USDA Natural Resources Conservation Service

Ecological site F144AY036NY
Semi-Rich Well Drained Till Uplands

Last updated: 10/04/2024
Accessed: 05/11/2025

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): 144A–New England and Eastern New York Upland, Southern Part

MLRA 144A: New England and Eastern New York Upland, Southern Part. The eastern half of the eastern part of this MLRA is in the Seaboard Lowland Section of the New England Province of the Appalachian Highlands. The western half of the eastern part and the southeastern half of the western part are in the New England Upland Section of the same province and division. The northwestern half of the western part is in the Hudson Valley Section of the Valley and Ridge Province of the Appalachian Highlands. This MLRA is a very scenic area of rolling to hilly uplands that are broken by many gently sloping to level valleys that terminate in coastal lowlands. Elevation ranges from sea level to 1,000 feet (0 to 305 meters) in much of the area, but it is 2,000 feet (610 meters) on some hills. Relief is mostly about 6 to 65 feet (2 to 20 meters) in the valleys and about 80 to 330 feet (25 to 100 meters) in the uplands.
iThis area has been glaciated and consists almost entirely of till hills, drumlins, and bedrock-controlled uplands with a mantle of till. It is dissected by narrow glacio-fluvial valleys. The southernmost boundary of the area marks the farthest southward extent of Wisconsinian glaciation on the eastern seaboard. The river valleys and coastal plains are filled with glacial lake sediments, marine sediments, and glacial outwash. The bedrock in the eastern half of the area consists primarily of igneous and metamorphic rocks of early Paleozoic age. Granite is the most common igneous rock, and gneiss, schist, and slate are the most common metamorphic rocks. In the parts of the MLRA in eastern and southeastern New York, Devonian- to Pennsylvanian-age sandstone, shale, and limestone are dominant. Carbonate rocks, primarily dolomite and limestone, are the dominant kinds of bedrock in the part of this MLRA in northwestern Connecticut.

Classification relationships

USDA-NRCS (USDA 2006):
Land Resource Region (LRR): N—East and Central Farming and Forest Region
Major Land Resource Area (MLRA): 144A— New England and Eastern New York Upland, Southern Part.

USDA-FS (Cleland et al. 2007)
Province: 221 - Eastern Broadleaf Province
Section: 221A - Lower New England
Subsection: 221Aa – Boston Basin
221Ac – Narragansett-Bristol Lowland and Islands
221Ad – Southern New England Coastal Lowland
221Ae – Hudson Highlands
221Ag - Southeast New England Coastal Hills and Plains
221Ah - Worcester-Monadnock Plateau
221Ai – Gulf of Maine Coastal Plain
221Ak - Gulf of Maine Coastal Lowland
Section: 221B – Hudson Valley
Subsection: 221Ba – Hudson Limestone Valley

221Bb - Miami – Taconic Foothills
221Bc – Hudson Glacial Lake Plains

Ecological site concept

The Semi Rich Well-Drained Till Uplands ecological site consists of moderately deep to deep, well drained soils formed in till. They are nearly level to very steep slopes on glaciated uplands hills and mountains. Soil pH is considered circumnuetral (pH 5.5-7.4). Representative soils are Stockbridge, Nellis, Pittsfield, and Galway. The reference plant communities may includes sugar maple (acer saccharum) and/or chinkapin oak (Quercus muhlenbergii) forest/woodland.

Associated sites

F144AY038NY	**Semi-Rich Moist Till Uplands**
F144AY039NY	**Semi-Rich Wet Till Depressions**

Similar sites

F144AY033MA	**Shallow Dry Till Uplands**

Table 1. Dominant plant species

Tree	(1) *Quercus muehlenbergii* (2) *Acer saccharum*
Shrub	(1) *Viburnum rafinesqueanum* (2) *Zanthoxylum americanum*
Herbaceous	(1) *Carex platyphylla* (2) *Carex eburnea*

Physiographic features

This site occurs on a variety of landforms and is not subject to flooding.

