

Ecological site R035XD422AZ

Sandy Loam Upland

7-11" p.z.

Gypsic

Accessed: 05/22/2026

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 35.4 – 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.

Associated sites

R035XD404AZ	Gypsum Hills 7-11" p.z. Gypsum Hills, 7-11" p.z.
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Similar sites

R035XD414AZ	Sandy Loam Upland 7-11" p.z. Sandy Loam Upland, 7-11" p.z.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Krascheninnikovia lanata</i>
Herbaceous	(1) <i>Pleuraphis jamesii</i> (2) <i>Sporobolus nealleyi</i>

Physiographic features

This site occurs in an upland position on fan terraces. The soils are very deep and are strongly effervescent throughout their profile. Gypsum crystals occur in the subsurface. The site resembles a sandy loam upland ecological site, both in position and plant community. The plant community differs from that found on a sandy loam upland ecological site due to the gypsum found in the soil profile.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan
Flooding frequency	None
Ponding frequency	None
Elevation	1,160 – 1,980 m
Slope	0 %
Ponding depth	0 cm
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)	280 mm

Influencing water features

Soil features

The soils characterizing this site are very deep. The surface layer is about 2 inches deep and has a texture of fine sandy loam. At a depth of 8 inches or less varying amounts of gypsum crystals are found in the subsoil. The depth to a gypsic horizon is 8 to 20 inches. The surface and subsoil are moderately permeable. The site can absorb all the moisture the climate provides. A typical profile of soil textures resembles the following:

0-2 inches - fine sandy loam

2-8 inches - loam

8-55 inches - stratified layers ranging from sandy loam to loam with varying amounts of gypsum

55-60 inches - gypsiferous, gravelly loamy sand.

The typical soil of this site is mapped in:

Table 4. Representative soil features

Parent material	(1) Alluvium – sandstone and shale
Surface texture	(1) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to moderate
Soil depth	50 – 100 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	20.62 – 27.36 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	10 – 20 %

Subsurface fragment volume >3" (Depth not specified)	Not specified
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Ecological dynamics

The historic climax plant community (HCPC) for a site in North America is the plant community that existed at the time of European immigration and settlement. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site at that time. The HCPC was in dynamic equilibrium with its environment and was able to avoid displacement by the suite of disturbances and disturbance patterns (magnitude and frequency) that naturally occurred within the area occupied by the site. Natural disturbances, such as drought, fire, grazing of native fauna, and insects, were inherent in the development and maintenance of the plant community. The effects of these disturbances are part of the range of characteristics of the site that contribute to the dynamic equilibrium. Fluctuations in the plant community's structure and function caused by the effects of these natural disturbances establish the boundaries of dynamic equilibrium. They are accounted for as part of the range of characteristics for the ecological site. The HCPC is not a precise assemblage of species for which the proportions are the same from place to place or from year to year. Variability is apparent in productivity and occurrence of individual species.

The HCPC for this ecological site has been estimated by sampling relict or relatively undisturbed sites and/or reviewing historic records.

A plant community that is subjected to abnormal disturbances and physical site deterioration or that is protected from natural influences, such as fire and grazing, for long periods seldom typifies the HCPC. Any physical site deterioration caused by the abnormal disturbance may result in the crossing of a threshold or irreversible boundary to another state, or equilibrium, for the ecological site. There may be multiple thresholds and states possible for an ecological site, determined by the type and or severity of abnormal disturbance. The known states and transition pathways for this ecological site are described in the accompanying state and transition model.

The "Plant Community Plant Species Composition" table provides a list of species and each species or group of species' annual production in pounds per acre (air-dry weight) expected in a normal rainfall year. Low and high production yields represent the modal range of variability for that species or group of species across the extent of the ecological site.

The "Annual Production by Plant Type" table provides the median air-dry production and the fluctuations to be expected during favorable, normal, and unfavorable years.

The present plant community on an ecological site can be compared to the various common vegetation states that can exist on the site. The degree of similarity is expressed through a similarity index. To determine the similarity index, compare the production 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 representative value shown in the "Annual Production by Plant Type" table for the reference plant community. Variations in production due to above or below normal rainfall, incomplete growing season or utilization must be corrected before comparing it to the site description. The "Worksheet for Determining Similarity Index" is useful in making these corrections. The accompanying growth curve can be used as a guide for estimating percent of growth completed.

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 (%)
Grass/Grasslike					
1	Dominant Native Perennial Grasses			291-359	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	233-262	–
	gyp dropseed	SPNE	<i>Sporobolus nealleyi</i>	146-204	–
2	Occasional Native Perennial Grasses			0-4	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0-4	–
	threeawn	ARIST	<i>Aristida</i>	0-4	–
	burrograss	SCBR2	<i>Scleropogon brevifolius</i>	0-4	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-4	–
Forb					

3	Occasional Native Perennial Forbs			0-4	
	milkvetch	ASTRA	<i>Astragalus</i>	0-4	-
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0-4	-
	globemallow	SPHAE	<i>Sphaeralcea</i>	0-4	-
4	Occasional Native Annual Forbs			0-4	
	flatcrown buckwheat	ERDE6	<i>Eriogonum deflexum</i>	0-4	-
Shrub/Vine					
5	Common Native Shrubs			67-112	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	67-112	-
6	Occasional Native Shrubs			22-31	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	22-27	-
	water jacket	LYAN	<i>Lycium andersonii</i>	0-4	-
7	Occasional Native Cacti			0-4	
	pricklypear	OPUNT	<i>Opuntia</i>	0-4	-

Animal community

This site is easily accessed by livestock. Since the plant community is dominated by warm season grasses, livestock grazing management strategies should be designed to enhance cool season grasses, forbs and shrubs to maximize plant diversity on the site. The site is an open grassland and provides habitat for small animals and birds. Management of grazing and other uses should provide adequate cover for antelope fawns, small mammals and ground nesting birds.

Recreational uses

Managing grazing and other uses of the site to leave some standing grasses, forbs and shrubs will provide cover to protect against soil erosion and will provide hiding cover for small animals.

Wood products

There are no wood products produced on this site.

Other information

The soil of this site is very susceptible to water erosion. Therefore it is important to keep an adequate cover of vegetation to protect against water erosion.

Type locality

Location 1: Mohave County, AZ	
Township/Range/Section	T40 N. R10 W. S16
General legal description	Arizona, Mohave County, Gyp Poscket AZ 7 1/2 min. quad., Sec. 16, T. 40 N., R. 10 W.

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:

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:
