

## Ecological site F038XB227AZ Clayey Slopes 16-20 (PIMO, JUDE2)

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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.

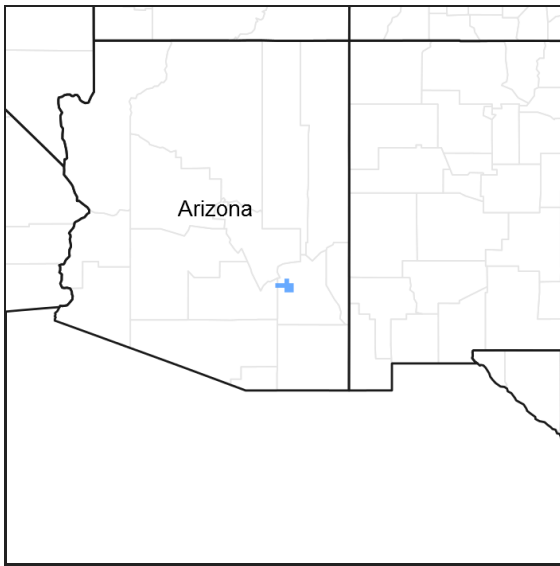


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### MLRA notes

Major Land Resource Area (MLRA): 038X–Mogollon Transition South

AZ 38.2 - Middle Mogollon Transition

Elevations range from 4,000 to 5,500 feet and precipitation averages 16 to 20 inches per year. Vegetation includes turbinella oak, Wright silktassel, hollyleaf buckthorn, desert buckbrush, one-seed juniper, alligator juniper, pinyon, algerita, sugar sumac, prairie junegrass, blue grama, curly mesquite, bottlebrush squirreltail, muttongrass, cane beardgrass, plains lovegrass, and bullgrass. The soil temperature regime ranges from thermic to mesic and the soil moisture regime is aridic ustic. This MLRA occurs within the Transition Zone Physiographic Province and is characterized by canyons and structural troughs or valleys. Igneous, metamorphic, and sedimentary rock classes occur on rough mountainous terrain in association with less extensive sediment filled valleys exhibiting little integrated drainage.

### Ecological site concept

The Clayey Slopes ecological site generally occurs on south facing back slopes and have clay loam textures.

Table 1. Dominant plant species

Tree	(1) <i>Pinus monophylla</i> (2) <i>Juniperus deppeana</i>
Shrub	Not specified
Herbaceous	(1) <i>Bouteloua curtipendula</i>

## Physiographic features

The Clayey Slopes ecological site generally occurs on south facing back slopes.

**Table 2. Representative physiographic features**

Landforms	(1) Hill (2) Mountain
Elevation	1,219–1,676 m
Slope	20–75%
Aspect	S

## Climatic features

Precipitation in this common resource area averages 16 to 20 inches annually. The winter/summer rainfall ratio ranges from about 60/40 percent in the western part of the area to 45/55 percent in the eastern part. Summer rains fall July through September; and are from high-intensity convective thunderstorms. This moisture originates primarily from the Gulf of Mexico, but can come from the remnants of Pacific hurricanes in September. Winter moisture is frontal, originates in the north Pacific, and falls as rain or snow in widespread storms of low intensity and long duration. Snowfall ranges from 5 to 35 inches per year and can occur from November through April. Snow seldom persists for more than a week. May and June are the driest months of the year. Humidity is generally low all year. Average annual air temperatures range from 51 to 60 degrees F (thermic temperature regime). Daytime temperatures in the summer are commonly in the low 90's. Freezing temperatures are common from October through April. The actual precipitation, available moisture, and temperature varies, depending on region, elevation, rain shadow effect, and aspect.

**Table 3. Representative climatic features**

Frost-free period (average)	180 days
Freeze-free period (average)	240 days
Precipitation total (average)	508 mm

## Influencing water features

### Soil features

These soils generally occur on south facing back slopes.

Soils mapped on this site include: from SSA-675 San Carlos IR Area MU, Haplustalfs-42.

