USDA icon **Natural Resources Conservation Service**

Major Land Resource Area 042B
Southern Rio Grande Rift

Accessed: 04/23/2026

Description

MLRA 42B Southern Rio Grande Rift is a subdivision of the Basin and Range province and falls within the Northern most extend of the Chihuahuan Desert. The rift is a string of alluvium-filled open and closed basins connected to the Rio Grande and Tularosa basins. The MLRA is distinguished by north to south trending mountains and valleys, steep fault-block sedimentary mountains, extinct volcanic hills, and lava flows. Elevation ranges from 3,500 to 8,500 ft. Ecological communities of this MLRA include basin and tributary riparian areas, gypsiferous dune fields, desert grasslands, desert shrublands, savanna hills, and pinyon-juniper woodlands. Most of the rangeland is federally or state owned with livestock grazing and outdoor recreation being the major land use. Most of the river valley is under cultivation and utilizes both surface and ground water for irrigation. The major crops are pecans, chili, onion, alfalfa, and ensilage for dairy cattle. The remainder of the valley is in residential and commercial use.

Ecological site keys

LRU 42BB - Desert Shrub

I. LRU 42.BB Desert Shrub. These sites are typically below 5200 ft., including hills below 5300 ft elevation. PZ is 9-10 PZ, Temp. Regime is thermic, Moisture Regime is Typic Aridic.

A. Site basalt flow, basalt hill or cinder cone. Malpais ... R042BB037NM – Malpais, Desert Shrub

B. Site is hypergypsic, soils having>15% gypsum with Gypsic, or a Hypergypsic minerology class

1 Site occurs on hills or mountains- Gyp Hills ... R042BB013NM – Gyp Hills, Desert Shrub

2 Site occurs within basin floor or piedmont slopes

i. Site lacustrine or relict lacustrine

a. Site concave ,0.5% slope, ponds water, and is void of vegetation. Gyp Playa ... R042BB008NM – Gyp Playa, Desert Shrub

b. Site on a pluvial lake plane or playa lake plane and/or 0.5 % slopes with surfacing watertable. Alkali Flat ... R042BB001NM – Alkali Flat, Desert Shrub

ii. Site an eolian deposit

a. Site is on an active dune field

1) Site located on crest to footslope of dune

a) Dunes are barchan or Transverse. These are very active dunes and typically occur adjacent to gyp source. Gyp Duneland Barren ... R042BB002NM – Gyp Duneland Barren, Desert Shrub

b) Dunes are parabolic in shape. Site typically not adjacent to gypsum source, and occurs downwind from barchan and transverse dunes. Gyp Dune Vegetated ... R042BB003NM – Vegetated Gypsum Dunes, Desert Shrub

2) Site located in the interdune (dune toeslope to lowest point in interdune)

a) **Depth to water table < 24 inches, site surface soil will have wind scouring or be slightly indurated. Gyp Interdune Wet ...** R042BB004NM – Gyp Interdune (Wet), Desert Shrub

b) **Depth to watertable >24 inches. Surface soils may have some wind scouring however will not be indurated, some recent soil deposit is evident. Gyp Interdune Dry ...** R042BB005NM – Gyp Interdune (Dry), Desert Shrub

b. **Site not in active dune field.**

1) **gypsum cementation occurs within 50 cm of soil surface. Site cover is dominated with hairy crinkle mat and crypto crust. Gyp Out Crop ...** R042BB007NM – Gyp Outcrop, Desert Shrub

2) **Soil surface not indurated, cemented gyp when present occurs at > 50cm depth. Gyp Upland ...** R042BB006NM – Gyp Upland, Desert Shrub

C. Site not Hypergypsic.

1 Landscape is hills and mountains

i. **Site is limestone or of limestone parent material. Limestone Hills ...** R042BB021NM – Limestone Hills, Desert Shrub

ii. **Site is of igneous parent materials other than basalt, or is sedimentary material other than limestone. Hills ...** R042BB027NM – Hills, Desert Shrub

2 landform is piedmont

i. **Site is a drainageway. Draw ...** R042BB016NM – Draw, Desert Shrub

ii. **Site not a drainageway**

a. **Site aeolian sand deposit and**

1) **Sand deposits are > 3 feet thick, sandy textures throughout. Indicator species Giant dropseed, mesa dropseed. Deep Sand ...** R042BB011NM – Deep Sand, Desert Shrub

