USDA Natural Resources Conservation Service

Ecological site R041XC312AZ
Loamy Bottom 12-16" 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.

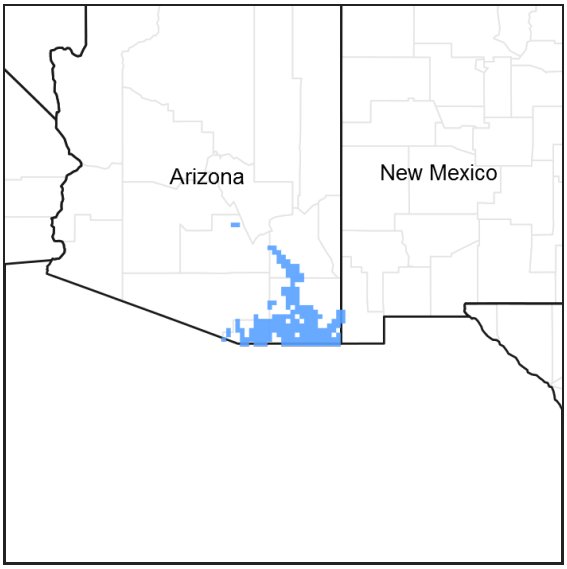

Figure 1. Mapped extent

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): 041X–Madrean Archipelago

AZ 41.3 – Chihuahuan – Sonoran Semidesert Grasslands

Elevations range from 3200 to 5000 feet and precipitation ranges from 12 to 16 inches per year. Vegetation includes mesquite, catclaw acacia, netleaf hackberry, palo verde, false mesquite, range ratany, fourwing saltbush, tarbush, littleleaf sumac, sideoats grama, black grama, plains lovegrass, cane beardgrass, tobosa, vine mesquite, threeawns, Arizona cottontop and bush muhly. The soil temperature regime is thermic and the soil moisture regime is ustic 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

R041XC311AZ	**Loamy Swale 12-16" p.z.**

Similar sites

R041XA114AZ	**Loamy Bottom 16-20" p.z.**
R041XC302AZ	**Clayey Swale 12-16" p.z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *sporobolus wrightii*

Physiographic features

This site occurs in the middle elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on floodplains and low stream terraces of major drainage ways and first and second order tributaries. It benefits on a regular basis from extra moisture received as over-bank flooding. It also benefits from shallow water tables at depths of 5-20 feet; or from subsurface clay lenses that perch available water for growth after flood events.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Stream terrace
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	3,200–5,000 ft
Slope	0–2%
Aspect	Aspect is not a significant factor

Climatic features

Precipitation in this common resource area ranges from 12-16 inches yearly in the eastern part with elevations from 3600-5000 feet, and 13-17 inches in the western part where elevations are 3300-4500 feet. Winter-Summer rainfall ratios are 40-60% in the west and 30-70% in the east. Summer rains fall July-September, originate in the Gulf of Mexico and are convective, usually brief, intense thunderstorms. Cool season moisture tends to be frontal, originates in the Pacific and Gulf of California, and falls in widespread storms with long duration and low intensity. Snow rarely lasts more than one day. May and June are the driest months of the year. Humidity is generally very low.

Temperatures are mild. Freezing temperatures are common at night from December-April; however temperatures during the day are frequently above 50 F. Occasionally in December-February, brief 0 F temperatures may be experienced some nights. During June, July and August, some days may exceed 100 F.

Cool season plants start growth in early spring and mature in early summer. Warm season plants take advantage of summer rains and are growing and nutritious July-September. Warm season grasses may remain green throughout the year.

Table 3. Representative climatic features

Frost-free period (average)	220 days
Freeze-free period (average)	
Precipitation total (average)	16 in

Influencing water features

There are no water features associated with this site.

Soil features

These are young soils on loamy to clayey alluvium of mixed origin. They are deep and dark colored. Plant-soil moisture relationships are excellent.

Soils mapped on this site include: SSA-666 Cochise county Northwest part MU 47 Guest; SSA-667 Santa Cruz area MU's Pm Pima and Ge Grabe; SSA-671 Cochise county Douglas-Tombstone part MU's 84 & 125 Riveroad, 144 Ubik SiL, 145 Ubic L and Ubic L saline-sodic.

