

Ecological site F144AY043MA Acidic Organic Wetlands

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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): 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

Ecological site concept

The Acid Organic Wetlands ecological site consists of very deep, very poorly drained organic soils formed in more than 40 cm of highly decomposed organic material on a variety of landforms. Slope ranges from 0 to 2 percent. Soils are dysic. Characteristic soils are Freetown and Swansea.

The site occurs within a variety of landforms, basins, depressions, swamps, seepage wetlands, and bogs. These various hydro-geologic settings are the primary determinant of water regimes, water chemistry, plant community structure and floristics, and groundwater recharge and discharge relationships (Golet et al 1992). Consequently, the reference plant community of the site is quite variable ranging from acidic hardwood, mixed, and conifer swamps to more open shubby wetlands and herbaceous wetlands and bogs.

Similar sites

F144AY020MA	Very Wet Coastal Lake Plain
F144AY039NY	Semi-Rich Wet Till Depressions

Table 1. Dominant plant species

Tree	(1) Acer rubrum(2) Chamaecyparis thyoides
Shrub	(1) Rhododendron viscosum(2) Clethra alnifolia
Herbaceous	Not specified

Physiographic features

This site occurs level and nearly level, saturated and ponded swamps and depressions.

Landforms	 (1) Alluvial plain > Depression (2) Upland > Swamp (3) Outwash plain (4) Valley
Runoff class	Negligible
Flooding frequency	None to rare
Ponding frequency	Frequent
Elevation	0–347 m
Slope	0–2%
Water table depth	0 cm
Aspect	Aspect is not a significant factor

Table 2. Representative physiographic features

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs varies between Dfb (Warmsummer humid continental) in the North, and Dfa (Hot-summer humid continental) to the southern portion of the MLRA. Precipitation is usually uniformly distributed throughout the year. Near the coast, however, it is slightly lower in summer. It 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)	126-139 days
Freeze-free period (characteristic range)	148-188 days
Precipitation total (characteristic range)	1,092-1,219 mm
Frost-free period (actual range)	116-171 days
Freeze-free period (actual range)	146-208 days
Precipitation total (actual range)	1,041-1,245 mm
Frost-free period (average)	138 days
Freeze-free period (average)	170 days
Precipitation total (average)	1,168 mm







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) TAUNTON MUNI AP [USW00054777], East Taunton, MA
- (6) DURHAM 2 SSW [USW00054795], Durham, NH
- (7) ORANGE MUNI AP [USW00054756], Orange, MA
- (8) MILLBROOK 3 W [USW00064756], Millbrook, NY

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

depth, drainage, parent material

This site consists of very deep, very poorly drained drained mucky acidic soils formed in organic and glaciofluvial parent materials. Representative soils are Freetown and Swansea.

Parent material	(1) Organic material(2) Glaciofluvial deposits	
Surface texture	(1) Mucky peat (2) Muck	
Family particle size	(1) Sandy or sandy-skeletal	
Drainage class	Very poorly drained	
Permeability class	Slow	
Depth to restrictive layer	183 cm	
Surface fragment cover <=3"	0%	
Surface fragment cover >3"	0%	
Available water capacity (Depth not specified)	25.4–40.64 cm	
Soil reaction (1:1 water) (Depth not specified)	3.5–6	
Subsurface fragment volume <=3" (Depth not specified)	0–1%	
Subsurface fragment volume >3" (Depth not specified)	0%	

Table 4. Representative soil features

Ecological dynamics

The Acid Organic Wetlands ecological site consists of very deep, very poorly drained organic soils formed in more than 40 cm of highly decomposed organic material on a variety of landforms. Slope ranges from 0 to 2 percent. Soils are dysic. Characteristic soils are Freetwon and Swansea.

The site occurs within a variety of landforms, basins, depressions, swamps, seepage wetlands, and bogs. These various hydro-geologic settings are the primary determinant of water regimes, water chemistry, plant community structure and floristics, and groundwater recharge and discharge relationships (Golet et al 1992). Consequently, the reference plant community of the site is quite variable ranging from acidic hardwood, mixed, and conifer swamps to more open shubby wetlands and herbaceous wetlands and bogs.

The Acid Organic Wetlands is characterized by North-Central Appalachian Swamp system (CES202.604), North-Central Appalachian and Acadian Conifer-Hardwood Acidic Swamp system (CES201.547), and the Northern Atlantic Coastal Plain Basin Peat Swamp system (CES203.522), Laurentian-Acadian Wet Meadow Shrub Swamp system (CES201.582). The ecological site occurs within basins, depressions, swamps, seepage wetlands, and bogs. These various hydro-geologic settings are the primary determinant of water regimes, water chemistry, plant community structure and floristics, and groundwater recharge and discharge relationships (Golet et al 1992). Consequently, the reference plant community of the site is quite variable ranging from rich hardwood, mixed, and conifer swamps to more open shubby wetlands and herbaceous wetlands and bogs. Natural disturbances include storm extremes ranging from windthrows to downbursts to ice-storms as well as pests and disease. Other agents-

of-change include direct land conversions and fragmentation by agricultural, development, drainage, and logging. Indirect effects include changes to hydrology and water chemistry by development activities in the watershed.

