

**Ecological site R040XB212AZ**  
**Loamy Slopes 7"-10" p.z.**

Accessed: 05/18/2024

**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.

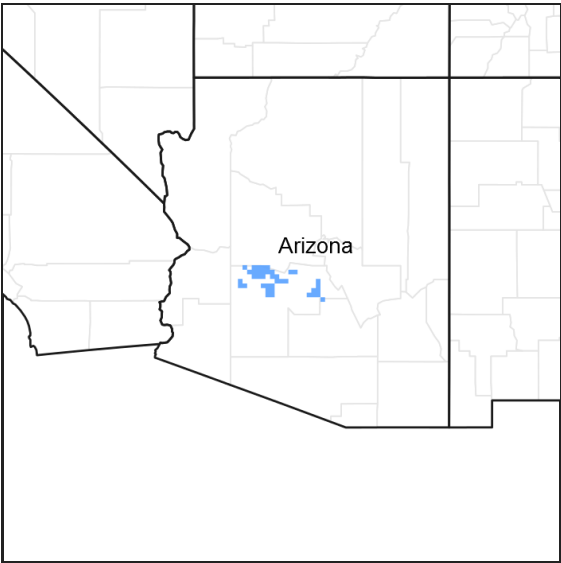


Figure 1. Mapped extent

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): 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 typical 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      | (1) <i>Ambrosia deltoidea</i>                                   |
| Herbaceous | (1) <i>Muhlenbergia porteri</i><br>(2) <i>Pleuraphis rigida</i> |

## Physiographic features

This site occurs on hillslopes and ridgetops. Slopes are from 15 to 45%. Elevations range from 1200 to 2600 feet.

**Table 2. Representative physiographic features**

|           |                       |
|-----------|-----------------------|
| Landforms | (1) Hill<br>(2) Ridge |
| Elevation | 366–792 m             |
| Slope     | 15–45%                |

## 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 and moderately deep soils formed in old alluvium from mixed origins. They are loamy and non-calcareous to moderate (20 inches) depths. Soil surfaces are well protected with gravel and rock covers. Plant-soil moisture relationships are fair to good.

Soils mapped on this site include: SSA-645 Aguila-Carefree area MU's Ebon > 15% slope-49 & Pinamt-49.

**Table 4. Representative soil features**

|                      |  |
|----------------------|--|
| Surface texture      | (1) Very gravelly loam<br>(2) Extremely gravelly clay loam |
| Family particle size | (1) Clayey   |
| Drainage class       | Well drained   |
| Permeability class   | Slow   |

|  |               |
|--|---------------|
| Soil depth   | 152 cm        |
| Surface fragment cover <=3"                              | 35–65%        |
| Surface fragment cover >3"                               | 1–10%         |
| Available water capacity<br>(0-101.6cm)                  | 7.62–15.24 cm |
| Calcium carbonate equivalent<br>(0-101.6cm)              | 1–15%         |
| Electrical conductivity<br>(0-101.6cm)                   | 0 mmhos/cm    |
| Sodium adsorption ratio<br>(0-101.6cm)                   | 0             |
| Soil reaction (1:1 water)<br>(0-101.6cm)                 | 7.4–8.4       |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 35–65%        |
| Subsurface fragment volume >3"<br>(Depth not specified)  | 1–10%         |

