USDA Natural Resources
Conservation Service

Ecological site R035XC343AZ
Limestone/Sandstone Cliffs 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.

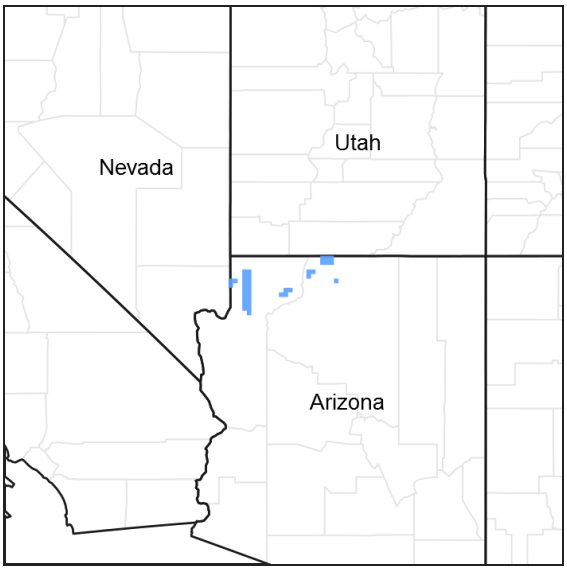

Figure 1. Mapped extent

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.

Associated sites

R035XC331AZ	**Shallow Upland 10-14" p.z. Warm** Shallow Upland, Calcareous, 10-14" p.z.
R035XC338AZ	**Loamy Upland 10-14" p.z. Limy** Shallow Sandy Loam, Calcareous, 10-14" p.z.

R035XC339AZ	**Shallow Sandy Loam 10-14" p.z. Calcareous** Loamy Upland, Calcareous, 10-14" p.z.

Similar sites

R035XC302AZ	**Sedimentary Cliffs 10-14" p.z.** Breaks, 10-14" p.z.

Table 1. Dominant plant species

Tree	(1) *Juniperus osteosperma*
Shrub	(1) *Coleogyne ramosissima* (2) *Yucca baccata*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

This site occures in the zone of climatic variables that support blackbrush on those soils conducive to its growth. It is found on escarpments, cliffs and canyon walls in comples with rock outcroppings. The soils are very shallow to shallow and are effervescent throughout the soil profile. Due to the steepness of the site runoff is very rapid. Slopes range from 35 to 70 percent.

Table 2. Representative physiographic features

Landforms	(1) Escarpment (2) Cliff
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	None
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None
Elevation	4,800–6,000 ft
Slope	35–70%
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)	14 in

Influencing water features

Soil features

The soils characterizing this site are very shallow to shallow and are strongly to violently effervescent through the soil profile. The surface texture is very gravelly loam. The subsurface texture is very gravelly loam. The permeability of the soil is moderate. The water holding capacity is very low.
NOT CURRENTLY CORRELATED in any AZ SSA.

Table 4. Representative soil features

Surface texture	(1) Very gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	10–20 in
Surface fragment cover <=3"	40%
Surface fragment cover >3"	5%
Available water capacity (0-40in)	0.7–2.4 in
Calcium carbonate equivalent (0-40in)	10–25%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	40%
Subsurface fragment volume >3" (Depth not specified)	5%

Ecological dynamics

The historic native plant community develops in the abscence of fire. When the site does burn blackbrush is removed from the plant community. The plant community becomes one of mixed shrubs, perennial grasses and forbs and annual grasses and forbs. The initial plant community following burning will be dominated by introduced annual grasses and forbs.

State and transition model

The State and Transition Model and Accompanying Narrative Descriptions are Still To Be Developed for this Ecological Site. For More Information Contact The Arizona NRCS State Rangeland Management Specialist.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The aspect of this ecological site is one of desert shrubs, predominantly blackbrush. Other shrubs occurring commonly are banana yucca, Mormon-tea and rubber rabbitbrush. Desert needlegrass dominates the understory mix of warm and cool season grasses and forbs.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	162	–	225
Grass/Grasslike	60	–	90
Forb	3	–	9
Tree	0	–	9
Total	**225**	**–**	**333**

Table 6. Soil surface cover

Tree basal cover	0-1%
Shrub/vine/liana basal cover	2-4%

Grass/grasslike basal cover	1-3%
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%

Figure 5. Plant community growth curve (percent production by month). AZ3501, 35.3 10-14" p.z. needle and thread. Growth starts in spring and extends into summer, plants may be green in the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10	20	30	10	5	5	10	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). AZ3514, 35.3 10-14" p.z. muttongrass. Growth begins in spring and continues with the summer rains..