Table 2. Representative physiographic features

Landforms	(1) Till plain > Bench (2) Upland > Ridge (3) Drumlinoid ridge
Runoff class	Low to very high
Flooding frequency	None
Ponding frequency	None
Elevation	0–1,460 ft
Slope	1–45%
Water table depth	28–72 in
Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs varies between Dfb (Warm-summer humid continental) in the North, and Dfa (Hot-summer humid continental) in the southern portion of the MLRA. Precipitation is usually uniformly distributed throughout the year. Near the coast, however, it is slightly lower in summer. Precipitation is slightly higher in spring and fall in inland areas. Rainfall occurs as high-intensity, convective thunderstorms during the summer. During the winter, most of the precipitation occurs as moderate-intensity storms (northeasters) that produce large amounts of rain or snow. The freeze-free period increases in

length to the south.

Table 3. Representative climatic features

Frost-free period (characteristic range)	126-145 days
Freeze-free period (characteristic range)	148-188 days
Precipitation total (characteristic range)	43-48 in
Frost-free period (actual range)	116-173 days
Freeze-free period (actual range)	146-208 days
Precipitation total (actual range)	41-48 in
Frost-free period (average)	140 days
Freeze-free period (average)	173 days
Precipitation total (average)	45 in

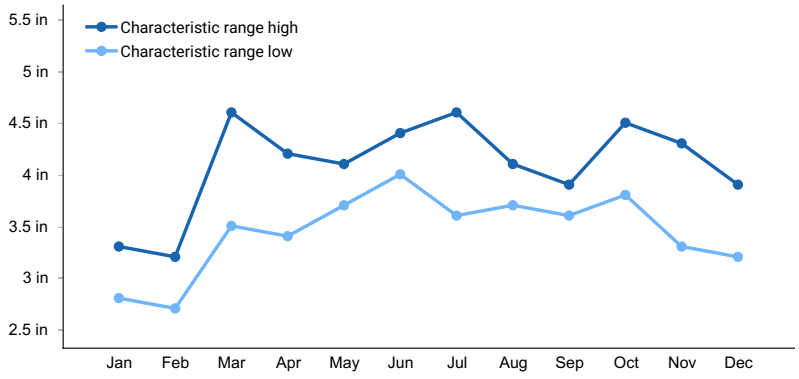


Figure 1. Monthly precipitation range

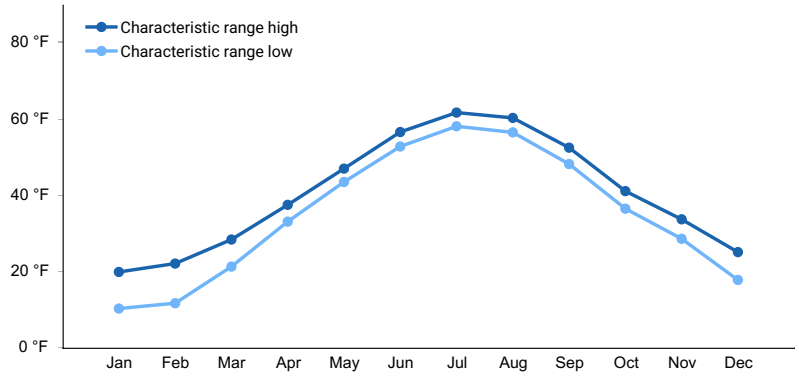


Figure 2. Monthly minimum temperature range

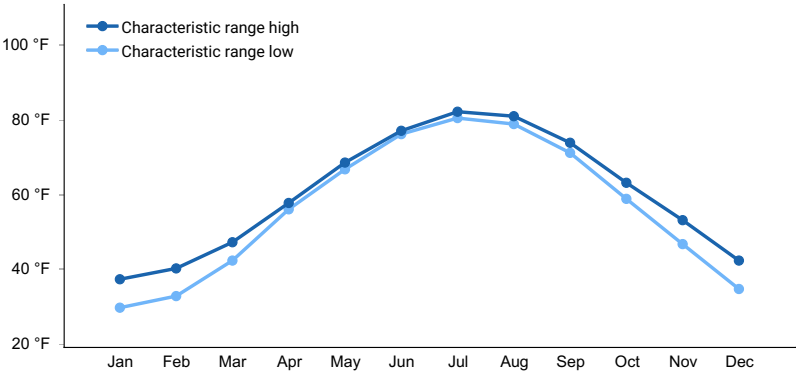


Figure 3. Monthly maximum temperature range