## 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 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



## Additional community tables

Table 6. Community 1.1 plant community composition

| Group                  | Common Name            | Symbol | Scientific Name                                     | Annual Production<br>(Kg/Hectare) | Foliar<br>Cover (%) |
|------------------------|------------------------|--------|---|-----------------------------------|---------------------|
| <b>Grass/Grasslike</b> |                        |        |   |                                   |                     |
| 1                      |                        |        |   | 22–50                             |                     |
|                        | bush muhly             | MUPO2  | <i>Muhlenbergia porteri</i>                         | 6–17                              | –                   |
|                        | purple threeawn        | ARPU9  | <i>Aristida purpurea</i>                            | 0–6                               | –                   |
|                        | Parish's threeawn      | ARPUP5 | <i>Aristida purpurea</i> var. <i>parishii</i>       | 0–3                               | –                   |
|                        | Wright's threeawn      | ARPUW  | <i>Aristida purpurea</i> var. <i>wrightii</i>       | 0–3                               | –                   |
|                        | spidergrass            | ARTE3  | <i>Aristida ternipes</i>                            | 0–3                               | –                   |
|                        | spidergrass            | ARTEG  | <i>Aristida ternipes</i> var. <i>gentilis</i>       | 0–3                               | –                   |
|                        | big galleta            | PLRI3  | <i>Pleuraphis rigida</i>                            | 0–3                               | –                   |
|                        | slender grama          | BORE2  | <i>Bouteloua repens</i>                             | 0–2                               | –                   |
|                        | tanglehead             | HECO10 | <i>Heteropogon contortus</i>                        | 0–2                               | –                   |
|                        | slim tridens           | TRMU   | <i>Tridens muticus</i>                              | 0–2                               | –                   |
|                        | tobosagrass            | PLMU3  | <i>Pleuraphis mutica</i>                            | 0–1                               | –                   |
|                        | low woollygrass        | DAPU7  | <i>Dasyochloa pulchella</i>                         | 0–1                               | –                   |
|                        | Arizona cottontop      | DICA8  | <i>Digitaria californica</i>                        | 0–1                               | –                   |
|                        | nineawn pappusgrass    | ENDE   | <i>Enneapogon desvauxii</i>                         | 0–1                               | –                   |
|                        | plains bristlegrass    | SEVU2  | <i>Setaria vulpiseta</i>                            | 0–1                               | –                   |
| 2                      |                        |        |   | 6–73                              |                     |
|                        | Eastwood fescue        | VUMIC  | <i>Vulpia microstachys</i> var. <i>ciliata</i>      | 0–11                              | –                   |
|                        | Pacific fescue         | VUMIP  | <i>Vulpia microstachys</i> var. <i>pauciflora</i>   | 0–11                              | –                   |
|                        | sixweeks fescue        | VUOC   | <i>Vulpia octoflora</i>                             | 0–11                              | –                   |
|                        | sixweeks threeawn      | ARAD   | <i>Aristida adscensionis</i>                        | 0–6                               | –                   |
|                        | prairie threeawn       | AROL   | <i>Aristida oligantha</i>                           | 0–6                               | –                   |
|                        | needle grama           | BOAR   | <i>Bouteloua aristidoides</i>                       | 0–6                               | –                   |
|                        | sixweeks grama         | BOBA2  | <i>Bouteloua barbata</i>                            | 0–6                               | –                   |
|                        | Rothrock's grama       | BORO2  | <i>Bouteloua rothrockii</i>                         | 0–6                               | –                   |
|                        | Arizona brome          | BRAR4  | <i>Bromus arizonicus</i>                            | 0–1                               | –                   |
|                        | tufted lovegrass       | ERPEP2 | <i>Eragrostis pectinacea</i> var. <i>pectinacea</i> | 0–1                               | –                   |
|                        | Mexican sprangletop    | LEFUU  | <i>Leptochloa fusca</i> ssp. <i>uninervia</i>       | 0–1                               | –                   |
|                        | mucronate sprangletop  | LEPA6  | <i>Leptochloa panicea</i>                           | 0–1                               | –                   |
|                        | delicate muhly         | MUFR   | <i>Muhlenbergia fragilis</i>                        | 0–1                               | –                   |
|                        | littleseed muhly       | MUMI   | <i>Muhlenbergia microsperma</i>                     | 0–1                               | –                   |
|                        | Bigelow's bluegrass    | POBI   | <i>Poa bigelovii</i>                                | 0–1                               | –                   |
|                        | Arizona signalgrass    | URAR   | <i>Urochloa arizonica</i>                           | 0–1                               | –                   |
| 3                      |                        |        |   | 0–11                              |                     |
|                        | mesquite mistletoe     | PHCA8  | <i>Phoradendron californicum</i>                    | 0–9                               | –                   |
|                        | bigseed alfalfa dodder | CUIN   | <i>Cuscuta indecora</i>                             | 0–2                               | –                   |
| 4                      |                        |        |   | 6–11                              |                     |
|                        | Alga                   | 2ALGA  | <i>Alga</i>   | 1–6                               | –                   |
|                        | Lichen                 | 2LICHN | <i>Lichen</i>                                       | 1–3                               | –                   |

