

Ecological site R035XB277AZ

Siltstone Upland

6-10" p.z.

Limy

Last updated: 5/20/2025

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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): 035X–Colorado Plateau

AZ CRA 35.2 - Colorado Plateau Shrub – Grasslands Elevations range from 3500-5500 feet and precipitation averages 6 to 10 inches per year. Vegetation includes shadscale, fourwing saltbush, Mormon tea, blackbrush, Indian ricegrass, galleta, blue grama, and black grama. The soil temperature regime is mesic and the soil moisture regime is typic aridic. This unit occurs within the Colorado Plateau Physiographic Province and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin.

Ecological site concept

This site occurs on shallow, well-drained soils. EC ranges from 4 to 16 mmhos/cm and SAR ranges from 5 to 13. This site occurs on toeslopes, footslopes and dipslopes of structural benches and cuestas.

Table 1. Dominant plant species

| | |
|------------|--|
| Tree | Not specified |
| Shrub | (1) <i>Atriplex cuneata</i> (2) <i>Picrothamnus desertorum</i> |
| Herbaceous | (1) <i>Achnatherum hymenoides</i> (2) <i>Pleuraphis jamesii</i> |

Physiographic features

This site occurs on toeslopes, footslopes and dipslopes of structural benches and cuestas. Also occurs on toeslopes, structural benches and dipslopes of cuestas of undulating plateaus.

This is an upland site. It does not benefit from run-in moisture from adjacent areas and may may sustain runoff on some slopes. It occurs on all exposures.

Table 2. Representative physiographic features

| | |
|--------------------|---|
| Landforms | (1) Structural bench (2) Cuesta (3) Plateau |
| Flooding frequency | None |
| Ponding frequency | None |
| Elevation | 1,490 – 1,710 m |
| Slope | 0 – 20 % |
| Aspect | Aspect is not a significant factor |

Climatic features

The climate of the land resource unit is arid with warm summers and cool winters. This is one of the driest land resource units on the Colorado Plateau with an average annual precipitation ranging from 6 to 10 inches per year. It is also very erratic, often varying substantially from year to year. 40 to 50 percent of the precipitation is received from October through early May. This precipitation comes as gentle rain or snow from frontal storms coming out of the Pacific Ocean. Snow is common from November through February. Generally no more than an inch or two of snow accumulates and usually melts within a day or two. The remaining precipitation, approximately 50 to 60 percent, is received from July through September as spotty, unreliable and sometimes violent thunderstorms. The moisture for this precipitation originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the area on the north end of the Mexican monsoon. Late May through late June is generally a dry period. The mean annual temperature ranges from 53 to 56 degrees Fahrenheit (F). The frost-free period (air temperature > 32 degrees F) ranges from 135 to 160 days (@ 50 percent probability). Strong winds are common, especially in the spring.

Table 3 Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 160 days |
| Freeze-free period (average) | 180 days |
| Precipitation total (average) | 250 mm |

Influencing water features

This is an upland site, and is not associated with water features or wetlands. During heavy rain events, this site may receive run-on moisture from landforms above and contribute runoff to landforms below.

Soil features

The soils on this site are shallow (10-20") and well drained. They are formed in alluvium and residuum derived from shale and siltstone. Surface textures include loam, silty clay loam, silt loam and very fine sandy loam. Subsurface textures include loam, silt loam, clay loam and silty clay loam. Siltstone is at a depth of 17-18 inches. Hazard of erosion by water is moderate and by wind is severe.

Typical taxonomic units include:

SSA 717 Shiprock NM - MU's 137, 250 and 260 the Persayo parts.

Table 4. Representative soil features

| | |
|---|--|
| Parent material | (1) Alluvium – shale and siltstone |
| Surface texture | (1) Loam (2) Silty clay loam (3) Silt loam |
| Family particle size | (1) Loamy |
| Drainage class | Moderately well drained to well drained |
| Permeability class | Slow to moderately slow |
| Soil depth | 30 – 50 cm |
| Available water capacity (0-101.6cm) | 0 – 6.35 cm |
| Calcium carbonate equivalent (0-101.6cm) | 10 % |
| Electrical conductivity (0-101.6cm) | 0 – 20 mmhos/cm |
| Sodium adsorption ratio (0-101.6cm) | 10 |
| Soil reaction (1:1 water) (0-101.6cm) | 7.4 – 8.4 |

Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire, or drought.

Production data provided in this site description is standardized to air-dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity Index, compare the production (air-dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|------------------------|---------------------|--------|--|----------------------|------------------|
| Shrub/Vine | | | | | |
| 0 | | | | 135-168 | |
| | valley saltbush | ATCU | <i>Atriplex cuneata</i> | 71-84 | – |
| | bud sagebrush | PIDE4 | <i>Picrothamnus desertorum</i> | 43-56 | – |
| | Shrub (>.5m) | 2SHRUB | <i>Shrub (>.5m)</i> | 0-6 | – |
| | shadscale saltbush | ATCO | <i>Atriplex confertifolia</i> | 0-3 | – |
| | mat saltbush | ATCO4 | <i>Atriplex corrugata</i> | 0-3 | – |
| | wheelscale saltbush | ATELF | <i>Atriplex elegans var. fasciculata</i> | 0-3 | – |
| | winterfat | KRLA2 | <i>Krascheninnikovia lanata</i> | 0-3 | – |
| | matted crinklemat | TILA6 | <i>Tiquilia latior</i> | 0-3 | – |
| Grass/Grasslike | | | | | |
| 0 | | | | 67-101 | |
| | Indian ricegrass | ACHY | <i>Achnatherum hymenoides</i> | 43-56 | – |
| | James' galleta | PLJA | <i>Pleuraphis jamesii</i> | 15-28 | – |
| | alkali sacaton | SPAI | <i>Sporobolus airoides</i> | 0-15 | – |
| | squirreltail | ELELE | <i>Elymus elymoides ssp. elymoides</i> | 3-15 | – |
| | Grass, perennial | 2GP | <i>Grass, perennial</i> | 0-15 | – |
| Forb | | | | | |
| 0 | | | | 3-15 | |
| | Forb, perennial | 2FP | <i>Forb, perennial</i> | 3-6 | – |
| | globemallow | SPHAE | <i>Sphaeralcea</i> | 0-6 | – |
| | Forb, annual | 2FA | <i>Forb, annual</i> | 0-3 | – |

Animal community

This site is suitable for grazing by all classes of livestock most seasons of the year. The winter season would be the best because of the plant species involved. Prescribed Grazing is readily adapted to this site. Wildlife species are transient on this site from other adjacent areas.

Recreational uses

The topography and unique plant cover provides an interesting scene from that of the adjacent sites. The winters are cold and spring time is usually windy. The summers are mild with typical southwest thunderstorms. The main activities are seasonal and include photography, wildlife observation and hiking.

Type locality

| | |
|---------------------------------|--|
| Location 1: San Juan County, NM | |
| Township/Range/Section | T30N R18W S20 |
| General legal description | Rattlesnake quad - about 4 miles south southeast of Cudei, NM - Navajo Reservation NM. |

Contributors

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Approval

Kendra Moseley, 5/20/2025

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 | 06/20/2026 |
| 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:
