Ecological site F140XY025NY
Rich Till Uplands

Last updated: 10/01/2024
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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): 140X–Glaciated Allegheny Plateau and Catskill Mountains

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This area is primarily in the Southern New York Section of the Appalachian Plateaus Province of the Appalachian Highlands. The top of the dissected plateau in this MLRA is broad and is nearly level to moderately sloping. The narrow valleys have steep walls and smooth floors. The Catskills in the east have steep slopes. Elevation is typically 650 to 1,000 feet on valley floors; 1,650 to 2,000 feet on the plateau surface; and 3,600 feet or more in parts of the Catskills.

The average annual precipitation in most of this area is 30 to 45 inches. Rainfall occurs as high-intensity, convective thunderstorms during the summer, but most of the precipitation in this area occurs as snow. The average annual temperature is 40 to 50 degrees F.

The dominant soil order in this MLRA is Inceptisols. The soils in the area dominantly have a mesic soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. Frigid soils are found within the higher elevations.

This area supports forest vegetation, particularly hardwood species. Beech-birch-maple and elm-ash-red maple are the potential forest types. The extent of oak species increases from east to west, particularly in areas of shallow and dry soils. In some areas conifers, such as white pine, are important. Aspen, hemlock, northern white-cedar, and black ash grow on the wetter soils. In some parts of the area, sugar maple has potential economic

significance. Some of the major wildlife species in this area are white-tailed deer, cottontail, turkey, pheasant, and grouse.

Classification relationships

USDA NRCS:
LRR: R - Northeastern Forage and Forest Region
MLRA 140 - Glaciated Allegheny Plateau and Catskills Mountains

Ecological site concept

Landform/Landscape Position:
The site occurs on till plains, hills, and drumlinoid ridges. Slopes range from 0 to 35 percent.

Soils:
The soils consists of very deep, moderately well drained and somewhat poorly drained, fine-loamy soils that formed in glacial till derived mostly from calcareous shale and siltstone. Representative soils are Burdett and Nunda.

Vegetation:
The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest and PA Natural Heritage Community: Sugar maple - basswood forest

Similar sites

F140XY024NY	**Moist Dense Till**

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Tilia americana*
Shrub	(1) *Ostrya virginiana* (2) *Hamamelis virginiana*
Herbaceous	(1) *Polystichum acrostichoides* (2) *Trillium cernuum*

Physiographic features

The site occurs on till plains, hills, and drumlinoid ridges. Slopes range from 0 to 35 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Drumlinoid ridge (3) Hill (4) Bench (5) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	295–2,460 ft
Slope	0–35%
Water table depth	9–26 in
Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs is Dfb, Warm-summer humid continental. Mean annual precipitation is 43 inches and evenly distributed throughout the year. Rainfall occurs as high-intensity, convective thunderstorms in the summer. However, snow comprises most of the precipitation in this area. Average frost-free and freeze-free days are 122 and 153, respectively, with the coldest temperatures and the shortest frost-free periods occurring in the high-elevation areas in the eastern part of the MLRA.

Table 3. Representative climatic features

Frost-free period (characteristic range)	110-134 days
Freeze-free period (characteristic range)	136-168 days
Precipitation total (characteristic range)	38-49 in
Frost-free period (actual range)	101-136 days
Freeze-free period (actual range)	136-168 days
Precipitation total (actual range)	36-51 in
Frost-free period (average)	122 days
Freeze-free period (average)	154 days
Precipitation total (average)	43 in