[*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 rubrum / Rhododendron viscosum - Clethra alnifolia Swamp Forest

Translated Name: Red Maple / Swamp Azalea - Sweet-pepperbush Swamp Forest Common Name: Lower New England Red Maple Swamp Forest (CEGL006156) • Chamaecyparis thyoides / Chamaedaphne calyculata Swamp Woodland Translated Name: Atlantic White-cedar / Leatherleaf Swamp Woodland Common Name: Atlantic Whitecedar Bog (CEGL006321) • Vaccinium corymbosum - Rhododendron viscosum - Clethra alnifolia Acidic Peatland ranslated Name: Highbush Blueberry - Swamp Azalea - Sweet-pepperbush Acidic Peatland Common Name: Highbush Blueberry - Winterberry Shrub Thicket (CEGL006371) • Typha (angustifolia, latifolia) - (Schoenoplectus spp.) Eastern Marsh Translated Name: Narrowleaf Cattail, Broadleaf Cattail - Bulrush Eastern Marsh Common Name: Eastern Cattail Marsh (CEGL006153) Other plant communities include: • Acer rubrum - Nyssa sylvatica -Betula alleghaniensis / Sphagnum spp. Swamp Forest Translated Name: Red Maple - Blackgum - Yellow Birch / Peatmoss species Swamp Forest Common Name: Red Maple - Blackgum Basin Swamp Forest (CEGL006014) • Tsuga canadensis - Betula alleghaniensis / Ilex verticillata / Sphagnum spp. Swamp Forest Translated Name: Eastern Hemlock - Yellow Birch / Common Winterberry / Peatmoss species Swamp Forest Common Name: Hemlock - Hardwood Swamp Forest (CEGL006226) • Picea rubens - Acer rubrum / Ilex mucronata Swamp Forest Translated Name: Red Spruce - Red Maple / Catberry Swamp Forest Common Name: Red Spruce - Red Maple Acidic Swamp Forest (CEGL006198) • Chamaecyparis thyoides / Ilex glabra - Rhododendron viscosum Swamp Forest Translated Name: Atlantic White-cedar / Inkberry - Swamp Azalea Swamp Forest Common Name: Coastal Plain Atlantic White-cedar Swamp Forest (CEGL006188) • Chamaecyparis thyoides / Rhododendron maximum Swamp Forest Translated Name: Atlantic White-cedar / Great Laurel Swamp Forest Common Name: Atlantic White-cedar / Great Laurel Swamp Forest (CEGL006355) • Pinus rigida / Chamaedaphne calyculata / Sphagnum spp. Swamp Woodland Translated Name: Pitch Pine / Leatherleaf / Peatmoss species Swamp Woodland Common Name: Pitch Pine Bog (CEGL006194) • Myrica gale - Chamaedaphne calyculata / Carex exilis Fen Translated Name: Sweetgale - Leatherleaf / Coastal Sedge Fen Common Name: Coastal Plain Sedge Fen (CEGL006392) • Chamaedaphne calyculata - (Gaylussacia dumosa) - Decodon verticillatus / Woodwardia virginica Acidic Peatland Translated Name: Leatherleaf - (Dwarf Huckleberry) - Swamp-loosestrife / Virginia Chainfern Acidic peatland Common Name: Southern New England Poor Fen (CEGL006008) • Dulichium arundinaceum / Sphagnum spp. Fen Translated Name: Threeway Sedge / Peatmoss species Fen Common Name: Southern New England Threeway Sedge Fen (CEGL006131) • Sphagnum rubellum - Vaccinium oxycoccos Fen Translated Name: Red Peatmoss -Small Cranberry Fen Common Name: Oligotrophic Peatland Moss Lawn (CEGL006135) • Pontederia cordata -Peltandra virginica - Sagittaria latifolia Marsh Translated Name: Pickerelweed - Green Arrow-arum - Broadleaf Arrowhead Marsh Common Name: Northeastern Leafy Forb Marsh (CEGL006191) • Calamagrostis canadensis -Carex spp. Laurentian-Acadian Wet Meadow Translated Name: Bluejoint - Sedge species Laurentian-Acadian Wet Meadow Common Name: Laurentian-Acadian Bluejoint Wet Meadow (CEGL005448) • Schoenoplectus (tabernaemontani, acutus) Eastern Marsh Translated Name: (Softstem Bulrush, Hardstem Bulrush) Eastern Marsh Common Name: Eastern Bulrush Deepwater Marsh (CEGL006275) • Carex stricta - Carex vesicaria Wet Meadow Translated Name: Upright Sedge - Blister Sedge Wet Meadow Common Name: Eastern Upright Sedge Wet Meadow (CEGL006412) • Scirpus cyperinus Wet Meadow Translated Name: Woolgrass Wet Meadow Common Name: Northeastern Woolgrass Wet Meadow (CEGL006349) • Cephalanthus occidentalis - Decodon verticillatus Shrub Swamp Translated Name: Common Buttonbush - Swamp-loosestrife Shrub Swamp Common Name: Northeastern Buttonbush Shrub Swamp (CEGL006069) • Decodon verticillatus Shrub Swamp Translated Name: Swamp-loosestrife Shrub Swamp Common Name: Swamp-loosestrife Shrub Swamp (CEGL005089)

