

# Major Land Resource Area 025X

## Owyhee High Plateau

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### Ecological site keys

#### Dissected low lava plateau

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##### I. Soil characterized by a mollic epipedon

###### A. Soil greater than 100cm.

- 1 Soil very deep, greater than 150cm, water table present between 100-152cm, evidence of redox features present in the soil profile. ... R025XY028ID – LOAMY BOTTOM 12-16
2. Soil greater than 150cm, no water table present, no evidence of redox features in the soil profile.
  - i. Site is on drainageway landforms. ... R025XY062OR – SILTY SWALE 8-11 PZ
  - ii. Site is on lava plateau landforms. ... R025XY066OR – SHRUBBY LOAM 11-13 PZ

###### B. Soil 50 to 100cm

###### 1 Slopes greater than 15 percent

- i. south aspect, mollic less than 50cm thick
  - a. Argillic horizon starts at 15cm or less. ... R025XY021OR – CLAYPAN SOUTH SLOPES 11-13 PZ
  - b. Argillic horizon starts at a depth greater than 15cm. ... R025XY020OR – SOUTH SLOPES 11-13 PZ
- ii. North aspect, mollic greater than 50cm thick ... R025XY032OR – NORTH SLOPES 11-13 PZ

###### 2 Slopes less than 15 percent

- i. Mollic epipedon is greater than 25cm thick. ... R025XY012OR – LOAMY 11-13 PZ
- ii. Mollic epipedon is less than 25cm thick. ... R025XY016OR – SHALLOW CLAYPAN 11-13 PZ

##### II. Soil characterized by an ochric epipedon.

###### A. Soil greater than 150cm deep, characterized by a aquic soil moisture regime. ... R025XY049NV – WET CLAY BASIN

###### B. Soils less than 100cm deep

###### 1 soil less than 50cm deep

- i. Soil has an alluvial parent material. The soil restriction is a silica cemented layer; duripan. ... R025XY020ID – LOAMY 7-10
- ii. Soil parent material is loess and residuum. Soil restriction is lithic bedrock. ... R025XY011OR – VERY SHALLOW 8-13 PZ

###### 2 Soil 50-100cm deep

- i. less than 35 percent clay in the particle size control section ... R025XY019ID – LOAMY 10-13
- ii. greater than 35 percent clay particle size control section
  - a. This site has greater than 15 percent rock fragments. ... R025XY048ID – SHALLOW CLAYPAN 11-13
  - b. This site has less than 15 percent rock fragments.
    - 1) Depth to duripan or bedrock is 70 to 100 cm. ... R025XY010OR – LOAMY 8-11 PZ
    - 2) Depth to bedrock or duripan is 51 to 70 cm. ... R025XY061OR – SHALLOW CLAYPAN 8-11 PZ

## Dissected High Lava Plateau

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### II. Soil characterized by a mollic epipedon

#### A. Soil 50-100cm deep

##### 1 Depth to clay increase less than 15cm from soil surface

- i. Soil has mollic epipedon 25 cms thick or less (value and chroma 3 or less). ... R025XY018OR – SHALLOW CLAYPAN 13-16 PZ
- ii. Soil has mollic epipedon greater than 25 cms thick (value and chroma 3 or less). ... R025XY032NV – CLAYPAN 16+ P.Z.

##### 2 Depth to clay increase greater than 15cm from the soil surface

- i. Soil characterized by a calcic horizon below 50cm ... R025XY043ID – LOAMY 11-13
- ii. soil characterized by a mollic epipedon greater than 40cm thick and volcanic glass greater than 5 percent of sand and coarse silt fraction in A and Bt1 (vitric feature). Calcic horizon absent.
  - a. Slopes are less than 15 percent
    - 1) Restriction kind is typically paralithic bedrock ... R025XY065OR – SHRUBBY LOAM 13-16 PZ
    - 2) Restriction kind is typically lithic bedrock. ... R025XY014OR – LOAMY 13-16 PZ
  - b. Slopes are greater than 15 percent.
    - 1) Aspect is North. ... R025XY038OR – CLAYPAN NORTH SLOPES 11-13 PZ
    - 2) Aspect is South. ... R025XY028OR – SHRUBBY SOUTH SLOPES 13-16 PZ
- iii. Soil characterized by a mollic epipedon less than 50cm thick.
  - a. Soil is characterized by frigid temperature regime.
    - 1) Soil is characterized by a xeric moisture regime. ... R025XY024ID – LOAMY 12-16
    - 2) Soil is characterized by an aridic moisture regime. ... R025XY082NV – STONY LOAM 12-14 P.Z.
  - b. Soil is characterized by mesic temperature regime. ... R025XY003ID – LOAMY 12-16

