USDA Natural Resources Conservation Service

Ecological site R041XB216AZ
Clayey Slopes 8-12" p.z.

Last updated: 8/06/2020
Accessed: 04/19/2024

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.

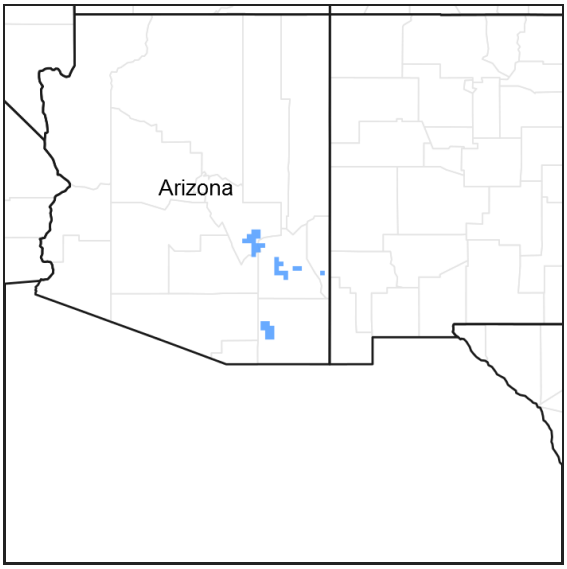

Figure 1. Mapped extent

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): 041X–Madrean Archipelago

AZ 41.2 – Chihuahuan – Sonoran Desert Shrubs

Elevations range from 2600 to 4000 feet and precipitation ranges from 8 to 12 inches per year. Vegetation includes mesquite, palo verde, catclaw acacia, soaptree yucca, creosotebush, whitethorn, staghorn cholla, desert saltbush, Mormon tea, burroweed, snakeweed, tobosa, black grama, threeawns, bush muhly, dropseed, and burrograss. The soil temperature regime is thermic and the soil moisture regime is typic aridic. This unit occurs within the Basin and Range Physiographic Province and is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys and basins. Igneous and metamorphic rock classes dominate the mountain ranges and sediments filling the basins represent combinations of fluvial, lacustrine, colluvial and alluvial deposits.

Associated sites

R041XB203AZ	**Clayey Upland 8-12" p.z.**
R041XB204AZ	**Clay Loam Upland 8-12" p.z.**
R041XB207AZ	**Limy Slopes 8-12" p.z.**

R041XB210AZ	**Loamy Upland 8-12" p.z.**

Similar sites

R041XC303AZ	**Clayey Slopes 12-16" p.z.**
R040XA103AZ	**Clayey Slopes 10"-13" p.z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Opuntia phaeacantha*
Herbaceous	(1) *Pleuraphis mutica* (2) *hilaria belangeri*

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on ridges, fan terraces and hill-slopes.

Table 2. Representative physiographic features

Landforms	(1) Ridge (2) Fan piedmont (3) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	2,600–4,000 ft
Slope	15–45%
Aspect	N, E, S

Climatic features

Precipitation ranges from 8-12 inches annually. More than half falls during Jul-Sep in brief, but often heavy, thunderstorms. The rest of the moisture comes as light rain or snow that falls slowly for a day or more, but rarely lasts more than a day. May and June are normally the driest months. Humidity is generally very low.

Temperatures are mild throughout most of the year. Freezing temperatures are common at night Dec-Feb; brief 0 F may be observed some nights. During June, July & August, some days may exceed 100 F.

In years of average or greater winter precipitation, annual grasses and forbs occur abundantly in the interspaces.

Table 3. Representative climatic features

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

Influencing water features

There are no water features associated with this site.

Soil features

These soils are moderately deep to deep and clayey textured. They are gravelly to very gravelly in the soil profile. They have thin (1-2 inch) surface horizons that range from sandyloam to loam in texture. They lack vertic soil properties. They usually have well developed covers of surface gravels and cobbles. Surface soils (10 inches) are non-calcareous, but some soils have calcic horizons below the argillic horizon.

Soil series mapped on areas of this site include: SSA-663 Gila-Duncan area MU 10 Eba; SSA-666 Cochise county Northwest part MU's 27 & 28 Contention; SSA-671 Cochise county Douglas-Tombstone part MU 35 Contention; SSA-675 San Carlos IR area MU 86 Eba.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam (2) Cobbly sandy loam (3) Very gravelly loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderately slow to slow
Soil depth	25–60 in
Surface fragment cover <=3"	20–60%
Surface fragment cover >3"	5–20%
Available water capacity (0-40in)	4.2–7.5 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	30–60%
Subsurface fragment volume >3" (Depth not specified)	0–10%

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

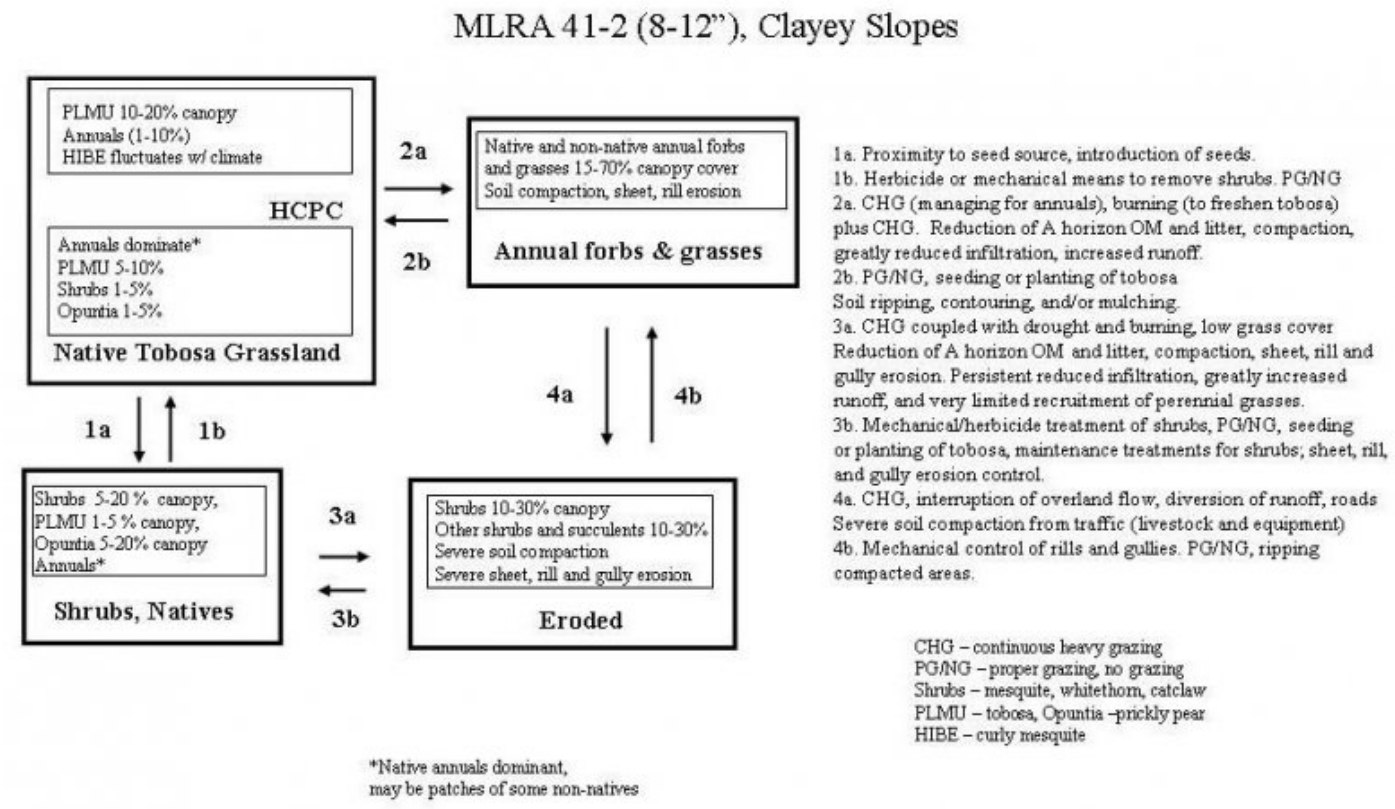

Figure 4. State and Transition, Clayey Slopes 8-12" pz.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Figure 5. Clayey Slopes 8-12" pz. soil profile

The native potential plant community on this site is a mixture of perennial grasses and desert shrubs and cacti. Annual forbs and grasses, of both the winter and summer seasons, are very important in the plant community in their respective (wet) seasons. Tobosa is the dominant perennial grass. The cover of some shallow rooted grass species like curly mesquite, fluctuate widely from wet to dry years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	130	300	525
Forb	6	50	175
Shrub/Vine	20	85	150
Tree	0	0	5
Total	**156**	**435**	**855**

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	1-2%
Grass/grasslike basal cover	1-2%
Forb basal cover	1-2%
Non-vascular plants	0%
Biological crusts	0-5%
Litter	10-60%
Surface fragments >0.25" and <=3"	30-50%

Surface fragments >3"	1-15%
Bedrock	0%
Water	0%
Bare ground	5-60%

Table 7. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	1-5%	1-20%	1-20%
>0.5 <= 1	–	2-5%	5-10%	1-15%
>1 <= 2	–	2-5%	5-10%	1-5%
>2 <= 4.5	–	5-15%	0-2%	0-2%
>4.5 <= 13	0-2%	1-5%	–	–
>13 <= 40	–	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

State 2
Annuals

Community 2.1
Annuals

This state occurs where native and non-native annual forbs and grasses dominate the plant community. Perennial grasses and forbs have been removed due to the interaction of drought, fire and continuous grazing. Repeat fires near residential areas can cause this state. Non-native annual species include red brome, filaree, cheatgrass and purslane.

State 3
Shrubs, tobosa

Community 3.1
Shrubs, tobosa

This state occurs where native shrubs and succulents have increased from 10 to 20% canopy. Dominant shrubs and succulents include catclaw, prickly pear, mesquite, whitethorn and cholla species. tobosa is still present on the site in adequate amounts and curly mesquite still fluctuates with climate.

State 4
Eroded

Community 4.1
Eroded

This state exists where severe sheet, rill and, in some cases, gully erosion has ocurred. It is usually associated with historic water locations and, or road and trail construction across the slope. The state is characterized by soil compaction and concentration of runoff by trailing of livestock or vehicles; or by heavy livestock traffic.

Transition T1A
State 1 to 2

Continuous Heavy Grazing (managing for annuals), burning (to freshen tobosa) plus CHG. Reduction of A Horizon, Organic Matter and litter. Soil is compacted, greatly reducing infiltration and increasing runoff.

Transition T1B
State 1 to 3

Proximity to seed source, introduction of seeds.

Restoration pathway R2A
State 2 to 1

Prescribed Grazing/No Grazing, seeding or planting of tobobsa. Soil ripping, contouring, and/or mulching.

Transition T2A
State 2 to 4

Continuous Heavy grazing, interruption of overland flow, diversion of runoff, roads. Severe soil compaction from traffic (livestock and equipment).

Restoration pathway R3A
State 3 to 1

Herbicide or mechanical means to remove shrubs. Prescribed Grazing/No Grazing.

Transition T3A
State 3 to 4

Continuous Heavy Grazing coupled with drought and burning, low grass cover. Reduction of A Horizon, Organic Matter and litter. Soil is compacted with sheet, rill and gully erosion. Persistently reduced infiltration, greatly reduced runoff, and very limited recruitment of perennial grasses.

Restoration pathway R4A
State 4 to 2

Mechanical control of rills and gullies. Prescribed Grazing/No Grazing, ripping compacted areas.

Restoration pathway R4B
State 4 to 3

Mechanical/Herbicide treatment of shrubs, Prescribed Grazing/No Grazing, seeding or planting of tobosa, maintenance treatments for shrubs, sheet, rill and gully erosion control.

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Dominant Perennial Grass**			100–200	
	tobosagrass	PLMU3	*Pleuraphis mutica*	100–200	–
2	**Miscellaneous Perennial Grasses**			17–125	
	curly-mesquite	HIBE	*Hilaria belangeri*	5–100	–
	black grama	BOER4	*Bouteloua eriopoda*	10–50	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	1–20	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	1–20	

	bush muhly	MUPO2	*Muhlenbergia porteri*	1–20	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–10	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	0–10	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–5	–
	green sprangletop	LEDU	*Leptochloa dubia*	0–5	–
	Hall's panicgrass	PAHA	*Panicum hallii*	0–5	–
	vine mesquite	PAOB	*Panicum obtusum*	0–5	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–5	–
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	0–5	–
	squirreltail	ELEL5	*Elymus elymoides*	0–2	–
	tanglehead	HECO10	*Heteropogon contortus*	0–2	–
	burrograss	SCBR2	*Scleropogon brevifolius*	0–1	–
3	**Perennial threeawns**			10–100	
	purple threeawn	ARPU9	*Aristida purpurea*	5–25	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–25	–
	spidergrass	ARTE3	*Aristida ternipes*	5–25	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	0–15	–
	Fendler threeawn	ARPUL	*Aristida purpurea var. longiseta*	0–15	–
	blue threeawn	ARPUN	*Aristida purpurea var. nealleyi*	0–5	–
	poverty threeawn	ARDI5	*Aristida divaricata*	0–5	–
4	**Annual grasses**			1–100	
	sixweeks threeawn	ARAD	*Aristida adscensionis*	1–25	–
	mucronate sprangeltop	LEPAB	*Leptochloa panicea ssp. brachiata*	0–25	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	1–25	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	0–20	–
	needle grama	BOAR	*Bouteloua aristidoides*	0–20	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–20	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–20	–
	witchgrass	PACA6	*Panicum capillare*	0–10	–
	Mexican panicgrass	PAHI5	*Panicum hirticaule*	0–10	–
	prairie threeawn	AROL	*Aristida oligantha*	1–10	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	0–5	–
	Eastwood fescue	VUMIC	*Vulpia microstachys var. ciliata*	0–5	–
	desert fescue	VUMIM	*Vulpia microstachys var. microstachys*	0–5	–
	Arizona brome	BRAR4	*Bromus arizonicus*	0–5	–
	feather fingergrass	CHVI4	*Chloris virgata*	0–5	–
	tapertip cupgrass	ERACA	*Eriochloa acuminata var. acuminata*	0–5	–
	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	0–5	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	0–5	–
	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	0–5	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	0–2	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	0–2	–
Forb					
5	**Perennial forbs**			5–25	

	dwarf desertpeony	ACNA2	*Acourtia nana*	1–10	–
	bluedicks	DICA14	*Dichelostemma capitatum*	0–5	–
	slender janusia	JAGR	*Janusia gracilis*	1–5	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	1–5	–
	slender poreleaf	POGR5	*Porophyllum gracile*	1–5	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	1–5	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–5	–
	pricklyleaf dogweed	THAC	*Thymophylla acerosa*	0–1	–
	Rocky Mountain zinnia	ZIGR	*Zinnia grandiflora*	0–1	–
	glandleaf milkwort	POMA7	*Polygala macradenia*	0–1	–
	Coues' cassia	SECO10	*Senna covesii*	0–1	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–1	–
	ragged nettlespurge	JAMA	*Jatropha macrorhiza*	0–1	–
	San Pedro daisy	LAPO4	*Lasianthaea podocephala*	0–1	–
	Parry's false prairie-clover	MAPA7	*Marina parryi*	0–1	–
	lacy tansyaster	MAPIP4	*Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida*	0–1	–
	plains blackfoot	MELE2	*Melampodium leucanthum*	0–1	–
	wishbone-bush	MILAV	*Mirabilis laevis var. villosa*	0–1	–
	desert tobacco	NIOB	*Nicotiana obtusifolia*	0–1	–
	tuber anemone	ANTU	*Anemone tuberosa*	0–1	–
	narrowleaf silverbush	ARLA12	*Argythamnia lanceolata*	0–1	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–1	–
	New Mexico silverbush	ARNE2	*Argythamnia neomexicana*	0–1	–
	perennial rockcress	ARPE2	*Arabis perennans*	0–1	–
	dense ayenia	AYMI	*Ayenia microphylla*	0–1	–
	hairyseed bahia	BAAB	*Bahia absinthifolia*	0–1	–
	desert marigold	BAMU	*Baileya multiradiata*	0–1	–
	scarlet spiderling	BOCO	*Boerhavia coccinea*	0–1	–
	Arizona wrightwort	CAAR7	*Carlowrightia arizonica*	0–1	–
	desert mariposa lily	CAKE	*Calochortus kennedyi*	0–1	–
	sego lily	CANU3	*Calochortus nuttallii*	0–1	–
	whitemargin sandmat	CHAL11	*Chamaesyce albomarginata*	0–1	–
	leatherweed	CRPO5	*Croton pottsii*	0–1	–
	fingerleaf gourd	CUDI	*Cucurbita digitata*	0–1	–
	coyote gourd	CUPA	*Cucurbita palmata*	0–1	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–1	–
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–1	–
	southwestern mock vervain	GLGO	*Glandularia gooddingii*	0–1	–
	desert rosemallow	HICO	*Hibiscus coulteri*	0–1	–
	Indian rushpea	HOGL2	*Hoffmannseggia glauca*	0–1	–
	brownfoot	ACWR5	*Acourtia wrightii*	0–1	–
	poreleaf dogweed	ADPO2	*Adenophyllum porophyllum*	0–1	–

	trailing windmills	ALIN	*Allionia incarnata*	0–1	–
	largeflower onion	ALMA4	*Allium macropetalum*	0–1	–
6	**Annual forbs**			1–150	
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–50	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–25	–
	western tansymustard	DEPI	*Descurainia pinnata*	0–20	–
	combseed	PECTO	*Pectocarya*	0–20	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–20	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–20	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–15	–
	intermediate pepperweed	LEVIM	*Lepidium virginicum var. medium*	0–15	–
	coastal bird's-foot trefoil	LOSAB	*Lotus salsuginosus var. brevivexillus*	0–15	–
	tanseyleaf tansyaster	MATA2	*Machaeranthera tanacetifolia*	0–15	–
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	0–15	–
	exserted Indian paintbrush	CAEXE	*Castilleja exserta ssp. exserta*	0–15	–
	pitseed goosefoot	CHBE4	*Chenopodium berlandieri*	0–10	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–10	–
	longleaf false goldeneye	HELOA2	*Heliomeris longifolia var. annua*	0–10	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–10	–
	manybristle chinchweed	PEPA2	*Pectis papposa*	0–10	–
	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–10	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–5	–
	sorrel buckwheat	ERPO4	*Eriogonum polycladon*	0–5	–
	Texas stork's bill	ERTE13	*Erodium texanum*	0–5	–
	wedgeleaf draba	DRCU	*Draba cuneifolia*	0–5	–
	flatcrown buckwheat	ERDE6	*Eriogonum deflexum*	0–5	–
	cryptantha	CRYPT	*Cryptantha*	0–5	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–5	–
	foothill deervetch	LOHU2	*Lotus humistratus*	0–5	–
	slender goldenweed	MAGR10	*Machaeranthera gracilis*	0–5	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–5	–
	milkvetch	ASTRA	*Astragalus*	0–5	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–5	–
	Coulter's spiderling	BOCO2	*Boerhavia coulteri*	0–5	–
	fringed redmaids	CACI2	*Calandrinia ciliata*	0–2	–
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–2	–
	hyssopleaf sandmat	CHHY3	*Chamaesyce hyssopifolia*	0–2	–
	Esteve's pincushion	CHST	*Chaenactis stevioides*	0–2	–
	white tackstem	CAWR	*Calycoseris wrightii*	0–2	–
	Arizona lupine	LUAR4	*Lupinus arizonicus*	0–2	–
	green carpetweed	MOVE	*Mollugo verticillata*	0–2	–
	desert evening primrose	OEPR	*Oenothera primiveris*	0–2	–

	Florida pellitory	PAFL3	*Parietaria floridana*	0–2	–
	hairy prairie clover	DAMO	*Dalea mollis*	0–2	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–2	–
	hairy desertsunflower	GECA2	*Geraea canescens*	0–2	–
	star gilia	GIST	*Gilia stellata*	0–2	–
	phacelia	PHACE	*Phacelia*	0–2	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–2	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–2	–
	woollyhead neststraw	STMI2	*Stylocline micropoides*	0–2	–
	sand fringepod	THCU	*Thysanocarpus curvipes*	0–1	–
	tumblemustard	THELY3	*Thelypodiopsis*	0–1	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–1	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–1	–
	chia	SACO6	*Salvia columbariae*	0–1	–
	sawtooth sage	SASU7	*Salvia subincisa*	0–1	–
	spreading fanpetals	SIAB	*Sida abutifolia*	0–1	–
	Mexican fireplant	EUHE4	*Euphorbia heterophylla*	0–1	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	0–1	–
	crestrib morning-glory	IPCO2	*Ipomoea costellata*	0–1	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–1	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0–1	–
	bristly nama	NAHI	*Nama hispidum*	0–1	–
	glandular threadplant	NEGL	*Nemacladus glanduliferus*	0–1	–
	Fendler's desertdandelion	MAFE	*Malacothrix fendleri*	0–1	–
	scrambled eggs	COAU2	*Corydalis aurea*	0–1	–
	whitemouth dayflower	COER	*Commelina erecta*	0–1	–
	yellow tackstem	CAPA7	*Calycoseris parryi*	0–1	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–1	–
	southwestern pricklypoppy	ARPL3	*Argemone pleiacantha*	0–1	–
	annual agoseris	AGHE2	*Agoseris heterophylla*	0–1	–
Shrub/Vine					
7	**Dominant shrubs**			10–70	
	jojoba	SICH	*Simmondsia chinensis*	0–40	–
	catclaw acacia	ACGR	*Acacia greggii*	5–15	–
	creosote bush	LATR2	*Larrea tridentata*	0–10	–
	western honey mesquite	PRGLT	*Prosopis glandulosa var. torreyana*	1–10	–
	whitethorn acacia	ACCO2	*Acacia constricta*	1–10	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–5	–
	longleaf jointfir	EPTR	*Ephedra trifurca*	0–5	–
8	**Miscellaneous shrubs**			0–10	
	crucifixion thorn	CAHO3	*Canotia holacantha*	0–1	–
	spiny hackberry	CEEH	*Celtis ehrenbergiana*	0–1	–