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Silt loam (3) Silty clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	60 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	8.4–12.6 in
Calcium carbonate equivalent (0-40in)	0–5%
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)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0–1%

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.
The potential plant community on this site is giant sacaton grassland. Occasional clumps and strands of trees occur along shallow drainage ways and discontinuous gullies. Natural fires during the summer months were important in maintaining the plant community.
The site is very susceptible to gully, channel and bank erosion, especially when the tall grass cover is depleted due to repeated burning and overgrazing or when structures such as dikes, roads, etc., are placed on the floodplain. The lowering of the base level of the axial stream of a watershed will eventually cause channeling of the site. Grade stabilization will be required to prevent deterioration under such conditions. Excessive pumping of ground water can, over time, lower water tables causing depletion of grass cover and site deterioration from gully erosion. With severe erosion, the effectiveness of flooding is reduced, water tables are lowered, the grass cover is thinned and woody plants, especially mesquite, will increase to dominate the plant community. Bermuda grass and Johnson grass are introduced species which can be troublesome on this site.

State and transition model

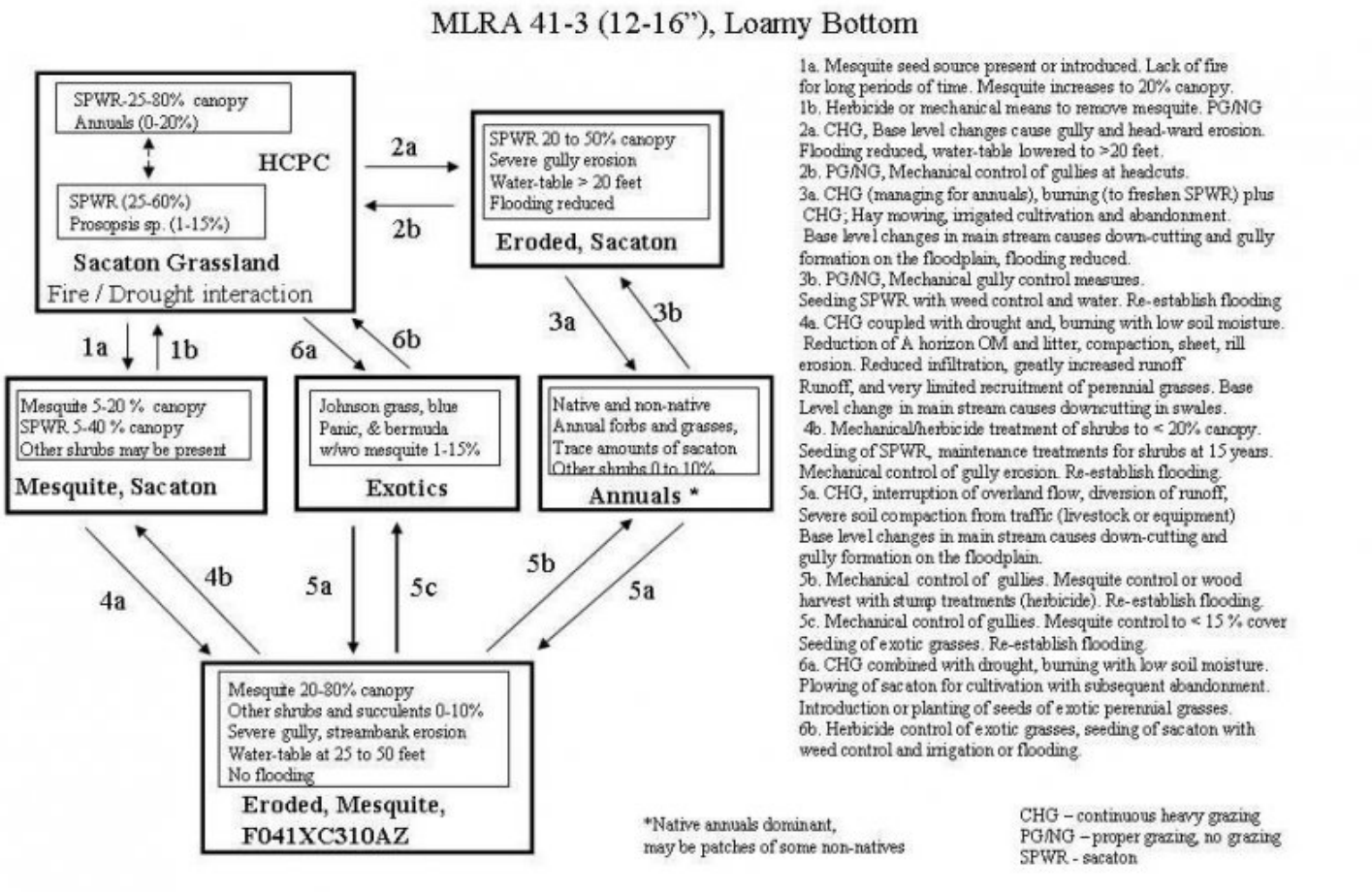

Figure 4. State and Transition, Loamy Bottom 12-16" p.z.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Figure 5. Loamy Bottom 12-16" pz. burned mesquite