2) **Sand deposits are < 3 feet but greater than 20 inches thick. May have a loamy sand surface texture. ...** R042BB012NM – Sandy, Desert Shrub

3) **Soils are shallow sand deposits less than 20 inches thick, or sandy material is over a contrasting soil texture or other restrictive soil features Shallow sands ...** R042BB015NM – Shallow Sandy, Desert Shrub

b. **Site alluvial and colluvial**

1) **Soils have restrictive features within 20 inches of the soil surface. Gravelly ...** R042BB010NM – Gravelly, Desert Shrub

2) **Soils have less than 15 percent gravel by volume.**

a) **Water receiving areas, less than 1% slope**

(1) **Clayey textures throughout, slightly calcareous. Clayey ...** R042BB023NM – Clayey, Desert Shrub

(2) **Soils are loamy throughout, and are highly calcareous within 6 inches of the soil surface. Limy ...** R042BB019NM – Limy, Desert Shrub

b) **Water shedding positions. Loamy ...** R042BB014NM – Loamy, Desert Shrub

3) **Soils have less than 35 percent gravel by volume but greater than 15 percent gravel.**

a) **Soils are sandy throughout. Gravelly sand ...** R042BB024NM – Gravelly Sand, Desert Shrub

b) **All other soils. Gravelly Loam ...** R042BB035NM – Gravelly Loam, Desert Shrub

4) **Soils have greater than 35 percent gravel by volume Very Gravelly ...** R042BB010NM – Gravelly, Desert Shrub

3 Landform is basin floor or relict basin floor

i. Eolian Parent Material consisting of sand and loamy sand textures

a. Soil has a restrictive layer within 20 inches ... R042BB015NM – Shallow Sandy, Desert Shrub

b. soil does not have a restrictive layer within 20 inches ... R042BE054NM – Deep Sand, Cool Desert Grassland

ii. Alluvial Parent Material

a. Saline or Alkaline soils, halophyte plants iodine bush, pickleweed or salt tolerant plants such as inland salt grass, alkali sacaton, atriplex spp.

1) Salt concentrations on soil surface

a) Adjacent to water and sub irrigated ... R042BB028NM – Salt Meadow, Desert Shrub

b) Drainageways and flood plains ... R042BB033NM – Salty Bottomland, Desert Shrub

2) No salt concentrations at surface

a) Alluvial Flats - not sub-irrigated and does not pond water ... R042BB036NM – Salt Flats, Desert Shrub

b. Non-Saline

1) Slope 0 to 1 % and not highly calcareous. Dominant species include giant sacaton, tobosa, vine mesquite. ... R042BB018NM – Bottomland, Desert Shrub

2) Slopes 1 .to 1.5 % highly calcareous site dominated by Burrograss ... R042BB019NM – Limy, Desert Shrub

3) Soils form in water shedding areas, rises ... R042BB023NM – Clayey, Desert Shrub

iii. Basalt Parent Material ... R042BB037NM – Malpais, Desert Shrub

LRU 42BE - Cool Desert Grassland

I. LRU 42BE Cool Desert Grassland. This LRU occurs at 4700-5600ft elevation. It has PZ of 11-12 inches, and has temp. regime of thermic and a moisture regime Typic of aridic. Vegetation is grassland and shrub savanna.

A. Landscape is Hills

1 Site is shallow to Limestone bedrock – Limestone Hills ES ... R042BE059NM – Limestone Hills Cool Desert Grassland

2 Site is shallow to basalt bedrock – Malpais ... R042BE056NM – Malpais, Cool Desert Grassland

3 **Site shallow to indurated sediments other than limestone or site shallow to igneous parent material other than basalt – Hill ...** R042BE058NM – Hills, Cool Desert Grassland

4 **Site shallow to moderately deep highly dissected- Mesa Breaks ...** R042BE060NM – Mesa Breaks, Cool Desert Grassland

B. Landscape is Piedmont

1 **Soils are clayey to sandy loam**

i. **Site in a drainageway– Swale ES ...** R042BE062NM – Swale, Cool Desert Grassland

ii. **Not in a drainage**

a. **Soils hypergypsic > 15% gypsum with Gypsic or Hypergypsic minerology class- Gyp upland ...** R042BE063NM – Gyp Upland, Cool Desert Grassland

b. **Soil have Clay to Clay loam surface and Clayey subsurface > 35%= Clay, Alkali sacaton is an indicator specie -Clayey ...** R042BE061NM – Clayey, Cool Desert Grassland

c. **Soil is loamy to loamy sand surface with Loamy subsurface, <35% Clay – Burrograss is an indicator specie-Loamy ...** R042BE052NM – Loamy, Cool Desert Grassland

iii. **Site Basalt, Gravelly to Cobbly-Malpais ES ...** R042BE056NM – Malpais, Cool Desert Grassland

iv. **Site Loamy and Gravelly- Gravelly Sand ...** R042BE053NM – Gravelly Sand, Cool Desert Grassland