	American tarwort	FLCE	*Flourensia cernua*	0–1	–
	ocotillo	FOSP2	*Fouquieria splendens*	0–1	–
	water jacket	LYAN	*Lycium andersonii*	0–1	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	0–1	–
	pale desert-thorn	LYPA	*Lycium pallidum*	0–1	–
	catclaw mimosa	MIACB	*Mimosa aculeaticarpa var. biuncifera*	0–1	–
	blue paloverde	PAFL6	*Parkinsonia florida*	0–1	–
	yellow paloverde	PAMI5	*Parkinsonia microphylla*	0–1	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–1	–
9	**Half shrubs**			5–50	
	fairyduster	CAER	*Calliandra eriophylla*	1–15	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	1–15	–
	littleleaf ratany	KRER	*Krameria erecta*	1–15	–
	rough menodora	MESC	*Menodora scabra*	1–15	–
	desert zinnia	ZIAC	*Zinnia acerosa*	0–10	–
	pelotazo	ABIN	*Abutilon incanum*	1–5	–
	shortleaf baccharis	BABR	*Baccharis brachyphylla*	1–5	–
	rayless goldenhead	ACSP	*Acamptopappus sphaerocephalus*	0–1	–
	Parish's goldeneye	VIPA14	*Viguiera parishii*	0–1	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	0–1	–
	burroweed	ISTE2	*Isocoma tenuisecta*	0–1	–
	brittlebush	ENFA	*Encelia farinosa*	0–1	–
	button brittlebush	ENFR	*Encelia frutescens*	0–1	–
	turpentine bush	ERLA12	*Ericameria laricifolia*	0–1	–
	threadleaf snakeweed	GUMI	*Gutierrezia microcephala*	0–1	–
10	**Succulents**			5–20	
	tulip pricklypear	OPPH	*Opuntia phaeacantha*	1–15	–
	cactus apple	OPEN3	*Opuntia engelmannii*	1–15	–
	buck-horn cholla	CYAC8	*Cylindropuntia acanthocarpa*	0–5	–
	walkingstick cactus	CYSP8	*Cylindropuntia spinosior*	0–5	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	0–2	–
	purple pricklypear	OPMA8	*Opuntia macrocentra*	0–2	–
	banana yucca	YUBA	*Yucca baccata*	0–2	–
	soaptree yucca	YUEL	*Yucca elata*	0–1	–
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–1	–
	pinkflower hedgehog cactus	ECFA	*Echinocereus fasciculatus*	0–1	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	0–1	–
	devil's cholla	GRKU	*Grusonia kunzei*	0–1	–
	Graham's nipple cactus	MAGR9	*Mammillaria grahamii*	0–1	–
Tree					
11	**Occasional tree**			0–5	
	oneseed juniper	JUMO	*Juniperus monosperma*	0–5	–

Animal community

This site produces some perennial forage for livestock. It wet (El Nino) winters it produces a tremendous amount of annual forbs and grasses, all of which are excellent forage. The site is home to a variety of small mammals and birds and their associated predators. It is a good foraging area for larger mammals like mule deer and javalina.

Hydrological functions

These soils are heavy textured and with steep slopes are very good producers of runoff.

Recreational uses

Hunting, horseback riding, hiking, wildlife observation, photography, rock hounding and bird watching.

Wood products

Limited mesquite wood for campfires.

Other products

Red clay for pot making. Herbs like wild onions, grass nuts and herbaceous sage.

Contributors

Dan Robinett
Larry D. Ellicott

Approval

Scott Woodall, 8/06/2020

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	04/19/2024
Approved by	Scott Woodall
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:**