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 plant community represents the natural climax community that eventually re-occupies the site with proper management. The potential plant community is dominated by nearly pure stands of giant sacaton. Frequent flooding and groundwater available within the rooting depth of sacaton (20 feet) account for dense and productive stands of grass. Occasional clumps and strands of trees occur along shallow drainages. Naturally occurring fires, June thru September, were an important factor in maintaining the plant community on this site. The aspect is tall grassland. Mesquite can invade and increase in the native plant community; but high intensity fires can remove even well established mesquite trees as long as sediment accumulation around the stem bases has not occurred. Even repeated fires at these intensities will not remove established mesquite if their bud zones are buried by sediment. The interaction of drought, fire, flooding and grazing can reduce sacaton canopy to 25%. It will recover to normal levels in a short time. Annual composite forbs like ragweed, goldeneye, sunflower and xanthocephalum can make tremendous stands in wet seasons after fire or drought has opened the grass community.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	3035	4000	5450
Forb	20	75	600
Tree	10	25	100
Shrub/Vine	0	10	50
Total	**3065**	**4110**	**6200**

Table 6. Soil surface cover

Tree basal cover	0-1%
Shrub/vine/liana basal cover	0-1%
Grass/grasslike basal cover	20-35%
Forb basal cover	0-1%
Non-vascular plants	0%
Biological crusts	0-5%
Litter	20-65%
Surface fragments >0.25" and <=3"	0-5%
Surface fragments >3"	0-1%
Bedrock	0%
Water	0%

Bare ground	10-60%

Table 7. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	–	0-5%	0-5%
>0.5 <= 1	–	–	0-10%	0-5%
>1 <= 2	–	–	0-5%	0-5%
>2 <= 4.5	–	0-2%	30-60%	0-10%
>4.5 <= 13	0-2%	0-2%	0-20%	0-5%
>13 <= 40	0-2%	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Figure 7. Plant community growth curve (percent production by month). AZ4134, 41.3 12-16" p.z. other sites. Growth begins in the spring, semi-dormancy occurs during the May through June drought, most growth occurs during the summer rains..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	0	0	30	35	15	5	0	0

