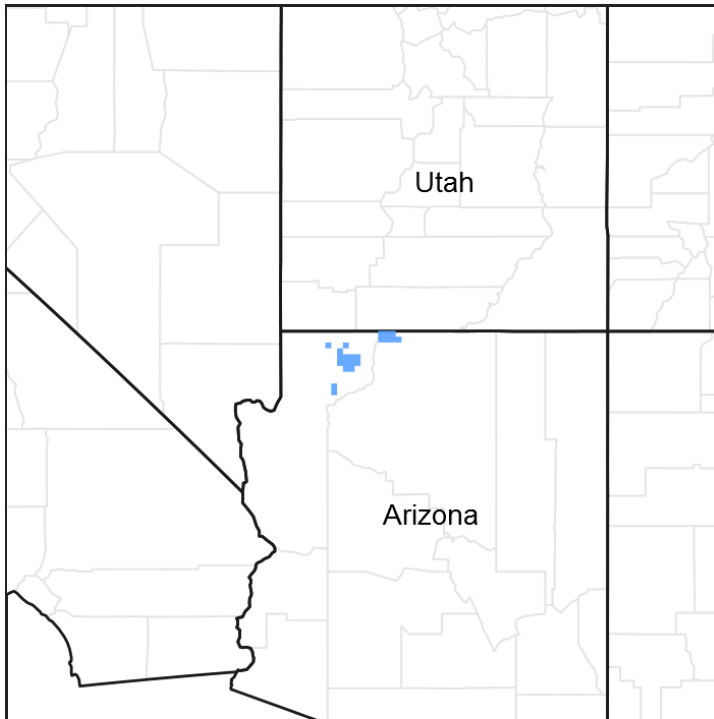


# Ecological site R035XD421AZ Clay Loam Upland 7-11" p.z.

Accessed: 05/20/2025

## 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): 035X–Colorado Plateau

AZ CRA 35.4 – Colorado Plateau Cold Sagebrush – Grasslands

Elevations range from 4200 to 5100 feet and precipitation averages 7 to 11 inches.

Vegetation includes winterfat, fourwing saltbush, buckwheat species, needlegrass, bottlebrush squirreltail, Indian ricegrass, black grama, blue grama, sideoats grama, gyp dropseed, and galleta. 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.

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Chrysothamnus viscidiflorus</i> (2) <i>Atriplex canescens</i>
Herbaceous	(1) <i>Pleuraphis jamesii</i> (2) <i>Scleropogon brevifolius</i>

## Physiographic features

The dominant aspect is cold desert shrub grassland. Major grasses are galleta and burrograss. Landform and position are lower concave positions and gentle sideslopes of drainages.

**Table 2. Representative physiographic features**

Landforms	(1) Fan (2) Terrace
Flooding frequency	None to rare
Ponding frequency	None to rare
Elevation	1,433–1,585 m
Slope	1–5%
Aspect	Aspect is not a significant factor

## Climatic features

Winter-Summer moisture ratios are typically 70:30 on the west side of this LRU and shift to 60:40 on the east side. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall June-September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture October-May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow December-February. Accumulations above 10 inches are not common, but can occur. Snow usually lasts 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95-100 F and, on occasion, exceed

105F. Winter air temperatures can regularly go below 15 F and have been recorded below -15 F.

**Table 3. Representative climatic features**

Frost-free period (average)	220 days
Freeze-free period (average)	150 days
Precipitation total (average)	279 mm

## Influencing water features

### Soil features

Soils on this site consist of very deep, well drained soils that formed in mixed alluvium derived dominantly from sedimentary formations and mixed gravelly alluvium and colluvium.

Soils mapped on this site include:

SSA623 Shivwits Area MU 83 Twist;  
SSA625 Mohave County NE part MU's 16 & 23 Hatknoll;  
SSA629 Coconino County North Kaibab part MU 19 Jocity.

**Table 4. Representative soil features**

Parent material	(1) Alluvium–basalt
Surface texture	(1) Gravelly loam (2) Loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to slow
Soil depth	102–152 cm
Surface fragment cover ≤3"	5–20%
Surface fragment cover >3"	0–15%
Available water capacity (0-101.6cm)	12.7–19.05 cm
Calcium carbonate equivalent (0-101.6cm)	1–15%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm

Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	5–20%

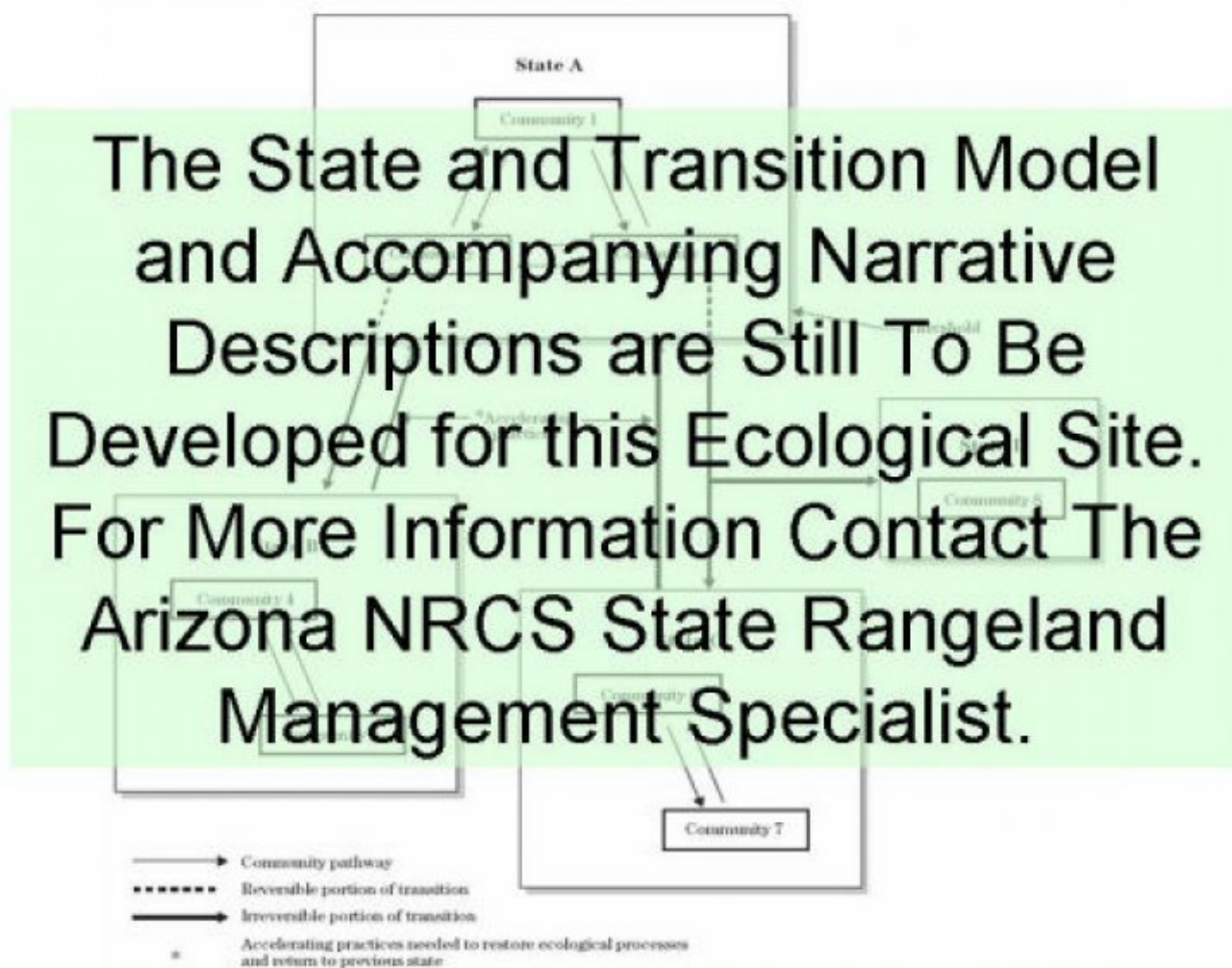
## Ecological dynamics

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 fire, grazing, 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 amount shown for each group. Divide the resulting total by the total normal year production shown in the plant community description. If the 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



## State 1

### Historic Climax Plant Community

## Community 1.1

### Historic Climax Plant Community

The dominant aspect is cold desert shrub grassland. The major grasses are galleta and burrograss. With severe disturbance, native annuals, broom snakeweed, stickyleaf low rabbitbrush and wolf berry will increase; cheatgrass and russian thistle will invade.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	336	379	420
Shrub/Vine	84	127	168
Forb	6	31	56
<b>Total</b>	<b>426</b>	<b>537</b>	<b>644</b>

**Table 6. Ground cover**

Tree foliar cover	0%
Shrub/vine/liana foliar cover	10-20%
Grass/grasslike foliar cover	5-15%
Forb foliar cover	0-1%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

**Table 7. Canopy structure (% cover)**

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	—	—	5-15%	—
>0.15 <= 0.3	—	5-10%	—	0-1%
>0.3 <= 0.6	—	10-20%	—	—
>0.6 <= 1.4	—	—	—	—
>1.4 <= 4	—	—	—	—
>4 <= 12	—	—	—	—
>12 <= 24	—	—	—	—
>24 <= 37	—	—	—	—
>37	—	—	—	—

