

## **Ecological site R030XB146CA Volcanic Hill 5-7" P.Z.**

Last updated: 2/25/2025  
 Accessed: 05/11/2025

### **General information**

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

### **Ecological site concept**

This site occurs on sideslopes of mountains on all exposures. Elevations are 3800 to 5000 feet. Slopes range from 15 to 50 percent. The soils that characterize this site are moderately deep and well drained. They are formed in colluvium and residuum from volcanic rock. Surface textures are extremely gravelly sandy loams. Subsurface textures are extremely gravelly loams and sandy loams.

Please refer to group concept R030XB070NV to view the provisional STM.

### **Associated sites**

R030XB134CA	<b>Cobbly Claypan 5-7" P.Z.</b> Cobbly Claypan 5-7
R030XB140CA	<b>Shallow Hill 4-6" P.Z.</b> Limy Hill 5-7

### **Similar sites**

R030XB123CA	<b>Granitic Hill 5-7" P.Z.</b> Granitic Hill 5-7
R030XB070NV	<b>VOLCANIC HILL 5-7 P.Z.</b> Volcanic Hill 5-7
R030XB140CA	<b>Shallow Hill 4-6" P.Z.</b> Limy Hill 5-7

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Eriogonum fasciculatum</i> (2) <i>Ambrosia dumosa</i>
Herbaceous	(1) <i>Achnatherum speciosum</i>

### **Physiographic features**

This site occurs on sideslopes of mountains on all exposures. Elevations are 3800 to 5000 feet. Slopes range from 15 to 50 percent.

**Table 2. Representative physiographic features**

Landforms	(1) Mountain slope
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Elevation	3,800–5,000 ft
Slope	15–50%
Aspect	Aspect is not a significant factor

## Climatic features

The climate on this site is arid characterized by warm, moist winters (30 to 60 degrees F) and hot, dry summers (70 to 100 degrees F). The average annual precipitation ranges from 4 to 8 inches with most falling as rain from November to March. Approximately 25% of the annual precipitation occurs from July to September as a result of summer convection storms. Mean annual air temperature is 57 to 66 degrees F.

The average frost-free period is 200 to 300 days.

**Table 3. Representative climatic features**

Frost-free period (average)	300 days
Freeze-free period (average)	
Precipitation total (average)	8 in

## Influencing water features

### Soil features

The soils that characterize this site are moderately deep and well drained. They are formed in colluvium and residuum from volcanic rock. Surface textures are extremely gravelly sandy loams. Subsurface textures are extremely gravelly loams and sandy loams. Available water capacity is very low and permeability is moderately rapid. Wind erosion hazard is negligible due to surface rock fragments. Effective rooting depth is 25 inches to unweathered basaltic bedrock.

Representative\_Soil Map Units  
102 Inclusion, Mulespring-Newera-Haleburu  
complex, 15-75% slopes

## Ecological dynamics

Please refer to group concept R030XB070NV to view the provisional STM.

The historic site potential is comprised of shrubs less than 1 meter tall, with an intermittent canopy. Perennial grasses and forbs are common. Annuals are seasonally present. Pockets of cryptogamic crust have developed in between the surface rock. This site is stable in this condition.

As ecological condition deteriorates California buckwheat and short-lived perennials such as Acton encelia, white bursage, desert trumpet and wirelettuce will increase. The perennial grasses will decrease. Non-native plants occurring on this site include schismus, *Schismus arabicus*; red brome, *Bromus rubens*; and red-stem filaree, *Erodium cicutarium*.

The presence of dodder is related to the soil-moisture conditions, therefore, its impact varies from year to year. Dodder has the ability to kill the host plant and consequently influence the ecology of the area.

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. Water developments would increase the species diversity of this site.

Species indigenous to this site are recommended for any revegetation efforts. California buckwheat is used extensively for erosion control and revegetation. White bursage and creosotebush are also valuable for erosion

control and cover restoration. Nevada ephedra forms dense, spreading colonies, which make it valuable for soil stabilization.

