USDA Natural Resources Conservation Service

Ecological site F144AY030NY
Semi-Rich Very Wet Outwash

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.
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 Semi Rich Very Wet Outwash ecological site consists of very deep, very poorly drained soils formed in glaciofluvial materials on outwash in depressions or low on terraces and outwash plains. Representative soils are Halsey.
The representative plant communities are very similar to the poorly drained Semi-Rich Wet Outwash counterpart, except the very poorly drained sites include more open plant communities. The modal reference plant community is an enriched red maple – lake sedge forest.

Associated sites

F144AY029NY	**Semi-Rich Wet Outwash**

Similar sites

F144AY040NY	**Semi-Rich Very Wet Till Depressions**
F144AY041MA	**Very Wet Till Depressions**

Table 1. Dominant plant species

Tree	(1) *Acer rubrum*
Shrub	(1) *Alnus incana subsp. rugosa*
Herbaceous	(1) *Carex lacustris*

Physiographic features

This site occurs on flat to gently sloping outwash plains that may experience occasional flooding.

Table 2. Representative physiographic features

Landforms	(1) Outwash plain > Depression (2) Drainageway (3) Terrace
Runoff class	Low to very high
Flooding frequency	None to occasional
Ponding frequency	None to frequent
Elevation	3–1,558 ft
Slope	0–8%
Water table depth	0–4 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)	123-143 days
Freeze-free period (characteristic range)	161-187 days
Precipitation total (characteristic range)	46-48 in
Frost-free period (actual range)	116-144 days
Freeze-free period (actual range)	149-188 days
Precipitation total (actual range)	42-48 in
Frost-free period (average)	132 days
Freeze-free period (average)	173 days
Precipitation total (average)	46 in