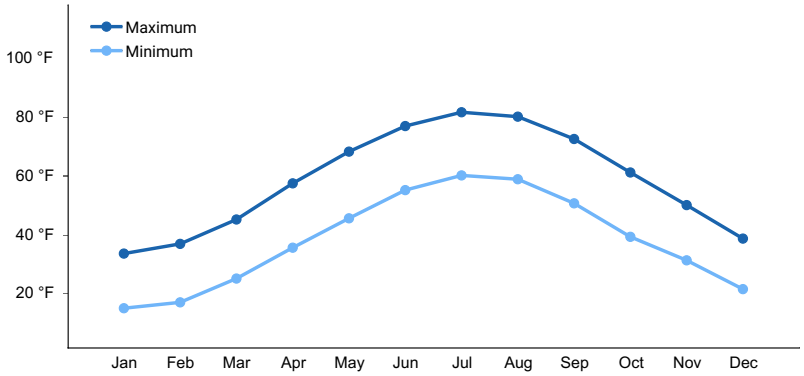


Figure 4. Monthly average minimum and maximum temperature

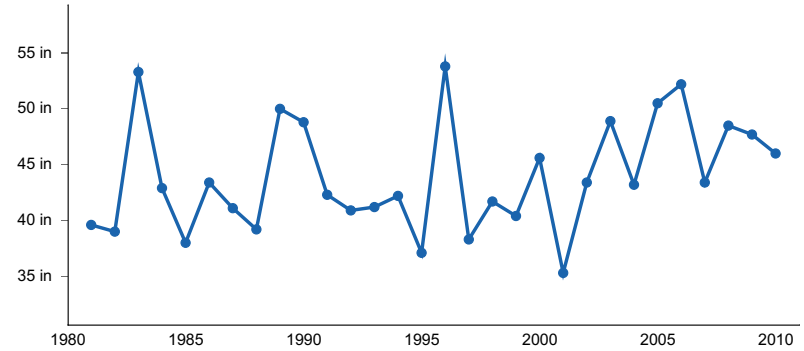


Figure 5. Annual precipitation pattern

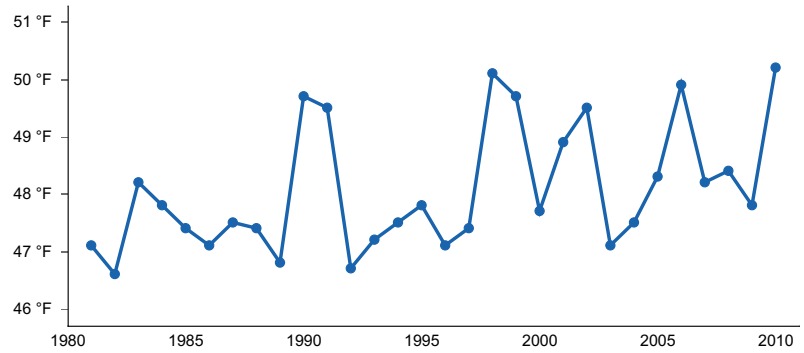


Figure 6. Annual average temperature pattern

Climate stations used

- (1) RUTLAND [USC00436995], Rutland, VT
- (2) GLOVERSVILLE [USC00303319], Gloversville, NY
- (3) BELVIDERE BRG [USC00280734], Bangor, NJ
- (4) BRIDGEPORT SIKORSKY MEM AP [USW00094702], Stratford, CT
- (5) NEW BEDFORD MUNI AP [USW00094726], New Bedford, MA
- (6) DURHAM 2 SSW [USW00054795], Durham, NH
- (7) ORANGE MUNI AP [USW00054756], Orange, MA

Influencing water features

NONE

Wetland description

NONE

Soil features

depth, drainage, parent material

This site consists of moderately to very deep, moderately well to well drained soils formed in water and wind deposited parent materials. Representative soils are Galway, Nellis, Stockbridge, and Pittsfield.

Table 4. Representative soil features

Parent material	(1) Eolian deposits–limestone and dolomite (2) Till–schist
Surface texture	(1) Loam (2) Gravelly silt loam (3) Fine sandy loam (4) Gravelly loam (5) Silt loam (6) Stony fine sandy loam
Family particle size	(1) Coarse-loamy
Drainage class	Moderately well drained to well drained
Permeability class	Very slow to moderately slow
Depth to restrictive layer	24–72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–10%
Available water capacity (Depth not specified)	4–6 in
Soil reaction (1:1 water) (Depth not specified)	4.5–8.4
Subsurface fragment volume <=3" (Depth not specified)	3–20%
Subsurface fragment volume >3" (Depth not specified)	0–7%