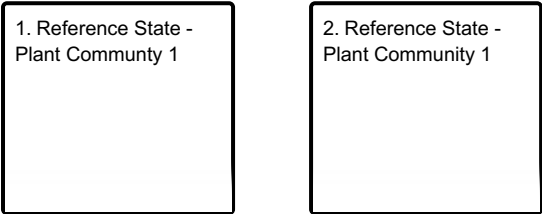
Transplants are more effective than direct seeding, although Nevada ephedra seedlings are very tolerant of drought and generally establish well following fall or winter seedings.

Planting seedlings 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.

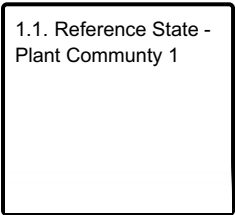
Desert communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery. California buckwheat increases after a fire and can quickly re-establish from seed. White bursage and creosotebush possess limited sprouting ability, thus, can be killed by fire, although white bursage can re-establish from seed.

**State and transition model**

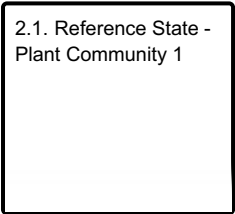
**Ecosystem states**



**State 1 submodel, plant communities**



**State 2 submodel, plant communities**



**State 1**  
**Reference State - Plant Community 1**

**Community 1.1**  
**Reference State - Plant Community 1**

**State 2**  
**Reference State - Plant Community 1**

**Community 2.1**  
**Reference State - Plant Community 1**

The representative natural plant community is Mojave Mixed Woody Scrub or California Buckwheat Series. This community is dominated by California buckwheat, white bursage and desert needlegrass. Potential vegetative

composition is about 15% grasses, 10% forbs, and 75% shrubs. The following table lists the major plant species and percentages by weight, air dry, of the total plant community that each contributes in an average production year. Fluctuations in species composition and relative production may change from year to year dependent upon abnormal precipitation or other climatic factors.

**Forest overstory.** Allow no more than 5% of each species of this group and no more than 20% in aggregate

**Forest understory.** Allow no more than 3% of each species of grasses group and no more than 10% in aggregate

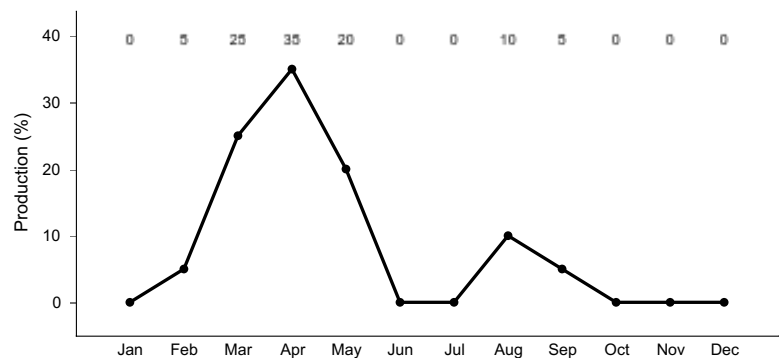
Allow no more than 2% of each species of the forb group and no more than 8% in aggregate

Table 4. Annual production by plant type

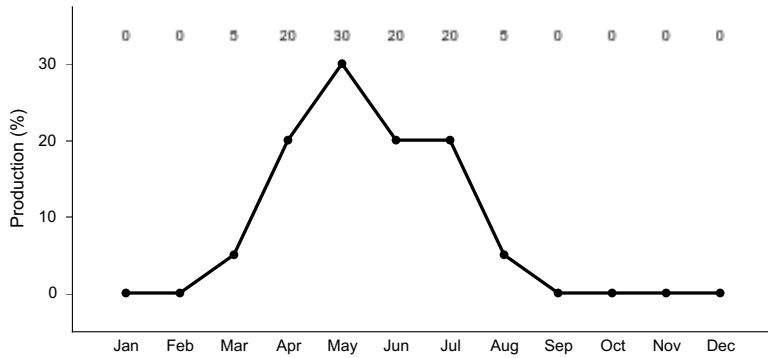
Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	150	263	375
Grass/Grasslike	30	52	75
Forb	20	35	50
<b>Total</b>	<b>200</b>	<b>350</b>	<b>500</b>