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

Figure 8. 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 9. Plant community growth curve (percent production by month). AZ3563, 35.3 10-14" p.z. fourwing saltbush. Growth occurs in late spring through summer..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	10	25	35	25	5	0	0	0

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Occasional Perennial Summer Grasses**			0–3	
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–3	–
	black grama	BOER4	*Bouteloua eriopoda*	0–3	–

	black grama	BOER4	*Bouteloua eriopoda*	0–3	
	wolfstail	LYCUR	*Lycurus*	0–3	–
2	**Common Perennial Spring Grasses**			45–60	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	45–60	–
3	**Occasional Native Perennial Summer Grasses**			12–21	
	giant ricegrass	ACCO21	*Achnatherum coronatum*	0–6	–
	muttongrass	POFE	*Poa fendleriana*	0–6	–
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	0–3	–
	threeawn	ARIST	*Aristida*	0–3	–
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	0–3	–
	phlox heliotrope	HECOC	*Heliotropium convolvulaceum var. californicum*	0–3	–
4	**Occasional Native Annual Grasses**			3–6	
	Grass, annual	2GA	*Grass, annual*	0–3	–
Forb					
5	**Occasional Native Perenial Forbs**			3–9	
	buckwheat	ERIOG	*Eriogonum*	0–3	–
	beardtongue	PENST	*Penstemon*	0–3	–
	spiny phlox	PHHO	*Phlox hoodii*	0–3	–
	globemallow	SPHAE	*Sphaeralcea*	0–3	–
6	**Occasional Native Annual Forbs**			0–3	
	Forb, annual	2FA	*Forb, annual*	0–3	–
Shrub/Vine					
7	**Common Native Shrubs**			105–150	
	blackbrush	CORA	*Coleogyne ramosissima*	105–150	–
8	**Occasional Native Shrubs**			36–51	
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	12–24	–
	rubber rabbitbrush	ERNAN5	*Ericameria nauseosa ssp. nauseosa var. nauseosa*	9–15	–
	jointfir	EPHED	*Ephedra*	6–9	–
	buckwheat	ERIOG	*Eriogonum*	0–3	–
	Apache plume	FAPA	*Fallugia paradoxa*	0–3	–
	Fremont's mahonia	MAFR3	*Mahonia fremontii*	0–3	–
	Mexican cliffrose	PUME	*Purshia mexicana*	0–3	–
	skunkbush sumac	RHTR	*Rhus trilobata*	0–3	–
	currant	RIBES	*Ribes*	0–3	–
	sage	SALVI	*Salvia*	0–3	–
	Wright's beebrush	ALWR	*Aloysia wrightii*	0–3	–
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	0–3	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–3	–
9	**Occasional Native Cacti**			0–6	
	hedgehog cactus	ECHIN3	*Echinocereus*	0–3	–
	dollarjoint pricklypear	OPCH	*Opuntia chlorotica*	0–3	–
	pricklypear	OPUNT	*Opuntia*	0–3	–

10	**Occasional Native Agave-Yucca-Likes**			9–18	
	banana yucca	YUBA	*Yucca baccata*	9–15	–
	Utah agave	AGUT	*Agave utahensis*	0–3	–
Tree					
11	**Occasional Native Trees**			0–9	
	Utah juniper	JUOS	*Juniperus osteosperma*	0–9	–

Animal community

This site is not suited for livestock grazing due to steep slopes.

Recreational uses

The escarpments and cliffs of this site provide beautiful backdrops to vast open expanses and vistas.

There is little opportunity for recreational opportunities on this site.

Wood products

No wood products are produced from this site.

Type locality

Location 1: Mohave County, AZ	
Township/Range/Section	T34 N. R13 W. S34
General legal description	Arizona, Mohave County, Mustang Point, AZ 7 1/2 min. quad., AW1/4, Sec. 34, T. 34 N., R. 13 W., Lower Pidgeon Canyon, NE of Lower Pidgeon Spring.

Other references

Combines old approved site R035XC343AZ/R035XC332AZ Limestone Breaks 10-14" p.z. that has ARTRW with provisional site Breaks 10-14" p.z. Calcareous that has CORA. The soils are the same. Need to develop the HCPC with 2 plant communities.

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:

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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:**
