninsular Florida and produce cool, cloudy, rainy weather. Freezing

temperatures are occasional in the northern areas of the MLRA, with typically <30 days of the year with temperatures dropping below freezing.

Precipitation in the northern section of the MRLA is distributed fairly evenly throughout the year. Average annual precipitation ranges from 45 to 55 inches. Highest monthly precipitation falls from June through October, with June through August being the wettest period. Winter rainfall is associated with cold fronts.

Hurricanes and tropical storms affect much of the MLRA 154 region. Catastrophic hurricanes make landfall along the Atlantic coast of Peninsular Florida on the order of two to four times per century. Strong winds and heavy rainfall affect the interior peninsula; rainfall from hurricanes and tropical systems vary widely but can exceed 20 inches from one storm. Hurricanes are most likely to occur between June and November and are most common in August and September.

Table 3. Representative climatic features

Frost-free period (characteristic range)	238-365 days
Freeze-free period (characteristic range)	365 days
Precipitation total (characteristic range)	1,295-1,346 mm
Frost-free period (actual range)	214-365 days
Freeze-free period (actual range)	319-365 days
Precipitation total (actual range)	1,270-1,346 mm
Frost-free period (average)	313 days
Freeze-free period (average)	356 days
Precipitation total (average)	1,321 mm