**Table 4. Representative soil features**

Surface texture	(1) Extremely gravelly sandy clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Soil depth	15–30 cm
Surface fragment cover <=3"	30–60%

Surface fragment cover >3"	5–15%
Available water capacity (0-101.6cm)	0–6.35 cm
Soil reaction (1:1 water) (0-101.6cm)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	40–80%

## Ecological dynamics

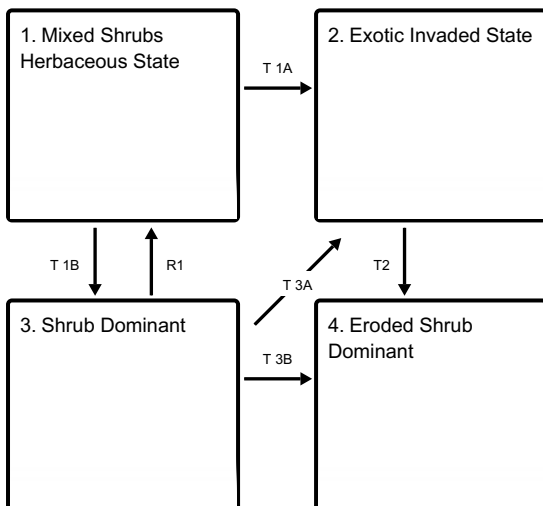
The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or 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.

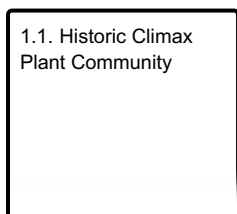
NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine 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

### Ecosystem states



### State 1 submodel, plant communities



## State 1

### Mixed Shrubs Herbaceous State

Shrubs and succulents are greater than annual grass and forbs which are greater than perennial grass

## Community 1.1

### Historic Climax Plant Community

The aspect view of this site is trees with an understory of grasses and shrubs. Tree canopy cover is 20-30% with the major overstory species of Utah juniper as 95% and singleleaf pinyon as 5% of the species present. Understory species include: Grasses and grass-like as 60% - sideoats grama, galleta, and slim tridens. Forbs as 5% - birdbeak. Shrubs as 30% - banana yucca and green Mormon tea. Trees (<4.5') as 5% - Utah juniper. Plant community changes that occur after disturbance: Herbaceous/Shrub stage: Grasses dominate with some shrubs and seedling trees. Immature stage: Medium-size juniper are in balance with the grasses and shrubs. Mature/Climax stage: Utah juniper trees dominate with grasses and shrubs in moderate amounts. Forbs are a minor component.

Figure 4. Plant community growth curve (percent production by month). AZ3811, 38.1 12-16" p.z. all sites. Growth begins in the spring, most growth occurs in the summer..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	1	7	15	20	22	20	10	5	0	0

## State 2

### Exotic Invaded State

Exotic annuals with 10-50% canopy cover

## State 3

### Shrub Dominant

Shrubs with greater than 50% canopy cover

## State 4

### Eroded Shrub Dominant

10-30% canopy cover

## Transition T 1A

### State 1 to 2

Invaded exotic species coupled with an increase in fire frequency

## Transition T 1B

### State 1 to 3

A decrease in fire frequency, continuous season-long herbivory, coupled with drought

## Transition T2

### State 2 to 4

Decrease in vegetative canopy cover; increase in soil erosion; increase in fire frequency; decrease in perennial herbaceous

## Restoration pathway R1

### State 3 to 1

Brush control coupled with grazing management that allows for adequate recovery periods

### **Transition T 3A State 3 to 2**

Introduction of exotic, invasive species coupled with a change to a wetter climate

### **Transition T 3B State 3 to 4**

Decrease in vegetative canopy cover; increase in soil erosion; increase in fire frequency; decrease in perennial plants

## **Additional community tables**

### **Type locality**

Location 1: Graham County, AZ	
Township/Range/Section	T4S R21E S20
General legal description	Haplustalfs are located at 2,100 feet north and 400 feet west of southeast corner of Section 20, Township 4 S, Range 21 E

### **Contributors**

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### **Approval**

Scott Woodall, 9/05/2019

## **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	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### **Indicators**

1. **Number and extent of rills:**
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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth ( in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**

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