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, not yet validated with field work.*]

The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003). Terrestrial ecological SYSTEMS are specifically defined as a group of plant community-types called ASSOCIATIONS that tend to [co-]occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. Any given system will typically manifest itself in a landscape at intermediate geographic scales of tens-to-thousands of hectares and will persist for 50 or more years. A vegetation association is a plant community that is much more specific to a given soil, geology, landform, climate, hydrology, and disturbance history. It is the basic unit for vegetation classification and recognized by the US National Vegetation Classification (US FDGC 2008). Each association will be named by the diagnostic and often dominant species that occupy the different height strata (tree, sapling, shrub, and herb). Within the NatureServe Explorer database (NatureServe, 2015), ecological systems are numbered by a Community Ecological System Code (CES) and individual vegetation associations are assigned an identification number called a Community Element Global Code (CEGL).

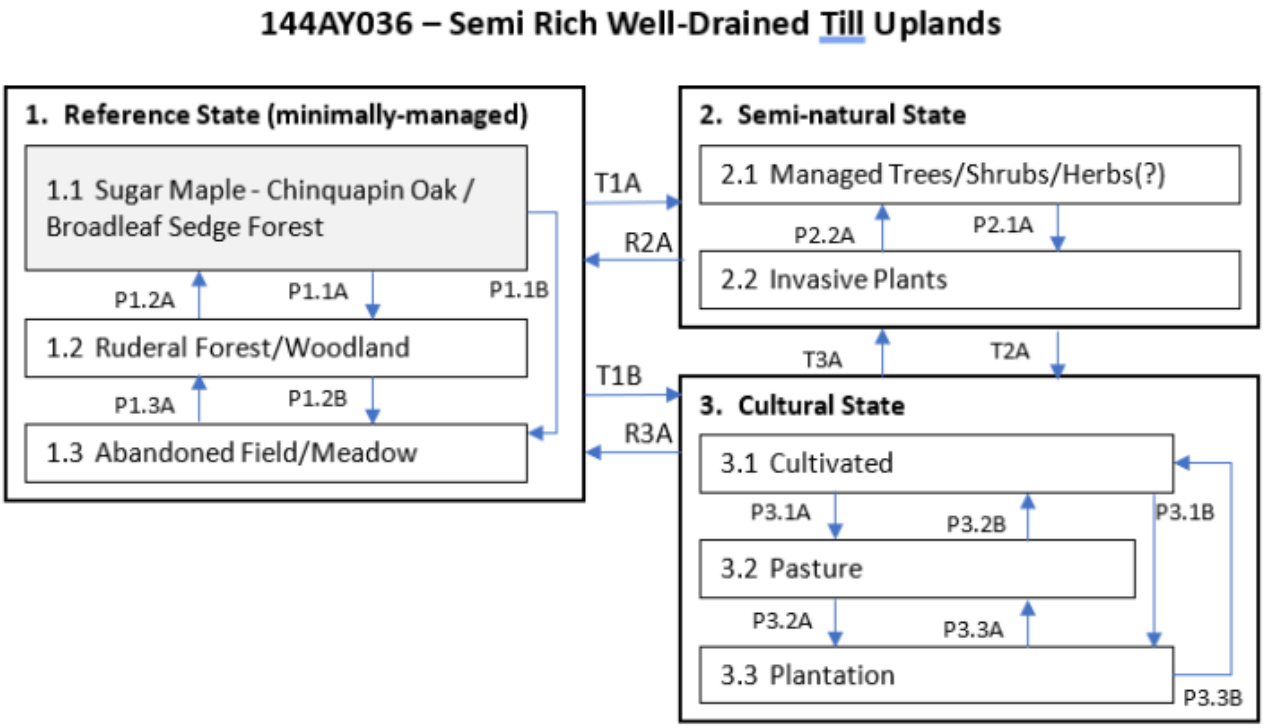
Additional and more localized vegetation information is provided by the State Natural Heritage Programs of Connecticut (Metzler and Barrett 2001), Massachusetts (Swain and Kearsley 2001), New Hampshire (Sperduto and Nichols, 2011), New York (Edinger et al., 2014), and Rhode Island (Enser and Lungren, 2006).