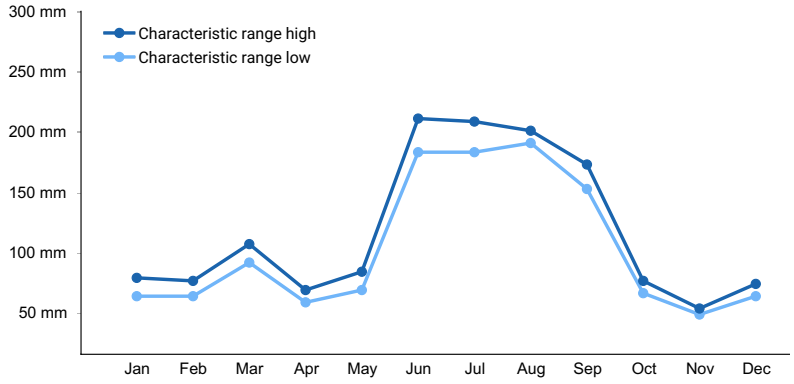


Figure 1. Monthly precipitation range

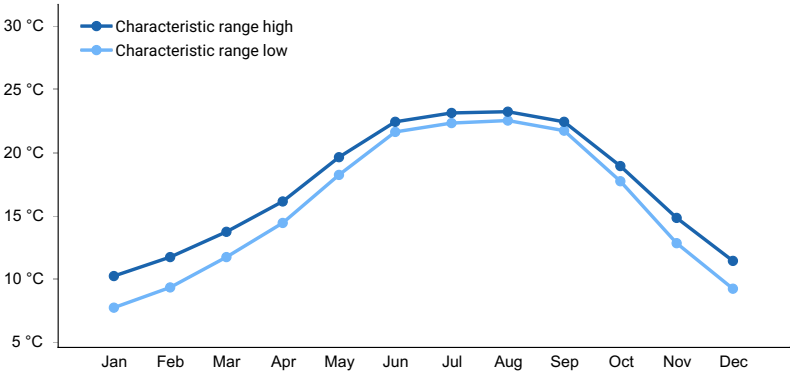


Figure 2. Monthly minimum temperature range

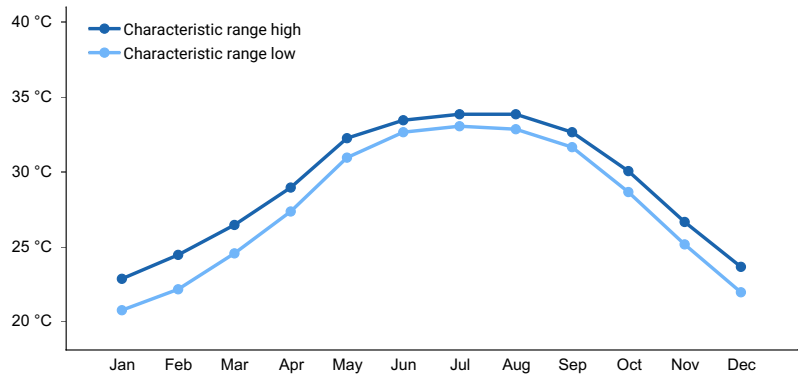


Figure 3. Monthly maximum temperature range

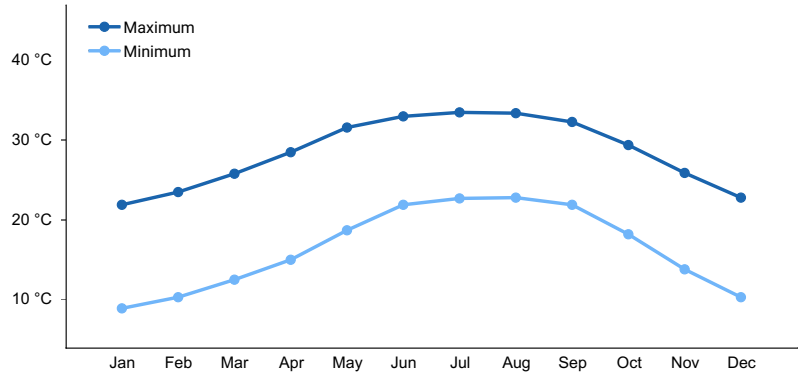


Figure 4. Monthly average minimum and maximum temperature

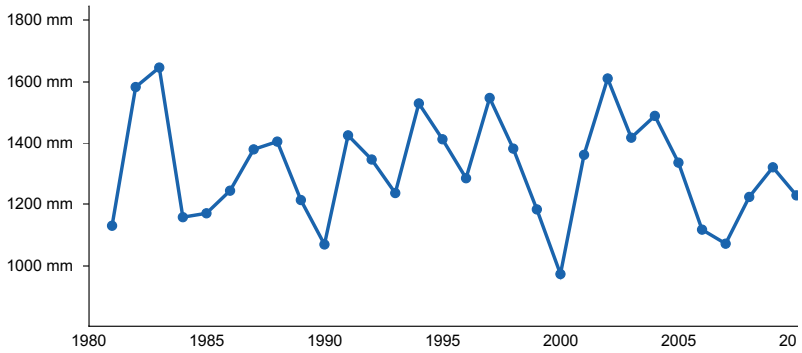


Figure 5. Annual precipitation pattern

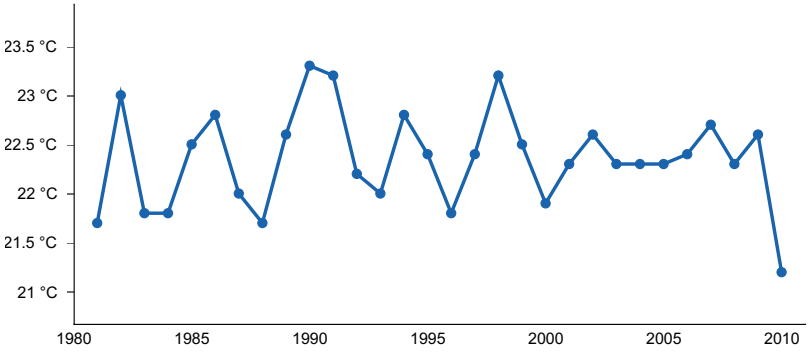


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BARTOW [USC00080478], Bartow, FL
- (2) LAKE ALFRED EXP STN [USC00084707], Haines City, FL
- (3) LISBON [USC00085076], Leesburg, FL

- (4) WINTER HAVEN [USC00089707], Winter Haven, FL
- (5) CLERMONT 9 S [USC00081641], Clermont, FL
- (6) GAINESVILLE 11 WNW [USC00083322], Gainesville, FL
- (7) INVERNESS 3 SE [USC00084289], Inverness, FL
- (8) MTN LAKE [USC00085973], Lake Wales, FL
- (9) BROOKSVILLE CHIN HILL [USC00081046], Brooksville, FL
- (10) SAINT LEO [USC00087851], San Antonio, FL
- (11) TARPON SPGS SEWAGE PL [USC00088824], Tarpon Springs, FL
- (12) LAKELAND [USW00012883], Lakeland, FL

Influencing water features

The modal concept for these sites are low lying, linear wetlands along stream and rivers surrounded by drier environments. The site is situated on soils that are flooded for long or very long periods and have a high water table (dominantly at or near the surface).

Given the localized nature of this site and the significant hydrologic differences of surrounding communities, this site can have an abrupt ecotone which dramatically shifts species composition from flood plain swamps and marshes to drier sites within short distances. Species of this plant community are edaphic adapted to withstand long or very long inundation.

Slope gradient, concave or linear landform positions, and variable saturated hydraulic conductivity results in medium to very high surface runoff. The combination of fertile organic material, high or very high available water, and occasional to very frequent flooding are the keys to this site’s plant community.

Soil features

Soils generally classify as either Typic Haplosaprists (Maurepas, Terra Ceia), Typic Haplohemists (Everglades) or Terric Haplosaprists (Gator, Okeelanta, Pamlico Shenks). These soils formed in herbaceous or woody plant materials more than 16 inches thick and can be underlain with clayey, loamy, or sandy mineral material. A few mineral soils with an organic surface layer (less than 7 inches thick) are included in the site (Chobee, Myakka, Nittaw).

