USDA Natural Resources Conservation Service

Ecological site R041XB223AZ
Basalt Hills 8-12" p.z.

Accessed: 05/11/2025

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.

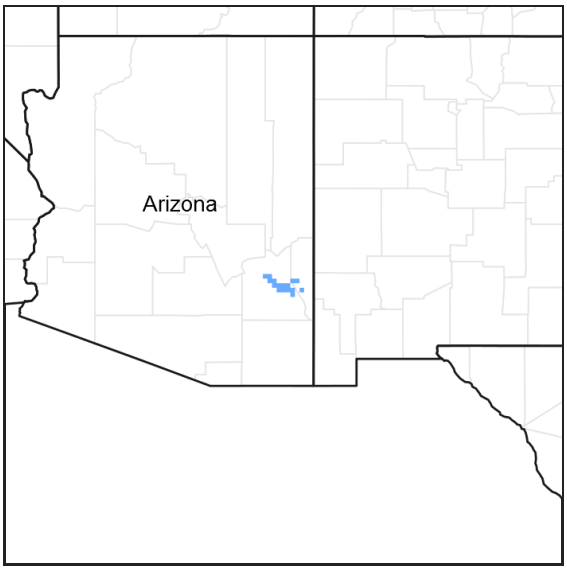

Figure 1. Mapped extent

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): 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.**
R041XB208AZ	**Limy Upland 8-12" p.z.**
R041XB220AZ	**Limestone Hills 8-12" p.z.**
R041XC330AZ	**Volcanic Hills 12-16" p.z. Clayey**

Similar sites

R040XA101AZ	**Basalt Hills 10"-13" p.z.**
R041XC323AZ	**Volcanic Hills 12-16" p.z. Loamy**
R038XA133AZ	**Volcanic/Metamorphic Hills 12-16" p.z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *larrea tridentata* (2) *acacia*
Herbaceous	(1) *bouteloua eriopoda* (2) *muhlenbergia porteri*

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on hill-slopes, ridge-tops and mesas.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Ridge (3) Mesa
Flooding frequency	None
Ponding frequency	None
Elevation	2,600–4,000 ft
Slope	15–65%
Aspect	N, E, S

Climatic features

Precipitation ranges from 8-12 inches annually. More than half falls during July-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)	0 days
Precipitation total (average)	0 in

Influencing water features

There are no water features associated with this site.

Soil features

These are shallow, calcareous, loamy soils on basic igneous bedrock like basalt, andesite and related tuffs, agglomerates and welded ash. Bedrock is hard and un-weathered. Soils are very gravelly and cobbly in the profile. They have well developed covers of gravels and cobbles. Plant soil-moisture relationships are fair.

Soils mapped to date on this site include: SSA-662 Safford area MU's GuE Graham and Rk rockland; SSA-663 Gila-Duncan area MU 1 Akela & Lehmans.

Table 4. Representative soil features

Parent material	(1) Colluvium–andesite
Surface texture	(1) Very cobbly sandy loam (2) Very gravelly sandy loam (3) Cobbly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to moderate
Soil depth	5–20 in
Surface fragment cover <=3"	40–60%
Surface fragment cover >3"	20–40%
Available water capacity (0-40in)	0.6–2.3 in
Calcium carbonate equivalent (0-40in)	3–15%
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)	35–65%
Subsurface fragment volume >3" (Depth not specified)	5–30%

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 community found on relict or relatively undisturbed areas of this site. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as fire, grazing and 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 described in the 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 amount shown for that 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 the field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of 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.

The historic native state includes the native plant communities that occur on the site, including the historic climax plant community. This state includes other plant communities that naturally occupy the site following fire, drought, flooding, herbivores and other natural disturbances. The historic climax plant community represents the natural climax community that eventually reoccupies the site with proper management and a return to near normal conditions and/or equilibrium.

