

Ecological site R030XB124CA

Gravelly Loam

3-5" 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.

Ecological site concept

This site occurs on summits and upper sideslopes of fan remnants. Elevations are 2200 to 4730 feet. Slopes range from 2 to 8%. Please refer to group concept R030XB038NV to view the provisional STM.

Associated sites

R030XB126CA	Saline Slope 3-5" P.Z. Saline Slope 3-5
R030XB136CA	Dry Wash Dry wash

Similar sites

R030XB121CA	Calcareous Hill 5-7" P.Z. Calcareous Hill 5-7
R030XB122CA	Calcareous Loam 3-5" P.Z. Calcareous Loam 3-5

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ambrosia dumosa</i> (2) <i>Atriplex confertifolia</i>
Herbaceous	(1) <i>Pleuraphis rigida</i>

Physiographic features

This site occurs on summits and upper sideslopes of fan remnants. Elevations are 2200 to 4730 feet. Slopes range from 2 to 8%.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant
Elevation	550 – 1,400 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The Mojave Desert experiences clear, dry conditions for a majority of the year. Winter temperatures are mild, summer temperatures are hot, and seasonal and diurnal temperature fluctuations are large. Monthly minimum temperature averages range from 30 to 80 degrees F (-1 to 27 degrees C). Monthly maximum temperature averages range from 60 to 110 degrees F (16 to 43 degrees C) (CSU 2002).

Average annual rainfall is between 2 and 8 inches (50 to 205 millimeters) (USDA 2006). Snowfall is more common at elevations above 4000 feet (1220 meters), but it may not occur every year (WRCC 2002b). The Mojave Desert receives precipitation from two sources. Precipitation falls primarily in the winter as a result of storms originating in the northern Pacific Ocean. The Sierra Nevada and Transverse Ranges create a rain shadow effect, causing little precipitation to reach the Mojave Desert. Sporadic rainfall occurs during the summer as a result of convection storms formed when moisture from the Gulf of Mexico or Gulf of California moves into the region. Summer rainfall is more common and has a greater influence on soil moisture in the eastern Mojave Desert.

Windy conditions are also common in the Mojave Desert, particularly in the west and central Mojave Desert. Spring is typically the windiest season, with winds averaging 10-15 miles per hour (WRCC 2002a). Winds in excess of 25 miles per hour and gusts in excess of 50 miles per hour are not uncommon (CSU 2002).

In the BLM Grazing Allotments Soil Survey (Northeast Part of Mojave Desert Area, CA (CA805)), most areas receive approximately 5 to 7 inches of precipitation annually (WRCC 2002b). At elevations above 4000 feet (1370 meters), average annual precipitation in the form of rain may reach 8 inches or more, and average annual snowfall may reach up to 10 inches (WRCC 2002b).

The data from the following climate stations were used to describe the climate in the BLM Grazing Allotments Soil Survey (station number in parentheses):

Pahrump, NV (265890)

Mountain Pass, CA (045890)

Searchlight, NV (267369)

Red Rock Canyon State Park, NV (266691)

"Maximum monthly precipitation" represents average monthly precipitation at Pahrump, NV.

Table 3 Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	280 days
Precipitation total (average)	180 mm

Influencing water features

Soil features

The soils associated with this site are very deep and well drained. They are formed on stable, older alluvial surfaces from mixed alluvium or alluvium derived from limestone. Soils are sandy or coarse-loamy throughout. The soils are moderately to strongly alkaline throughout. Available water holding capacity is low and permeability is slow to moderately rapid. Soils classify as sandy, mixed, thermic Duric Torriorthents (Spider series) or coarse-loamy, mixed, thermic Typic Haplocalcids (Weiser series).

These soils are found on stable, older alluvial soils. The stability and are of these landforms allows for the development of silica-cemented nodules (Spider soils) and/or horizons high in calcium carbonate in soils formed from limestone parent materials (Weiser soils).

This ecological site is found in the following Map units and soil components:

SSA Map unit Component

CA697 - 155 - Spider

CA697 - 251 - Spider

CA805 - 3650 - Weiser

Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	200 cm
Surface fragment cover <=3"	70 – 100 %
Surface fragment cover >3"	10 – 30 %
Available water capacity (0-101.6cm)	4.06 – 6.35 cm
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 9.2

Subsurface fragment volume <=3" (Depth not specified)	20 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 20 %

Ecological dynamics

Please refer to group concept R030XB038NV to view the provisional STM.

The reference state for this ecological site is a mixture of many desert shrubs, with the primary dominance coming from white bursage (*Ambrosia dumosa*), shadscale (*Atriplex confertifolia*) and creosote bush (*Larrea tridentata*) with the most dominant grass being big galleta grass (*Pleuraphis rigida*).

