USDA Natural Resources Conservation Service

Ecological site F144AY014CT
Wet Sandy Low Floodplain

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 in much of the area, but it is 2,000 feet on some hills. Relief is mostly about 6 to 65 feet in the valleys and about 80 to 330 feet in the uplands.

This 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 Wet Sandy Low Floodplain ecological site consists of deep, coarse-loamy, poorly drained, alluvial soils on low floodplains of mostly small to medium sized river valleys but can also be found within large river valleys. These floodplains are subject annual flooding. Water is at or near the surface for much of the growing season. Representative soil is Rippowam.

The reference plant community is considered to be an alluvial red maple dominated forest. Red maple (*Acer rubrum*) dominates with occasionally American elm (*Ulmus americana*). At higher elevations in the flood profile may be found American sycamore (*Platanus occidentalis*), black cherry (*Prunus serotina*), American hornbeam (*Carpinus caroliniana* var virginiana). Silky dogwood (*Cornus amomum*) is a typical shrub. The understory is diverse with many ferns, sedges and herbs.

Common invasive exotic plants are honeysuckles (Lonicera spp), moneywort (*Lysimachia nummularia*), garlic mustard (Alliaria petiolate) and Japanese stiltgrass (Microstegium viminium).

Associated sites

F144AY012CT	**Sandy Low Floodplain**
F144AY016MA	**Very Wet Low Floodplain**

Similar sites

F144AY006CT	**High Floodplain Levee**
F144AY042NY	**Semi-Rich Organic Wetlands**

Table 1. Dominant plant species

Tree	(1) *Acer rubrum*
Shrub	(1) *Viburnum dentatum*
Herbaceous	(1) *Onoclea sensibilis*

Physiographic features

The site occurs on low floodplains of mostly small to medium sized river valleys but can also be found within large river valleys. These floodplains are subject annual flooding. Water is at or near the surface for much of the growing season.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Flood plain
Runoff class	Very low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	None to frequent
Ponding frequency	None
Elevation	0–787 ft
Slope	0–3%
Water table depth	6–9 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)	135-152 days
Freeze-free period (characteristic range)	156-184 days
Precipitation total (characteristic range)	48-53 in
Frost-free period (actual range)	129-152 days
Freeze-free period (actual range)	155-199 days
Precipitation total (actual range)	48-53 in
Frost-free period (average)	142 days
Freeze-free period (average)	175 days
Precipitation total (average)	51 in