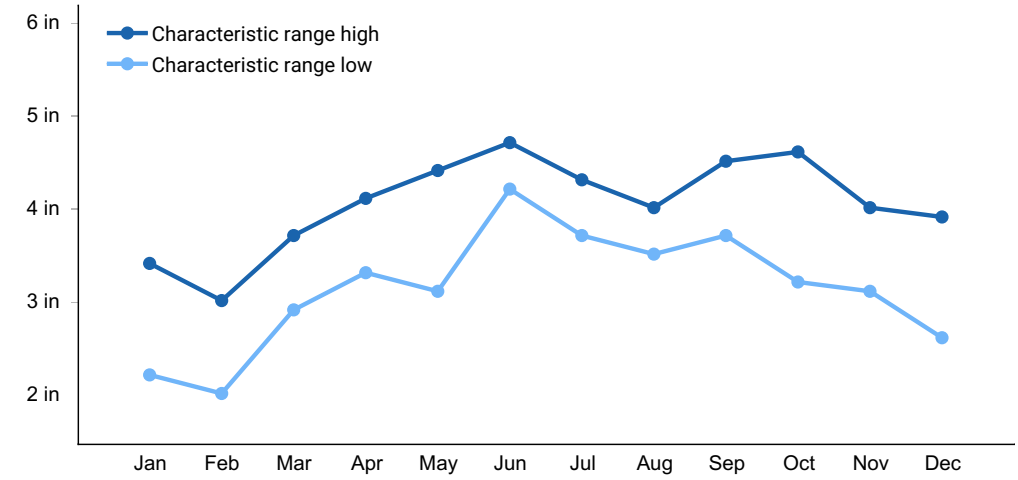


Figure 1. Monthly precipitation range

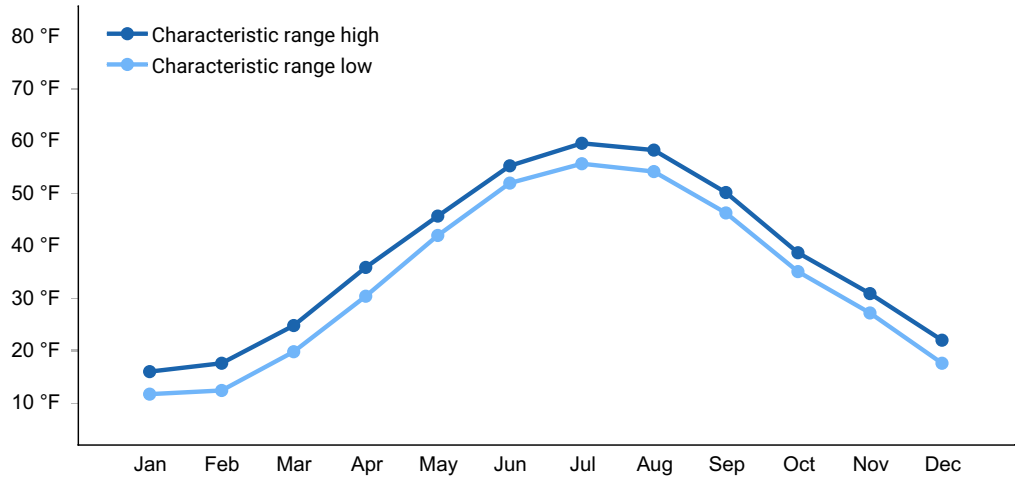


Figure 2. Monthly minimum temperature range

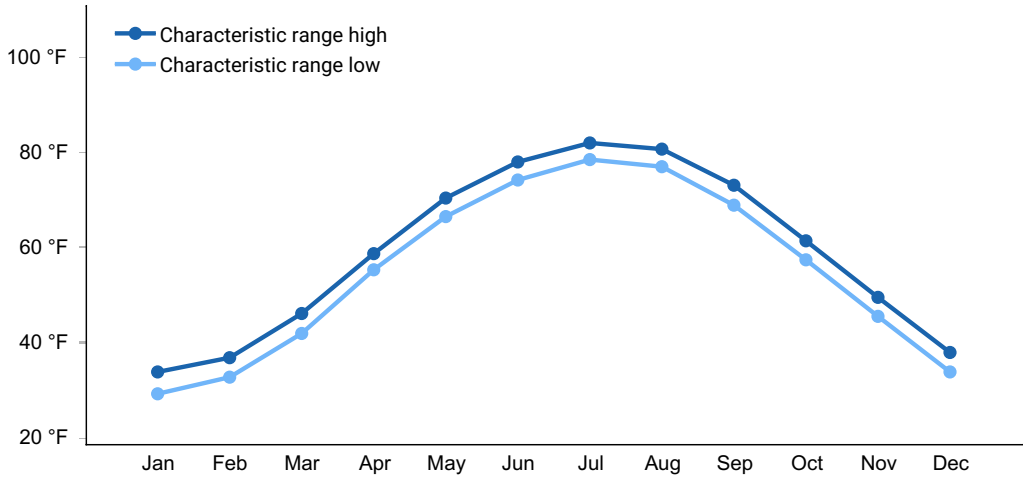


Figure 3. Monthly maximum temperature range

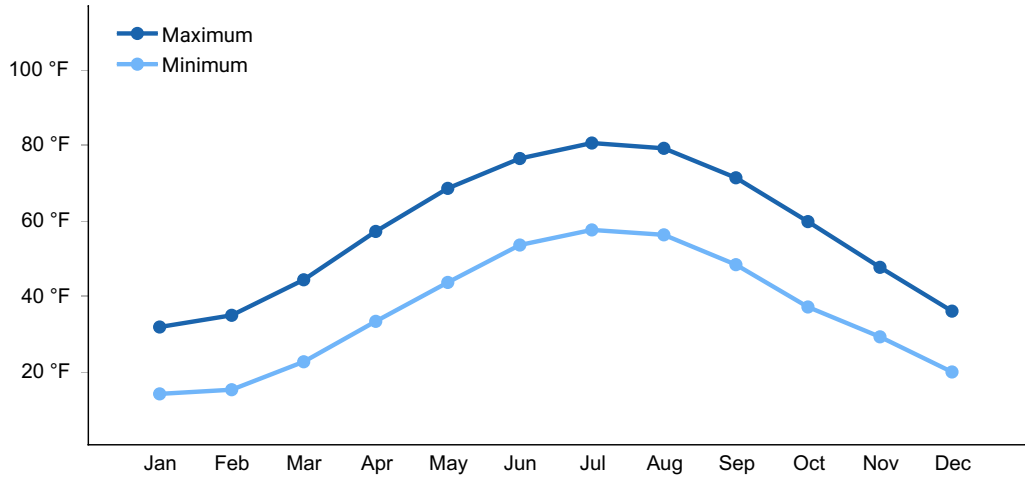


Figure 4. Monthly average minimum and maximum temperature

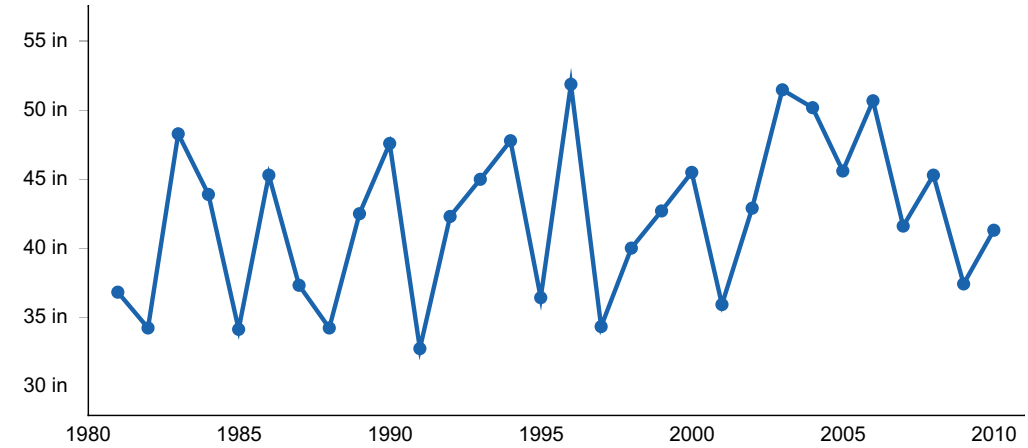


Figure 5. Annual precipitation pattern

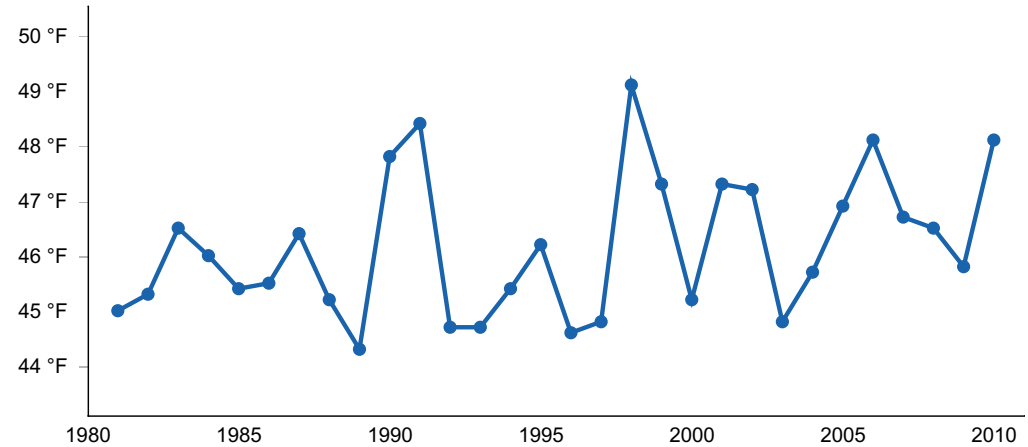


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BINGHAMTON [USW00004725], Johnson City, NY
- (2) STROUDSBURG [USC00368596], East Stroudsburg, PA
- (3) TOWANDA 1 S [USC00368905], Towanda, PA
- (4) MONTROSE [USC00365915], Montrose, PA

- (5) CORNING [USC00301787], Corning, NY
- (6) ROCK HILL 3 SW [USC00307210], Rock Hill, NY
- (7) CANTON [USC00361212], Canton, PA

Influencing water features

NONE

Wetland description

NONE

Soil features

The soils consists of very deep, moderately well drained and somewhat poorly drained, fine-loamy soils that formed in glacial till derived mostly from calcareous shale and siltstone. Representative soils are Burdett, Nunda, and Wassaic.

