

Ecological site F043AY509WA
Warm, Xeric, Sandy, Outwash Terraces and Plains
(Ponderosa Pine/Dry Grass)
Pinus ponderosa / Pseudoroegneria spicata , Pinus ponderosa / Festuca
idahoensis

Last updated: 3/11/2019

Accessed: 04/21/2026

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): 043A–Northern Rocky Mountains

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LRU notes

Most commonly found in LRU 43A03 (Columbia-Colville Valleys). This LRU is composed predominantly of glaciated foothills, lower mountain slopes and outwash terraces near the Columbia and Colville Rivers. The LRU is in the portion of the Northern Rocky Mountains that was subjected to continental glaciation. The soils tend to be loamy mollisols and inceptisols with thin to mixed volcanic ash surfaces. Till and outwash are the dominant parent materials though colluvium and residuum from granitic and /or metamorphic geology are also common.. Soil climate is a dominantly mesic or frigid temperature regime and xeric moisture regime with average annual precipitation around 495 mm (19 inches) and an average annual air temperature around 8.2 degrees C (47 degrees F). Elevation ranges from about 370 to 1030 m (1,200 to 3,380 feet). Also found in LRU 44A01 (Spokane-Rathdrum Outwash Plains) and areas of 43A01 (Okanogan Plateau).

Classification relationships

Relationship to Other Established Classifications: United States National Vegetation Classification (2008) – A3447 Ponderosa Pine / Herbaceous Understory Central Rocky Mt. Forest & Woodland Alliance Washington Natural Heritage Program. Ecosystems of Washington State, A Guide to Identification, Rocchio and Crawford, 2015 – Northern Rocky Mountain Ponderosa Pine Woodland and Savanna Description of Ecoregions of the United States, USFS PN # 1391, 1995 - M332 Middle Rocky Mt. Forest-Steppe-Coniferous Forest-Alpine Meadow Province Level III and IV Ecoregions of WA, US EPA, June 2010 - 15r Okanogan – Colville Xeric Valleys & Foothills and 15s Spokane Valley Outwash Plains This ecological site includes the following USDA Forest Service Plant Associations: PIPO/PSSP, PIPO/FEID, and PIPO-PSME/PSSP. (Williams et. al. 1995)

Ecological site concept

This site consists of terraces, alluvial fans and outwash plains with the following characteristics: sandy soil materials; a water table (perched or apparent) more than 75 cm (30 in) below the soil surface during the April to October period; PIPO/FEID, PIPO/PSSP6 or PIPO-PSME/PSSP6 habitat types.

Table 1. Dominant plant species

Tree	<p>(1) <i>Pinus ponderosa</i> (2) <i>Pseudotsuga menziesii</i> var. <i>glauca</i></p>
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Shrub	Not specified
Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Pseudoroegneria spicata</i>

Physiographic features

Physiographic Features

Landscapes: Valleys

Landform: outwash terraces, outwash plains, alluvial fans, escarpments

Elevation (m): Total range = 320 to 800 m

(1,050 to 2,625 feet)

Core Concept = 500 to 620 m

(1,640 to 2,035 feet)

Slope (percent): Total range = 0 to 65 percent

Core Concept = 3 to 25 percent

Aspect (degrees):

47-211-338

Core Concept = 143-211-308

Table 2. Representative physiographic features

Geomorphic position, terraces	(1) Tread (2) Riser
Landforms	(1) Valley > Outwash terrace (2) Valley > Outwash plain (3) Valley > Alluvial fan
Flooding frequency	None
Ponding frequency	None
Elevation	500 – 620 m
Slope	0 – 30 %
Water table depth	200 cm
Aspect	W, NW, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	320 – 800 m
Slope	0 – 70 %
Water table depth	Not specified

Climatic features

Climatic Features

Frost-free period (days): Total range = 110 to 145 days

Core Concept = 125 to 130 days

Mean annual precipitation (cm): Total range = 265 to 625 mm

(10 to 25 inches)

Core Concept = 395 to 485 mm

(16 to 19 inches)

MAAT Total range = 7.3 to 10.5 C

(45 to 51 F)

Core Concept = 8.5 to 9.3 C

(47 to 49 F)

Climate Stations: Wellpinit

Table 4 Representative climatic features

Frost-free period (characteristic range)	130-130 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	410-480 mm
Frost-free period (actual range)	110-150 days
Freeze-free period (actual range)	
Precipitation total (actual range)	250-640 mm

Influencing water features

Water Table Depth (cm): >200 cm (>80 inches)

Flooding:

Frequency: None

Duration: None

Ponding:

Frequency: None

Duration: None

Soil features

Representative Soil Features

This ecological subsite is associated with several soil series (e.g. Bisbee, Dart, Marble, Marblespring, Spens, Springdale, Winthrop). The soil components can be grouped into: Entic Ultic Haploxerolls, Lamellic Xeropsamments, Typic Xeropsamments, Typic Xerorthents, and Vitrandic Haploxerepts. These soils have developed in mixed Mazama tephra deposits, outwash and alluvium. The soils are very deep and have low available water capacity to a depth of 1 m. The soils are mostly somewhat excessively drained.

Table 5. Representative soil features

Parent material	(1) Outwash (2) Alluvium
Surface texture	(1) Loamy sand (2) Sand (3) Loamy coarse sand
Drainage class	Somewhat excessively drained
Permeability class	Rapid
Soil depth	200 cm
Available water capacity (0-101.6cm)	5.08 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-152.4cm)	Not specified
Subsurface fragment volume <=3" (25.4-101.6cm)	20 %

Table 6. Representative soil features (actual values)

Drainage class	Not specified
Permeability class	Rapid to very rapid
Soil depth	Not specified
Available water capacity (0-101.6cm)	3.56 – 7.11 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-152.4cm)	10 – 7.2
Subsurface fragment volume <=3" (25.4-101.6cm)	0 – 70 %

Ecological dynamics

A description of vegetation dynamics and a state and transition model can be found in Ecological Site Group EX043AESG03.

State and transition model

Additional community tables

Approval

Scott Woodall, 3/11/2019

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	

Approved by	
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:**