State 2
Sacaton, eroded

Community 2.1
Sacaton, eroded

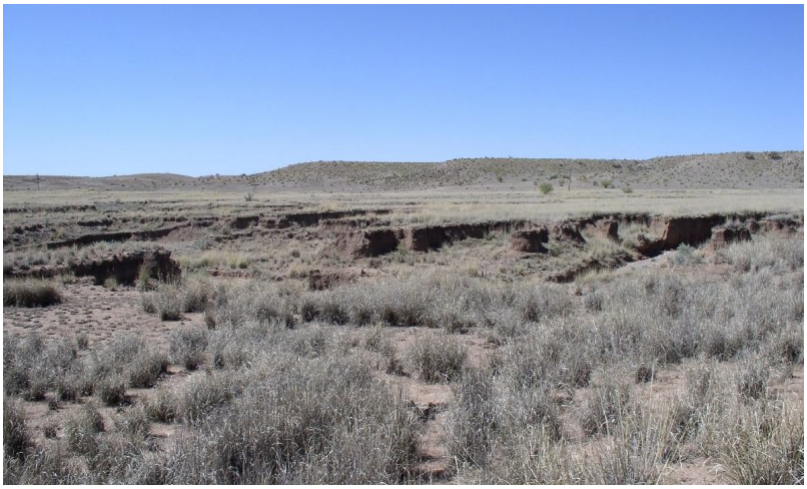

Figure 8. Loamy Bottom 12-16" pz. gullied

Head-cutting and gully erosion have drained the site. It no longer benefits from extra water received as flooding. The cover of sacaton thins to less than 25%. Groundwater may become out of reach to sacaton roots if incision is deeper than 20 feet. Annual production becomes a function of seasonal rainfall. Annual forbs and grasses may equal sacaton in production.

State 3
Annual Forbs and Grasses

Community 3.1

Annual Forbs and Grasses

Some areas of this state have been created by cultivation for irrigated farming and subsequent abandonment. Former cultivated areas usually have been altered by the diversion of floodwaters with dikes or drainage ditches. In other areas erosion and lowering of water tables have reduced sacaton to less than 5% canopy cover and allowed annual species to dominate. Native and non-native annual forbs and grasses dominate the plant community with minor amounts of sacaton and other native and non-native perennial grasses.

State 4
Non-native perennial grasses

Community 4.1
Non-native perennial grasses

Non-native perennial grasses like Johnson grass, bermuda grass and blue panic dominate the plant community. In some areas this state was made by plowing (and/or burning) of sacaton and seeding of the non-native species. In other areas non-native species invaded from disturbed areas like highway ROWs into areas where the native sacaton stands had been reduced by the interactions of continuous grazing, drought and fire. In other areas this state is a result of the abandonment of cultivated land which is still flooded and had a weed component of the non-native grasses. This state may or may not have a mesquite canopy. Fires can still burn at historic intensities due to the high productivity of grass species with frequent flooding.

State 5
Mesquite, sacaton

Community 5.1
Mesquite, sacaton

Figure 9. Loamy Bottom 12-16" pz. Mesquite

Mesquite has invaded the site in the absence of fire for long periods of time. Mesquite canopy ranges from 20 to 40%. Trees are well established and the crowns are protected from the heat of surface fires due to sediment accumulation around the stem bases. Sacaton is co-dominant as the state still benefits from frequent flooding and groundwater within the reach of grass roots.

State 6
Mesquite, eroded

Community 6.1
Mesquite, eroded

The down-cutting of major stream systems and subsequent "valley side" gullying have left many areas of this state along side of rivers like the San Pedro, Santa Cruz and Cienega and Babocomari creeks. Groundwater has dropped beyond the root zone of sacaton (25 feet); but still within the root zone of mesquite (50 feet). The site no longer

benefits from flooding. The plant community is dominated by mature mesquite trees with little or no perennial understory. This state is recognized as a mesquite woodland site as it occurs and forms naturally in the geomorphic dynamics of southwestern stream systems. For details see Forestland site number F041XC310AZ.