Community 1.1

1.1a Red Maple / Swamp Azalea - Sweet-pepperbush Swamp Forest (CEGL006156) 1.1b Atlantic White-cedar / Leatherleaf Swamp Woodland (CEGL006321) 1.1c Highbush Blueberry -Swamp Azalea - Sweet-pepperbush Peatland (CEGL6371) 1.1d Cattail Marsh (CEGL006153)

Community 1.1a Lower New England Red Maple Swamp Forest (CEGL006156) *Acer rubrum / Rhododendron viscosum - Clethra alnifolia* Swamp Forest (Translated) Red Maple / Swamp Azalea - Sweet-pepperbush Swamp Forest Red maple (*Acer rubrum*) dominates the canopy often with abundant black gum (*Nyssa sylvatica*). The shrub layer is characterized by highbush blueberry (*Vaccinium corymbosum*), sweet pepperbush (*Clethra alnifolia*) common winterberry (Ilex verticillate), swamp azalea (*Rhododendron viscosum*), swamp dog-laurel (Leucothoe racemose), and inkberry (*Ilex glabra*) may also be present. The herbaceous layer may not beparticularly diverse, characterized by cinnamon fern (*Osmunda cinnamomea*), skunk cabbage (*Symplocarpus foetidus*), greater bladder sedge (*Carex intumescens*), royal fern (*Osmunda regalis*), Jack-in-the-pulpit (*Arisaema triphyllum*), and sensitive fern (*Onoclea sensibilis*). Sphagnum mosses are likely present. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political State): CT: Red maple / winterberry – highbush blueberry Forest (Metzler and Barrett, 2006) MA: Red maple swamp (Swain and Kearsley, 2001) NH: undisclosed (Sperduto and Nichols, 2011) NY: Red maple – blackgum Swamp (Edinger et al.,