The Semi Rich Well-Drained Till Uplands ecological site is characteristic of the Central Appalachian Dry Oak-Pine

Forest system (CES202.591) and the Laurentian-Acadian Calcareous Rocky Outcrop system (CES201.572). The reference plant communities typically includes sugar maple (acer saccharum) and/or chinkapin oak (Quercus muhlenbergii) forest/woodland. The vegetation is not well-described. Natural disturbances include climate extremes such as, excessive droughts, or storm activity ranging from windthrows to downbursts to ice-storms. Atmospheric deposition may effect trees at high elevations. Wildfires do happen but are largely suppressed. Over-browsing by deer can occur. Other agents-of-change include land conversions and fragmentation by agricultural, development, limestone quarrying, and logging. The most invasive plants associated with this community include buckthorn (*Rhamnus cathartica*), common barberry (*Berberis vulgaris*), Oriental bitter-sweet (Celastris orbiculatus), and spotted knapweed (*Centaurea stoebe* ssp. micranthos).

[*Caveat] The information presented is representative of very complex vegetation communities. Key indicator plants 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 geography. The reference plant community is not necessarily the management goal. The drafts of species lists are merely 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 and transition model



Transition	*Drivers/practices*
T1A	Forest mgmt., Disturbance
T1B, T2A	Disturbance/cutting/clearing, Brush removal
R2A, R2B	Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment
T3A	Abandonment, Plant establishment, Forest mgmt.
P2.1A	Disturbance, Invasive species establishment
P2.2A	Invasive spp. Control, Forest mgmt..
P1.3A, P1.2A	Abandonment, succession
P3.1A, P3.2A, P3.3A, P3.1B, P3.2B, P3.3B	Changing agricultural phases
P1.1A, P1.1B, P1.2B	Disturbance, Early Successional Habitat Development

State 1
Reference State (minimally-managed)

The reference plant community includes: • *Acer saccharum* - *Quercus muehlenbergii* / *Carex platyphylla* Forest Translated Name: Sugar Maple - Chinquapin Oak / Broadleaf Sedge Forest Common Name: Sugar Maple - Chinquapin Oak / Sedge Forest (CEGL006162)

Community 1.1
Sugar Maple - Chinquapin Oak / Broadleaf Sedge Forest (CEGL006162)

Acer saccharum - *Quercus muehlenbergii* / *Carex platyphylla* Forest Translated Name: Sugar Maple - Chinquapin Oak / Broadleaf Sedge Forest Common Name: Sugar Maple - Chinquapin Oak / Sedge Forest (CEGL006162) The somewhat open canopy is characterized by a diversity of tree species, including sugar maple (*Acer saccharum*), chinkapin oak (*Quercus muehlenbergii*), American basswood (*Tilia americana*), whit ash (*Fraxinus americana*), and occasionally tuliptree (*Liriodendron tulipifera*), white oak (*Quercus alba*), chestnut oak (*Quercus montana* [=