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 tall grass**			3000–5000	
	big sacaton	SPWR2	*Sporobolus wrightii*	3000–5000	–
	alkali sacaton	SPAI	*Sporobolus airoides*	0–150	–
2	**Subdominant perennial grasses**			25–200	
	vine mesquite	PAOB	*Panicum obtusum*	0–100	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	0–100	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–100	–
	creeping muhly	MURE	*Muhlenbergia repens*	0–50	–
	tobosagrass	PLMU3	*Pleuraphis mutica*	0–50	–
3	**Miscellaneous perennial grasses**			0–100	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	0–50	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–25	–
	Arizona cottontop	DICA8	*Digitaria californica*	0–25	–
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	0–25	–
	green sprangletop	LEDU	*Leptochloa dubia*	0–25	–
	whiplash pappusgrass	PAVA2	*Pappophorum vaginatum*	0–25	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	0–25	–
	spidergrass	ARTE3	*Aristida ternipes*	0–20	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	0–15	–
	Orcutt's threeawn	ARSCO	*Aristida schiedeana var. orcuttiana*	0–15	–
	flatsedge	CYPER	*Cyperus*	0–15	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	0–15	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	0–10	–
	bulrush	SCIRP	*Scirpus*	0–10	–
	spike dropseed	SPCO4	*Sporobolus contractus*	0–10	–
	plains lovegrass	ERIN	*Eragrostis intermedia*	0–10	–
	mountain rush	JUARL	*Juncus arcticus ssp. littoralis*	0–10	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	0–10	–
	sedge	CAREX	*Carex*	0–5	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–5	–
	burrograss	SCBR2	*Scleropogon brevifolius*	0–5	–
	bulb panicgrass	PABU	*Panicum bulbosum*	0–5	–
	bullgrass	MUEM	*Muhlenbergia emersleyi*	0–5	–
	poverty threeawn	ARDI5	*Aristida divaricata*	0–3	–
4	**Annual grasses**			10–150	
	feather fingergrass	CHVI4	*Chloris virgata*	0–50	–

	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	0–50	–
	sticky sprangletop	LEVI5	*Leptochloa viscida*	0–50	–
	mucronate sprangeltop	LEPAB	*Leptochloa panicea ssp. brachiata*	0–25	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	0–25	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	0–25	–
	Mexican panicgrass	PAHI5	*Panicum hirticaule*	0–25	–
	needle grama	BOAR	*Bouteloua aristidoides*	0–20	–
	tapertip cupgrass	ERACA	*Eriochloa acuminata var. acuminata*	0–15	–
	Mexican lovegrass	ERME	*Eragrostis mexicana*	0–5	–
	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	0–5	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	0–5	–
	sixweeks threeawn	ARAD	*Aristida adscensionis*	0–5	–
	prairie threeawn	AROL	*Aristida oligantha*	0–5	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–5	–
	Arizona brome	BRAR4	*Bromus arizonicus*	0–5	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	0–5	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	0–5	–
	witchgrass	PACA6	*Panicum capillare*	0–5	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	0–5	–
Forb					
5	**Perennial Forbs**			10–100	
	sedge	CAREX	*Carex*	50–250	–
	flatsedge	CYPER	*Cyperus*	50–250	–
	slimleaf sneezeweed	HELI	*Helenium linifolium*	50–250	–
	rush	JUNCU	*Juncus*	50–250	–
	Missouri gourd	CUFO	*Cucurbita foetidissima*	0–50	–
	coyote gourd	CUPA	*Cucurbita palmata*	0–25	–
	fingerleaf gourd	CUDI	*Cucurbita digitata*	0–25	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	1–25	–
	gooseberryleaf globemallow	SPGR2	*Sphaeralcea grossulariifolia*	0–20	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–15	–
	scarlet spiderling	BOCO	*Boerhavia coccinea*	0–15	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–10	–
	spear globemallow	SPHA	*Sphaeralcea hastulata*	0–10	–
	canaigre dock	RUHY	*Rumex hymenosepalus*	0–10	–
	Indian rushpea	HOGL2	*Hoffmannseggia glauca*	0–10	–
	slimleaf bean	PHAN3	*Phaseolus angustissimus*	0–10	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–10	–
	Wright's cudweed	PSCAC2	*Pseudognaphalium canescens ssp. canescens*	0–5	–
	American vetch	VIAM	*Vicia americana*	0–5	–
	Louisiana vetch	VILUL2	*Vicia ludoviciana ssp. ludoviciana*	0–5	–
	Trans-Pecos thimblehead	HYWI	*Hymenothrix wislizeni*	0–5	–

