

Ecological site F043AY523WA
Warm-Frigid, Moist- Xeric Loamy Foothills/Mountainsides, low AWC
subsoils
(Grand Fir Warm Dry Shrub)
***Abies grandis* - *Pseudotsuga menziesii* / *Physocarpus malvaceus* -**
Symphoricarpos albus

Last updated: 10/14/2020

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

Major land resource area (MLRA): 043A-Northern Rocky Mountains Description of MLRAs can be found in: United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. Available electronically at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_053624#handbook

LRU notes

Most commonly found in LRU 43A04 (Selkirk Mountains). Also found in adjacent areas of 44A02 Climate parameters were obtained from PRISM and other models for the area. Landscape descriptors are derived from USGS DEM products and their derivatives.

Classification relationships

Relationship to Other Established Classifications: United States National Vegetation Classification (2008) – A3362 *Abies grandis* – *Pseudotsuga menziesii* Central Rocky Mountain Forest & Woodland Alliance Washington Natural Heritage Program. Ecosystems of Washington State, A Guide to Identification, Rocchio and Crawford, 2015 – Northern Rocky Mountain Mesic Montane Mixed Conifer Forest Description of Ecoregions of the United States, USFS PN # 1391, 1995 - M333 Northern Rocky Mt. Forest-Steppe-Coniferous Forest-Alpine Meadow Province Level III and IV Ecoregions of WA, US EPA, June 2010 – 15x Okanogan Highland Dry Forest, 15y Selkirk Mountains, 15v Northern Idaho Hills and Low Relief Mountains. This ecological site includes the following USDA Forest Service Plant Association: ABRG/PHMA, (Williams et. al. 1995)

Ecological site concept

This ES group is distinguished by an overstory of grand fir and Douglas-fir and an understory shrub component of ninebark, oceanspray, snowberry and /or twinflower. It occurs on loamy mountainsides, moraines, and terraces with a cumulative water holding capacity of less than 3 inches within a depth of 40 inches. This ES group fits into the National Vegetation Standard's Grand Fir - Douglas-fir Central Rocky Mountain Forest & Woodland Alliance and Washington State's Natural Heritage Program's Northern Rocky Mt. Mesic Montane Mixed Conifer Forest.

Table 1. Dominant plant species

Tree	(1) <i>Abies grandis</i> (2) <i>Pseudotsuga menziesii</i> var. <i>glauca</i>
Shrub	(1) <i>Physocarpus malvaceus</i> (2) <i>Symphoricarpos albus</i>

Herbaceous	(1) <i>Calamagrostis rubescens</i> (2) <i>Hieracium albiflorum</i>
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Physiographic features

Physiographic Features

Landscapes: Mountains, Outwash Plains

Landform: mountain slopes, outwash terraces and moraines

Elevation (m): Total range = 630 to 1480 m

(2,065 to 4,855 feet)

Central tendency = 860 to 1110 m

(2,820 to 3,640 feet)

Slope (percent): Total range = 0 to 80 percent

Central tendency = 20 to 45 percent

Flooding:

Frequency: None

Duration: None

Ponding:

Frequency: None

Duration: None

Aspect: (central tendency)

188-240-272

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope (2) Outwash plain > Outwash terrace (3) Mountains > Moraine
Flooding frequency	None
Ponding frequency	None
Elevation	860 – 1,110 m
Slope	20 – 50 %
Aspect	W, S, SW

Table 3. Representative physiographic features (actual ranges)

Flooding frequency	None
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Ponding frequency	None
Elevation	630 – 1,480 m
Slope	0 – 80 %

Climatic features

Climatic Features

Frost-free period (days): Total range = 85 to 130 days

Central tendency = 100 to 110 days

Mean annual precipitation (cm): Total range = 595 to 1220 mm

(23 to 48 inches)

Central tendency = 780 to 955 mm

(31 to 38 inches)

MAAT (C): Total range = 3.8 to 8.3

(39 to 47 F)

Central tendency = 5.5 to 6.6

(42 to 44 F)

Climate Stations: none

Influencing water features

Water Table Depth (cm):

>200 cm (>80 inches)

Soil features

Representative Soil Features

This ecological subsite is associated with several soil series (e.g. Treble, Ardtoo, Stien, Mitten). The soil components can be grouped into: Dystric Xerochrepts, Typic Vitrixerands, Andic Eutrudepts. These soils have developed in thin or mixed Mazama tephra deposits over till or residuum from granite or metamorphic rocks. The soils are very deep and have low available water capacity to a depth of 1 m. The soils are well-drained.

Parent Materials:

Kind: Tephra (volcanic ash)

Origin: mixed

Kind: till, residuum

Origin: granite or metamorphic rocks

Surface Texture: (2mm fraction)

(1) Ashy- Sandy Loam

(2) Ashy-Silt loam

Fragment content of surface: 20 to 26 percent (median = 25%)

Subsurface Texture Group: Loamy

Fragment content of subsurface (25 to 100cm): 20 to 85 percent (median = 57%)

Most components lack surface fragments

Drainage Class: Well drained

Saturated Hydraulic conductivity: Moderately high to High

Soil Depth: 59% of components have no restriction within 150 cm

Paralithic contact when present is at 100 to 150 cm (median = 124 cm)

Calcium Carbonate Equivalent (percent): 0 to 3 (median = 0)
 Soil Reaction (1:1 Water): 6.1 to 6.5
 Available Water Capacity (total in 100cm): 5.68-7.36cm (median = 6.47 cm)

Table 4. Representative soil features

Parent material	(1) Volcanic ash (2) Till (3) Residuum – granite (4) Residuum – metamorphic rock
Surface texture	(1) Ashy sandy loam (2) Ashy silt loam
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Depth to restrictive layer	Not specified

Table 5. Representative soil features (actual values)

Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Depth to restrictive layer	100 – 0 cm

Ecological dynamics

A description of vegetation dynamics and a state and transition model can be found in Ecological Site Group EX043AESG06

State and transition model

Additional community tables

Approval

Curtis Talbot, 10/14/2020

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	04/21/2026
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:**
