

## Ecological site R035XC318AZ Silty Shallow 10-14" p.z.

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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): 035X–Colorado Plateau

AZ CRA 35.3 – Colorado Plateau Sagebrush – Grasslands

Elevations range from 4500 to 6000 feet and precipitation averages 10 to 14 inches. Vegetation includes Wyoming big sagebrush, Utah juniper, Colorado pinyon - cliffrose, Mormon tea, fourwing saltbush, blackbrush Indian ricegrass, needle and thread, western wheatgrass Galleta, black grama, blue grama, and sand dropseed. The soil temperature regime is mesic and the soil moisture regime is ustic 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>Atriplex confertifolia</i> (2) <i>Artemisia bigelovii</i>
Herbaceous	(1) <i>Pleuraphis jamesii</i>

## Physiographic features

Site consists of shallow well drained soil and is on the summits and footslopes of structural benches.

**Table 2. Representative physiographic features**

Landforms	(1) Alluvial flat (2) Structural bench
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Very rare to rare
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	1,859–2,103 m
Slope	2–20%
Aspect	Aspect is not a significant factor

## Climatic features

Winter summer moisture ratios range from 70:30 to 60:40. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall from June through September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through 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 from December through February. Accumulations above 12 inches are not common but can occur. Snow usually lasts for 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95 - 100 F and on occasion exceed 105 F. Winter air temperatures can regularly go below 10 F and have been recorded below - 20 F.

**Table 3. Representative climatic features**

Frost-free period (average)	168 days
Freeze-free period (average)	193 days
Precipitation total (average)	356 mm

## Influencing water features

### Soil features

Soil depths are shallow and the surface texture is channery loam. Subsoils are loam to silty clay loam. Parent material is alluvium, residuum derived from siltstone and shale. The geologic formation is Mancos shale. Available water capacity is very low. Erosion hazard from wind and water is moderate. Runoff is medium. Depth to gypsum layer is 1 - 3". Soils are moderately saline below 12" and are slightly sodic. pH is 7.4-8.4. Moisture regime is Ustic Aridic and the temperature is Mesic.

Typical taxonomic unit on this site is:

SSA 717 Shiprock Area AZ/NM: MU 317 Toadlena.

**Table 4. Representative soil features**

Parent material	(1) Alluvium–shale and siltstone
Surface texture	(1) Channery loam
Family particle size	(1) Loamy

Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow
Soil depth	25–51 cm
Surface fragment cover <=3"	15–25%
Available water capacity (0-101.6cm)	0–6.35 cm
Calcium carbonate equivalent (0-101.6cm)	5–10%
Electrical conductivity (0-101.6cm)	2–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	5–13
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	15–25%

## 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**

This site has a plant community made up primarily of mid and short grasses with a relatively small percentage of forbs and shrubs. In the original plant community there is a predominance of warm season grasses with shrubs, half shrubs, and cool season grasses. Plant species most likely to invade or increase on this site when it deteriorates are mormon tea, shadscale and annuals. Continuous grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by warm season, lower forage value grasses and shrubs.

**Table 5. Annual production by plant type**

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	146	219	291
Shrub/Vine	67	101	135
Forb	7	10	17
<b>Total</b>	<b>220</b>	<b>330</b>	<b>443</b>

**Table 6. Soil surface cover**

Tree basal cover	0%
Shrub/vine/liana basal cover	0-2%

Grass/grasslike basal cover	5-10%
Forb basal 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	–	–	–	0-1%
>0.15 <= 0.3	–	–	5-15%	–
>0.3 <= 0.6	–	1-3%	–	–
>0.6 <= 1.4	–	–	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	–	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–

Figure 5. Plant community growth curve (percent production by month). AZ3503, 35.3 10-14" p.z. galleta. Growth begins in spring, most growth occurs during summer and early fall rainy season. Plants will green up again in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	5	20	15	20	30	10	0	0

Figure 6. Plant community growth curve (percent production by month). AZ3505, 35.3 10-14" p.z. Indian ricegrass. Growth begins in spring, with semi-dormancy occurring during July through August. Plants will green up again in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10	20	25	20	5	5	10	5	0	0

Figure 7. Plant community growth curve (percent production by month). AZ3507, 35.3 10-14" p.z. alkali sacaton. Growth begins in late spring, most growth occurs in summer and early fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	15	20	30	10	0	0	0

Figure 8. Plant community growth curve (percent production by month). AZ3509, 35.3 10-14" p.z. shadscale saltbush. Growth begins in spring and extends through the summer. Seed set occurs in summer to early fall..

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

Figure 9. Plant community growth curve (percent production by month). AZ3531, 35.3 10-14" p.z. all sites. Growth begins in the spring and continues through the summer..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	17	18	10	19	20	10	1	1	0

Figure 10. Plant community growth curve (percent production by month). AZ3534, 35.3 10-14" p.z. Bigelow sagebrush. Growth occurs mostly in spring and summer. Seed set occurs in later summer to fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	20	20	15	15	10	5	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				84–118	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	44–66	–
	Bigelow sage	ARBI3	<i>Artemisia bigelovii</i>	17–34	–
	Shrub (>.5m)	2SHRUB	<i>Shrub (&gt;.5m)</i>	7–17	–
	slenderleaf buckwheat	ERLE10	<i>Eriogonum leptophyllum</i>	7–17	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	3–17	–
	matted crinklemat	TILA6	<i>Tiquilia latior</i>	0–7	–
	Torrey's jointfir	EPTO	<i>Ephedra torreyana</i>	0–7	–
<b>Grass/Grasslike</b>					
0				202–235	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	67–101	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	50–67	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	33–66	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	17–34	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	17–34	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–17	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	3–17	–
<b>Forb</b>					
0				3–17	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	11–22	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	3–10	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–7	–

## Animal community

This site is suitable for grazing during any period of the year by stocker cattle, sheep and goats. Prescribed grazing systems can benefit this site by allowing rest periods for the cool season species.

The potential plant community provides a variety of food and cover plants for wildlife. When the vegetation complex retrogresses then unpalatable shrub species increase and the site becomes less usable as a foraging area for some species. Grazing practices that encourage cool season grass species are beneficial to antelope, cottontails

and rodents. Shrubs that provide both food and cover should be maintained.

Wildlife includes lizards, ground squirrel, cottontail rabbit, snakes, blacktail jackrabbit and mule deer. With severe disturbance, Galleta and Alkali sacaton will increase; Russian thistle will invade.

## Recreational uses

Site is located on footslopes and summits of structural benches, which lend themselves to activities such as hiking, wildlife observation, photography and hunting.

## Type locality

Location 1: Apache County, AZ	
Township/Range/Section	T24N R19W S16
General legal description	Tsin-Nas-Kid Quad - Section 16, T24N, R19W; 1 mile NorthWest of Tsin-Nas-Kid Mesa; Navajo Indian Reservation, New Mexico. Type location is in Shiprock NM SWCD an Arizona NRCS administered part of New Mexico.

## Contributors

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## 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):**
- 
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):**
- 
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):**
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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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