State and transition model

Ecosystem states

1. HCPC

2. Shrubs, exotic annuals

3. Annuals

State 1 submodel, plant communities

1.1. HCPC

State 2 submodel, plant communities

2.2. Shrubs, exotic annuals

State 3 submodel, plant communities

3.3. Annuals

State 1
HCPC

Community 1.1
HCPC

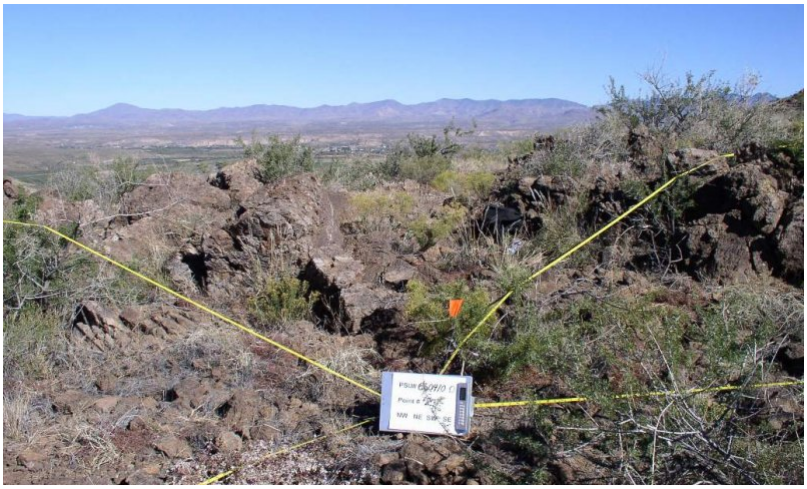

Figure 4. Basalt Hills 8-12" pz., HCPC

The native potential plant community on this site is a mixture of desert trees, shrubs, succulents and perennial and annual forbs and grasses. Shrubs like creosote bush dominate the plant community. Annuals, of both winter and summer types, are very important in their respective seasons in wet years. Perennial grasses fluctuate from 1-2% after prolonged drought to 20% of the plant community during favorable rainfall years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	71	200	315
Grass/Grasslike	17	50	240
Forb	4	20	180
Tree	0	1	20
Total	**92**	**271**	**755**

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	1-2%
Grass/grasslike basal cover	0-1%
Forb basal cover	0-1%
Non-vascular plants	0%
Biological crusts	0-5%
Litter	10-55%
Surface fragments >0.25" and <=3"	40-60%
Surface fragments >3"	20-40%
Bedrock	0-5%
Water	0%
Bare ground	5-30%

Table 7. Canopy structure (% cover)

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

State 2
Shrubs, exotic annuals

Community 2.1
Shrubs, exotic annuals

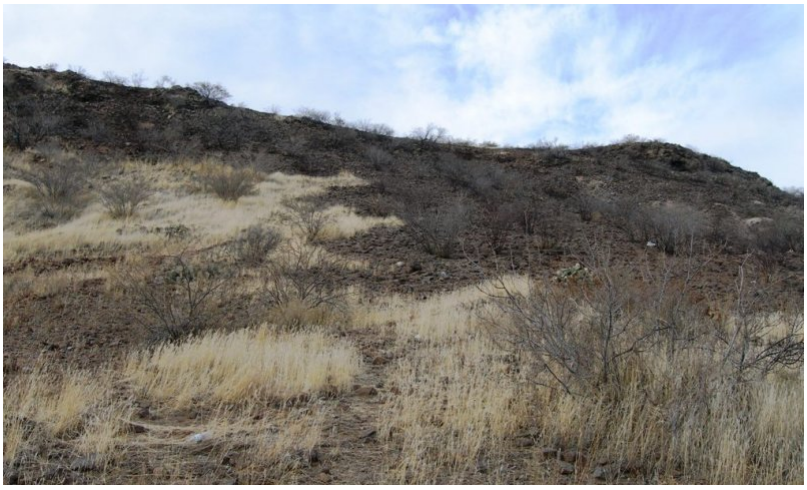

Figure 6. Basalt Hills 8-12" pz., red brome

This state occurs where non-native annual grasses and forbs have increased to dominate the herbaceous layer of the plant community. The native tree and shrub cover is intact. Annual species like red brome, cheatgrass, filaree, purslane and tumble mustard dominate the under-story. Native annuals and perennial grasses and forbs still exist in the plant community but are diminished in cover and diversity.