Successive years of above-average precipitation may result in considerable die-off of many species of native shrubs, especially shadscale. Destructive impacts such as land clearing can also reduce long-lived creosotebush. Opportunistic perennials such as white bursage, white burrobush and desert trumpet may increase or invade this site. Non-native annual grasses and forbs such as red brome, schismus and red-stem filaree will readily invade this site.

Desert communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery. White bursage and creosotebush possess limited sprouting ability, thus, can be killed by fire. White bursage, however, can rapidly re-establish from seed. Saltbush species, such as shadscale, are generally resistant to fire because of a low volatilization rate.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

WILDLIFE COMMUNITIES (Brown and Nagy 1995; Brydolf 1996; Recht 1995): a. This site provides suitable habitat for mammals such as antelope ground squirrels; pocket mice; Merriam's and Great Basin kangaroo rats; and black-tailed jackrabbits and coyotes. Shadscale seeds are used by several species of small mammals. The twigs and foliage provide forage for jackrabbits and some small mammals. b. This site provides habitat for lizards such as the western whiptail; side-blotched lizard and desert horned lizard. The sandy subsurface textures may be a limiting factor for burrowing reptiles such as desert tortoise. c. Birds common to this site include common ravens, black-throated and sage sparrows, and rock wrens. Wildlife Habitat: Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Close roads and trails no longer being used and revegetate using native species indigenous to this site. Vehicle activity off of designated roads and tank trails can result in destruction of desert tortoise and small mammal burrows. Water developments would increase the species diversity of this site. Livestock grazing: a. Season of Use- Other Mgt. Considerations: Shadscale is considered valuable browse for cattle and sheep. Shadscale is often eaten during the early spring before spines mature. The seeds are also readily eaten by livestock. White bursage is fair browse for cattle and horses, and fair to good browse for goats. Sheep also use this shrub, feeding primarily on new growth and seeds. Creosotebush is unpalatable to livestock. Domestic sheep use creosotebush primarily for shade. During favorable years, perennial and annual forbs and grasses provide additional forage. b. General guide to initial stocking rate. Before making specific recommendations, an on-site evaluation must be made.

Hydrological functions

Runoff is low. Hydrologic soil group A - soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well drained to excessively drained sands or gravels. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor 30% ground cover. Soil Series: Spider Hydrologic Group: A Hydrologic Conditions and Runoff Curves: Good:49 Fair: 55 Poor: 63

Recreational uses

This site is highly valued for open space and those interested in desert ecology. Flowering wildflowers and shrubs may also attract visitors during the spring.

Other information

Revegetation of Disturbed Areas: Species indigenous to this site are recommended for any revegetation efforts. Shadscale, white bursage and creosotebush are effective shrubs for revegetation of disturbed sites. Transplanting seedlings is more effective than direct seeding. Planting in late fall or early spring allows for acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new vegetative growth out of season. Supplemental irrigation is recommended for the first growing season, especially if winter rainfall has been sparse. Protection from rodents is also recommended. Military Operations: Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Land clearing or other disturbances that destroy the vegetation and the soil crust and structure can result in soil compaction, reduced infiltration rates, accelerated erosion, soil blowing and barren areas. The frequency of flash flooding may also increase with increased surface runoff and loss of vegetative cover. Rest or protect sites from further disturbance. Deep ripping heavily compacted soil facilitates water infiltration, seed germination, rapid root growth and improves overall plant survival and growth. Gully stabilization methods include straw bale checkdams, rock riprap, and sand bags.

Inventory data references

NV-ECS-1 SCS-Range 417 Other form

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T12N R3E S15
UTM zone	N
UTM northing	3887501
UTM easting	532388
General legal description	TYPICAL SITE LOCATION: SE1/4 Sec. 15 T12N R3E Approximately 4 miles south of Langford Well Lake Langford Well Lake Quadrangle UTM 11S 0532388e 3887501n (Datum=NAS-C) San Bernardino Co., CA

Other references

Brown, T.K. and K. A. Nagy with R.D. Nieuhaus, Inc. 1995. Final Report, Herpetological Surveys and Physiological Studies on the Western Portion of Fort Irwin NTC.

Brydolf, B. with R.D. Nieuhaus, Inc. 1996. Final Report, 1994 Avian Survey at the National Training Center, Fort Irwin, CA.

Recht, M.A. with R.D. Nieuhaus, Inc. 1995. Final Report, 1994 Small Mammal Surveys of Selected Sites at the National Training Center Fort Irwin, California.

Contributors

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Approval

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	08/30/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

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

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