|             |                            |        |  |       |   |
|-------------|----------------------------|--------|--|-------|---|
|             | Moss                       | 2MOSS  | <i>Moss</i>                                      | 1–2   | – |
|             | Fungus                     | 2FUNGI | <i>Fungus</i>                                    | 1–2   | – |
| <b>Forb</b> |                            |        |  |       |   |
| 5           |                            |        |  | 22–50 |   |
|             | desert globemallow         | SPAM2  | <i>Sphaeralcea ambigua</i>                       | 0–6   | – |
|             | Emory's globemallow        | SPEM   | <i>Sphaeralcea emoryi</i>                        | 0–6   | – |
|             | Louisiana vetch            | VILUL2 | <i>Vicia ludoviciana</i> ssp. <i>ludoviciana</i> | 0–2   | – |
|             | woollyhead neststraw       | STMI2  | <i>Stylocline micropoides</i>                    | 0–1   | – |
|             | Coulter's globemallow      | SPCO2  | <i>Sphaeralcea coulteri</i>                      | 0–1   | – |
|             | Nuttall's povertyweed      | MONU   | <i>Monolepis nuttalliana</i>                     | 0–1   | – |
|             | evening primrose           | OENOT  | <i>Oenothera</i>                                 | 0–1   | – |
|             | Florida pellitory          | PAFL3  | <i>Parietaria floridana</i>                      | 0–1   | – |
|             | beardtongue                | PENST  | <i>Penstemon</i>                                 | 0–1   | – |
|             | phacelia                   | PHACE  | <i>Phacelia</i>                                  | 0–1   | – |
|             | desert Indianwheat         | PLOV   | <i>Plantago ovata</i>                            | 0–1   | – |
|             | slender poreleaf           | POGR5  | <i>Porophyllum gracile</i>                       | 0–1   | – |
|             | chia                       | SACO6  | <i>Salvia columbariae</i>                        | 0–1   | – |
|             | poreleaf dogweed           | ADPO2  | <i>Adenophyllum porophyllum</i>                  | 0–1   | – |
|             | trailing windmills         | ALIN   | <i>Allionia incarnata</i>                        | 0–1   | – |
|             | carelessweed               | AMPA   | <i>Amaranthus palmeri</i>                        | 0–1   | – |
|             | bluestar                   | AMSON  | <i>Amsonia</i>                                   | 0–1   | – |
|             | tuber anemone              | ANTU   | <i>Anemone tuberosa</i>                          | 0–1   | – |
|             | narrowleaf silverbush      | ARLA12 | <i>Argythamnia lanceolata</i>                    | 0–1   | – |
|             | New Mexico silverbush      | ARNE2  | <i>Argythamnia neomexicana</i>                   | 0–1   | – |
|             | smallflowered milkvetch    | ASNU4  | <i>Astragalus nuttallianus</i>                   | 0–1   | – |
|             | desert marigold            | BAMU   | <i>Baileya multiradiata</i>                      | 0–1   | – |
|             | spiderling                 | BOERH2 | <i>Boerhavia</i>                                 | 0–1   | – |
|             | hoary bowlesia             | BOIN3  | <i>Bowlesia incana</i>                           | 0–1   | – |
|             | exserted Indian paintbrush | CAEXE  | <i>Castilleja exserta</i> ssp. <i>exserta</i>    | 0–1   | – |
|             | yellow tackstem            | CAPA7  | <i>Calycoseris parryi</i>                        | 0–1   | – |
|             | white tackstem             | CAWR   | <i>Calycoseris wrightii</i>                      | 0–1   | – |
|             | whitemargin sandmat        | CHAL11 | <i>Chamaesyce albomarginata</i>                  | 0–1   | – |
|             | hyssopleaf sandmat         | CHHY3  | <i>Chamaesyce hyssopifolia</i>                   | 0–1   | – |
|             | New Mexico thistle         | CINE   | <i>Cirsium neomexicanum</i>                      | 0–1   | – |
|             | American wild carrot       | DAPU3  | <i>Daucus pusillus</i>                           | 0–1   | – |
|             | wedgeleaf draba            | DRCU   | <i>Draba cuneifolia</i>                          | 0–1   | – |
|             | whisperingbells            | EMPE   | <i>Emmenanthe penduliflora</i>                   | 0–1   | – |
|             | spreading fleabane         | ERDI4  | <i>Erigeron divergens</i>                        | 0–1   | – |
|             | buckwheat                  | ERIOG  | <i>Eriogonum</i>                                 | 0–1   | – |
|             | Texas stork's bill         | ERTE13 | <i>Erodium texanum</i>                           | 0–1   | – |
|             | dainty desert hideseed     | EUMI2  | <i>Eucrypta micrantha</i>                        | 0–1   | – |
|             | California fagonbush       | FALA   | <i>Fagonia laevis</i>                            | 0–1   | – |
|             | gilia                      | GILIA  | <i>Gilia</i>                                     | 0–1   | – |

|                   |                              |        |   |         |   |
|-------------------|------------------------------|--------|---|---------|---|
|                   | Arizona poppy                | KAGR   | <i>Kallstroemia grandiflora</i>   | 0–1     | – |
|                   | Gordon's bladderpod          | LEGO   | <i>Lesquerella gordonii</i>   | 0–1     | – |
|                   | Bigelow's linanthus          | LIBI2  | <i>Linanthus bigelovii</i>  | 0–1     | – |
|                   | foothill deervetch           | LOHU2  | <i>Lotus humistratus</i>  | 0–1     | – |
|                   | desert deervetch             | LOMI   | <i>Lotus micranthus</i>   | 0–1     | – |
|                   | coastal bird's-foot trefoil  | LOSA   | <i>Lotus salsuginosus</i>   | 0–1     | – |
|                   | slender goldenweed           | MAGR10 | <i>Machaeranthera gracilis</i>  | 0–1     | – |
|                   | desertdandelion              | MALAC3 | <i>Malacothrix</i>  | 0–1     | – |
|                   | Parry's false prairie-clover | MAPA7  | <i>Marina parryi</i>  | 0–1     | – |
|                   | lacy tansyaster              | MAPIP4 | <i>Machaeranthera pinnatifida</i> ssp. <i>pinnatifida</i> var. <i>pinnatifida</i> | 0–1     | – |
|                   | rough menodora               | MESC   | <i>Menodora scabra</i>  | 0–1     | – |
| <b>Shrub/Vine</b> |                              |        |   |         |   |
| 6                 |                              |        |   | 101–168 |   |
|                   | triangle bur ragweed         | AMDE4  | <i>Ambrosia deltoidea</i>   | 101–168 | – |
| 7                 |                              |        |   | 22–73   |   |
|                   | water jacket                 | LYAN   | <i>Lycium andersonii</i>  | 0–6     | – |
|                   | Berlandier's wolfberry       | LYBE   | <i>Lycium berlandieri</i>   | 0–6     | – |
|                   | Arizona desert-thorn         | LYEX   | <i>Lycium exsertum</i>  | 0–6     | – |
|                   | desert wolfberry             | LYMA   | <i>Lycium macrodon</i>  | 0–6     | – |
|                   | yellow paloverde             | PAMI5  | <i>Parkinsonia microphylla</i>  | 0–6     | – |
|                   | desert ironwood              | OLTE   | <i>Olneya tesota</i>  | 0–3     | – |
|                   | ocotillo                     | FOSP2  | <i>Fouquieria splendens</i>   | 0–3     | – |
|                   | sangre de cristo             | JACA2  | <i>Jatropha cardiophylla</i>  | 0–3     | – |
|                   | creosote bush                | LATR2  | <i>Larrea tridentata</i>  | 0–2     | – |
|                   | starry bedstraw              | GAST   | <i>Galium stellatum</i>   | 0–2     | – |
|                   | velvet mesquite              | PRVE   | <i>Prosopis velutina</i>  | 0–2     | – |
|                   | lotebush                     | ZIOB   | <i>Ziziphus obtusifolia</i>   | 0–1     | – |
|                   | catclaw acacia               | ACGR   | <i>Acacia greggii</i>   | 0–1     | – |
|                   | Tucson bur ragweed           | AMCO4  | <i>Ambrosia cordifolia</i>  | 0–1     | – |
|                   | burrobush                    | AMDU2  | <i>Ambrosia dumosa</i>  | 0–1     | – |
|                   | Coulter's brickellbush       | BRCO   | <i>Brickellia coulteri</i>  | 0–1     | – |
| 8                 |                              |        |   | 22–50   |   |
|                   | jojoba                       | SICH   | <i>Simmondsia chinensis</i>   | 0–11    | – |
|                   | spiny hackberry              | CEEH   | <i>Celtis ehrenbergiana</i>   | 0–3     | – |
|                   | littleleaf ratany            | KRER   | <i>Krameria erecta</i>  | 0–3     | – |
|                   | white ratany                 | KRGR   | <i>Krameria grayi</i>   | 0–2     | – |
|                   | Mexican bladdersage          | SAME   | <i>Salazaria mexicana</i>   | 0–2     | – |
|                   | fairyduster                  | CAER   | <i>Calliandra eriophylla</i>  | 0–2     | – |
|                   | brittlebush                  | ENFA   | <i>Encelia farinosa</i>   | 0–2     | – |
|                   | Nevada jointfir              | EPNE   | <i>Ephedra nevadensis</i>   | 0–1     | – |
|                   | Eastern Mojave buckwheat     | ERFA2  | <i>Eriogonum fasciculatum</i>   | 0–1     | – |
|                   | American threefold           | TBCA8  | <i>Trixis californica</i>   | 0–1     | – |