#### B. Soil 100cm deep or greater

##### 1 occurs on stream terraces, flood plains, inset fans and/or valley floors (seasonal water table present)

- i. seasonal high-water table within 25 to 50cm from the soil surface ... R025XY046ID – MEADOW
- ii. seasonal high-water table within 50 to 150cm from soil surface ... R025XY039ID – DRY MEADOW

##### 2 occurs on high stream terraces, hills and plateaus (seasonal water table absent)

- i. site is on stream terraces, escarpments, plateaus or mountains soils are characterized by mollic epipedon greater than 50cm thick
  - a. Soils are somewhat excessively to excessively drained. ... R025XY010UT – Riparian (Narrowleaf Cottonwood)
  - b. soils are somewhat poorly to well drained
    - 1) site is on stream terraces ... R025XY028ID – LOAMY BOTTOM 12-16
    - 2) site is on plateaus and mountains ... R025XY056NV – LOAMY 14-16 P.Z.
- ii. occurs on hills and plateaus, soils are characterized by a mollic epipedon 35-50cm thick
  - a. slopes are greater than 30 percent ... R025XY008ID – NORTH SLOPE STONY 12-16
  - b. slopes are less than 30 percent ... R025XY011ID – LOAMY 13-16

#### C. Soils less than 50cms deep.

##### 1 Precipitation is greater than 14 inches. ... R025XY004ID – SHALLOW STONY 12-16

##### 2 Precipitation is less than 14 inches. ... R025XY022NV – COBBLY CLAYPAN 8-12 P.Z.

### III. Soil characterized by an ochric epipedon

#### B. Soils are greater than 50cms deep.

##### 1 Soil is poorly or very poorly drained.

- i. Soil temperature regime is frigid. ... R025XY035ID – CHURNING CLAY 12-16
- ii. Soil temperature regime is mesic. ... R025XY069NV – SUBIRRIGATED CLAY BASIN
- 2 Soil is well drained. Soil has less than 35 percent clay in the particle size control section.
  - i. Soils are 100-150cms deep.
    - a. soils have a high amount of volcanic glass; greater than 80 percent in all horizons. ... R025XY038ID – ASHY SOUTH SLOPE 10-16
    - b. soils have less than 80 percent volcanic glass in all horizons. ... R025XY006ID – SOUTH SLOPE STONY 10-13
  - ii. Soils are 50 to 100 cms deep. ... R025XY041ID – GRAVELLY 10-12
- 3 Soil is well drained. Soil has more than 35 percent clay in the particle size control section. ... R025XY014ID – CLAYEY 12-16
- C. Soil shallow or very shallow (less than 50cm deep)
  - 1 soil less than 20cm deep (very shallow), less than 35% clay particle size control section ... R025XY044ID – VERY SHALLOW STONY LOAM 10-14
  - 2 Soil 20 to 50cm deep (shallow)
    - i. Soil characterized by less than 35 percent rock fragments by volume (site dominated by early sagebrush) ... R025XY014ID – CLAYEY 12-16
    - ii. Soil characterized by greater than 35 percent rock fragments by volume (skeletal in the particle size control section)
      - a. Maximum clay content is typically 50 or less
        - 1) Surface texture is typically extremely rocky. ... R025XY084NV – SCABLAND 10-14 P.Z.
        - 2) surface texture is typically less than extremely rocky. ... R025XY010ID – CLAYPAN 12-16
      - b. Maximum clay content is typically greater than 50. ... R025XY063OR – SKELETAL CLAYPAN 11+ PZ
    - iii. Soil characterized by a calcic horizon or relatively high sodium absorption rate values (2 to 10 or greater). ... R025XY040ID – VERY SHALLOW STONY 8-12

## **Piedmont slope (Upper Humboldt Plains)**

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- I. Soil characterized by a mollic epipedon.
  - A. soil depth is less than 50 cm (shallow).
    - 2 moisture class xeric is bordering on (subclass) aridic. ... R025XY315UT – Upland Shallow Gravelly Loam (Thurber Needlegrass)
    - 3 Moisture class and subclass are both xeric.
      - ii. Soil at this site is lacking an O horizon (plant material) on the surface. ... R025XY007NV – GRAVELLY LOAM 12-16 P.Z.
      - i. Soil at this site has an Oi horizon on the surface (intermediately decomposed plant material).
        - a. Site is typically below elevations of 8000 feet. ... R025XY031NV – STONY MAHOGANY SAVANNA
        - b. Site is typically at elevations greater than 8000 feet. ... R025XY071NV – MAHOGANY SAVANNA 14-16 P.Z.
    - 4 Soil moisture class is aridic bordering on xeric (moisture subclass). ... R025XY046NV – FRACTURED STONY LOAM 14+ P.Z.
  - B. soil greater than 100cm deep (deep to very deep)
    - 1 Mollic epipedon less than 50cm thick, calcareous parent material
      - i. Soil characterized by greater than 35% rock fragments in the Particle Size Control Section.

- a. Soil is characterized by less than 35% clay in the particle size control section.
  - 1) This soil at this site has an Oi and Oe horizon (slightly and moderately decomposed plant material). ... R025XY030NV – MAHOGANY THICKET
  - 2) This soil of this site lacks significant plant material on the surface.
    - a) Calcium Carbonates percentage is 15 percent or less. ... R025XY036ID – SOUTH SLOPE LOAMY 12-16
    - b) Calcium Carbonate percentage is greater than 15. ... R025XY318UT – Upland Stony Loam (Black Sagebrush)
- b. Soil is characterized with more than 35% clay in the particle size control section. ... R025XY320UT – Upland Stony Clay (Low Sagebrush)
- ii. Soil is characterized by less than 35% rock fragments in the Particle Size Control Section. ... R025XY310UT – Upland Loam (Basin Big Sagebrush)

2 Mollic epipedon greater than 50cm thick.

- i. Soil well drained, not characterized by a seasonal high water table.
  - a. Site is on stream terraces, flood plains or drainageways. ... R025XY003NV – LOAMY BOTTOM 8-14 P.Z.
  - b. Site is on mountain slopes, hillslopes and escarpments.
    - 1) Site is in a water receiving position on the landscape.
      - a) Soil typically has greater than 35 percent clay in the particle size control section. ... R025XY047NV – CLAY SEEP
      - b) Soil typically has less than 35 percent clay in the particle size control section. ... R025XY001ID – ASPEN THICKET
    - 2) Site is on a water shedding position on the landscape.
      - a) Mean Annual Precipitation is typically 16 inches or less. Site is exclusive to north slopes. ... R025XY023ID – NORTH SLOPE LOAMY 16-22
      - b) Mean annual precipitation is typically greater than 16 inches. Site is on all aspects.
        - (1) Maximum clay content is typically below 30 percent.
          - (a) Rock fragments in the particle size control section are less than 35 percent. ... R025XY022ID – LOAMY 16-22
          - (b) Rock fragments in the particle size control section are greater than 35 percent. ... R025XY056NV – LOAMY 14-16 P.Z.
        - (2) Maximum clay content is typically greater than 30 percent but less than 35 percent. ... R025XY029NV – DEEP LOAMY 14+ P.Z.
- ii. Soil poorly drained, characterized by a seasonal high water table within 150cm of the soil surface.
  - a. Seasonal high-water table with 15 to 60cm from the soil surface. Willow is significant part of the plant community. ... R025XY001NV – MOIST FLOODPLAIN
  - b. Seasonal high-water table within 15 to 60cm from the soil surface. Plant community dominated by grass/grass-like. Willow is not a significant part of the plant community. ... R025XY005NV – WET MEADOW
  - c. Seasonal high-water table within 50 to 150cm from the soil surface. Plant community dominated by grass/grass-like. ... R025XY006NV – DRY MEADOW

C. The soil depth is 50 to 100 cm.

- 1 Depth of mollic epipedon is from surface to less than 50 cm. Mean Annual Precipitation is 12 inches or less.
  - i. Site is on north aspects only. ... R025XY034OR – SHRUBBY NORTH SLOPES 13-16 PZ
  - ii. Site is on all aspects.
    - a. Soil typically has 5 or less percent rocks on the surface. ... R025XY064OR – SHRUBBY SHALLOW CLAYPAN 13-16 PZ

b. Soil typically has more than 5 percent rocks on the surface. ... R025XY014NV – LOAMY 10-12 P.Z.

2 Depth of mollic epipedon is from surface to near 50 cm or greater. Mean Annual Precipitation is typically 12 inches or more.

ii. Mean Annual Precipitation is typically less than 20 inches. Available Water Holding Capacity (AWC) is typically greater than 2 inches. ... R025XY027NV – LOAMY 12-14 P.Z.

iii. Mean Annual Precipitation is typically greater than 20 inches. ... R025XY030ID – MOUNTAIN BRUSH 18-22

## II. Soil characterized by an ochric epipedon

### A. restrictive layer less than 50cm from the soil surface (shallow rooting depth)

#### 1 less than 18 percent clay in the PSCS

i. soil vitrandic, characterized by greater than 15 percent ash through the soil profile or ashy soil textures throughout the soil profile ... R025XY007ID – ASH 10-14

ii. Soil not vitrandic, less than 15% ash throughout the soil profile. Carbonates disseminated and soil effervescent throughout the soil profile. ... R025XY025NV – CHALKY KNOLL

#### 2 greater than 18 percent clay in the particle size control section

##### i. 18 to 27% clay in the particle size control section

a. greater than 35% rock fragments, by volume, throughout the soil profile (soil skeletal), subsurface horizon cemented by silica (duripan) present between 36-50cm ... R025XY085NV – Juniper Savanna

b. subsurface horizon cemented by silica (duripan) present greater than 50cm from the soil surface, less than 35% rock fragments, by volume, throughout the soil profile, ... R025XY014NV – LOAMY 10-12 P.Z.

##### ii. greater than 27 percent clay in the particle size control section

a. between 27 to 35 percent clay particle size control section ... R025XY021NV – SHALLOW LOAM 8-12 P.Z.

b. greater than 35 percent clay in the particle size control section ... R025XY018NV – CLAYPAN 10-12 P.Z.

### B. restrictive layer between 50 to 100 cm from the soil surface (soil moderately deep)

#### 1 Soil temperature regime is typically mesic.

##### i. Soil is characterized by an ashy modifier.

a. The texture of the surface horizon is loamy fine sand. ... R025XY045NV – ASHY LOAM 8-10 P.Z.

b. The texture of the surface horizon is sandy loam. ... R025XY066NV – ASHY LOAM 10-12 P.Z.

ii. Soil is not characterized by an ashy modifier. ... R025XY322UT – Upland Juniper Savanna (Utah Juniper)

#### 2 Soil temperature regime is typically frigid.

i. Soil parent material is alluvium. ... R025XY016ID – SHALLOW CALCAREOUS LOAM 10-16

ii. Soil parent material is residuum derived from tuffaceous rocks. ... R025XY013NV – CHURNING CLAY 8-12 P.Z.

### C. restrictive layer greater than 100 cm from the soil surface (soil deep)

#### 1 less than 28 percent clay in the particles size control section. site occurs in run-on landscape position.

i. Soil is well drained. ... R025XY070NV – LOAMY FAN 8-10 P.Z.

ii. Soil is somewhat poorly drained. ... R025XY062NV – STREAM TERRACE

#### 2 particle size control section has 28 to 35 percent clay. Site occurs in run-off landscape position.

i. duric (subsurface horizon weakly to strongly cemented by silica ) feature present between 50 to 100cm ... R025XY019NV – LOAMY 8-10 P.Z.

ii. Duric feature absent ... R025XY015NV – SOUTH SLOPE 8-12 P.Z.