2 **Soils are sandy to sandy loam or sandy material is over a various soil textures or restrictive soil features**

i. **Soil not gravelly < 15% gravel**

a. **Soils sandy to loamy sand eolian Deposits > 3 feet in depth and sandy textures throughout. Site is undulating or dunes, Giant Dropseed is an indicator species - Deep Sand ...** R042BE054NM – Deep Sand, Cool Desert Grassland

b. **Soils sandy loam deposits 20 -36 in depth, – Sandy ...** R042BE051NM – Sandy, Cool Desert Grassland

ii. **Soils >15% gravel – Gravelly Sand ES ...** R042BE053NM – Gravelly Sand, Cool Desert Grassland

C. Landscape is basin floor. These ES sites occur at the northern most extent of the MLRA 42B and LRU 42BE.

1 **Eolian Parent Material consisting of sand and loamy sand textures**

i. **Soil depth between 20 to 72 inches in depth. Sandy ...** R042BE051NM – Sandy, Cool Desert Grassland

ii. **Soil depth >72 inches and undulating to dunes. Deep Sand ...** R042BE054NM – Deep Sand, Cool Desert Grassland

2 **Alluvial Parent Material not sub-irrigated no shallow watertable**

i. **Saline soils without salt concentrations at surface salty. Dominant shrub Atriplex sp. Salty Bottomland ES ...** R042BE055NM – Salty Bottomland, Cool Desert Grassland

ii. **Non-Saline. Bottomland ES ...** R042BE057NM – Bottomland, Cool Desert Grassland

3 **Site alluvial has shallow water table, or seasonal shallow watertable**

i. **Site Saline. Dominant species inland saltgrass, alkali sacaton, atriplex sp. Salty Bottomland ...** R042BE055NM – Salty Bottomland, Cool Desert Grassland

ii. Site not saline Giant Sacaton. Bottomland ... R042BE057NM – Bottomland, Cool Desert Grassland

LRU 42BF - Desert Foothills

I. LRU 42BF Desert Foothills. This LRU occurs in mountains footslope and foothills with elevation an elevation range of 5400 - 7100 ft. Annual precipitation ranges from 13-15 inches. Vegetation includes both Tree savanna, mixed shrublands, and mixed P-J Veg. Zone

A. Limestone Hills - Site gravelly to channery, soils high in carbonates derived from parent material such as limestone and dolomite.

1 Site typically shallow to deep gravelly alluvium soils. Vegetation is sparse shrubs of little leaf sumac or winterfat, and is dominated by grass understory of black grama, bluegram, tridens. Limestone Shrub Savannah ... R042BF801NM – Limestone Shrub Savannah, Desert Foothills

2 Site dominated by shallow gravelly alluvium, occurs at higher elevations or northern aspects. Vegetation is a mix of juniper and pinyon trees, mountain mahogany, with blue grama and Wolf tail dominating the grass understory. Limestone Hills ... R042BF020NM – Limestone Hill, Desert Foothills

B. Igneous Hills- Site cobbly to very cobbly derived from both intrusive and extrusive material.

1 Site typically shallow to deep alluvial cobbly to very cobbly. Gravels. Typically, the site has scattered juniper or oak shrubs with grass understory of blue and side oats grama, curly mesquite, tobosa and black grama. Igneous Shrub Savannah ... R042BF902NM – Igneous Shrub Savannah, Desert Foothills

2 Site dominated by shallow alluvium, occurs at higher elevations or northern aspects. Vegetation is a mix of juniper and pinyon trees, mountain mahogany, buckbrush shrubs and wolftail, bluegrama,and deer muhly grass understory. Igneous Hills ESD

C. Site very shallow to mod. deep soils of sandstone parent material. Sand Stone Hills ESD ... R042BF903NM – Sandstone Hill, Desert Foothills

LRU 42BG - Desert Mountains

I. LRU 42BK Desert Mountians. This LRU occurs on sites that are 6000 to 8500 ft. in elevation ... R042BG901NM – Igneous Mountains, Desert Mountains