2014) RI: Red maple – deciduous shrub Swamp (Enser and Lundgren, 2006) Community 1.1b Chamaecyparis thyoides / Chamaedaphne calyculata Swamp Woodland Translated Name: Atlantic White-cedar / Leatherleaf Swamp Woodland Common Name: Atlantic White-cedar Bog (CEGL006321) This Atlantic white-cedar bog of the northeastern is an oligotrophic basin peatland dominated by heath shrubs with an open canopy of Atlantic whitecedar. Atlantic white cedar (Chamaecyparis thyoides) is the most abundant tree but generally grows in association with other trees such asred maple (Acer rubrum), pitch pine (Pinus rigida), and blackgum (Nyssa sylvatica. Tall scattered shrubs include highbush blueberry (Vaccinium corymbosum), sweet pepperbush (Clethra alnifolia), and/or swap azalea (Rhododendron viscosum). Heath shrubs form a dense low-shrub layer dominated by leatherleaf (Chamaedaphne calyculata), sheeplaurel (Kalmia angustifolia), dwarf huckleberry (Gaylussachia bigeloviana [= Gaylussacia Dumosa]) and rhodora (Rhododendron canadense). Herbaceous species growing within the dwarf-shrub mat often include cottonsedges (Eriophorum spp)., Virginia chainfern (Woodwardia virginica), large cranberry (Vaccinium macrocarpon), sundews (Drosera spp)., and purple pitcherplant (Sarracenia purpurea). Peatmosses (Sphagnu spp.) form a continuous layer. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political State): CT: Atlantic white cedar / leatherleaf Bog (Metzler and Barrett, 2006) MA: Atlantic white cedar Bog (Swain and Kearsley, 2001) NH: Atlantic white cedar Bog (Sperduto and Nichols, 2011) NY: Coastal plain Atlantic white cedar swamp (Edinger et al., 2014) RI: Atlantic White Cedar Swamp (Enser and Lundgren, 2006) Comminity 1.1c Vaccinium corymbosum -Rhododendron viscosum - Clethra alnifolia Acidic Peatland Translated Name: Highbush Blueberry - Swamp Azalea - Coastal Sweet-pepperbush Acidic Peatland Common Name: Highbush Blueberry - Winterberry Shrub Thicket (CEGL006371) This plant community-type is a tall-shrub swamp where the dominant shrubs include highbush blueberry (Vaccinium corymbosum), common winterberry (Ilex verticillata), and swamp azalea (Rhododendron viscosum). Scattered red maple (Acer rubrum) are not uncommon. Shrubs include maleberry (Lyonia ligustrina) and common buttonbush (Cephalanthus occidentalis) are characteristic. Associated shrubs may include sweet pepperbush (Clethra alnifolia), rosy meadowsweet (Spiraea tomentosa), leatherleaf (Chamaedaphne calyculata), inkberry (*llex glabra*), swamp dog laurel (Leucothoe racemosa, swamp loostrife (*Decodon verticillatus*), sheep laurel (Kalmia angustifolia), smooth alder (Alnus serrulata), sweetgale (Myrica gale), and chokeberries (Aronia spp.). Herbaceous composition include cinnamon fern (Osmundastrum cinnamoneum [= Osmunda cinnamomea]), royal fern (Osmunda regalis), marsh fern (Thelypteris palustris), sensitive fern (Onoclea sensibilis), water arum (Calla palustris), northern water hore-hound (Lycopus uniflorus), Virginia marsh St. John's-wort (Triadenum virginicum), fowl manna grass (Glyceria striata), rice cutgrass (Leersia oryzoides), three-way sedge (Dulichium arundinaceum), common softrush (Juncus effusus), and Virginia chainfern (Woodwardia virginica). Peatmoss (Sphagnum spp.) is common. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political State): CT: undisclosed (Metzler and Barrett, 2006) MA: Shrub Swamp (Swain and Kearsley, 2001) NH: Higbush blueberry – Winterberry Shrub Swamp (Sperduto and Nichols, 2011) NY: Undeisclosed (Edinger et al., 2014) RI: Shrub Swamp (Enser and Lundgren, 2006) Community 1.1d • Typha (angustifolia, latifolia) - (Schoenoplectus spp.) Eastern Marsh Translated Name: (Narrowleaf Cattail, Broadleaf Cattail) - (Bulrush species) Eastern Marsh Common Name: Eastern Cattail Marsh (CEGL006153) Tall graminoids dominate this plant community-type. Occasionally, scattered shrubs may be found. Trees are absent. Narrowleaf cattail (Typha angustifolia), broadleaf cattail (Typha latifolia), or their hybrid cattail (Typha x glauca) dominate, either alone or mixed with other tall emergent marsh species. Scattered shrubs may include inkberry (Myrica gale), common winterberry (*llex verticillata*), and white meadowsweet (*Spiraea alba*. Associated species vary widely; sedges, such as water sedge (Carex aquatilis), sallow sedge (Carex lurida), wooly sedge (Carex pellita [= Carex lanuginose]), tussock sedge (Carex stricta), woolsedge (Scirpus cyperinus), and bulrushes, such as chair-maker's club- bulrush (Schoenoplectus americanus[= Scirpus americanus]) and hard-stemmed club-bulrush (Schoenoplectus acutus [= Scirpus acutus]), occur along with patchy grasses, such as bluejoint (Calamagrostis canadensis). Broad-leaved herbs includeswamp milkweed (Asclepias incarnata), water arum (Calla palustris), jewelweed (Impatiens capensis), sensitive fern (Onoclea sensibilis), common arrowhead (Sagittaria latifolia), maddog skullcap (Scutellaria lateriflora), great bur-reed (Sparganium eurycarpum), skunk cabbage (Symplocarpus foetidus), marsh fern (Thelypteris palustris), and blue vervain (Verbena hastata). Floating aquatics, such as Lemna minor, may be common in deeper zones. The invasive plants puple loosestrife (Lythrum salicaria) and common reed (Phragmites australis) may be abundant in parts of some occurrences. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political State): CT: Typha angustifolia, Typha latifolia Marsh (Metzler and Barrett, 2006) MA: Deep Emergent Marsh (Swain and Kearsley, 2001) NH: Cattail Marsh (Sperduto and Nichols, 2011) NY: Shallow Emergent Marsh (Edinger et al., 2014) RI: Cattail Marsh (Enser and Lundgren, 2006)

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.

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 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.

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Contributors

Nels Barrett, Ph.D. (vegetation)

Approval

Nels Barrett, 2/10/2025

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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	02/10/2025
Approved by	Nels Barrett
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-

- 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: