USDA Natural Resources
Conservation Service

Ecological site R040XB211AZ
Loamy Swale 7"-10" 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.

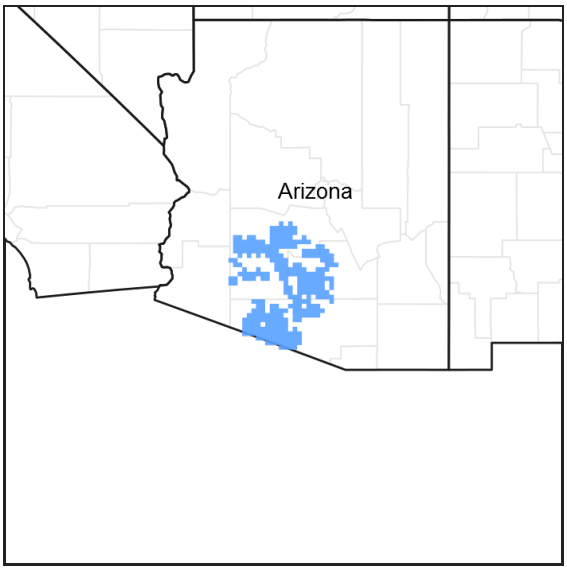

Figure 1. Mapped extent

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): 040X–Sonoran Basin and Range

AZ 40.2 – Middle Sonoran Desert

Elevations range from 1200 to 2000 feet and precipitation averages 7 to 10 inches per year. Vegetation includes saguaro, palo verde, creosotebush, triangle bursage, brittlebush, prickly pear, cholla, desert saltbush, wolfberry bush muhly, threeawns, and big galleta. The soil temperature regime is hyperthermic 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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Pleuraphis rigida* (2) *Muhlenbergia porteri*

Physiographic features

This site occurs on floodplains and alluvial fans. Slopes are from 0 to 2%. This site benefits on a regular basis from extra moisture received as runoff from adjacent uplands and/or watershed areas. Watershed size is less than 10,000 acres.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Alluvial fan
Elevation	274–625 m
Slope	0–2%

Climatic features

Precipitation in the sub-resource area ranges from 7 to 10 inches. Elevations range from 900 to 2050 feet. Winter-summer rainfall ratios range from 40% to 60% in the southern part along the international boundary, to 60% to 40% in the central and northern parts of the sub-resource area. As one moves from east to west in this resource area rains become more unpredictable and variable with Coefficients of Variation of annual rainfall equal to 38% at Florence and 46% at Aguila. Summer rains fall July- September, originate in the Gulf of Mexico, and are convective, usually brief, intense thunderstorms. Summer precipitation is extremely erratic and undependable in this area. 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. This is the dependable moisture supply for vegetation in the area. Snow is very rare and usually melts on contact. May-June is the driest time of the year. Humidity is very low.

Winter temperatures are very mild with very few days recording freezing for short periods of time. Summertime temperatures are hot to very hot with many days in June-July exceeding 105 degrees F. Frost-free days range from 280 at stations in major river valleys with cold air drainage to 320 to 350 days at upland stations.

Both the spring and the summer growing seasons are equally important for perennial grass, forb and shrub growth. Cool and warm season annual forbs and grasses can be common in their respective seasons with above average rainfall. Perennial forage species can remain green throughout the year with available moisture.

Table 3. Representative climatic features

Frost-free period (average)	350 days
Freeze-free period (average)	0 days
Precipitation total (average)	254 mm

Influencing water features

Soil features

These are deep, young soils on loamy alluvium from mixed origins. Surface texture may include silt loam, and silty clay loam. Subsurface texture group may include fine silty and coarse silty. They may or may not be calcareous, are not saline and have low shrink-swell potentials. Plant-soil moisture relationships are excellent. This site is mapped in 6 Soil Survey areas in the D40-2 CRA in South Western Arizona.

Soils mapped on this site include: SSA-651 Central Maricopa County MU's Aqualt-Aa, Gadsen clay loam-Gb, Gilman-Ge & GL, & Vecont-Ve; SSA-653 Gila Bend-Ajo area MU's Cuerda-14 & Mohall(flooded)-48; SSA-659 Western Pinal County MU's Cuerda-12, Gilman-21 & 22, Glenbar-24 & Trix-45; SSA-661 Eastern Pinal-Southern Gila Counties MU's Gilman-270, 360 & 365, Glenbar-350 & Mohall(flooded)-575 & 830; SSA-669 Eastern Pima County MU Trix-46; SSA-703 Tohono O'odham area MU's Gilman-25, Glenbar-27, Trix-44 & Valencia-59.

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Very fine sandy loam (3) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	21.34–28.96 cm
Calcium carbonate equivalent (0-101.6cm)	1–10%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

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 the 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.

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
Historical Climax Plant Community

Community 1.1
Historical Climax Plant Community

The potential plant community on this site is a diverse mixture of perennial and annual grasses and forbs, trees, shrubs and cacti. The aspect is shrubland. With continuous, heavy grazing, perennial grasses are removed from the plant community. When the grass cover is depleted, this site is extremely susceptible to gully erosion. Mesquite, whitethorn acacia, jimmyweed, and alkalai goldenweed can quickly increase to dominate the plant community with heavy use and erosion. Base level changes in larger watersheds can lead to the eventual gullying of this site. Gully formation acts to rapidly drain floodwaters from the site reducing the potential productivity. The natural tree canopy cover on the site is less than 20%. The trees reach only moderate size on this site. Bermuda and Johnson grass are common introduced, perennial grasses on the site. Cocklebur and ragweed can become problem species with overgrazing. Red brome, foxtail barley, filaree, and London rocket are common, cool season introduced annual species found on the site. Cryptogam cover can be high on this site. Mosses (Musci), algae (Chara, Oscillatoria, and Spirogya spp) and fungi (Phycomincetes, Ascomycetes, and Basidiomycetes) are all common. Plant populations of major species on this site are from 50 to 100 trees per acre for mesquite and from 100 to 200 plants per acre for the creosote-whitethorn group.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	538	–	874
Tree	538	–	874
Grass/Grasslike	336	–	471
Forb	135	–	269
Total	**1547**	**–**	**2488**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				61–81	
	bush muhly	MUPO2	*Muhlenbergia porteri*	61–81	–
2				20–40	
	purple threeawn	ARPU9	*Aristida purpurea*	20–40	–
	blue threeawn	ARPUN	*Aristida purpurea var. nealleyi*	20–40	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	20–40	–
	Wright's threeawn	ARPUW	*Aristida purpurea var. wrightii*	20–40	–
	spidergrass	ARTE3	*Aristida ternipes*	20–40	–
	spidergrass	ARTEG	*Aristida ternipes var. gentilis*	20–40	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	20–40	–
	Arizona cottontop	DICA8	*Digitaria californica*	20–40	–
	tanglehead	HECO10	*Heteropogon contortus*	20–40	–
	vine mesquite	PAOB	*Panicum obtusum*	20–40	–
	whiplash pappusgrass	PAVA2	*Pappophorum vaginatum*	20–40	–
	tobosagrass	PLMU3	*Pleuraphis mutica*	20–40	–
	big galleta	PLRI3	*Pleuraphis rigida*	20–40	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	20–40	–
	spike dropseed	SPCO4	*Sporobolus contractus*	20–40	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	20–40	–
	slim tridens	TRMU	*Tridens muticus*	20–40	–
	Pacific fescue	VUMIP	*Vulpia microstachys var. pauciflora*	20–40	–
3				20–61	
	sixweeks threeawn	ARAD	*Aristida adscensionis*	20–61	–
	prairie threeawn	AROL	*Aristida oligantha*	20–61	–
	needle grama	BOAR	*Bouteloua aristidoides*	20–61	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	20–61	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	20–61	–
	Arizona brome	BRAR4	*Bromus arizonicus*	20–61	–
	feather fingergrass	CHVI4	*Chloris virgata*	20–61	–
	bearded cupgrass	ERAR5	*Eriochloa aristata*	20–61	–
	canyon cupgrass	ERLE7	*Eriochloa lemmonii*	20–61	–

	desert lovegrass	ERPEM	*Eragrostis pectinacea var. miserrima*	20–61	–
	tufted lovegrass	ERPEP2	*Eragrostis pectinacea var. pectinacea*	20–61	–
	Mexican sprangletop	LEFUU	*Leptochloa fusca ssp. uninervia*	20–61	–
	mucronate sprangletop	LEPA6	*Leptochloa panicea*	20–61	–
	sticky sprangletop	LEVI5	*Leptochloa viscida*	20–61	–
	delicate muhly	MUFR	*Muhlenbergia fragilis*	20–61	–
	littleseed muhly	MUMI	*Muhlenbergia microsperma*	20–61	–
	witchgrass	PACA6	*Panicum capillare*	20–61	–
	Bigelow's bluegrass	POBI	*Poa bigelovii*	20–61	–
	Arizona signalgrass	URAR	*Urochloa arizonica*	20–61	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	20–61	–
4				4–20	
	bigseed alfalfa dodder	CUIN	*Cuscuta indecora*	4–20	–
	mesquite mistletoe	PHCA8	*Phoradendron californicum*	4–20	–
5				4–20	
	Alga	2ALGA	*Alga*	4–20	–
	Fungus	2FUNGI	*Fungus*	4–20	–
	Moss	2MOSS	*Moss*	4–20	–
Forb					
6				67–135	
	dwarf desertpeony	ACNA2	*Acourtia nana*	0–1	–
	brownfoot	ACWR5	*Acourtia wrightii*	0–1	–
	poreleaf dogweed	ADPO2	*Adenophyllum porophyllum*	0–1	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	0–1	–
	fringed amaranth	AMFI	*Amaranthus fimbriatus*	0–1	–
	common fiddleneck	AMMEI2	*Amsinckia menziesii var. intermedia*	0–1	–
	carelessweed	AMPA	*Amaranthus palmeri*	0–1	–
	bristly fiddleneck	AMTE3	*Amsinckia tessellata*	0–1	–
	field anoda	ANPE4	*Anoda pentaschista*	0–1	–
	New Mexico silverbush	ARNE2	*Argythamnia neomexicana*	0–1	–
	smallflowered milkvetch	ASNU4	*Astragalus nuttallianus*	0–1	–
	milkvetch	ASTRA	*Astragalus*	0–1	–
	wheelscale saltbush	ATEL	*Atriplex elegans*	0–1	–
	Wright's saltbush	ATWR	*Atriplex wrightii*	0–1	–
	desert marigold	BAMU	*Baileya multiradiata*	0–1	–
	scarlet spiderling	BOCO	*Boerhavia coccinea*	0–1	–
	hoary bowlesia	BOIN3	*Bowlesia incana*	0–1	–
	exserted Indian paintbrush	CAEXE	*Castilleja exserta ssp. exserta*	0–1	–
	yellow tackstem	CAPA7	*Calycoseris parryi*	0–1	–
	white tackstem	CAWR	*Calycoseris wrightii*	0–1	–
	lambsquarters	CHAL7	*Chenopodium album*	0–1	–
	brittle spineflower	CHBR	*Chorizanthe brevicornu*	0–1	–
	aridland goosefoot	CHDE	*Chenopodium desiccatum*	0–1	–

	hyssopleaf sandmat	CHHY3	*Chamaesyce hyssopifolia*	0–1	–
	New Mexico thistle	CINE	*Cirsium neomexicanum*	0–1	–
	sand pygmyweed	CRCO34	*Crassula connata*	0–1	–
	cryptantha	CRYPT	*Cryptantha*	0–1	–
	fingerleaf gourd	CUDI	*Cucurbita digitata*	0–1	–
	coyote gourd	CUPA	*Cucurbita palmata*	0–1	–
	pricklyburr	DAIN2	*Datura inoxia*	0–1	–
	hairy prairie clover	DAMO	*Dalea mollis*	0–1	–
	American wild carrot	DAPU3	*Daucus pusillus*	0–1	–
	western tansymustard	DEPI	*Descurainia pinnata*	0–1	–
	bluedicks	DICAC5	*Dichelostemma capitatum ssp. capitatum*	0–1	–
	touristplant	DIWI2	*Dimorphocarpa wislizeni*	0–1	–
	miniature woollystar	ERDI2	*Eriastrum diffusum*	0–1	–
	spreading fleabane	ERDI4	*Erigeron divergens*	0–1	–
	woolly sunflower	ERIOP2	*Eriophyllum*	0–1	–
	Texas stork's bill	ERTE13	*Erodium texanum*	0–1	–
	California poppy	ESCAM	*Eschscholzia californica ssp. mexicana*	0–1	–
	spurge	EUPHO	*Euphorbia*	0–1	–
	hairy desertsunflower	GECA2	*Geraea canescens*	0–1	–
	gilia	GILIA	*Gilia*	0–1	–
	Indian rushpea	HOGL2	*Hoffmannseggia glauca*	0–1	–
	morningglory	IPER	*Ipomoea eriocarpa*	0–1	–
	slender janusia	JAGR	*Janusia gracilis*	0–1	–
	Arizona poppy	KAGR	*Kallstroemia grandiflora*	0–1	–
	prickly lettuce	LASE	*Lactuca serriola*	0–1	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–1	–
	shaggyfruit pepperweed	LELA	*Lepidium lasiocarpum*	0–1	–
	coastal bird's-foot trefoil	LOSA	*Lotus salsuginosus*	0–1	–
	Arizona lupine	LUAR4	*Lupinus arizonicus*	0–1	–
	Coulter's lupine	LUSP2	*Lupinus sparsiflorus*	0–1	–
	disc mayweed	MADI6	*Matricaria discoidea*	0–1	–
	lacy tansyaster	MAPIP4	*Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida*	0–1	–
	Nuttall's povertyweed	MONU	*Monolepis nuttalliana*	0–1	–
	bristly nama	NAHI	*Nama hispidum*	0–1	–
	desert tobacco	NIOB	*Nicotiana obtusifolia*	0–1	–
	desert evening primrose	OEPR	*Oenothera primiveris*	0–1	–
	Florida pellitory	PAFL3	*Parietaria floridana*	0–1	–
	combseed	PECTO	*Pectocarya*	0–1	–
	manybristle chinchweed	PEPA2	*Pectis papposa*	0–1	–
	phacelia	PHACE	*Phacelia*	0–1	–
	tepary bean	PHACL	*Phaseolus acutifolius var. latifolius*	0–1	–

	tepary bean	PHACT	*Phaseolus acutifolius var. tenuifolius*	0–1	–
	Arizona popcornflower	PLAR	*Plagiobothrys arizonicus*	0–1	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–1	–
	slender poreleaf	POGR5	*Porophyllum gracile*	0–1	–
	purslane	PORTU	*Portulaca*	0–1	–
	doubleclaw	PRPA2	*Proboscidea parviflora*	0–1	–
	New Mexico plumeseed	RANE	*Rafinesquia neomexicana*	0–1	–
	canaigre dock	RUHY	*Rumex hymenosepalus*	0–1	–
	violet wild petunia	RUNU	*Ruellia nudiflora*	0–1	–
	sleepy silene	SIAN2	*Silene antirrhina*	0–1	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–1	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–1	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–1	–
	spear globemallow	SPHA	*Sphaeralcea hastulata*	0–1	–
	woollyhead neststraw	STMI2	*Stylocline micropoides*	0–1	–
	brownplume wirelettuce	STPA4	*Stephanomeria pauciflora*	0–1	–
	sand fringepod	THCU	*Thysanocarpus curvipes*	0–1	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	0–1	–
	Tumamoc globeberry	TUMA	*Tumamoca macdougalii*	0–1	–
	vervain	VERBE	*Verbena*	0–1	–
	Louisiana vetch	VILUL2	*Vicia ludoviciana ssp. ludoviciana*	0–1	–
	rough cocklebur	XAST	*Xanthium strumarium*	0–1	–
Tree					
7				269–336	
	velvet mesquite	PRVE	*Prosopis velutina*	269–336	–
Shrub/Vine					
8				106–141	
	whitethorn acacia	ACCO2	*Acacia constricta*	106–141	–
	crucifixion thorn	CAEM4	*Castela emoryi*	106–141	–
	creosote bush	LATR2	*Larrea tridentata*	106–141	–
	water jacket	LYAN	*Lycium andersonii*	106–141	–
	Arizona desert-thorn	LYEX	*Lycium exsertum*	106–141	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	106–141	–
9				7–15	
	ambrosia leaf bur ragweed	AMAM2	*Ambrosia ambrosioides*	7–15	–
	triangle bur ragweed	AMDE4	*Ambrosia deltoidea*	7–15	–
	holywood	GUSA	*Guaiacum sanctum*	7–15	–
	alkali goldenbush	ISACA2	*Isocoma acradenia var. acradenia*	7–15	–
	southern goldenbush	ISPL	*Isocoma pluriflora*	7–15	–
	burroweed	ISTE2	*Isocoma tenuisecta*	7–15	–
	whitestem paperflower	PSCO2	*Psilostrophe cooperi*	7–15	–
10				36–71	
	catclaw acacia	ACGR	*Acacia greggii*	36–71	