State 3
Annuals

Community 3.1
Annuals

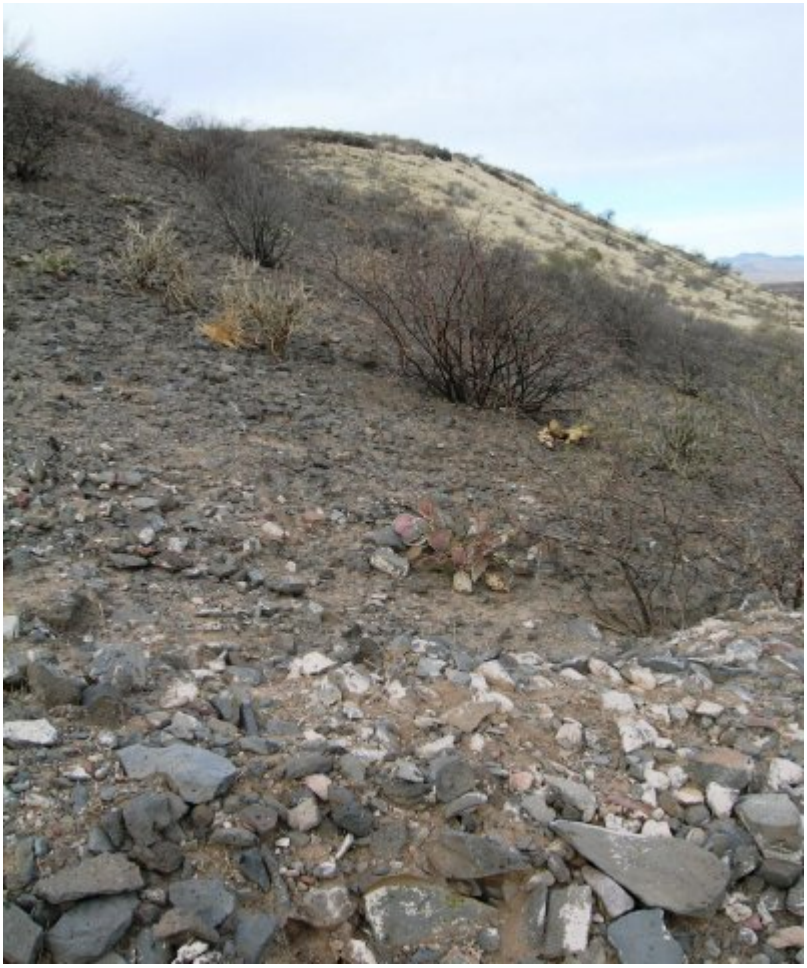

Figure 7. Basalt Hills 8-12" pz., repeated fires

This state occurs where repeated fires have removed the tree and shrub component of the plant community. It occurs near residential areas and along heavily traveled roads where the incidence of fire is high. Native and non-native annual forbs and grasses dominate the plant community.

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 grasses**			15–100	
	sideoats grama	BOCU	*Bouteloua curtipendula*	5–50	–
	black grama	BOER4	*Bouteloua eriopoda*	5–50	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	5–50	–
	tobosagrass	PLMU3	*Pleuraphis mutica*	5–30	–
	slim tridens	TRMU	*Tridens muticus*	0–30	–
	purple threeawn	ARPU9	*Aristida purpurea*	0–20	–
	blue threeawn	ARPUN	*Aristida purpurea var. nealleyi*	0–20	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–20	–
	spidergrass	ARTE3	*Aristida ternipes*	0–15	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	0–10	–
2	**Misc. perennial grasses**			1–30	
	low woollygrass	DAPU7	*Dasyochloa pulchella*	1–10	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–10	–

	tanglehead	HECO10	*Heteropogon contortus*	0–10	–
	Hall's panicgrass	PAHA	*Panicum hallii*	0–10	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	0–10	–
	nineawn pappusgrass	ENDE	*Enneapogon desvauxii*	1–5	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–5	–
	slim tridens	TRMUE	*Tridens muticus var. elongatus*	0–1	–
	burrograss	SCBR2	*Scleropogon brevifolius*	0–1	–
	fall witchgrass	DICO6	*Digitaria cognata*	0–1	–
	alkali sacaton	SPAI	*Sporobolus airoides*	0–1	–
	spike dropseed	SPCO4	*Sporobolus contractus*	0–1	–
	poverty threeawn	ARDI5	*Aristida divaricata*	0–1	–
	Fendler threeawn	ARPUL	*Aristida purpurea var. longiseta*	0–1	–
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	0–1	–
3	**Cool season grasses**			0–10	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	0–10	–
	squirreltail	ELEL5	*Elymus elymoides*	0–5	–
4	**Annual grasses**			1–100	
	mucronate sprangeltop	LEPAB	*Leptochloa panicea ssp. brachiata*	0–25	–
	needle grama	BOAR	*Bouteloua aristidoides*	0–20	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–20	–
	sixweeks threeawn	ARAD	*Aristida adscensionis*	0–20	–
	Mexican panicgrass	PAHI5	*Panicum hirticaule*	0–20	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–10	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	0–10	–
	Eastwood fescue	VUMIC	*Vulpia microstachys var. ciliata*	0–10	–
	desert fescue	VUMIM	*Vulpia microstachys var. microstachys*	0–10	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	1–10	–
	prairie threeawn	AROL	*Aristida oligantha*	0–5	–
	witchgrass	PACA6	*Panicum capillare*	0–5	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	0–2	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	0–2	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	0–2	–
	Arizona brome	BRAR4	*Bromus arizonicus*	0–2	–
	feather fingergrass	CHVI4	*Chloris virgata*	0–2	–
	canyon cupgrass	ERLE7	*Eriochloa lemmonii*	0–2	–
	Mexican lovegrass	ERME	*Eragrostis mexicana*	0–2	–
	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	0–2	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	0–2	–
	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	0–1	–
Forb					
5	**Perennial forbs**			3–30	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	1–10	–
	slender poreleaf	POGR5	*Porophyllum gracile*	0–5	–
	Coues' cassia	SECO10	*Senna covesii*	0–5	–

	[illegible]	[illegible]	[illegible]	[illegible]	
	slender janusia	JAGR	*Janusia gracilis*	0–5	–
	Parry's false prairie-clover	MAPA7	*Marina parryi*	1–5	–
	lacy tansyaster	MAPIP4	*Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida*	1–5	–
	dwarf desertpeony	ACNA2	*Acourtia nana*	0–5	–
	trailing windmills	ALIN	*Allionia incarnata*	0–5	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	1–5	–
	bluedicks	DICA14	*Dichelostemma capitatum*	0–5	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–2	–
	leatherweed	CRPO5	*Croton pottsii*	0–2	–
	bigseed alfalfa dodder	CUIN	*Cuscuta indecora*	0–1	–
	desert larkspur	DEPA	*Delphinium parishii*	0–1	–
	ragged nettlespurge	JAMA	*Jatropha macrorhiza*	0–1	–
	Fendler's bladderpod	LEFE	*Lesquerella fendleri*	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	–
	Parry's beardtongue	PEPA24	*Penstemon parryi*	0–1	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–1	–
	glandleaf milkwort	POMA7	*Polygala macradenia*	0–1	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–1	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–1	–
	pricklyleaf dogweed	THAC	*Thymophylla acerosa*	0–1	–
	rue of the mountains	THTE2	*Thamnosma texana*	0–1	–
	branched noseburn	TRRA5	*Tragia ramosa*	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	–
	desert mariposa lily	CAKE	*Calochortus kennedyi*	0–1	–
	sego lily	CANU3	*Calochortus nuttallii*	0–1	–
	whitemargin sandmat	CHAL11	*Chamaesyce albomarginata*	0–1	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–1	–
	desert trumpet	ERIN4	*Eriogonum inflatum*	0–1	–
	wild dwarf morning-glory	EVAR	*Evolvulus arizonicus*	0–1	–
	paleface	HIDE	*Hibiscus denudatus*	0–1	–
	tuber anemone	ANTU	*Anemone tuberosa*	0–1	–
	brownfoot	ACWR5	*Acourtia wrightii*	0–1	–
	poreleaf dogweed	ADPO2	*Adenophyllum porophyllum*	0–1	–
6	**Annual forbs**			1–150	
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	1–20	–
	Coulter's spiderling	BOCO2	*Boerhavia coulteri*	0–15	–
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–15	–

	longleaf false goldeneye	HELOA2	*Heliomeris longifolia var. annua*	0–15	–
	tanseyleaf tansyaster	MATA2	*Machaeranthera tanacetifolia*	0–15	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–15	–
	combseed	PECTO	*Pectocarya*	0–15	–
	phacelia	PHACE	*Phacelia*	0–15	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–10	–
	thelypody	THELY	*Thelypodium*	0–10	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–10	–
	flatcrown buckwheat	ERDE6	*Eriogonum deflexum*	0–10	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–10	–
	pitseed goosefoot	CHBE4	*Chenopodium berlandieri*	0–10	–
	western tansymustard	DEPI	*Descurainia pinnata*	0–10	–
	cryptantha	CRYPT	*Cryptantha*	0–5	–
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–5	–
	milkvetch	ASTRA	*Astragalus*	0–5	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–5	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–5	–
	crestrib morning-glory	IPCO2	*Ipomoea costellata*	0–5	–
	intermediate pepperweed	LEVIM	*Lepidium virginicum var. medium*	0–5	–
	foothill deervetch	LOHU2	*Lotus humistratus*	0–5	–
	coastal bird's-foot trefoil	LOSAB	*Lotus salsuginosus var. brevivexillus*	0–5	–
	Arizona lupine	LUAR4	*Lupinus arizonicus*	0–5	–
	slender goldenweed	MAGR10	*Machaeranthera gracilis*	0–5	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–5	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–5	–
	Goodding's bladderpod	LEGO2	*Lesquerella gooddingii*	0–2	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–2	–
	manybristle chinchweed	PEPA2	*Pectis papposa*	0–2	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0–2	–
	woollyhead neststraw	STMI2	*Stylocline micropoides*	0–2	–
	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–2	–
	chia	SACO6	*Salvia columbariae*	0–2	–
	sawtooth sage	SASU7	*Salvia subincisa*	0–2	–
	spreading fanpetals	SIAB	*Sida abutifolia*	0–2	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–2	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–2	–
	sorrel buckwheat	ERPO4	*Eriogonum polycladon*	0–2	–
	white tackstem	CAWR	*Calycoseris wrightii*	0–2	–
	hyssopleaf sandmat	CHHY3	*Chamaesyce hyssopifolia*	0–2	–
	Esteve's pincushion	CHST	*Chaenactis stevioides*	0–2	–
	hairy prairie clover	DAMO	*Dalea mollis*	0–2	–
	soft prairie clover	DAMO2	*Dalea mollissima*	0–1	–
	sanddune wallflower	ERCA14	*Erysimum capitatum*	0–1	–

	miner's lettuce	CLPEP	*Claytonia perfoliata ssp. perfoliata*	0–1	–
	scrambled eggs	COAU2	*Corydalis aurea*	0–1	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–1	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–1	–
	fringed redmaids	CACI2	*Calandrinia ciliata*	0–1	–
	exserted Indian paintbrush	CAEXE	*Castilleja exserta ssp. exserta*	0–1	–
	yellow tackstem	CAPA7	*Calycoseris parryi*	0–1	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–1	–
	Mexican fireplant	EUHE4	*Euphorbia heterophylla*	0–1	–
	star gilia	GIST	*Gilia stellata*	0–1	–
	southwestern mock vervain	GLGO	*Glandularia gooddingii*	0–1	–
	redstar	IPCO3	*Ipomoea coccinea*	0–1	–
	ivyleaf morning-glory	IPHE	*Ipomoea hederacea*	0–1	–
	annual agoseris	AGHE2	*Agoseris heterophylla*	0–1	–
	lyreleaf jewelflower	STCAA	*Streptanthus carinatus ssp. arizonicus*	0–1	–
	sand fringepod	THCU	*Thysanocarpus curvipes*	0–1	–
	desert unicorn-plant	PRAL4	*Proboscidea althaeifolia*	0–1	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–1	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–1	–
	green carpetweed	MOVE	*Mollugo verticillata*	0–1	–
	bristly nama	NAHI	*Nama hispidum*	0–1	–
	glandular threadplant	NEGL	*Nemacladus glanduliferus*	0–1	–
	desert evening primrose	OEPR	*Oenothera primiveris*	0–1	–
	Florida pellitory	PAFL3	*Parietaria floridana*	0–1	–
	Fendler's desertdandelion	MAFE	*Malacothrix fendleri*	0–1	–
Shrub/Vine					
7	**Dominant shrubs**			50–200	
	creosote bush	LATR2	*Larrea tridentata*	20–100	–
	catclaw acacia	ACGR	*Acacia greggii*	5–50	–
	whitethorn acacia	ACCO2	*Acacia constricta*	1–25	–
	ocotillo	FOSP2	*Fouquieria splendens*	1–20	–
	Wright's beebrush	ALWR	*Aloysia wrightii*	1–20	–
	blue paloverde	PAFL6	*Parkinsonia florida*	0–20	–
	western honey mesquite	PRGLT	*Prosopis glandulosa var. torreyana*	0–10	–
	longleaf jointfir	EPTR	*Ephedra trifurca*	1–10	–
	viscid acacia	ACNE4	*Acacia neovernicosa*	0–10	–
8	**Miscellaneous shrubs**			5–50	
	shortleaf baccharis	BABR	*Baccharis brachyphylla*	0–20	–
	mariola	PAIN2	*Parthenium incanum*	1–20	–
	water jacket	LYAN	*Lycium andersonii*	1–10	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	0–10	–