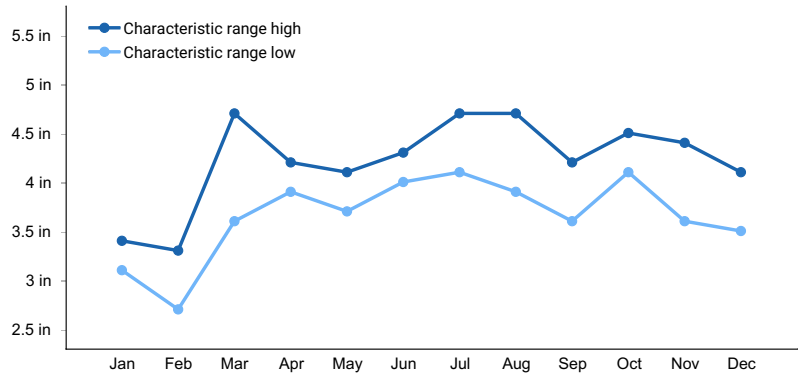


Figure 1. Monthly precipitation range

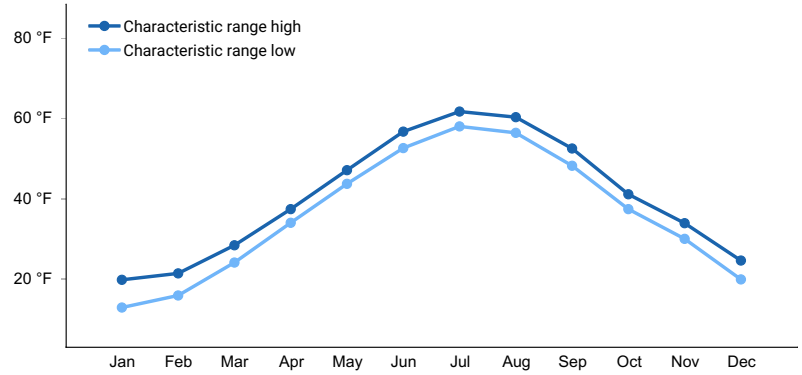


Figure 2. Monthly minimum temperature range

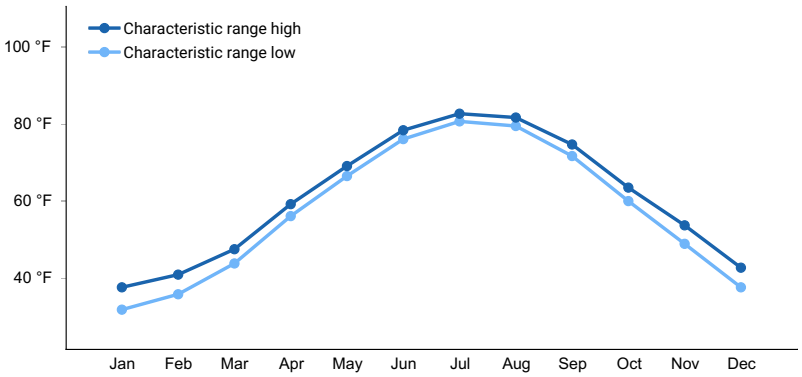


Figure 3. Monthly maximum temperature range

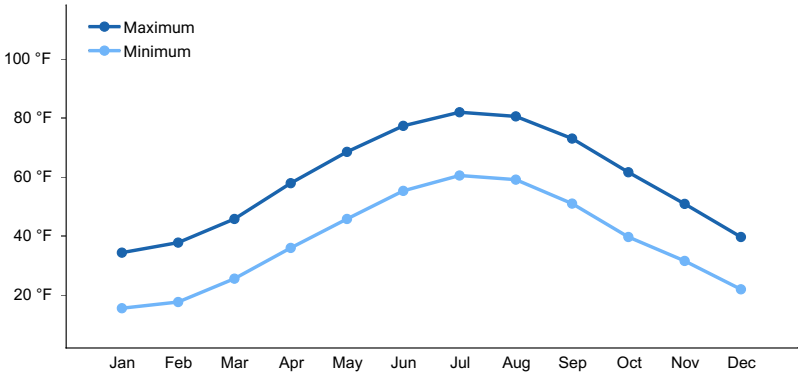


Figure 4. Monthly average minimum and maximum temperature

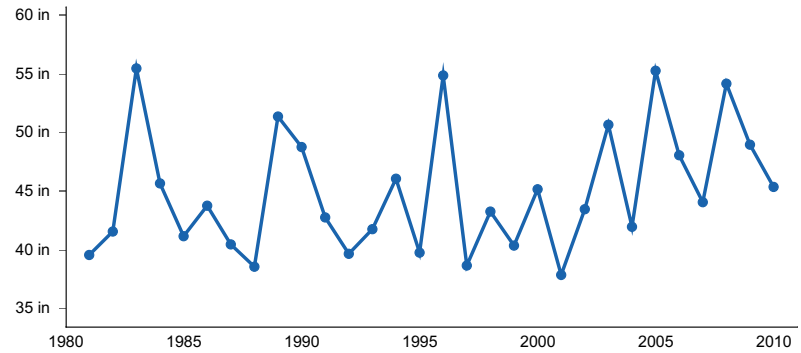


Figure 5. Annual precipitation pattern

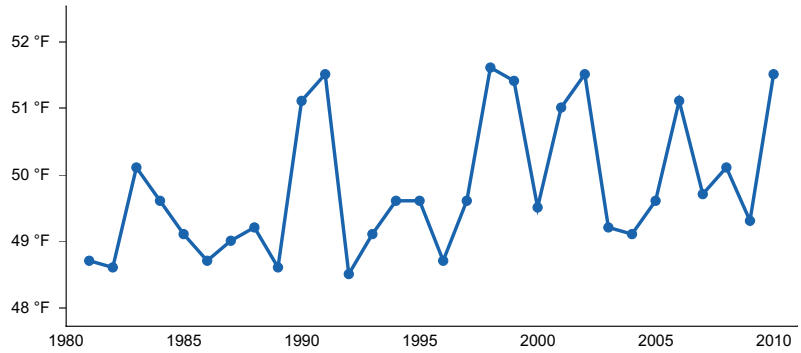


Figure 6. Annual average temperature pattern

Climate stations used

- (1) RUTLAND [USC00436995], Rutland, VT
- (2) BELVIDERE BRG [USC00280734], Bangor, NJ
- (3) BRIDGEPORT-SUCCESS HILL [USC00060808], Bridgeport, CT
- (4) NEW BEDFORD MUNI AP [USW00094726], New Bedford, MA
- (5) DURHAM 2 SSW [USW00054795], Durham, NH
- (6) BELCHERTOWN [USC00190562], Belchertown, MA