**Figure 5. Plant community growth curve (percent production by month).**  
**AZ0004, 35.4 7-11" p.z. fourwing saltbush. Some growth in spring, most growth in summer to early fall rainy season..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	10	15	30	40	5	0	0	0

**Figure 6. Plant community growth curve (percent production by month).**  
**AZ3541, 35.4 7-11" p.z. all sites. Most growth occurs in the spring and during the summer rainy season..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	9	20	15	5	16	25	6	2	1	0

**Figure 7. Plant community growth curve (percent production by month).**  
**AZ3566, 35.4 7-11" p.z. winterfat. Growth occurs from spring through summer..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	30	30	10	10	10	5	0	0	0

**Figure 8. Plant community growth curve (percent production by month).**  
**AZ0001, 35.4 7-11. Growth begins in the spring, most growth occurs during the summer rainy season..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	3	15	5	25	40	10	2	0	0

## Additional community tables

**Table 8. Community 1.1 plant community composition**

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Shrub/Vine</b>					
0				84–168	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	28–56	—
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	28–56	—
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	28–56	—
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	11–28	—
	water jacket	LYAN	<i>Lycium andersonii</i>	0–11	—
	pale desert-thorn	LYPA	<i>Lycium pallidum</i>	0–11	—
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	0–6	—
4				0–6	
	Whipple cholla	CYWH	<i>Cylindropuntia whipplei</i>	0–6	—
	globe cactus	MAMMI	<i>Mammillaria</i>	0–6	—
	twistspine pricklypear	OPMA2	<i>Opuntia macrorhiza</i>	0–6	—
	banana yucca	VIIRA	<i>Yucca baccata</i>	0–6	—

	banana yucca	FOBR	yucca baccata	0-6	—
<b>Grass/Grasslike</b>					
0				336–392	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	84–168	—
	burrograss	SCBR2	<i>Scleropogon brevifolius</i>	56–84	—
	squirreltail	ELELE	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	28–56	—
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	17–45	—
	black grama	BOER4	<i>Bouteloua eriopoda</i>	11–39	—
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	11–39	—
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	11–39	—
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	0–17	—
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–17	—
1				0–17	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	8–30	—
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	8–30	—
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–6	—
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0–6	—
	ring muhly	MUTO2	<i>Muhlenbergia torreyi</i>	0–6	—
2				38–56	
	squirreltail	ELELE	<i>Elymus elymoides</i> ssp. <i>elymoides</i>	19–38	—
	Grass, annual	2GA	<i>Grass, annual</i>	0–17	—
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–17	—
<b>Forb</b>					
0				6–45	
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	11–30	—
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–11	—
	globemallow	SPHAE	<i>Sphaeralcea</i>	0–11	—
	winding mariposa lily	CAFL	<i>Calochortus flexuosus</i>	0–6	—
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0–6	—
	pepperweed	LEPID	<i>Lepidium</i>	0–6	—
	phlox	PHLOX	<i>Phlox</i>	0–6	—
3				6–28	



5				0-20	
	Forb, annual	2FA	<i>Forb, annual</i>	6-28	—
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0-11	—
	milkvetch	ASTRA	<i>Astragalus</i>	0-6	—
	borage	BORAG	<i>Borago</i>	0-6	—
	western tansymustard	DEPI	<i>Descurainia pinnata</i>	0-6	—
	miniature woollystar	ERDI2	<i>Eriastrum diffusum</i>	0-6	—
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0-6	—

## Animal community

This site is suitable for yearlong grazing by either cows and calves or stocker cattle and is easily traversed by all classes of livestock. Prescribed Grazing systems adapt very well to use on this site.

Potential wildlife on site are pronghorn antelope, black-tailed jackrabbit, coyote, badger, antelope squirrel, kangaroo rat, deer mouse, red tail hawk, raven meadowlark, gopher snake, western rattlesnake, longnose leopard lizard, short-horned lizard, western whiptail, and black-collared lizard.

## Recreational uses

This site is found gently sloping valley sides, characterized by open grasslands interspersed with a few flowering forbs and shrubs.

Winters are cold and summers are quite warm. Spring and fall are the dry seasons and are typically cool and windy.

Recreational activities most likely to occur are hunting, cross-country riding, photography and wildlife observation.

## Other information

Threatened and Endangered Species: Golden eagles and Prairie falcons occasionally use the site for feeding areas.

## Type locality

Location 1: Mohave County, AZ

Township/Range/Section	T38N R7W S35
General legal description	Little Clayhole Valley 7 1/2 min. quad; 1 mi east of Black Point Reservoir

## Contributors

ASM, SEC  
 Larry D. Ellicott  
 Steve Barker

## 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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