	thimbleheaa				
	Lewis flax	LILE3	*Linum lewisii*	0–5	–
	Greene's bird's-foot trefoil	LOGR4	*Lotus greenei*	0–5	–
	Wright's deervetch	LOWR	*Lotus wrightii*	0–5	–
	woodsorrel	OXALI	*Oxalis*	0–5	–
	Lemmon's ragwort	SELE8	*Senecio lemmonii*	0–5	–
	New Mexico fanpetals	SINE	*Sida neomexicana*	0–5	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–5	–
	Missouri goldenrod	SOMI2	*Solidago missouriensis*	0–5	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–5	–
	white prairie aster	SYFAC	*Symphyotrichum falcatum var. commutatum*	0–5	–
	beeblossom	GAURA	*Gaura*	0–5	–
	southwestern mock vervain	GLGO	*Glandularia gooddingii*	0–5	–
	small matweed	GUDED	*Guilleminea densa var. densa*	0–5	–
	tarragon	ARDR4	*Artemisia dracunculus*	0–5	–
	bluedicks	DICA14	*Dichelostemma capitatum*	0–5	–
	leastdaisy	CHAET2	*Chaetopappa*	0–5	–
	whitemouth dayflower	COER	*Commelina erecta*	0–2	–
	yerba mansa	ANCA10	*Anemopsis californica*	0–2	–
	wild dwarf morning-glory	EVAR	*Evolvulus arizonicus*	0–2	–
	jewels of Opar	TAPA2	*Talinum paniculatum*	0–2	–
	ragged nettlespurge	JAMA	*Jatropha macrorhiza*	0–2	–
	orange fameflower	PHAU13	*Phemeranthus aurantiacus*	0–2	–
	ivyleaf groundcherry	PHHE4	*Physalis hederifolia*	0–2	–
	milkweed	ASCLE	*Asclepias*	0–1	–
6	**Annual forbs**			10–500	
	common sunflower	HEAN3	*Helianthus annuus*	1–200	–
	San Pedro matchweed	XAGY	*Xanthocephalum gymnospermoides*	1–200	–
	longleaf false goldeneye	HELOL	*Heliomeris longifolia var. longifolia*	1–150	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	0–100	–
	longleaf false goldeneye	HELOA2	*Heliomeris longifolia var. annua*	1–100	–
	western tansymustard	DEPI	*Descurainia pinnata*	0–50	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–50	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–25	–
	Coulter's spiderling	BOCO2	*Boerhavia coulteri*	0–25	–
	sensitive partridge pea	CHNI2	*Chamaecrista nictitans*	0–25	–
	New Mexico thistle	CINE	*Cirsium neomexicanum*	0–25	–
	horseweed	CONYZ	*Conyza*	0–15	–
	cryptantha	CRYPT	*Cryptantha*	0–15	–
	Wright's saltbush	ATWR	*Atriplex wrightii*	0–15	–
	New Mexico copperleaf	ACNE	*Acalypha neomexicana*	0–15	–
	crestrib morning-glory	IPCO2	*Ipomoea costellata*	0–15	–

	morning-glory	IPOMO	*Ipomoea*	0–15	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–15	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–15	–
	intermediate pepperweed	LEVIM	*Lepidium virginicum var. medium*	0–15	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–15	–
	woolly plantain	PLPA2	*Plantago patagonica*	0–10	–
	purslane	PORTU	*Portulaca*	0–5	–
	desert unicorn-plant	PRAL4	*Proboscidea althaeifolia*	0–5	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–5	–
	chia	SACO6	*Salvia columbariae*	0–5	–
	sawtooth sage	SASU7	*Salvia subincisa*	0–5	–
	spreading fanpetals	SIAB	*Sida abutifolia*	0–5	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–5	–
	rough cocklebur	XAST	*Xanthium strumarium*	0–5	–
	Florida pellitory	PAFL3	*Parietaria floridana*	0–5	–
	combseed	PECTO	*Pectocarya*	0–5	–
	phacelia	PHACE	*Phacelia*	0–5	–
	phlox	PHLOX	*Phlox*	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	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–5	–
	hollowleaf annual lupine	LUSU3	*Lupinus succulentus*	0–5	–
	slender goldenweed	MAGR10	*Machaeranthera gracilis*	0–5	–
	tanseyleaf tansyaster	MATA2	*Machaeranthera tanacetifolia*	0–5	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0–5	–
	warty caltrop	KAPA	*Kallstroemia parviflora*	0–5	–
	goosefoot	CHENO	*Chenopodium*	0–5	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–5	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–5	–
	sorrel buckwheat	ERPO4	*Eriogonum polycladon*	0–5	–
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–5	–
	spurge	EUPHO	*Euphorbia*	0–5	–
	Arizona blanketflower	GAAR2	*Gaillardia arizonica*	0–5	–
	southwestern pricklypoppy	ARPL3	*Argemone pleiacantha*	0–5	–
	milkvetch	ASTRA	*Astragalus*	0–5	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–5	–
	jimsonweed	DAST	*Datura stramonium*	0–5	–
	sacred thorn-apple	DAWR2	*Datura wrightii*	0–5	–
	scrambled eggs	COAU2	*Corydalis aurea*	0–5	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–5	–
	golden crownbeard	VEEN	*Verbesina encelioides*	0–5	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–3	–