|   | American threestoed         | TRORA  | <i>Vitis californica</i>                     | 0-1    | - |
|---|-----------------------------|--------|--|--------|---|
|   | Parish's goldeneye          | VIPA14 | <i>Viguiera parishii</i>                     | 0-1    | - |
|   | Indian mallow               | ABUT1  | <i>Abutilon</i>                              | 0-1    | - |
|   | whitethorn acacia           | ACCO2  | <i>Acacia constricta</i>                     | 0-1    | - |
| 9 |                             |        |  | 50-101 |   |
|   | beavertail pricklypear      | OPBA2  | <i>Opuntia basilaris</i>                     | 0-11   | - |
|   | woollyjoint pricklypear     | OPTO2  | <i>Opuntia tomentosa</i>                     | 0-6    | - |
|   | Leconte's barrel cactus     | FECYL  | <i>Ferocactus cylindraceus var. lecontei</i> | 0-2    | - |
|   | candy barrelcactus          | FEWI   | <i>Ferocactus wislizeni</i>                  | 0-2    | - |
|   | globe cactus                | MAMMI  | <i>Mammillaria</i>                           | 0-1    | - |
|   | senita cactus               | PASC14 | <i>Pachycereus schottii</i>                  | 0-1    | - |
|   | organpipe cactus            | STTH3  | <i>Stenocereus thurberi</i>                  | 0-1    | - |
|   | Engelmann's hedgehog cactus | ECEN   | <i>Echinocereus engelmannii</i>              | 0-1    | - |
|   | rainbow cactus              | ECPE   | <i>Echinocereus pectinatus</i>               | 0-1    | - |

## Animal community

Steep slopes and very gravelly to cobbly surfaces limit grazing distribution especially during the hot summer months. Stocker cattle will use areas of this site fairly well during the fall, winter and spring. In years with above average winter rainfall the production of annual forbs and grasses can be significant and will allow for additional carrying capacity in the March-May growing season. The plant community may be deficient in energy in the summer through winter seasons.

Water developments can be very important to wildlife species on this site. Cover and diversity are somewhat lacking for the larger desert mammals but the diverse topography makes up for that. The site is also home to a variety of small mammal, reptile and bird species.

## Other information

T&E: Leptonycteris curasoae yerbe beuna  
(Lesser long-nosed bat)

## Type locality

|                                 |                                      |
|---------------------------------|--------------------------------------|
| Location 1: Maricopa County, AZ |                                      |
| Township/Range/Section          | T6N R2W S33                          |
| General legal description       | Phoenix FO - Desert Hills Cattle Co. |
| Location 2: Maricopa County, AZ |                                      |
| Township/Range/Section          | T3N R6E S21                          |
| General legal description       | Chandler FO - McDowell Mountains     |

## 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, Shai Schendel, Scott Stratton, Dan Robinett, Emilio Carrillo |
| Contact for lead author                     | NRCS Tucson Area Office   |
| Date  | 12/14/2005  |
| Approved by                                 | S. Cassady  |
| Approval date                               |   |
| Composition (Indicators 10 and 12) based on | Annual Production   |

## Indicators

- 1. Number and extent of rills:** Fairly common, 8-10 feet apart well vegetated by annuals in El Nino years, all rills have gently sloping banks.  

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- 2. Presence of water flow patterns:** Uncommon; verland flow location difficult to determine due to high gravel cover.  

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- 3. Number and height of erosional pedestals or terracettes:** Pedestals are uncommon only observed near naturally eroding rills; terracettes only formed by high densities of rock fragments.  

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- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-10%, gravel cover 85-90%  

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- 5. Number of gullies and erosion associated with gullies:** None  

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- 6. Extent of wind scoured, blowouts and/or depositional areas:** None  

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- 7. Amount of litter movement (describe size and distance expected to travel):** Most litter size classes stay in place. Fine classes may move 5-10 feet before being intercepted by plants of rock fragments.  

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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):** Expect values of 1-3 in canopy interspaces, and 4-6 under 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 weak granular; thickness to 1 inch.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Canopy 20-25%: 50% shrubs (40% jojoba), 35-40% trees, 3-5% half shrubs, and 0-1% succulents. 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: shrubs > trees = half shrubs > succulents. In El Nino years, annual forbs and grasses can be greater than all groups.
- 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):** 10% of perennial grass plants have been lost in recent prolonged drought; 18, 68, 23, 10, 39 and 24% canopy cover mortality of creosote, mormon tea, palo verde, flattertop buckwheat, range ratany and triangle bursage, respectively.
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14. **Average percent litter cover (%) and depth ( 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):** 300 lbs/ac unfavorable precipitation, 450 lbs/ac normal precipitation, 600 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, filaree, Mediterranean grass, red brome(at higher elevations of MLRA).
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17. **Perennial plant reproductive capability:** Not impaired for shrubs; drought impaired for perennial grasses and forbs.
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