Influencing water features

Very poorly drained
Water is removed from the soil so slowly that free water remains at or very near the surface during much of the growing season. Internal free water occurrence is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soils are commonly level or depressed and frequently ponded. In areas where rainfall is high or nearly continuous, slope gradients may be greater.

Wetland description

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

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

Soil features

This site consists of moderate to very deep, very poorly drained soils formed in glaciofluvial and eolian deposits. The representative soil in this site is Halsey. Saturated hydraulic conductivity for this soil is moderately high or high in the solum and high or very high in the substratum.

Table 4. Representative soil features

Parent material	(1) Glaciofluvial deposits–limestone and dolomite (2) Eolian deposits–schist (3) Sandstone and shale (4) Slate
Surface texture	(1) Fine sandy loam (2) Silt loam (3) Mucky silt loam
Family particle size	(1) Coarse-loamy over sandy or sandy-skeletal
Drainage class	Very poorly drained
Permeability class	Moderately slow
Depth to restrictive layer	20–72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–1%
Available water capacity (Depth not specified)	3–6 in
Soil reaction (1:1 water) (Depth not specified)	5.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	10–38%
Subsurface fragment volume >3" (Depth not specified)	2–5%

Ecological dynamics

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

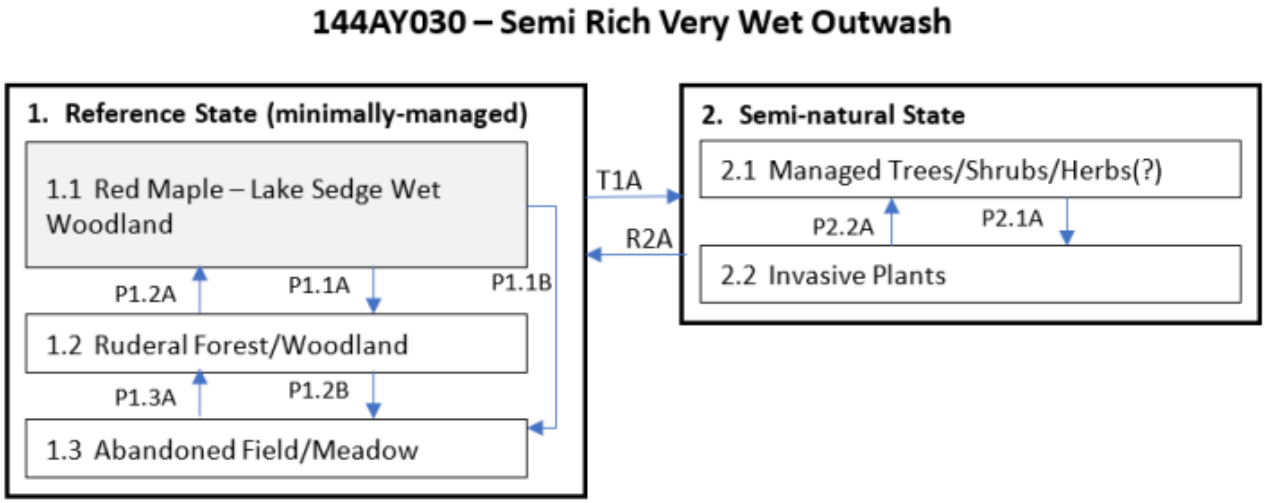
The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003). Terrestrial ecological SYSTEMS are specifically defined as a group of plant community-types called ASSOCIATIONS that tend 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 Semi Rich Very Wet Outwash ecological site is characteristic of the North-Central Interior and Appalachian Rich Swamp system (CES202.605). The modal reference plant community is an enriched red maple- lakeside sedge forest.
Natural disturbances include climate extremes such as, excessive droughts, or storm activity ranging from windthrows to downbursts to ice-storms. Alteration of the natural hydrological regime (diversions, culverts, impoundments) can be a threat. Invasive plants, include purple loosestrife (*Lythrum salicaria*), reedgrass (*Phragmites australis* ssp. australis), and buckthorn (*Frangula alnus*).