Table 4. Representative soil features

Parent material	(1) Till–calcareous shale (2) Till–sandstone and siltstone (3) Limestone
Surface texture	(1) Silt loam (2) Channery silt loam
Family particle size	(1) Fine-silty
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Very slow
Depth to restrictive layer	30–72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–2%
Available water capacity (Depth not specified)	4–6 in
Soil reaction (1:1 water) (Depth not specified)	5.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	6–17%
Subsurface fragment volume >3" (Depth not specified)	0–2%

Ecological dynamics

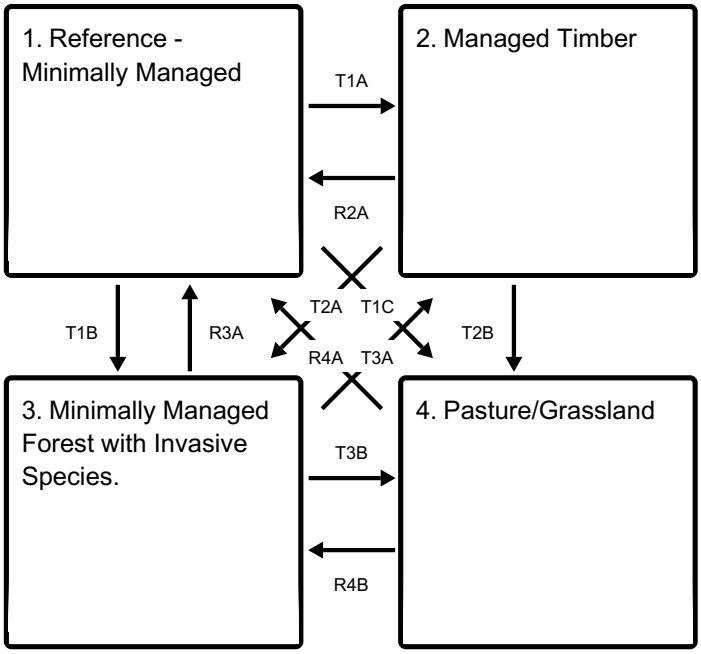
The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest and PA Natural Heritage Community: Sugar maple - basswood forest.

Common trees are sugar maple, white ash, northern red oak, basswood, yellow birch, eastern white pine, American beech, and hop hornbeam. Shrubs include striped maple, witch-hazel, American hophornbeam, and dogwood.

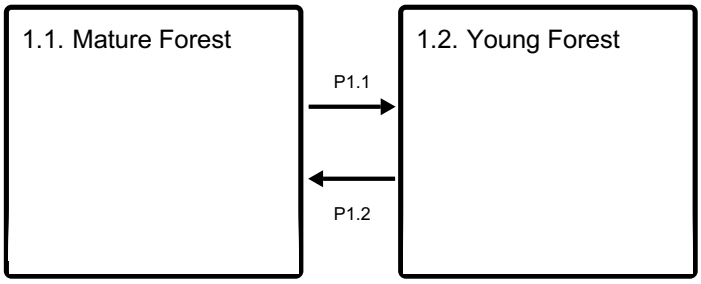
Dynamics includes an invasive species state and conversion of site into agricultural production (pasture/hayland or cropland). Disturbances include wind, ice, insects, and land clearing or timber harvest.

State and transition model

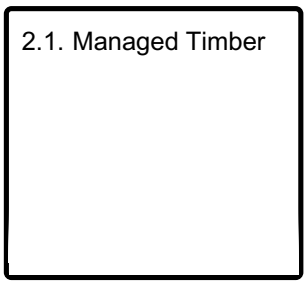
Ecosystem states



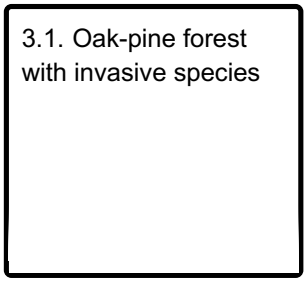
State 1 submodel, plant communities



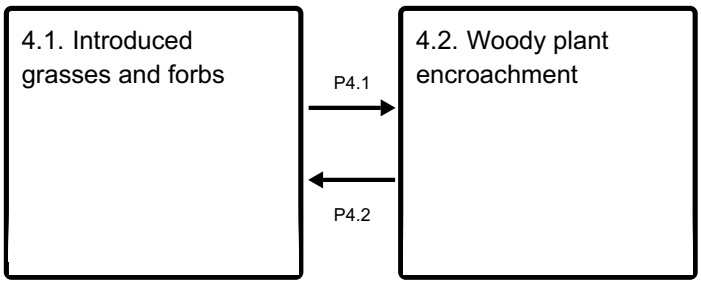
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1
Reference - Minimally Managed

Natural disturbances such and wind and ice storms, tree fall, insect damage will create openings for an early successional plant community or young forest. This forest may have at one time been cleared or plowed during colonial times.