	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–3	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–2	–
	Mexican passionflower	PAME2	*Passiflora mexicana*	0–2	–
	green carpetweed	MOVE	*Mollugo verticillata*	0–2	–
	plains flax	LIPU4	*Linum puberulum*	0–2	–
	fringed redmaids	CACI2	*Calandrinia ciliata*	0–2	–
	star gilia	GIST	*Gilia stellata*	0–2	–
	Texas stork's bill	ERTE13	*Erodium texanum*	0–2	–
	Goodding's bladderpod	LEGO2	*Lesquerella gooddingii*	0–2	–
Shrub/Vine					
7	**Miscellaneous shrubs**			0–50	
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–10	–
	mule-fat	BASA4	*Baccharis salicifolia*	0–10	–
	Apache plume	FAPA	*Fallugia paradoxa*	0–10	–
	singlewhorl burrobrush	HYMO	*Hymenoclea monogyra*	0–10	–
	American black elderberry	SANIC4	*Sambucus nigra ssp. canadensis*	0–10	–
	canyon grape	VIAR2	*Vitis arizonica*	0–5	–
	soaptree yucca	YUEL	*Yucca elata*	0–5	–
	fringed twinevine	FUCYC	*Funastrum cynanchoides ssp. cynanchoides*	0–5	–
	pale desert-thorn	LYPA	*Lycium pallidum*	0–5	–
	catclaw mimosa	MIACB	*Mimosa aculeaticarpa var. biuncifera*	0–5	–
	Texas mulberry	MOMI	*Morus microphylla*	0–5	–
	sacahuista	NOMI	*Nolina microcarpa*	0–5	–
	Drummond's clematis	CLDR	*Clematis drummondii*	0–5	–
	Thurber's desert honeysuckle	ANTH2	*Anisacanthus thurberi*	0–5	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0–5	–
	walkingstick cactus	CYSP8	*Cylindropuntia spinosior*	0–2	–
	yerba de pasmo	BAPT	*Baccharis pteronioides*	0–2	–
	desertbroom	BASA2	*Baccharis sarothroides*	0–2	–
	whitethorn acacia	ACCO2	*Acacia constricta*	0–2	–
	fetid passionflower	PAFO2	*Passiflora foetida*	0–2	–
	skunkbush sumac	RHTR	*Rhus trilobata*	0–2	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–2	–
	burroweed	ISTE2	*Isocoma tenuisecta*	0–2	–
Tree					
8	**Common trees**			10–50	
	desert willow	CHLI2	*Chilopsis linearis*	0–50	–
	mesquite	PROSO	*Prosopis*	0–50	–
9	**Miscellaneous trees**			0–50	
	Arizona sycamore	PLWR2	*Platanus wrightii*	0–50	–
	Fremont cottonwood	POFR2	*Populus fremontii*	0–50	–
	Goodding's willow	SAGO	*Salix gooddingii*	0–25	–

	western soapberry	SASAD	*Sapindus saponaria var. drummondii*	0–10	–
	netleaf hackberry	CELAR	*Celtis laevigata var. reticulata*	0–10	–
	velvet ash	FRVE2	*Fraxinus velutina*	0–10	–
	Arizona walnut	JUMA	*Juglans major*	0–10	–
	catclaw acacia	ACGR	*Acacia greggii*	0–5	–

Animal community

Big sacaton begins growth in the spring about mid April. The green season extends through September. Grazing must be concentrated on areas of this site to achieve reasonable utilization of sacaton and keep it in a vegetative state. Heat, humidity and insects are severe enough during summer flooding in July-August , to greatly affect livestock performance. Burning or mowing can be used periodically to freshen old growth sacaton. Burning should be done in February or early March; only in years when November thru February moisture equals or exceeds 4 inches. Burning can be done in July or August, after the first summer rains, to freshen sacaton for winter grazing. Areas of this site should be fenced exclusively for best management of the forage resources. Sacaton is very coarse and unpalatable, but provides adequate nutrition for livestock when green.
Sacaton bottoms are very important habitat for a variety of ground nesting birds and small mammals. They are important cover and foraging areas for javalina, whitetail and mule deer.

Hydrological functions

Sacaton floodplains are extremely important in the hydrologic regime of southeastern Arizona stream systems. Intact sacaton floodplains retain floodwaters for 3 to 4 weeks after major flooding events. Channeled or gullied bottomlands often pass the same flood in 2 or 3 days. Water tables in healthy sacaton bottoms range from 5 to 20 feet alongside major streams and creeks and their larger tributaries. In other sacaton bottoms, clay lenses at moderate depths, perch and hold water in the root zone of sacaton after flood events.

Recreational uses

Hunting, bird-watching, hiking, horseback riding, photography.

Wood products

Sacaton bottoms invaded by mesquite furnish large quantities of fuel-wood and posts.

Other products

Sacaton seed

Inventory data references

Range 417s include 1 in excellent condition, 7 in good condition and 6 in fair condition.

Type locality

Location 1: Cochise County, AZ	
Township/Range/Section	T23S R22E S9
General legal description	San Pedro River
Location 2: Santa Cruz County, AZ	
Township/Range/Section	T21S R19E S18
General legal description	Lyle Canyon
Location 3: Pima County, AZ	
Township/Range/Section	T19S R17E S11

General legal description	Empire Ranch, Key Area 19 in the 5 Wire (east) Pasture.

Contributors

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Unknown

Approval

Curtis Talbot, 4/12/2021

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)	Wilma Renken, Dave Womack, Emilio Carrillo, Dan Robinett
Contact for lead author	USDA-NRCS Tucson MLRA Soil Survey Office
Date	07/22/2013
Approved by	Curtis Talbot
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None Present on this site.

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2. **Presence of water flow patterns:** Uncommon; probably cover no more than 5% of area; very short and discontinuous, 1-3 feet in length.

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3. **Number and height of erosional pedestals or terracettes:** Slope is 0-1% and not conducive to forming pedestals and 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):** 3-10% basd on monitoring data. Bare areas are <3 feet in diameter; perennial grasses are evenly distributed.

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5. **Number of gullies and erosion associated with gullies:** Occasional, discontinuous gullies. These gullies can be 50-200 feet in length, 2-5 feet wide and 2-5 feet deep.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None present on this site.

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7. **Amount of litter movement (describe size and distance expected to travel):** All litter size classes staying in place, occasionally being transported in flow paths.

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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):** No slake test performed. Expect values of 5's & 6's across site.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Weak granular to moderate subangular blocky; Color is 10YR5/2 Dry, 10YR3/2 Moist; thickness to 20+ inches.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Cover estimated as follows: Canopy 47-93%, Basal 17-24%, Litter 65-79%; 95% of canopy cover is perennial tall grasses, 3% is short grasses, and 2 % is grass like and forbs. Short grass species cover occupy scattered patches throughout site. Canopy cover is temporally dynamic.

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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):** None present on this site.

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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: Perennial tall grasses >>

    Sub-dominant: short grasses > grasslike species > perennial forbs > annuals grasses & forbs.

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** 10-20% basal area lost on short grasses, 5% basal area lost on tall grasses.

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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):** 3,500 lbs/acre unfavorable precipitation, 5,000 lbs/acre normal precipitation, 6,500 lbs/acre favorable precipitation.

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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:** mesquite, wait-a-bit, burrobrush, rubber rabbitbrush, johnson grass, bermuda grass.

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17. **Perennial plant reproductive capability:** Not affected even following several years of prolonged drought period for region.