#### 3 Soil of this site has greater than 35 percent clay.

i. Soil drainage class is poorly or very poorly drained. ... R025XY048NV – CLAY BASIN

- ii. Soil is well drained. ... R025XY050NV – STONY BOTTOM
- III. Soil has an umbric epipedon. ... R025XY037ID – CEANOTHUS THICKET 16-24

## Mountains, hills and high plateaus (High elevation forest and shrublands)

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- I. soil less than 50cm to a restrictive layer (shallow or very shallow)
  - A. soil profile characterized by a mollic epipedon
    - 1 accumulation of clay (argillic horizon) present
      - i. boundary to clay increase (argillic horizon) abrupt
        - a. Soil has convex/convex slope shape. Above 7000 feet elevation. ... R025XY024NV – MOUNTAIN RIDGE
        - b. linear/linear landform shape, soil less than 25cm deep. Typically below 7,000 feet elevation. ... R025XY057NV – SHALLOW CLAY LOAM 10-14 P.Z.
        - c. linear/linear landform shape, soil 25 to 50cm deep
          - 1) Bedrock may be fractured. ... R025XY023NV – GRAVELLY CLAYPAN 12-16 P.Z.
          - 2) Bedrock may not be fractured. ... R025XY017NV – CLAYPAN 12-16 P.Z.
      - ii. boundary to clay increase (argillic horizon) smooth, gradual, other (not abrupt)
        - a. mollic epipedon 35cm thick or to bedrock, soil derived from volcanic parent material ... R025XY018ID – MAHOGANY SAVANNA 16-22
        - b. mollic epipedon 35-50cm thick or to bedrock, soil derived from granitic parent material ... R025XY027ID – SOUTH SLOPE GRANITIC 12-16
    - 2 accumulation of clay (argillic horizon) absent
      - i. mollic epipedon 20 to 50cm thick, less than 18 percent clay in the particle size control section ... R025XY075NV – MAHOGANY SAVANNA 16+ P.Z.
      - ii. mollic epipedon 18 to 35cm thick, greater than 27 percent clay in the particle size control section ... R025XY042NV – SHALLOW LOAM 14-16 P.Z.
  - B. soil profile characterized by an ochric epipedon
    - 1 accumulation of clay (argillic horizon) present ... R025XY051NV – ERODED CLAYPAN 12-16 P.Z.
    - 2 accumulation of clay (argillic horizon) absent
      - i. soil 25-50cm deep, effervescent throughout and increasing with depth ... R025XY316UT – Upland Shallow Loam (Black Sagebrush)
      - ii. soil less than 25cm deep and consistently associated with rock outcrop ... R025XY058NV – BOULDERY LOAM
      - iii. soil less than 25cm deep and effervescent throughout ... F025XY060NV – Thin Surface Juniper
- II. soil 50 to 100 cm to a restrictive layer (moderately deep)
  - A. soil derived from sedimentary parent material (limestone, dolomite or siltstone)
    - 1 Greater than 10" precipitation
      - i. Soil has Mollic Epipedon  $\geq$  50cm or R025XY610UT ... F025XY510UT – High Mountain Loam (Subalpine Fir)
      - ii. Soil has Mollic Epipedon  $\leq$  50cms
        - a. Soil is characterized by a calcic horizon that starts within a depth of 20cms from the soil surface. ... R025XY415UT – Mountain Shallow Gravelly Ridge (Black Sagebrush)
        - b. Soil is characterized by a calcic horizon that starts at a depth greater than 20cms of the soil surface. ... F025XY061NV – Pinyon-Mahogany Mountain Slopes
    - 2 Less than 10" precipitation ... F025XY059NV – Gravelly Juniper
  - B. soil derived from volcanic, metamorphic or other parent material

1 soil characterized by a mollic epipedon

- i. accumulation of clay (argillic horizon) present ... R025XY026OR – CLAYPAN SOUTH SLOPES 13-16 PZ
- ii. accumulation of clay (argillic horizon) absent
  - a. mollic epipedon greater than 50cm thick, concave/concave landscape position. Snowbrush ceanothus dominant species. ... R025XY052NV – CEANOTHUS THICKET
  - b. umbric epipedon (mollic colors from soil surface to greater than 50cm, low base saturation), pH <6 ... R025XY080NV – Shrubby Snowfield
  - c. mollic epipedon less than 50cm thick
    - 1) landform shape linear/convex, typically found on shoulders ... R025XY034NV – Mountain Shoulder
    - 2) linear/linear landform shape, typically occurs on backslopes or sideslopes ... R025XY012NV – LOAMY SLOPE 12-16 P.Z.