Table 5. Ground cover

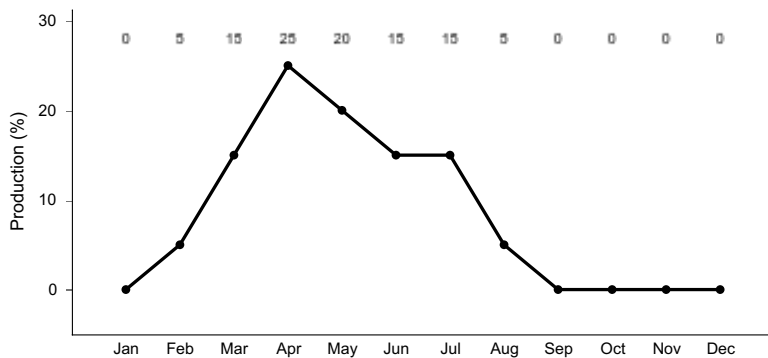
Tree foliar cover	0%
Shrub/vine/liana foliar cover	8-15%
Grass/grasslike foliar cover	2-3%
Forb foliar cover	1-2%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%



**Figure 2. Plant community growth curve (percent production by month). CA3004, Burrobush XB.** Growth starts in early spring, flowering and seed set occur by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of new growth..



**Figure 3. Plant community growth curve (percent production by month). CA3014, California buckwheat. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..**



**Figure 4. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..**

## Additional community tables

### Animal community

This site provides habitat for mammals such the Panamint and Merriam's kangaroo rats, desert woodrats, deer mice, and canyon mice.

This site provides habitat for lizards such as the western whiptail, zebra-tailed lizard, desert collared lizard, chuckwalla and desert spiny lizard. Several species of snakes may also occur on this site. The depth to bedrock is a limiting feature for burrowing reptiles such as desert tortoise.

Birds occurring on this site include black-throated and sage sparrows, common ravens, rock wrens and several species of warblers.

### LIVESTOCK GRAZING:

This site has limited use for livestock grazing due to the steep rocky slopes and low productivity. California buckwheat is considered fair to poor browse for cattle and sheep, and fair for goats. White bursage is fair browse for cattle and horses, and fair to good browse for sheep. White bursage is one of the major forage species of feral burros, especially in winter. Feral burros can eliminate this shrub through browsing and trampling. Creosotebush is unpalatable to livestock.

General guide to initial stocking rate. Before making specific recommendations, an on-site evaluation must be made.

Pounds/acre  
 air dry AUM/AC AC/AUM  
 Normal Years 350

## Hydrological functions

Runoff is medium to high. Hydrologic group B - soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well drained to well drained soils with moderately fine to moderately coarse textures. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series: Typic Haplargids

Hydrologic Group: B

Hydrologic Conditions and Runoff Curves:

Good 68; Fair 72; Poor 77

## 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

Military Operations - The steep rocky slopes restrict extensive vehicle and foot traffic. Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Disturbance of the cryptogamic crust may result in increased soil erosion. 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.

## Inventory data references

Sampling technique

\_2\_ NV-ECS-1

\_\_\_ SCS-Range 417

\_3\_ Other

## Type locality

Location 1: San Bernardino County, CA	
UTM zone	N
UTM northing	3930378
UTM easting	555019
General legal description	Non-sectionalized area of T17N R5E Avawatz Pass Quadrangle UTM 11S 0555019e 3930378n (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

## Approval

Sarah Quistberg, 2/25/2025

## 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	05/11/2025
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or 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):**

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

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

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

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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):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
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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):**
- 
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:**
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17. **Perennial plant reproductive capability:**
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