	pale desert-thorn	LYPA	*Lycium pallidum*	0–10	–
	brittlebush	ENFA	*Encelia farinosa*	0–10	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–5	–
	Florida hopbush	DOVI	*Dodonaea viscosa*	0–5	–
	jojoba	SICH	*Simmondsia chinensis*	0–5	–
	Parish's goldeneye	VIPA14	*Viguiera parishii*	0–1	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–1	–
	cattle saltbush	ATPO	*Atriplex polycarpa*	0–1	–
	button brittlebush	ENFR	*Encelia frutescens*	0–1	–
	American tarwort	FLCE	*Flourensia cernua*	0–1	–
	crown of thorns	KOSP	*Koeberlinia spinosa*	0–1	–
9	**Half shrubs**			15–50	
	bastardsage	ERWR	*Eriogonum wrightii*	1–20	–
	fairyduster	CAER	*Calliandra eriophylla*	1–15	–
	rough menodora	MESC	*Menodora scabra*	1–15	–
	desert zinnia	ZIAC	*Zinnia acerosa*	1–10	–
	Eastern Mojave buckwheat	ERFA2	*Eriogonum fasciculatum*	0–10	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	1–10	–
	littleleaf ratany	KRER	*Krameria erecta*	1–10	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	0–5	–
	Coulter's brickellbush	BRCO	*Brickellia coulteri*	0–5	–
	rayless goldenhead	ACSP	*Acamptopappus sphaerocephalus*	0–5	–
	whitestem paperflower	PSCO2	*Psilostrophe cooperi*	0–2	–
	woody crinklemat	TICA3	*Tiquilia canescens*	0–1	–
	burrobush	AMDU2	*Ambrosia dumosa*	0–1	–
	featherplume	DAFO	*Dalea formosa*	0–1	–
	starry bedstraw	GAST	*Galium stellatum*	0–1	–
	threadleaf snakeweed	GUMI	*Gutierrezia microcephala*	0–1	–
10	**Succulents**			1–15	
	walkingstick cactus	CYSP8	*Cylindropuntia spinosior*	0–10	–
	cactus apple	OPEN3	*Opuntia engelmannii*	1–10	–
	banana yucca	YUBA	*Yucca baccata*	1–10	–
	tulip pricklypear	OPPH	*Opuntia phaeacantha*	1–5	–
	Schott's century plant	AGSC3	*Agave schottii*	0–5	–
	common sotol	DAWH2	*Dasylirion wheeleri*	0–2	–
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–1	–
	redspine fishhook cactus	ECER2	*Echinomastus erectocentrus*	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	–

	saguaro	CAGI10	*Carnegiea gigantea*	0–1	–
	buck-horn cholla	CYAC8	*Cylindropuntia acanthocarpa*	0–1	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	0–1	–
	goldenflower century plant	AGCH2	*Agave chrysantha*	0–1	–
	nightblooming cereus	PEGR3	*Peniocereus greggii*	0–1	–
	purple pricklypear	OPMA8	*Opuntia macrocentra*	0–1	–
	soaptree yucca	YUEL	*Yucca elata*	0–1	–
Tree					
11	**Trees**			0–20	
	crucifixion thorn	CAHO3	*Canotia holacantha*	0–20	–
	oneseed juniper	JUMO	*Juniperus monosperma*	0–20	–

Animal community

This site produces little perennial forage for livestock. In wet winters it produces an abundance of annual forage species. Very cobbly surfaces, slopes steeper than 45% and areas of rock out-crop limit livestock utilization of the site.
This site is home to a variety of small mammals and birds and their associated predators. It is mainly a foraging area for larger desert mammals like javalina and mule deer.
Water developments are very important for both livestock and wildlife on the site. Many areas of this site are adjacent to perennial streams like the Gila River and San Carlos Creek. In these situations areas of the site can often be overused, especially in the spring when perennial forage species green up early and south slopes warm up very early.

Hydrological functions

This site is a good producer of runoff due to shallow soils and steep slopes.

Recreational uses

Hunting, hiking, horseback riding, rock hounding, bird watching, camping.

Wood products

Very limited wood from mesquite, catclaw acacia, etc, for campfires and branding fires.

Other products

Fire agate, malapai rock for building and landscaping, herbs like grass nuts, herbaceous sage and chia.

Type locality

Location 1: Greenlee County, AZ	
Township/Range/Section	T6S R31E S30

Contributors

Dan Robinett
Larry D. Ellicott

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:**