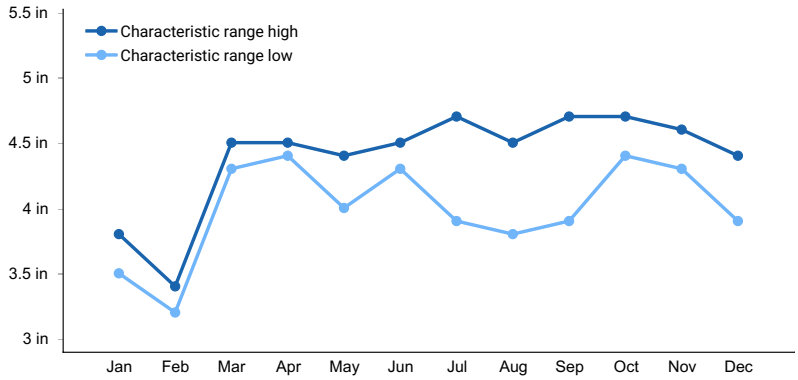


Figure 1. Monthly precipitation range

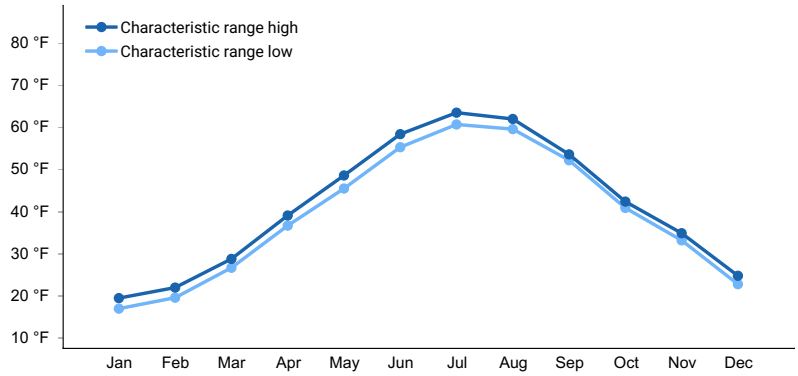


Figure 2. Monthly minimum temperature range

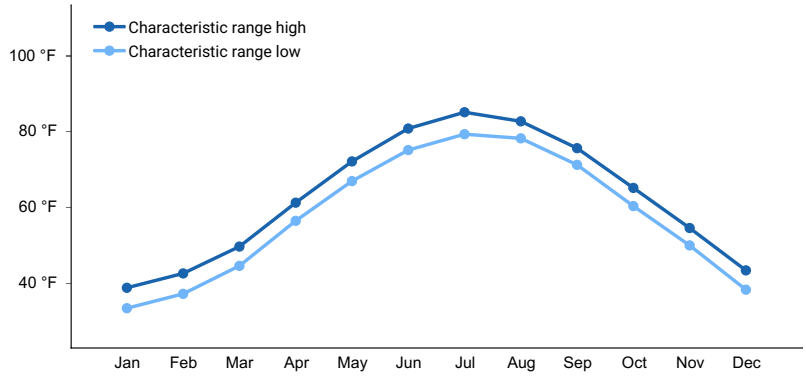


Figure 3. Monthly maximum temperature range

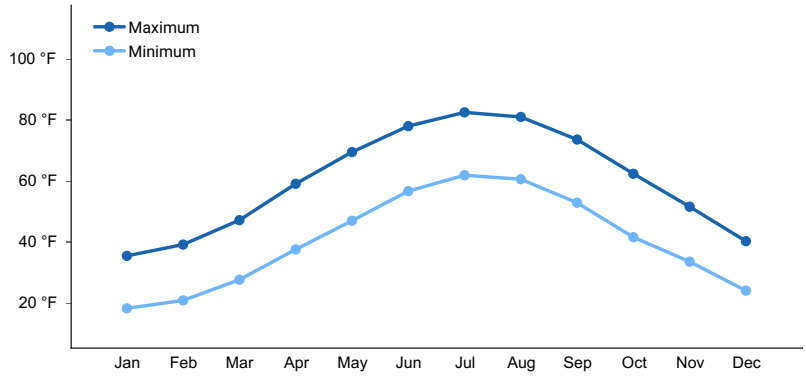


Figure 4. Monthly average minimum and maximum temperature

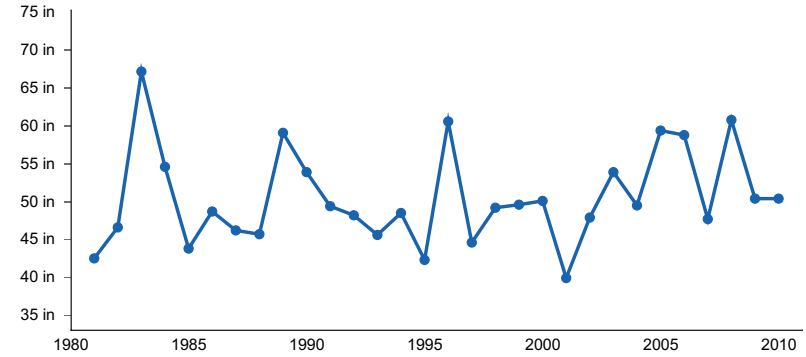


Figure 5. Annual precipitation pattern

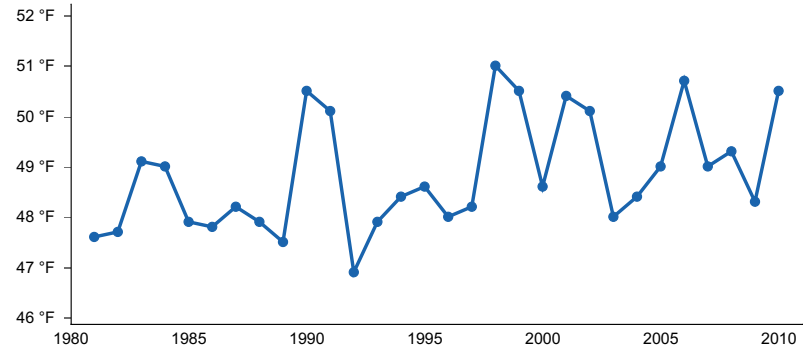


Figure 6. Annual average temperature pattern

Climate stations used

- (1) DANBURY [USC00061762], Bethel, CT
- (2) KINGSTON [USC00374266], Kingston, RI
- (3) WORCESTER RGNL AP [USW00094746], Leicester, MA

- (4) DOBBS FERRY ARDSLEY [USC00302129], Ardsley, NY
- (5) STORRS [USC00068138], Storrs Mansfield, CT
- (6) NASHUA 2 NNW [USC00275712], Merrimack, NH

Influencing water features

Poorly drained
Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free water occurrence is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown, unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow depth. Free water at shallow depth is common. The water table is commonly the result of low or very low saturated hydraulic conductivity, nearly continuous rainfall, or a combination of these.

Wetland description

National Wetland Classification (Cowardin et al., 1979):

Palustrine, class variable, leaf morphology variable, water regime variable, chemistry modifier variable.

Soil features

The site consists of deep, coarse-loamy, poorly drained, alluvial soils on low floodplains of mostly small to medium sized river valleys but can also be found within large river valleys. These floodplains are subject annual flooding. Water is at or near the surface for much of the growing season. Soil pH ranges from very strongly acid to neutral.

Representative soils are Rippowam.

Table 4. Representative soil features

Parent material	(1) Alluvium–granite and gneiss (2) Schist
Surface texture	(1) Fine sandy loam (2) Sandy loam (3) Very fine sandy loam
Family particle size	(1) Coarse-loamy (2) Coarse-loamy over sandy or sandy-skeletal
Drainage class	Poorly drained
Permeability class	Moderately slow to moderate
Depth to restrictive layer	72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–6 in
Soil reaction (1:1 water) (0-40in)	4.5–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0–5%

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).

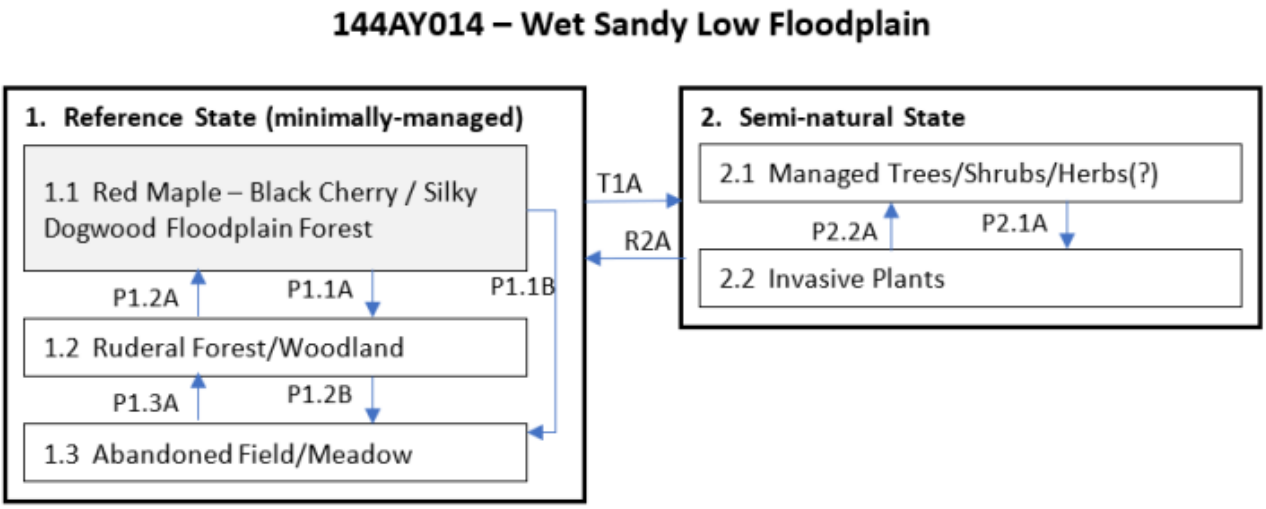
Additional and more localized vegetation information is provided by the State Natural Heritage Programs of Connecticut (Metzler and Barrett 2001), Massachusetts (Swain and Kearsley 2001), New Hampshire (Sperduto and Nichols, 2011), New York (Edinger et al., 2014), and Rhode Island (Enser and Lungren,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

The Wet Sandy Low Floodplain ecological site is characteristic of the Laurentian-Acadian Floodplain Forest system (CES201.587) and to a lesser the extent the Central Appalachian River Floodplain Forest system (CES201.587) (NatureServe 2015). This floodplain forest develops along smaller river systems and large streams with a medium gradient. Disturbances are related to the magnitude, frequency, and seasonal timing of flooding. Differences in hydrologic regime and fluvial geomorphology wil result in changes in community composition (Marks et al. 2011). Due to their poorly drained nature, wet floodplain are not typically converted to agriculture.

On smaller river systems, swamp oak (*Quercus bicolor*), red maple (*Acer rubrum*) American basswood (Tilea americana), American sycamore (*Platanus occidentalis*) predominate.
Invasive exotic plants are a significant threat to the community since many can successfully displace native species. Common invasive exotic plants are honeysuckles (Lonicera spp), moneywort (*Lysimachia nummularia*), garlic mustard (Alliaria petiolate) and Japanese stiltgrass (Microstegium viminium).

