

# Major Land Resource Area 044A

## Northern Rocky Mountain Valleys

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### Ecological site keys

#### MLRA 44A – West of Cabinet Gorge

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##### I. West of Cabinet Gorge and Cabinet Mountains

A. Outwash terraces, outwash plains and footslopes below 2625 feet elevation, south and west of Lake Pend Oreille and Spirit Valley; LRU01 Spokane Rathdrum Outwash Plains

###### i. Mesic climate zone

a. Aquic with organic soil materials ... R044AY501WA – Mesic, Aquic, Organic Depressions and Seeps

b. Xeric moisture regime (EX044AESG01)

1 Sandy ... F044AY502WA – Warm Mesic Xeric Sandy Hill slopes and Outwash terraces (Ponderosa Pine/Shrub) *Pinus Ponderosa* / *Symphoricarpos albus*, *Pinus Ponderosa* / *Physocarpus malvaceus*

2 Loamy with low AWC ... F044AY501WA – Warm Mesic Xeric Loamy Foothills, Terraces, low AWC subsoils (Ponderosa Pine/Shrub) *Pinus Ponderosa* / *Symphoricarpos albus*, *Pinus Ponderosa* / *Physocarpus malvaceus*

###### ii. Frigid climate zone

a. Warm-frigid

1 Aquic-xeric moisture regime ... R044AY502WA – Warm-frigid, Aquic-Xeric, Loamy, Flood Plains (Grass/Sedge) Semi-wet Meadow

2 Xeric or Moist xeric moisture regime

I) Xeric with high water table ... F044AY504WA – Frigid, Udic, Loamy Foothills and Drainageways, high water table (Western Hemlock/Moist Forbes) *Tsuga heterophylla* / *Clintonia uniflora* , *Tsuga heterophylla* / *Asarum caudatum*

II) Moist-xeric with high water table (EX044AESG02) ... F044AY503WA – Warm-Frigid, Moist-Xeric Loamy Foothills/Mountainsides, high water table (Grand Fir Warm Dry Shrub) *Abies grandis* - *Pseudotsuga menziesii* / *Physocarpus malvaceus* - *Symphoricarpos albus*

b. Cool-frigid climate zone (EX044AESG03)

1 High water table ... F044AY504WA – Frigid, Udic, Loamy Foothills and Drainageways, high water table (Western Hemlock/Moist Forbes) *Tsuga heterophylla* / *Clintonia uniflora* , *Tsuga heterophylla* / *Asarum caudatum*

2 Sandy, no high water table ... F044AY505WA – Frigid, Udic, Sandy Hill slopes and Outwash terraces (Western Hemlock/Moist Forbes) *Tsuga heterophylla* / *Clintonia uniflora* , *Tsuga heterophylla* / *Asarum caudatum*

B. Outwash terraces, outwash plains and footslopes below 3500 feet, north and east of Lake Pend Oreille and Spirit Valley; LRU02 Pend Oreille-Kootenai Valleys

###### i. Mesic climate zone

a. Aquic with organic soil materials ... R044AY501WA – Mesic, Aquic, Organic Depressions and Seeps

b. Xeric moisture regime (EX044AESG01)

1 Sandy

2 Loamy with low AWC ... F044AY501WA – Warm Mesic Xeric Loamy Foothills, Terraces, low AWC subsoils (Ponderosa Pine/Shrub) *Pinus Ponderosa* / *Symphoricarpos albus*, *Pinus Ponderosa* / *Physocarpus malvaceus*

ii. Frigid climate zone

a. Warm-frigid

1 Aquic-xeric moisture regime ... R044AY502WA – Warm-frigid, Aquic-Xeric, Loamy, Flood Plains (Grass/Sedge) Semi-wet Meadow

2 Xeric or moist xeric moisture regime

I) Xeric with high water table ... F044AY506WA – Warm-Frigid, Xeric, Loamy, Foothills and Stream Terraces, High Water Table (Douglas-Fir Warm Dry Shrub)

II) Moist-xeric with high water table (EX044AESG02) ... F044AY503WA – Warm-Frigid, Moist-Xeric Loamy Foothills/Mountainsides, high water table (Grand Fir Warm Dry Shrub) *Abies grandis* - *Pseudotsuga menziesii* / *Physocarpus malvaceus* - *Symphoricarpos albus*

b. Cool-frigid climate zone (EX044AESG03)

1 High water table ... F044AY504WA – Frigid, Udic, Loamy Foothills and Drainageways, high water table (Western Hemlock/Moist Forbes) *Tsuga heterophylla* / *Clintonia uniflora* , *Tsuga heterophylla* / *Asarum caudatum*

2 Sandy, no high water table ... F044AY505WA – Frigid, Udic, Sandy Hill slopes and Outwash terraces (Western Hemlock/Moist Forbes) *Tsuga heterophylla* / *Clintonia uniflora* , *Tsuga heterophylla* / *Asarum caudatum*

II. East of Cabinet Gorge; use 4-MIS key

## MLRA 44A - East of Cabinet Gorge

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I. Site resides along the Clark Fork River, east of Lake Pend Oreille, in areas with narrow valley width along river corridors to Bull Lake and south to the substantially wider Missoula valley.

A. Site resides on outwash terraces and alluvial fans, soils are very deep, well drained and have parent material of volcanic ash over alluvium. ... F044AF006MT – Lower Subalpine Moderately Cool and Moist Coniferous Pend Oreille-Kootenai Valleys western redcedar-western hemlock/bride's bonnet

B. Site resides in moraines, foothills and mountain slopes with soils that are very deep, well drained from parent material of glacial till. ... F044AF001MT – Lower Subalpine Moderately Warm and Moist Coniferous Pend Oreille-Kootenai Valleys grand fir/bride's bonnet

E. Site resides in foothills and mountain slopes with soils that are deep, somewhat excessively drained with parent materials of outwash or colluvium from argillite or quartzite. ... F044AF004MT – Montane Moderately Warm Dry Coniferous Pend Oreille-Kootenai Valleys Douglas fir/common snowberry

II. Site resides in the Tobacco Valley, the northern-most extent of this MLRA, on glaciofluvial landforms with generally eolian or alluvial parent material.

A. Site forested.

1 Sites reside on dune, outwash terraces with low slopes with soils that are very deep, well drained with parent material of eolian sand and textures are sandy. ... F044AH001MT – Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys

2 Site resides on drumlins, ground moraines and mountain slopes with soils that are very deep, well drained with parent materials of glacial till. ... F044AH003MT – Montane Moderately Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys

3 Site resides on drainageways and swales with soils that are very deep, and somewhat poorly to very poorly drained. ... F044AH002MT – Montane Wet Cool Coniferous Seeley, Swan, Flathead and Tobacco Valleys

B. Site non-forested.

1 Site is a closed depression with run-in. ... R044AH008MT – Pothole Seeley, Swan, Flathead and Tobacco Valleys

2 Seasonal high water table < 40" from ground surface; Soil organic (organic surface > 8" thick).

- i. Site resides in a basin. ... R044AH004MT – Montane Rich to Intermediate Basin Plate Type Fen Seeley, Swan, Flathead and Tobacco Valleys
- ii. Site resides on a slope (even very low slopes). ... R044AH005MT – Montane Intermediate Flow Through Type Fen Seeley, Swan, Flathead and Tobacco Valleys

3 Seasonal water table < 12" and Soil not organic. ... R044AH003MT – Wet Meadow Seeley, Swan, Flathead and Tobacco Valleys

4 Site does not have seasonal water table.

i. Soils skeletal.

a. Soil loamy-skeletal or clayey-skeletal and not strongly or violently effervescent within surface mineral 4"

- 1) Slope < 15%. ... R044AH036MT – Droughty Seeley, Swan, Flathead and Tobacco Valleys
- 2) Slopes >15%. ... R044AH038MT – Droughty Steep Seeley, Swan, Flathead and Tobacco Valleys

b. Sandy-skeletal within 10-20" of soil surface & typically consists of gravels and/or cobbles and . Not strongly or violently effervescent within surface mineral 4". ... R044AH134MT – Shallow to Gravel Seeley, Swan, Flathead and Tobacco Valleys

ii. Soils not skeletal.

a. Clay content is < 32% in surface mineral 4" and argillic horizon, if present, has < 35% clay of mineral soil (ribbon < 2" long), Loamy and slopes less than 15%. ... R044AH032MT – Loamy Seeley, Swan, Flathead and Tobacco Valleys

b. Slope ≥15% and mollic epipedon present, clay content is < 32% (ribbon < 2" long) in surface mineral 4". ... R044AH040MT – Loamy Steep Seeley, Swan, Flathead and Tobacco Valleys

III. Site is non-forested and resides in the 10-14" or 14-19" precipitation zone.

A. Site is non-forested and resides in the 10-14" precipitation range.

1 Soils shallow.

i. Soil not skeletal and clay content < 32% in surface mineral 4" (able to make a ribbon < 2" long) and soil texture within surface mineral 4" is typified by loam, clay loam, or silt loam. ... R044AA136MT – Shallow Loamy (Swlo) LRU 44A-A

2 Soils moderately deep to very deep.

i. Soils skeletal.

a. Soil sandy-skeletal, sandy-skeletal within 10" of soil surface. ... R044AA020MT – Gravelly (Gr) LRU 44A-A

b. Soil loamy-skeletal or clayey-skeletal.

- 1) Not strongly or violently effervescent within surface mineral 4"; Slope < 15%. ... R044AA036MT – Droughty (Dr) LRU 44A-A
- 2) Not strongly or violently effervescent within surface mineral 4"; Slope ≥ 15%. ... R044AA038MT – Droughty Steep (Drstp) LRU 44A-A

ii. Soils not skeletal.

a. Not strongly or violently effervescent in surface mineral 4"; Slope < 15%.

- 1) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long) and Soil 32% to 45% clay within surface mineral 4". ... R044AA001MT – Clayey (Cy) LRU 44A-A
- 2) Clay content is < 32% in surface mineral 4" and Slope < 15% and argillic horizon, if present, has < 35% clay of mineral soil (ribbon < 2" long). ... R044AA032MT – Loamy (Lo) LRU 44A-A

b) Slope ≥15% and mollic epipedon not present, clay content > 32% (ribbon > 2") in surface mineral 4". ... R044AA161MT – Thin Clayey (Tcy) LRU 44A-A

c) Mollic epipedon not present, clay content < 32% (ribbon < 2") in surface mineral 4". ... R044AA162MT – Thin Loamy (Tlo) LRU 44A-A

B. Site is non-forested and resides in the 14-19" precipitation range.

1 Soils moderately deep, deep, or very deep ( $\geq 20$ " deep to bedrock, lithic, or paralithic root restrictive layer).

i. Soil skeletal to within 20" of soil surface (averages  $> 35\%$  rock fragments in the 10"-20" layer).

a) Soil sandy-skeletal and not strongly or violently effervescent within surface mineral 4". ...

R044AB134MT – Shallow To Gravel (Swgr) LRU 44A-B

b) Soil loamy-skeletal or clayey-skeletal.

1) Slope  $< 15\%$ . ... R044AB036MT – Droughty (Dr) LRU 44A-B

2) Slope  $> 15\%$ . ... R044AB038MT – Droughty Steep (Drstp) LRU 44A-B

c. Sandy-skeletal within 10" of soil surface. ... R044AB020MT – Gravelly (Gr) LRU 44A-B

ii. Soils not skeletal.

a) Not strongly or violently effervescent in surface mineral 4" and not sandy textures.

1) Slope  $< 15\%$ .

i) Not sandy soil textures, slope  $< 15\%$ , clay content is  $< 32\%$  in surface mineral 4" and any argillic horizon in surface 20" with  $> 35\%$  clay (ribbon  $> 2$ " long). ... R044AB033MT – Loamy Argillic (Loa) LRU 44A-B

ii) Clay content is  $< 32\%$  in surface mineral 4" and argillic horizon, if present, has  $< 35\%$  clay of mineral soil (ribbon  $< 2$ " long). ... R044AB032MT – Loamy (Lo) LRU 44A-B

2) Slope  $> 15\%$ .

(i) Mollic epipedon not present.

(2) Mollic epipedon not present and clay content  $< 32\%$  (ribbon  $< 2$ ") in surface mineral 4".

... R044AB162MT – Thin Loamy (Tlo) LRU 44A-B

(ii) Mollic epipedon present; Slope  $\geq 15\%$  and mollic epipedon present, clay content is  $< 32\%$  (ribbon  $< 2$ " long) in surface mineral 4". ... R044AB040MT – Loamy Steep (Lostp) LRU 44A-B

b) Sandy soil texture, coarse sandy loam to fine sandy loam texture within surface mineral 4" and argillic horizon, if present, has  $< 20\%$  clay. ... R044AB110MT – Sandy (Sy) LRU 44A-B

IV. Site is not captured in the above subsections of this key.

A. Site forested.

1 Site in moist conditions (24-34" mean annual precipitation, 43-45 degrees F mean annual temperature, 70-105 days frost free, 2200-3000 feet elevation).

i Soils ashy. ... F044AP901MT – Ashy Cool Moist Woodland Group

ii Soils not ashy. ... F044AP904MT – Upland Cool Moist Woodland Group

2 Site is not in moist conditions and resides in moderate elevations.

i Site in moderate to high elevations; cool conditions (18-25" mean annual precipitation, 43-45 degrees F mean annual temperature, 90-105 days frost free, 2300-3400 feet elevation). ... F044AP903MT – Upland Cool Woodland Group

3 Site in low elevations; warm conditions (13-22" mean annual precipitation, 39-45 degrees F mean annual temperature, 60-100 days frost free, 1300-5500 feet elevation).

i. Site with shallow soils (16-22" mean annual precipitation, 39-46 degrees F mean annual temperature, 60-100 days frost free, 2200-5500 feet elevation). ... F044AP902MT – Shallow Warm Woodland Group

ii. Site does not have shallow soils (13-19" mean annual precipitation, 39-45 degrees mean annual temperature, 80-100 days frost free, 1300-4600 feet elevation). ... F044AP905MT – Upland Warm Woodland Group

B. Site not forested.

1 Site located in a floodplain (12-14" mean annual precipitation, 41-45 degrees F mean annual temperature, 90-115 days frost free, 0-2 percent slopes, 3100-3800 feet elevation). ... R044AP801MT – Bottomland Group

2 Site not located in a floodplain; Site receives additional effective moisture.

i. Soils saline-sodic within 20" of surface (12-14" mean annual precipitation, 39-45 degrees F mean annual temperature, 90-115 days frost free, 0-2 percent slopes, 3400-4100 feet elevation). ...

R044AP807MT – Subirrigated Saline-Sodic Grassland Group

ii. Soils not saline-sodic (high water table within 100 cm of surface, 13-17" mean annual precipitation, 39-45 degree mean annual temperature, 85-105 days frost free, 0-4 percent slopes, 3300-4300 feet elevation). ... R044AP806MT – Subirrigated Grassland Group

3 Site not located in a floodplain; Site does not receive additional effective moisture.

i. Soils saline-sodic within 20" of surface.

a. Vegetation dominated by shrubs, (10-14" mean annual precipitation, 39-45 degree mean annual temperature, 105-120 days frost free, 2-15 percent slopes, 2500-3000 feet elevation). ...

R044AP804MT – Saline-Sodic Shrubland Group

b. Vegetation dominated by grasses - Saline-Sodic Grassland 12-16" mean annual precipitation, 39-45 degrees F mean annual temperature, 105-120 days frost free, 2-5 percent slopes, 2600-3300 feet elevation). ... R044AP803MT – Saline-Sodic Grassland Group

ii. Soils not saline-sodic within 20" of surface.

c. Soils Shallow (16-22" mean annual precipitation, 39-45 degrees F mean annual temperature, 70-100 days frost free, 15-35 percent slopes, 3500-5500 feet elevation). ... R044AP805MT – Shallow Grassland Group

d. Soils not shallow.

1) Vegetation dominated by sagebrush (12-16" mean annual precipitation, 39-45 degrees mean annual temperature, 100-120 days frost free, 7-15 percent slopes, 2500-3200 feet elevation). ...

R044AP809MT – Upland Sagebrush Shrubland Group

2) Vegetation dominated by grasses (14-22" mean annual precipitation, 39-45 degrees F mean annual temperature, 95-120 days frost free, 12-35 percent slopes, 3000-4000 feet elevation). ...

R044AP808MT – Upland Grassland Group