[*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 type is characterized by: • *Acer rubrum* / *Carex lacustris* Wet Woodland Translated Name: Red Maple / Lake Sedge Wet Woodland Common Name: Red Maple / Lake Sedge Wet Woodland (CEGL006105) Others plant communities can include: • *Acer rubrum* - *Fraxinus nigra* - (*Larix laricina*) / *Rhamnus alnifolia* Swamp Forest Translated Name: Red Maple - Black Ash - (Tamarack) / Alderleaf Buckthorn Swamp Forest Common Name: Red Maple - Black Ash Rich Seepage Swamp Forest (CEGL006009) • *Acer rubrum* - *Fraxinus nigra* - (*Tsuga canadensis*) / *Tiarella cordifolia* Swamp Forest Translated Name: Red Maple - Black Ash - (Eastern Hemlock) / Heartleaf Foamflower Swamp Forest Common Name: Northern Hardwood - Hemlock Seepage Swamp Forest (CEGL006052)

Community 1.1
Red Maple / Lake Sedge Wet Woodland (CEGL006105)

Acer rubrum / *Carex lacustris* Wet Woodland Translated Name: Red Maple / Lake Sedge Wet Woodland Common Name: Red Maple / Lake Sedge Wet Woodland (CEGL006105) This red maple swamp occurs in somewhat enriched conditions derived from groundwater seepage through calcareous bedrock. Soils are seasonally saturated and vary in texture from muck to silt loam sometimes covered with organic matter. Red maple (*Acer rubrum*) is the dominant tree in a somewhat open canopy. The shrub layer is generally sparse and includes speckled alder (*Alnus incana* ssp. rugosa), nannyberry (*Viburnum lentago*). The herbaceous layer is characterized by tall, dense patches of lakeside sedge (*Carex lacustris*). Other common herbaceous species include sensitive fern (*Onoclea sensibilis*), spotted Joe-Pye-weed (*Eutrochium maculatum* [=Eupatorium maculatum]), jewelweed (*Impatiens capensis*), marsh bellflower (*Campanula aparinoides*), fringed yellow loostrife (*Lysimachia ciliata*), and occasionally other sedges such as tussock sedge (*Carex stricta*). (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political state): CT: Red maple – lakeside sedge Swamp Forest (Metzler and Barret, 2006) MA: Red Maple - Black Ash Swamp (Swain and Kearsley, 2001) NY: Red maple-hardwood swamp (Edinger et al., 2014)

Dominant plant species

- red maple (*Acer rubrum*), tree
- black ash (*Fraxinus nigra*), tree
- hairy sedge (*Carex lacustris*), other herbaceous

Community 1.2
Ruderal Forest/Woodland

Community 1.3
Abandoned Field/Meadow

Pathway P1.1A
Community 1.1 to 1.2

Disturbance, early successional habitat development

Pathway P1.1B
Community 1.1 to 1.3

Disturbance, early successional habitat development

Pathway P1.2A
Community 1.2 to 1.1

Abandonment, succession

Pathway P1.2B
Community 1.2 to 1.3

Disturbance, early successional habitat development

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 management

Pathway P2.2A
Community 2.2 to 2.1

Invasive species control, forest management

Transition T1A
State 1 to 2

Forest management, disturbance

Restoration pathway R2A
State 2 to 1

Restoration and management, forest stand improvement, early successional habitat development, upland wildlife management, invasive species control, plant establishment

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

Acknowledgments

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):**

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:**