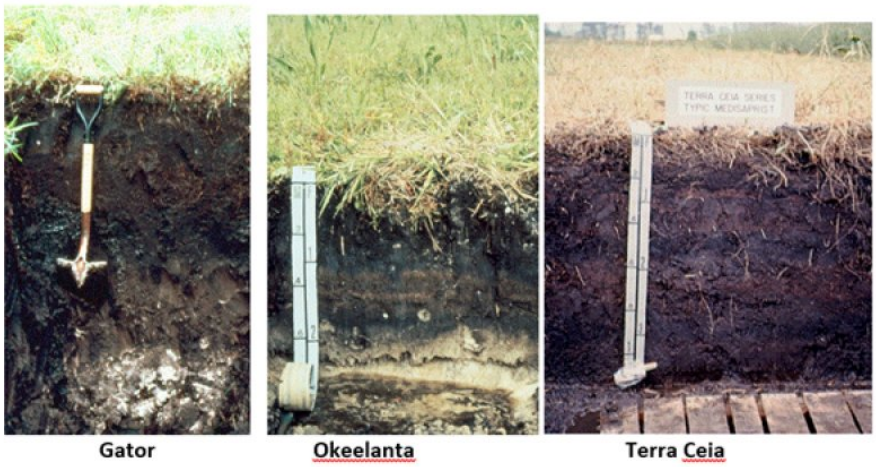


Figure 7. Soil profiles

Table 4. Representative soil features

Parent material	(1) Herbaceous organic material (2) Marine deposits (3) Limestone
Surface texture	(1) Muck
Drainage class	Very poorly drained
Permeability class	Moderate to very rapid

Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	22.86–38.1 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–4
Soil reaction (1:1 water) (0-101.6cm)	4.5–8.4
Subsurface fragment volume <=3" (0-101.6cm)	0%
Subsurface fragment volume >3" (0-101.6cm)	0%

Ecological dynamics

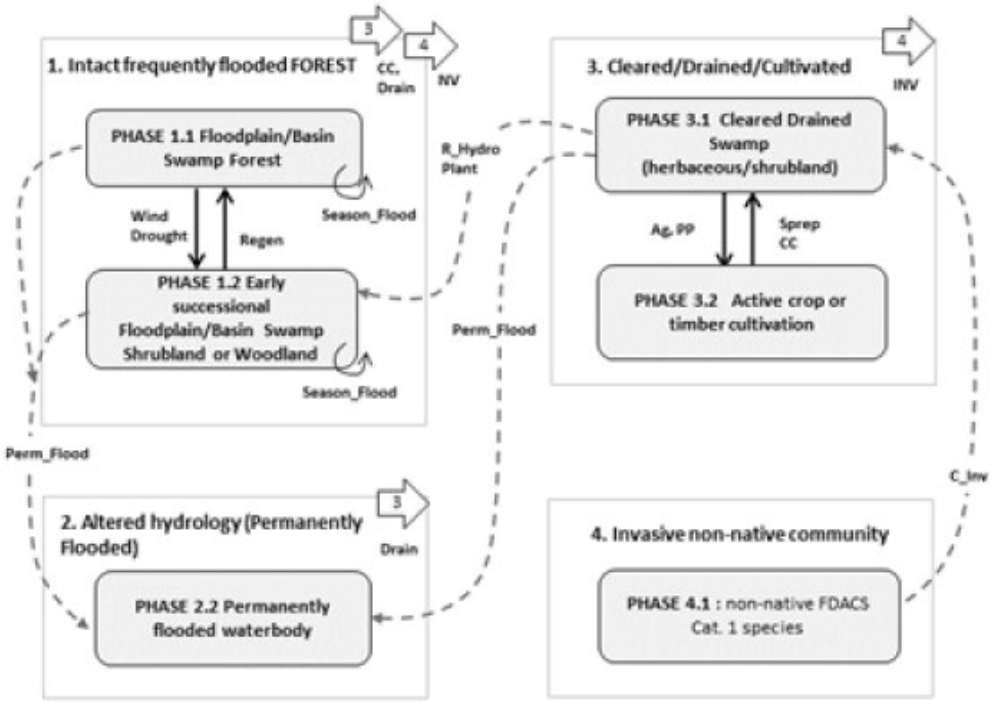
The Histic Alluvial Forests site occurs either in alluvial floodplains or basin wetlands. Although these two wetland environments differ in hydrologic regime and flooding periodicity, common features of this site include very deep and very poorly drained organic soils that flood frequently. Flooding timing and duration is seasonally influenced, depending on flooding source (river flooding vs. rainfall ponding).

Histic alluvial forests inhabit frequently flooded areas adjacent to stream and river channels, or depressional “basins” of various configurations and sizes. These floodplain or basin swamp forests have well developed canopies of hydrophytic trees, which are often buttressed. Understory vegetation is sparse, usually patchily distributed and limited to slightly higher rises that are less frequently flooded.

Natural ecological processes are most influenced by flooding regimes and associated nutrient flows. The two natural settings of this site (i.e. Floodplains and Basins) differ in flooding regimes. Floodplain forests are regularly inundated by flowing flood waters of adjacent rivers or other water bodies. Flows and aerobic conditions are variable in floodplains, depending on local site morphology and micro-topography. Backswamps and sloughs are flooded with stagnant water for extensive periods of time, resulting in highly anaerobic conditions. In contrast, flooding frequency and depths are more variable in point bars and river bends, leading to more aerobic conditions, nutrient flows and mechanical scouring.

Basin swamps also experience seasonal flooding. In general, flooding is less variable, and is tied to local rainfall and runoff and seepage from surrounding uplands. Standing water is present throughout most of the year in these “still swamps” not adjacent to flowing rivers and streams.

State and transition model



Note: Solid arrows denote transitions between phases within States, dashed arrows show transitions between States, block arrows indicate transitions which are possible for ALL phases within a State. Destination State denoted by number in block arrow

Figure 8. Histic Alluvial Forests STM

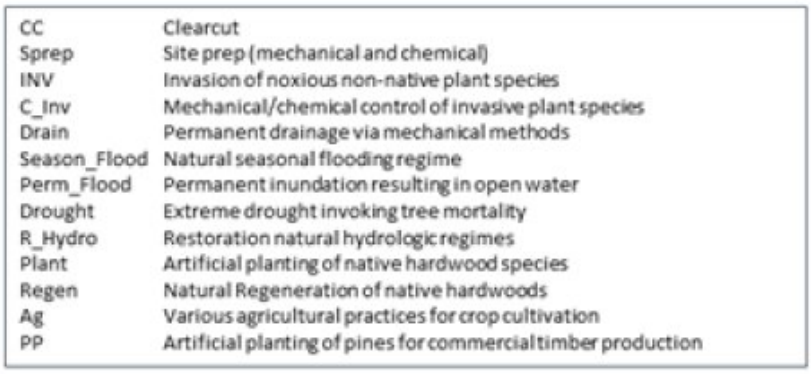


Figure 9. Histic Alluvial Forests legend

State 1
Floodplain/Basin Forest

Forest composition of Histic Alluvial Forests is dependent on flooding regime and landscape orientation. Cypress (Taxodium spp.) is generally ubiquitous in the canopy. However, bald cypress (T. distichum) occurs in swamp forests of seasonally flooded alluvial floodplains, usually associated with free flowing streams and rivers. Other canopy trees of floodplain swamp forests include water tupelo (*Nyssa aquatica*), swamp tupelo (*N. sylvatica* var. biflora), water hickory (*Carya aquatica*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and swamp laurel oak (*Q. laurifolia*). Forests of basin swamps are compositionally different. Pond cypress (T. ascendens) is dominant and indicative of still water conditions. Other flood tolerant trees of the canopy and midstory include swamp tupelo (*Nyssa sylvatica* var. biflora), red maple (*Acer rubrum*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), swamp laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), green ash (*Fraxinus pennsylvanica*), American hornbeam (*Carpinus caroliniana*), and American elm (*Ulmus americana*). Depending on the hydrology and fire history, slash pine may be present in the canopy (P. elliottii). The mid- and under-story of floodplain and basin swamp forests are variable, and depend on small scale variations in hydrology and topography. Common shrub species include: Virginia willow (*Itea virginica*), swamp dogwood (*Cornus foemina*), swamp doghobble (Leucothoe racemosa), myrtle dahoon (*Ilex cassine* var. myrtifolia), fetterbush (*Lyonia lucida*), wax myrtle (Myrica cerifera), and common buttonbush (*Cephalanthus occidentalis*). Herbaceous ground cover is also variable and usually sparse.

State 2
Altered hydrology (Permanently Flooded)

This state describes permanently flooded conditions for this site. Permanent flooding may result from damming, or a natural event causing permanent inundation. Depending on the depth of permanent inundation, cypress will persist

in an open water swamp with emergent aquatic vegetation, or all canopy trees will die over time.

State 3
Cleared/Drained/Cultivated

This state describes conditions related to land use conversion for community production. Drastic changes in hydrologic regime result from draining and clearing.

State 4
Invasive non-native community

State 4 describes a condition where one or several noxious non-native species has invaded and dominated the site.

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Contributors

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Approval

Charles Stemmans, 2/21/2024

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	05/03/2024
Approved by	Charles Stemmans
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):**

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

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

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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:

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

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

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

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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:**

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17. **Perennial plant reproductive capability:**
