Major Land Resource Area 044B
Central Rocky Mountain Valleys

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Ecological site keys

Key to the Keys

I. Ecological Site Groups rather than more specific Ecological Site Descriptions. ... Key 2 – 44B PES Groupings Key

II. Ecological Site Descriptions rather than the more broad-based and general descriptions of Ecological Site Groups.

A. LRU 1 Subset A, Lower precipitation 9-14 inch zone ... Key 3 – MRLA 44B Key LRU 01 Subset A

B. LRU 1 Subset B, higher precipitation

1 LRU 1 Subset B, higher precipitation 15-19 inch zone ... Key 4 – MLRA 44B Key LRU 01 Subset B

2 LRU 1 Subset C, higher precipitation 20-24 inch zone ... Key 5 – LRU 01 Subset C

44B PES Groupings Key

A Rangeland Groups

1 Significant additional water influences community.

i. Soils are associated with a stream or live water and are in a riparian or lowland situation. ... R044BP801MT – Bottomland

ii. Not in a riparian situation, but has a water table present.

a. Soil saline or sodic (EC > 7 or SAR > 12 within surface 18cm)

1) Community is Grass and grasslike dominated, water table within rooting depth of herbaceous species, limiting woody vegetation (less than 100 cm from the ground surface for part of the growing season). ... R044BP813MT – Subirrigated Saline-Sodic Grassland

2) Community is shrub dominated, water table within rooting depth of herbaceous species, limiting woody vegetation (greater than 100 cm from the ground surface for part of the growing season). ... R044BP814MT – Subirrigated Saline-Sodic Shrubland

b. Soils are not saline or sodic

1) Community is Grass and grasslike dominated, water table within rooting depth of herbaceous species, limiting woody vegetation (less than 100 cm from the ground surface for part of the growing season). ... R044BP815MT – Subirrigated Grassland

2) Community is shrub dominated, water table within rooting depth of herbaceous species, limiting woody vegetation (greater than 100 cm from the ground surface for part of the growing season). ... R044BP817MT – Subirrigated Shrubland

2 Not water controlled - upland

i Soils influenced by chemistry within the upper soil profile.

a. Soil saline or sodic (EC > 7 or SAR > 12 within surface 18cm)

1) Dominated by grasses and grasslike species - Grassland ... R044BP807MT – Saline-Sodic Grassland

2) Dominated by shrubs ... R044BP808MT – Saline-Sodic Sagebrush Shrubland

b. Soil is strongly or violently effervescent (CaCO3 > 14%) in surface mineral 18cm – Limy

1) Dominated by grasses and grasslike species - Grassland ... R044BP804MT – Limy Grassland

2) Dominated by shrubs

a) Sagebrush is the dominant shrub - Sagebrush Shrubland ... R044BP805MT – Limy Sagebrush Shrubland

b) All other shrubs - Shrubland ... R044BP806MT – Limy Shrubland

ii Soils not influence by chemistry

A) Soils are shallow (less than 20 inches to a restrictive layer, root limiting layer, or bedrock)

1) Dominated by grasses and grasslike species - Grassland ... R044BP810MT – Shallow Grassland

2) Dominated by shrubs

a) Sagebrush is the dominant shrub - Sagebrush Shrubland ... R044BP811MT – Shallow Sagebrush Shrubland

b) All other shrubs - Shrubland ... R044BP812MT – Shallow Shrubland

B) Soils are not shallow

A) Soils contain a high amount (greater than 35%) rock fragments on the soil surface.

a) Dominated by grasses and grasslike species - Grassland ... R044BP802MT – Rubbly Grassland

b) Sagebrush is the dominant shrub - Sagebrush Shrubland ... R044BP803MT – Rubbly Sagebrush Shrubland

B) Soils do not contain a high amount of rock fragments on the soil surface.

a) Dominated by grasses and grasslike species - Grassland ... R044BP818MT – Upland Grassland

b) Dominated by shrubs

(1) Sagebrush is the dominant shrub - Sagebrush Shrubland ... R044BP819MT – Upland Sagebrush Shrubland

(2) All other shrubs - Shrubland ... R044BP820MT – Upland Shrubland

B Forestland Groups

1 Deciduous dominated community, dominantly Aspen - Aspen Woodland ... F044BP908MT – Upland Aspen Woodland

2 All other Forest Types

a Warmer temperatures, generally related to lower elevations, south and west aspects - Warm Woodland

i Soils are shallow (less than 20 inches to a restrictive layer, root limiting layer, or bedrock) ... F044BP904MT – Shallow Warm Woodland

ii Soils are not shallow

1) Soil is strongly or violently effervescent (CaCO3 > 14%) in surface mineral 18cm – Limy ... F044BP913MT – Limy Warm Woodland

2) Soils are not strong to violently effervescent ... F044BP911MT – Upland Warm Woodland

b Cooler temperatures with higher elevations

i Coldest and highest elevation, just below timberline or on north and east aspects -Cold Woodland

1) Additional moisture available, meadows or snow-catch areas - Cold-Moist Woodland ... F044BP906MT – Subirrigated Cold Woodland

2) No additional moisture - Cold Woodland

a) Soil is strongly or violently effervescent (CaCO3 > 14%) in surface mineral 18cm – Limy ... F044BP902MT – Shallow Cold Woodland

b) Soil is not strongly or violently effervescent ... F044BP909MT – Upland Cold Woodland

ii Cool temperatures, mid-elevation range, and variable aspect.

A) Additional moisture available, meadows or snow-catch areas - Cool-Moist Woodland ... F044BP907MT – Subirrigated Cool Woodland

B) No additional moisture - Cool Woodland

a) Soils are shallow (less than 20 inches to a restrictive layer, root limiting layer, or bedrock) ... F044BP903MT – Shallow Cool Woodland

b) Soils are not shallow

(1) Soil is strongly or violently effervescent ($CaCO_3$ > 14%) in surface mineral 18cm – Limy ... F044BP912MT – Limy Cool Woodland

(2) Soil is not strongly or violently effervescent

(a) Soils contain a high amount (greater than 35%) rock fragments on the soil surface. ... F044BP901MT – Rubbly Cool Woodland

(b) Soils do not have a high amount of rock fragments on the surface. ... F044BP910MT – Upland Cool Woodland

MRLA 44B Key LRU 01 Subset A

I. Site receives additional effective moisture.

A. Soil Saline (EC>4 within surface 4") and water table 24-40" from ground surface; salt tolerant plants dominate site -- Saline Subirrigated (SSb)

B. Soil Not Saline

1 Seasonal high water table ≥ 40" from ground surface; site regularly receives more than normal soil moisture from run-in and stream overflow -- Overflow (Ov) ... EX044B01A060 – Overflow (Ov) 10-14" PZ Frigid

2 Seasonal high water table < 40" from ground surface

i. Soil Organic (Organic surface > 8 inches thick) -- Wet Meadow, Organic (WMO)

ii. Soil Not Organic

a. Site located in Floodplain

1) Seasonal high water table < 24"

a) Seasonal high water table <12" -- Riparian Wet Meadow (RWM)

b) Seasonal high water table 12" to 24" -- Riparian Meadow (RM) ... EX044B01Y080 – Riparian Meadow (RM) LRU 01 Subset Y

2) Seasonal high water table 24" to 40" -- Riparian Subirrigated (RSb) ... EX044B01Y081 – Riparian Subirrigated (RSb) LRU 01 Subset Y

b. Site not located in Floodplain

1) Seasonal high water table < 24"

a) Seasonal high water table <12" -- Wet Meadow (WM)

b) Seasonal high water table 12" to 24" -- Meadow (M)

2) Seasonal high water table 24" to 40" -- Subirrigated

II. Site does not receive additional effective moisture

A. Soil Saline or Saline-Sodic within surface 20" or soils with natric or relic natric horizons

1 No columnar structure; site dominated by salt tolerant plants -- Saline Upland (SU) ... EX044B01A093 – Saline Upland (SU) 10-14" PZ Frigid

2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface

i. Less than 4" of soil surface over clay layer (evidence of columnar structure) -- Thin Claypan (TCp) ... EX044B01A165 – Thin Claypan (TCp) 10-14" PZ Frigid

ii. Soil has 4" to 8" of surface over clay layer (evidence of columnar structure) -- Claypan (Cp) ...

EX044B01A006 – Claypan (Cp) 10-14" PZ Frigid

B. Soil NOT Saline or Saline-Sodi

1 Soil Shallow (10"-20" deep to bedrock, lithic, or paralithic root restrictive layer)

i. Soil is strongly or violently effervescent (calcareous) in surface mineral 4"; lime concentrations often increase with depth

a. Soil skeletal (≥35% rock fragment in the 10-20" layer) -- Shallow Limy Droughty (SwLyDr) ... EX044B01A135 – Shallow Limy Droughty (SwLyDr) 10-14" PZ Frigid

b. Soil NOT skeletal (<35% rock fragment in 10-20" layer) -- Shallow Limy (SwLy) ... EX044B01A132 – Shallow Limy (SwLy) 10-14" PZ Frigid

ii. Soil NOT strongly or violently effervescent in surface mineral 4"

a. Soil Skeletal (≥35% rock fragments in 10-20" layer) -- Shallow Droughty (SwDr) ... EX044B01A138 – Shallow Droughty (SwDr) 10-14" PZ Frigid

b. Soil NOT skeletal (<35% rock fragments in 10-20" layer)

1) Soil clay content ≤ 32% in surface mineral 4" (soil ribbon ≤ 2") -- Shallow Loamy (SwLo) ... EX044B01A136 – Shallow Loamy (SwLo) 10-14" PZ Frigid

2) Soil clay content >32% in surface mineral 4" (ribbon >2") ... EX044B01A131 – Shallow Clay (SwC) 10-14" PZ Frigid

2 Soils moderately deep, deep, or very deep (≥ 20" deep to bedrock, lithic, or paralithic root restrictive layer

i. Soil skeletal (≥35% rock fragment in the 10-20" layer)

a. Soil Sandy-Skeletal

1) Soil sandy-skeletal within 10" of soil surface -- Gravelly (Gr) ... EX044B01A020 – Gravelly (Gr) 10-14" PZ Frigid

2) Soil sandy-skeletal within 10-20" of soil surface

a) Soil strongly or violently effervescent within surface mineral 4" -- Shallow to Gravel, Limy (SwGrLy) ... EX044B01A137 – Shallow to Gravel Limy (SwGrLy) 10-14" PZ Frigid

b) Soil NOT strongly or violently effervescent within surface mineral 4" -- Shallow to Gravel (SwGr) ... EX044B01A134 – Shallow to Gravel (SwGr) 10-14" PZ Frigid

b. Soil loamy-skeletal or clayey-skeletal

1) Soil strongly or violently effervescent within top 4" -- Limy Droughty (LyDr) ... EX044B01A031 – Limy Droughty (LyDr) 10-14" PZ Frigid

2) Soil NOT strongly or violently effervescent within surface mineral 4"

a) Slope < 15% -- Droughty (Dr) ... EX044B01A036 – Droughty (Dr) 10-14" PZ Frigid

b) Slope ≥ 15% -- Droughty Steep (DrStp) ... EX044B01A038 – Droughty Steep (DrStp) 10-14" PZ Frigid

ii. Soil NOT skeletal (<35% rock fragment in 10-20" layer)

a. Soil strongly or violently effervescent in surface mineral 4" -- Limy (Ly) ... EX044B01A030 – Limy (Ly) 10-14" PZ Frigid

b. Soil NOT strongly or violently effervescent in surface mineral 4"

1) Soil Sand or Loamy Sand texture within surface mineral 4" -- Sands (Sa)

2) Soil NOT sand or loamy sand texture

a) Slope < 15%

(1) Soil Coarse sandy loam to fine sandy loam texture within surface mineral 4" -- Sandy (Sy) ... EX044B01A110 – Sandy (Sy) 10-14" PZ Frigid

(2) Soil texture NOT sandy loam to fine sandy loam

(a) Soil Clay content >32% in surface mineral 4" (ribbon ≥ 2")

(1) Clay content >32%-45% within surface mineral 4" -- Clayey (Cy) ... EX044B01A001 – Clayey (Cy) 10-14" PZ Frigid

(2) Clay >45% within surface mineral 2" -- Dense Clay Nonsodic (DCX)

(b) Soil Clay content ≤32% in surface mineral 4"

(1) Any Argillic horizon in surface 20" with >32% clay (ribbon ≥2") -- Loamy Argillic (LoA)

(2) Argillic horizon, if present in surface 20", has ≤ 32% clay (ribbon <2") -- Loamy (Lo) ... EX044B01A032 – Loamy (Lo) 10-14" PZ Frigid

b) Slope ≥ 15%

(1) Mollic epipedon present

(a) Clay content is >32% in surface mineral 4" (ribbon ≥ 2") -- Clayey Steep (CyStp)

(b) Clay content is ≤ 32% in surface mineral 4" (ribbon < 2") -- Loamy Steep (LoStp) ... EX044B01A040 – Loamy Steep (LoStp) 10-14" PZ Frigid

(2) Mollic epipedon NOT present

(a) Coarse sandy loam to fine sandy loame texture -- Thin Sandy (TSy)

(b) Soils NOT sandy loam or fine sandy loam

(1) Clay content is ≤ 32% in surface mineral 4" (ribbon < 2") -- Thin Loamy (TLo)

(2) Clay content is >32% in surface mineral 4" (ribbon ≥ 2") -- Thin Clayey (TCy)

MLRA 44B Key LRU 01 Subset B

I. Site receives additional effective moisture.

A. Soil Saline (EC>4 within surface 4") and water table 24-40" from ground surface; salt tolerant plants dominate site -- Saline Subirrigated (SSb)

B. Soil Not Saline

1 Seasonal high water table ≥ 40" from ground surface; site regularly receives more than normal soil moisture from run-in and stream overflow ... EX044B01C060 – Overflow (Ov) 15-19" PZ Frigid North

2 Seasonal high water table < 40" from ground surface

i. Soil Organic (Organic surface > 8 inches thick) -- Wet Meadow, Organic (WMO)

ii. Soil Not Organic

a. Site located in Floodplain

1) Seasonal high water table < 24"

a) Seasonal high water table <12" -- Riparian Wet Meadow (RWM)

b) Seasonal high water table 12" to 24" ... EX044B01Y080 – Riparian Meadow (RM) LRU 01 Subset Y

2) Seasonal high water table 24" to 40" ... EX044B01Y081 – Riparian Subirrigated (RSb) LRU 01 Subset Y

b. Site not located in Floodplain

1) Seasonal high water table < 24"

a) Seasonal high water table <12" -- Wet Meadow (WM)

b) Seasonal high water table 12" to 24" -- Meadow (M)

2) Seasonal high water table ≥24"

a) Seasonal high water table >40" ... EX044B01Y200 – Stream Terrace LRU 44B-Y

b) Seasonal high water table 24" to 40" -- Subirrigated (Sb)

II. Site does not receive additional effective moisture

A. Soil Saline or Saline-Sodic within surface 20" or soils with natric or relic natric horizons

1 No columnar structure; site dominated by salt tolerant plants -- Saline Upland

2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface

i. Less than 4" of soil surface over clay layer (evidence of columnar structure) -- Thin Claypan

ii. Soil has 4" to 8" of surface over clay layer (evidence of columnar structure) -- Claypan

B. Soil NOT Saline or Saline-Sodic

1 Soil Shallow (10"-20" deep to bedrock, lithic, or paralithic root restrictive layer)

i. Soil is strongly or violently effervescent (calcareous) in surface mineral 4"; lime concentrations often increase with depth

c. Soil skeletal (<35% rock fragment in 10-20" layer) -- Shallow Limy Droughty (SwLyDr)

b. Soil NOT skeletal (<35% rock fragment in 10-20" layer) -- Shallow Limy (SwLy)

ii. Soil NOT strongly or violently effervescent in surface mineral 4"

a. Soil Skeletal (≥35% rock fragments in 10-20" layer) ... EX044B01C138 – Shallow Droughty (SwDr) 15-19" PZ Frigid North

b. Soil NOT skeletal (<35% rock fragments in 10-20" layer)

1) Soil clay content ≤ 32% in surface mineral 4" (soil ribbon ≤ 2") ... EX044B01C136 – Shallow Loamy (SwLo) 15-19" PZ Frigid North

2) Soil clay content >32% in surface mineral 4" (ribbon >2") ... EX044B01C131 – Shallow Clay (SwC) 15-19" PZ Frigid North

2 Soils moderately deep, deep, or very deep (≥ 20" deep to bedrock, lithic, or paralithic root restrictive layer

i. Soil skeletal (≥35% rock fragment in the 10-20" layer)

a. Soil Sandy-Skeletal

1) Soil sandy-skeletal within 10" of soil surface -- Gravelly (Gr)

2) Soil sandy-skeletal within 10-20" of soil surface

a) Soil strongly or violently effervescent within surface mineral 4" -- Shallow to Gravel, Limy (SwGrLy)

b) Soil NOT strongly or violently effervescent within surface mineral 4" -- Shallow to Gravel (SwGr)

b. Soil loamy-skeletal or clayey-skeletal

1) Soil strongly or violently effervescent within top 4" ... EX044B01C031 – Limy Droughty (LyDr) 15-19" PZ Frigid North

2) Soil NOT strongly or violently effervescent within surface mineral 4"

a) Slope < 15% ... EX044B01C036 – Droughty (Dr) 15-19" PZ Frigid North

b) Slope ≥ 15% ... EX044B01C038 – Droughty Steep (DrStp) 15-19" PZ Frigid North

ii. Soil NOT skeletal (<35% rock fragment in 10-20" layer)

a. Soil strongly or violently effervescent in surface mineral 4" ... EX044B01C030 – Limy (Ly) 15-19" PZ Frigid North

b. Soil NOT strongly or violently effervescent in surface mineral 4" -- Sands (Sa)

1) Soil Sand or Loamy Sand texture within surface mineral 4"

2) Soil NOT sand or loamy sand texture

a) Slope < 15%

(1) Soil Coarse sandy loam to fine sandy loam texture within surface mineral 4" -- Sandy (Sy)

(2) Soil texture NOT sandy loam to fine sandy loam

(a) Soil Clay content >32% in surface mineral 4" (ribbon ≥ 2")

(1) Clay content >32%-45% within surface mineral 4" -- Clayey (Cy)

(2) Clay >45% within surface mineral 2" -- Dense Clay Nonsodic (DCX)

(b) Soil Clay content ≤32% in surface mineral 4" - Loamy Argillic (LoA)

(1) Any Argillic horizon in surface 20" with >32% clay (ribbon ≥2")

(2) Argillic horizon, if present in surface 20", has ≤ 32% clay (ribbon <2") ...

EX044B01C032 – Loamy (Lo) 15-19" PZ Frigid North

b) Slope ≥ 15%

(1) Mollic epipedon present

(a) Clay content is >32% in surface mineral 4" (ribbon ≥ 2") -- Clayey Steep (CyStp)

(b) Clay content is ≤ 32% in surface mineral 4" (ribbon < 2") ... EX044B01C040 – Loamy Steep (LoStp) 15-19" PZ Frigid North

(2) Mollic epipedon NOT present

(a) Coarse sandy loam to fine sandy loame texture -- Thin Sandy (TSy)

(b) Soils NOT sandy loam or fine sandy loam

(1) Clay content is ≤ 32% in surface mineral 4" (ribbon < 2")-- Thin Loamy (TLo)

(2) Clay content is >32% in surface mineral 4" (ribbon ≥ 2") -- Thin Clayey (TCy)

LRU 01 Subset C

I. Not included in any other Key, Is in higher precipitation zones and is less than 35% clay and greater than 18% Clay, No argillic horizon, and less than 15% slope. ... EX044B01B032 – Loamy 15-19" PZ Frigid