[*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
R2A	Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment
P2.1A	Disturbance, Invasive species establishment
P2.2A	Invasive spp. Control, Forest mgmt..
P1.3A, P1.2A	Abandonment, succession
P1.1A, P1.2B	Disturbance, Early Successional Habitat Development

State 1
Reference State (minimally-managed)

The reference community varies with the size of the river system. On larger river systems, the predominant plant community is: • Red Maple Floodplain Forest (CEGL006503) *Acer rubrum - Prunus serotina / Cornus amomum* Floodplain Forest ([Translated] Red Maple - Black Cherry / Silky Dogwood Floodplain Forest) Other plant communities may include: • Eastern Black Willow Floodplain Forest *Salix nigra* - (*Populus deltoides*) Floodplain Forest ([Translated] Black Willow - (Eastern Cottonwood) Floodplain Forest) • Riverine Floodplain Forest (Early-Successional Type) (CEGL006036) *Platanus occidentalis - Fraxinus pennsylvanica* Floodplain Forest ([Translated] American Sycamore - Green Ash Floodplain Forest).

Community 1.1
Red Maple – Black Cherry / Silky Dogwood Floodplain Forest (CEGL006503)

These floodplain forests dominated by *Acer rubrum* are found on smaller rivers and large streams in the northeastern United States. They are characteristic of small to moderate watersheds. The soils are alluvial loams to silt loams, temporarily inundated during spring floods, and often imperfectly drained. There may be a limited organic horizon, but the soils are predominantly mineral and acidic. The forest can range from closed-canopy to woodland

structure. Shrub cover is generally moderate, and may be locally high in patches. Herbs are often abundant, with ferns particularly characteristic. Bryophytes are minor. *Acer rubrum* is the dominant tree; associated woody and herbaceous species can vary somewhat depending on elevation within the floodplain. *Ulmus americana* is typical of the lowest floodplain elevations, *Prunus serotina* and *Carpinus caroliniana* of the middle elevations, and *Quercus rubra* and *Pinus strobus* of the higher elevations, grading to upland forest. Characteristic shrubs include *Carpinus caroliniana*, *Cornus amomum*, Viburnum spp., and *Ilex verticillata*. *Toxicodendron radicans* and *Vitis labrusca* are common vines. The most abundant herbs are the ferns *Onoclea sensibilis*, *Osmunda regalis*, *Osmunda cinnamomea*, *Osmunda claytoniana*, and *Athyrium filix-femina*. Other herbs include *Boehmeria cylindrica*, *Arisaema triphyllum*, *Cinna latifolia*, *Galium asprellum*, *Impatiens capensis*, and *Doellingeria umbellata*. This type differs from most other deciduous floodplain forests in its dominance by *Acer rubrum*; it differs from the more northerly ~*Acer rubrum* - *Abies balsamea* / *Viburnum nudum* var. cassinoides Floodplain Forest (CEGL006501)$$ by the presence of more temperate species such as *Carpinus caroliniana* and *Cornus amomum* and the absence or low importance of *Abies balsamea*. It differs from red maple swamps in non-floodplain settings by its alluvial, mineral soils with poor horizon development and the presence of floodplain species such as *Cornus amomum*, *Boehmeria cylindrica*, *Prunus serotina*, and Parthenocissus spp. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]).

Dominant plant species

- red maple (*Acer rubrum*), tree
- silky dogwood (*Cornus amomum*), shrub
- sensitive fern (*Onoclea sensibilis*), other herbaceous
- smallspike false nettle (*Boehmeria cylindrica*), other herbaceous

Community 1.2
Ruderal Wet Forest/Wet Woodland

Community 1.3
Abandoned Wet Field/Wet Meadow

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

Abandonment, 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

Common invasive exotic plants are honeysuckles (Lonicera spp), moneywort (*Lysimachia nummularia*), garlic mustard (Alliaria petiolate) and Japanese stiltgrass (Microstegium viminium).

Pathway P2.1A
Community 2.1 to 2.2

Invasive plant establishment

Pathway P2.2A
Community 2.2 to 2.1

Invasive spp. Control, Forest mgmt..

Transition T1A
State 1 to 2

Disturbance, Forest Mgmt

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, Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Wetland Wildlife Habitat Management
Early Successional Habitat Development/Management
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Invasive Plant Species Control

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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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):**

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:**

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17. **Perennial plant reproductive capability:**