Characteristics and indicators. Soil may have evidence of an historic plow layer (Ap horizon).

Resilience management. Ensure that regenerating trees and shrubs are not heavily browsed by deer that they cannot replace overstory trees. Deer have been shown to have negative effects on forest understories (New York Natural Heritage Program, 2020). Avoid cutting old-growth forests.

Community 1.1
Mature Forest

Mature, late successional closed canopy forest. The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest, beech-maple forest, and Vermont's Mesic Maple-Ash-Hickory-Oak forest. Common trees are sugar maple,

white ash, northern red oak, basswood, yellow birch, eastern white pine, American beech, and hop hornbeam. Shrubs include striped maple, witch-hazel, American hophornbeam, and dogwood.

Community 1.2
Young Forest

Open canopy, early successional, young forest.

Pathway P1.1
Community 1.1 to 1.2

Natural disturbances - wind/ice storm, tree fall, and insect damage.

Conservation practices

Early Successional Habitat Development/Management

Pathway P1.2
Community 1.2 to 1.1

Time (succession).

State 2
Managed Timber

The state is characterized by active logging. Composition of forest stands will vary based on management objectives.

Community 2.1
Managed Timber

State 3
Minimally Managed Forest with Invasive Species.

Invasive species such as Japanese barberry, bush honeysuckle, multiflora rose, garlic mustard, and stiltgrass are common in the understory.

Community 3.1
Oak-pine forest with invasive species

State 4
Pasture/Grassland

Forest has been cleared and grasses and forbs have been introduced for livestock grazing, hay production, and/or wildlife.

Resilience management. Grazing, mowing, or prescribed fire is required to maintain grassland and prevent woody plant encroachment.

Community 4.1
Introduced grasses and forbs

Community 4.2
Woody plant encroachment

Pathway P4.1
Community 4.1 to 4.2

Abandonment (lack of mowing or fire suppression)

Pathway P4.2
Community 4.2 to 4.1

Mowing, prescribed fire, and/or brush management.

Conservation practices

Brush Management

Transition T1A
State 1 to 2

Timber harvest; logging.

Transition T1B
State 1 to 3

Introduction of invasive species usually after disturbance.

Transition T1C
State 1 to 4

Land use conversion.

Restoration pathway R2A
State 2 to 1

Time (succession). Forest stand improvement, restoration.

Transition T2A
State 2 to 3

Introduction of invasive species. Lack of timber management.

Transition T2B
State 2 to 4

Land use conversion

Restoration pathway R3A
State 3 to 1

Brush management, invasive species management.

Transition T3A
State 3 to 2

Timber management/harvest, logging.

Transition T3B
State 3 to 4

Land use conversion.

Restoration pathway R4A
State 4 to 1

Abandonment, Time (succession), forest restoration.

Restoration pathway R4B
State 4 to 3

Abandonment, time (sucession) and introduction of invasive species.

Additional community tables

Inventory data references

Site Development and Testing Plan:
Future work to validate the vegetation information in this provisional ecological site description is needed. This will include field activities to collect low and medium intensity

sampling and analysis of that data. Field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final approved level document. Reviews of the project plan are to be conducted by the Ecological Site Technical Team.

Other references

Edinger, G.J., Evans, D.J., Gebauer, S., Howard, T.G., Hunt, D.M., and A.M. Olivero, A.M. (eds.). 2014. Ecological Communities of New York State, Second Edition: A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Zimmerman, E., T. Davis, G. Podniesinski, M. Furedi, J. McPherson, S. Seymour, B. Eichelberger, N. Dewar, J. Wagner, and J. Fike (editors). 2012. Terrestrial and Palustrine Plant Communities of Pennsylvania, 2nd Edition. Pennsylvania Natural Heritage Program, Pennsylvania Department of Conservation and Natural Resources, Harrisburg, Pennsylvania.

Contributors

Joshua Hibit

Approval

Greg Schmidt, 10/01/2024

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	05/20/2020
Approved by	Greg Schmidt
Approval date	

Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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

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5. **Number of gullies and erosion associated with gullies:**

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

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

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

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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:**

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:**