Quercus prinus]), white walnut (*Juglans cinerea*), black walnut (*Juglans nigra*), bitternut hickory (*Carya cordiformis*), slippery elm (*Ulmus rubra*), shagbark hickory (*Carya ovata*), or pignut hickory (*Carya glabra*). Hop hornbeam (*Ostrya virginiana*), sweet birch (*Betula lenta*), mockernut hickory (*Carya tomentosa*), hackberry (*Celtis occidentalis*), and/or flowering dogwood (*Cornus florida*) in the subcanopy. Shrubs can include witchhazel (*Hamamelis virginiana*), hornbeam (*Carpinus caroliniana* ssp. virginiana), American bladdernut (*Staphylea trifolia*), alternate-leaved dogwood (*Cornus alternifolia*), maple leaf viburnum (*Viburnum acerifolium*), eastern black currant (Ribes Americanum), and occasionally common prickly ash (*Zanthoxylum americanum*) or downy arrowwood (Viburnum rafinesquianum). Vines may include wild yam (*Dioscorea villosa*), Canada moonseed (*Menispermum canadense*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*). The herb layer is extraordinarily diverse with running groundsel (*Packera obovata* [= Senecio obovatus]), bristle-leaved sedge (*Carex eburnea*), broad-leaved sedge (*Carex platyphylla*), Seneca milkwort (*Polygala senega*), red columbine (*Aquilegia canadensis*), smooth false foxglove (*Aureolaria flava*), black-seeded mountain rice grass(Piptatherum racemosa [= Oryzopsis racemosa]), tall anemone (*Anemone virginiana*), blunt-lobed hepatica (*Hepatica nobilis* var. obtusa [= Hepatica americana]), late purple American aster (*Symphyotrichum patens* [= Aster patens]), wavy-leaved American aster (*Symphyotrichum undulatum* [= Aster undulatus]), orange-fruited horse-gentian (*Triosteum aurantiacum*), early meadow rue (*Thalictrum dioicum*), purple virgin's bower (*Clematis occidentalis*), four-leaved milkweed (*Asclepias quadrifolia*), sicklepod rockcress (Boechera canadensis [= *Arabis canadensis*]), spotted geranium(*Geranium maculatum*), northeastern beardtongue (*Penstemon hirsutus*), white trillium (*Trillium grandiflorum*), bland sweet cicely (Osmorhiza claytonia), white baneberry (*Actaea pachypoda*), catnip giant hyssop (*Agastache nepetoides*), ramps (*Allium tricoccum*), lyre-leaved thale-cress (Arabidopsis lyrate [= Arabis lyrate[), Jack-in-the-pulpit (*Arisaema triphyllum*), poke milkweed (*Asclepias exaltata*), northern horsebalm (*Collinsonia canadensis*), Bosc's rosette-panicgrass (*Dichanthelium boscii*), broad loose-flowered sedge (*Carex laxiflora*), bashful bulrush (*Trichophorum planifolium* [= Scirpus verecundus]), and others. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political State): CT: Sugar Maple – Chinkapin Oak / Bristle-leaved Sedge Woodland (Metzler and Barrett, 2006) MA: Yellow Oak Dry Calcareous Forest (Swain and Kearsley, 2001) NY: Limestone woodland (Edinger et al., 2014)

Community 1.2
Ruderal Forest/Woodland

Community 1.3
Abandoned Field/Meadow

Disturbance

Pathway P1.1A
Community 1.1 to 1.2

Disturbance

Pathway P1.1B
Community 1.1 to 1.3

Disturbance

Pathway P1.2A
Community 1.2 to 1.1

Succession

Pathway P1.2B
Community 1.2 to 1.3

Disturbance

Pathway P1.3A

Community 1.3 to 1.2

Abandonment, Succession

State 2
Semi-natural State

The Semi-natural State would expect plant communities where ecological processes are primarily operating with some land conditioning in the past or present, e.g., managed forests, or plant communities that are an artifact of land management e.g., predominately invasive plants.

Community 2.1
Managed Trees/Shrubs/Herbs(?)

Community 2.2
Invasive Plants

Pathway P2.1A
Community 2.1 to 2.2

Disturbance, Invasive species establishment

Pathway P2.2A
Community 2.2 to 2.1

Invasive spp. Control, Forest mgmt.

State 3
Cultural State

The Cultural State would expect the ecological site to be very strongly conditioned by land management conversion, by transformation to Cultivated/Pasture/Plantation.

Community 3.1
Cultivated

Community 3.2
Pasture

Community 3.3
Plantation

Pathway P3.1A
Community 3.1 to 3.2

Changing agricultural phases

Pathway P3.1B
Community 3.1 to 3.3

Changing agricultural phases

Pathway P3.2A
Community 3.2 to 3.1

Changing agricultural phases

Pathway P3.2B
Community 3.2 to 3.3

Changing agricultural phases

Pathway P3.3A
Community 3.3 to 3.1

Changing agricultural phases

Pathway P3.3B
Community 3.3 to 3.2

Changing agricultural phases

Transition T1A
State 1 to 2

altered by human- induced Disturbance or Management

Conservation practices

Tree/Shrub Establishment
Forest Land Management
Forest stand improvement for habitat and soil quality

Transition T1B
State 1 to 3

Disturbance, clearing, cutting

Restoration pathway R2A
State 2 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Brush Management
Tree/Shrub Establishment
Early Successional Habitat Development/Management
Forest Stand Improvement
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Forest Land Management
Invasive Plant Species Control

Transition T2A
State 2 to 3

Land clearing, cutting

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed Control

Restoration pathway R3A
State 3 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management

Transition T3A
State 3 to 2

Abandonment. Plant establishment, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Additional community tables

Inventory data references

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

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Contributors

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Approval

Greg Schmidt, 10/04/2024

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Michael Margo and tech team provided earlier drafts. Josh Hibit made compliance updates w/ 2021 Checklist V.2

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	05/11/2025
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):

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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:**