	catclaw acacia	ACGR	*Acacia greggii*	36–71	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	36–71	–
	cattle saltbush	ATPO	*Atriplex polycarpa*	36–71	–
	desertbroom	BASA2	*Baccharis sarothroides*	36–71	–
	Palmer ceanothus	CEPA	*Ceanothus palmeri*	36–71	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	36–71	–
	desert wolfberry	LYMA	*Lycium macrodon*	36–71	–
	desert ironwood	OLTE	*Olneya tesota*	36–71	–
	blue paloverde	PAFL6	*Parkinsonia florida*	36–71	–
	yellow paloverde	PAMI5	*Parkinsonia microphylla*	36–71	–
	soaptree yucca	YUEL	*Yucca elata*	36–71	–
11				7–36	
	burrobush	AMDU2	*Ambrosia dumosa*	7–36	–
	Coulter's brickellbush	BRCO	*Brickellia coulteri*	7–36	–
	fairyduster	CAER	*Calliandra eriophylla*	7–36	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	7–36	–
	sangre de cristo	JACA2	*Jatropha cardiophylla*	7–36	–
	littleleaf ratany	KRER	*Krameria erecta*	7–36	–
	white ratany	KRGR	*Krameria grayi*	7–36	–
	Mexican bladdersage	SAME	*Salazaria mexicana*	7–36	–
	American threefold	TRCA8	*Trixis californica*	7–36	–
	Parish's goldeneye	VIPA14	*Viguiera parishii*	7–36	–
	desert zinnia	ZIAC	*Zinnia acerosa*	7–36	–
12				7–36	
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	7–36	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	7–36	–
	nightblooming cereus	PEGR3	*Peniocereus greggii*	7–36	–

Animal community

The plant community on this site, in good condition, provides adequate nutrition for livestock year round. Because of water availability in the rainy seasons, long green periods, shade, and easy accessibility, this site is often overused. Large areas may justify fencing to be able to manage separately from adjacent upland areas. Grazing should be avoided in the summer flooding season to avoid trampling wet soils and because heat, humidity and insects can reduce livestock performance. Stock pond developments placed in areas of this site should be designed to avoid drying up downstream areas and altering base levels allowing gully formation to occur.

Free water is available in the rainy seasons in natural charcos and discontinuous gullies. Forage diversity, cover, and shade are good and combined with moderate tree canopies make this site home to a wide variety of desert mammals, birds, and reptiles. Water developments can create permanent supplies increasing the use of this site by the larger desert mammals and some bird species.

Other information

T&E: Antilocapra Americana sonoriensis
(Sonoran pronghorn)
Tumamoca Macdougalii
(Tumamoc globeberry)
Leptonycteris curasoae yerbe buena

(Lesser long-nosed bat)

Type locality

Location 1: Pima County, AZ	
Township/Range/Section	T19S R1E S17
General legal description	Sells FO - Papago Farms enclosure
Location 2: Maricopa County, AZ	
Township/Range/Section	T1S R7E S14
General legal description	Chandler FO - General Motors Proving Grounds
Location 3: Pima County, AZ	
Township/Range/Section	T14S R5W S24
General legal description	Tucson FO - Organ Pipe National Monument, Kuakatch Wash
Location 4: Pima County, AZ	
Township/Range/Section	T16S R1E S21
General legal description	Sells FO - Pisinimo District
Location 5: Maricopa County, AZ	
Township/Range/Section	T6N R2E S33
General legal description	Phoenix FO - Lockett Ranch SW 1/4 Sec. 33

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)	Dave Womack Dan Robinett, Emilio Carrillo
Contact for lead author	NRCS Tucson Area Office
Date	03/07/2005
Approved by	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are uncommon but usually well vegetated and not eroding.

2. **Presence of water flow patterns:** Water flow patterns ar common, discontinuos and a function of upland runoff.

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3. **Number and height of erosional pedestals or terracettes:** None

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20-60%. Lower values expected in El Nino years.

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5. **Number of gullies and erosion associated with gullies:** Uncommon

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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence

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7. **Amount of litter movement (describe size and distance expected to travel):** All litter classes

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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):** Soil surface resistance to erosion is good. Expect values of 1-3 in plant interspaces; 4-6 in plant canopies.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Weak thir platy to granular to subangular blocky with depth; 7.5-1R6/4 dry, 7.5-10YR4/4 moist; entisol - no A horizons.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Canopy 20-30%; 85-90% perennial grasses, 5-10% annual forbs and grasses, and <2-3% trees and shrubs. Cover is well dispersed throughout site.

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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

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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: trees & shrubs > perennial grasses > winter annuals > summer annuals > perennial forbs > succulents > cryptogams

    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):** 0-50% canopy mortality

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14. **Average percent litter cover (%) and depth (in):** Herbaceous litter is not persisten on this site and may be 35-60% in El Nino years.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 900 lbs/ac unfavorable precipitation, 1200 lbs/ac normal precipitation, 2000 lbs/ac 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:** Sahara mustard (potential), London Rcket, Cheeseweed, whitethorn acacia, mesquit, jimmyweed, burroweed

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17. **Perennial plant reproductive capability:** Not impaired for shrubs, drought impaired for perennial grasses and forbs.