2 soil characterized by an ochric epipedon

- i. O horizon absent, less than 10 percent clay in the particle size control question ... R025XY077NV – Dry Snowfield
- ii. Slightly decomposed pine needles and other plant materials (O horizon) present 0 to 2cm, less than 10 percent clay in the particle size control section ... F025XY086NV – Deep Subalpine Slope
- iii. greater than 10 percent clay in the particle size control section
  - a. concave/concave landscape position, areas of snow accumulation near foot slopes or rock outcrops ... R025XY028NV – SNOWPOCKET
  - b. linear/linear or linear/concave landscape positions, typically on backslopes or sideslopes
    - 1) soil derived from carbonatic parent material ... R025XY326UT – Upland Shallow Stony Loam (Utah Juniper)
    - 2) soil derived from volcanic parent material ... F025XY078NV – High Mountain Loam

III. soil greater than 100cm to restrictive layer (deep or very deep)

A. soil profile characterized by a mollic epipedon

1 soil 100 to 150 cm deep

- i. soil very poorly drained, persistent water table within 25cm of the soil surface
  - a. Soil has greater than 35 percent clay in the particle size control section. ... R025XY089NV – Subalpine Wet Meadow
  - b. Soil has less than 35 percent clay in the particle size control section. ... R025XY004OR – DRY MEADOW
- ii. soil moderately well to well drained
  - a. less than 18 percent clay in the particle size control section
    - 1) Soils have greater than 5 percent calcium carbonates. ... R025XY041NV – SHALLOW CALCAREOUS SLOPE 14+ P.Z.
    - 2) Soils have less than 5 percent calcium carbonates.
      - a) Site is on north aspects only. ... R025XY010NV – STEEP NORTH SLOPE
      - b) Site is on all aspects. ... R025XY076NV – SHALLOW LOAM 16+ P.Z.
  - b. greater than 18 percent clay in particle size control section
    - 1) soil profile characterized by clay textures throughout ... R025XY033ID – CLAY SEEP 12-16
    - 2) soil profile not characterized by clay increase, greater than 35 percent rock fragments by volume through the soil profile ... R025XY004NV – LOAMY SLOPE 16+ P.Z.
    - 3) greater than 27 percent clay below 40cm, less than 35 percent rock fragments by volume through the soil profile ... R025XY087NV – Mountain Valley Slope

2 soil greater than 150cm deep

- i. soil profile characterized by the presence of identifiable carbonates, strongly effervescence below ~65cm ... R025XY055NV – SHALLOW CLAY SLOPE 10-14 P.Z.
- ii. soil profile characterized by greater than 35 percent rock fragments by volume
  - a. occurs on stream terrace of perennial streams
    - 1) occurs at elevations less than 6500 feet, site dominated by narrow leaf cottonwood ... F025XY053NV – Cottonwood Terrace
    - 2) occurs at elevations greater than 6500, site dominated by quaking aspen ... F025XY064NV – Streambank Aspen
  - b. occurs on backslopes of mountains
    - 1) mollic epipedon less than 40cm thick ... R025XY045ID – DOUGLAS FIR SNOWBERRY 22+
    - 2) mollic epipedon greater than 40cm thick
      - a) accumulation of clay (argillic horizon) present
        - (1) greater than 27% clay in particle size control section ... R025XY016NV – SOUTH SLOPE 14-18 P.Z.
      - b) accumulation of clay (argillic horizon) absent ... R025XY002NV – ASPEN THICKET
- iii. soil profile characterized by less than 35 percent rock fragments by volume
  - a. occurs on stream terrace of perennial stream. water table between 40 to 100cm in early summer.
    - 1) soil has less than 35 percent clay in the particle size control section ... R025XY079NV – STREAMBANK
    - 2) soil has more than 35 percent clay in the particle size control section. ... R025XD008NV – Fine Frigid Floodplain ARCA13/CACU7/LETR5
  - b. occurs on mountain backslopes, soil characterized by accumulation of clay (argillic horizon) within 50cm of soil surface ... R025XY410UT – Mountain Aspen Thicket
  - c. occurs on mountain backslopes, soil lacks accumulation of clay (argillic horizon) ... F025XY065NV – Backslope Aspen

B. soil characterized by an ochric epipedon

- 1 soil derived from carbonatic parent material (limestone) ... F025XY073NV – Limber Pine Colluvium
- 2 soil derived from metamorphic/volcanic parent material ... F025XY086NV – Deep Subalpine Slope