USDA Natural Resources
Conservation Service

Ecological site R030XY156CA
Sodic Loam 3-5" p.z.

Last updated: 2/24/2025
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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.

Classification relationships

California Natural Diversity Database, May 2002. List of California terrestrial natural communities recognized by the California Natural Diversity Database – Desert Bush Seepweed shrub.

Sawyer, J.O. and T. Keeler-Wolf. 1995. Manual of California Vegetation – Bush Seepweed Series.

Ecological site concept

This site occurs on nearly alluvial flats adjacent to dry lakebeds. The soils associated with this site are well drained and very deep. These soils are saline and sodic.

Please refer to group concept R030XB114NV to view the provisional STM.

Associated sites

R030XY047NV	**ALLUVIAL PLAIN** Occurs on adjacent hummocks.
R030XY158CA	**Sodic Bottom 3-5" p.z.** Occurs on adjacent hummocks.

Table 1. Dominant plant species

Tree	Not specified

Shrub	(1) *Atriplex confertifolia* (2) *Suaeda moquinii*
Herbaceous	Not specified

Physiographic features

This site occurs on nearly alluvial flats adjacent to dry lakebeds.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Very rare
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	Rare
Elevation	786–853 m
Slope	0–2%
Ponding depth	3–10 cm
Aspect	Aspect is not a significant factor

Climatic features

The primary air masses affecting California are cold maritime polar air from the Gulf of Alaska and warmer, moist maritime subtropical air from lower latitudes. Occasionally there are invasions of cold continental polar air from northern Canada or the Rocky Mountains. Precipitation in the area results primarily from the passage of cyclones with associated fronts during fall, winter and spring; from closed cyclones in late winter and spring; and from the flow of moist tropical air from the southeast to the southwest quadrant in the summer.

Barstow Fire Station, occurs at a lower elevation and has a long-term record from 1980 to 2002. Twentynine Palms Station, occurs at a lower elevation and has a long-term record from 1948 to 2002. This climate summary is based on data from both locations. Warm, moist winters (35 to 70 degrees F) and hot, dry summers (60 to 105 degrees F) characterize the climate on this site. Mean annual air temperature is 65 to 70 degrees F. The average annual precipitation is 3 to 5 inches, with most falling as rain from December through March. Approximately 20 to 45% of the annual precipitation occurs from July to September as a result of intense, convection storms.

Table 3. Representative climatic features

Frost-free period (average)	340 days
Freeze-free period (average)	
Precipitation total (average)	127 mm

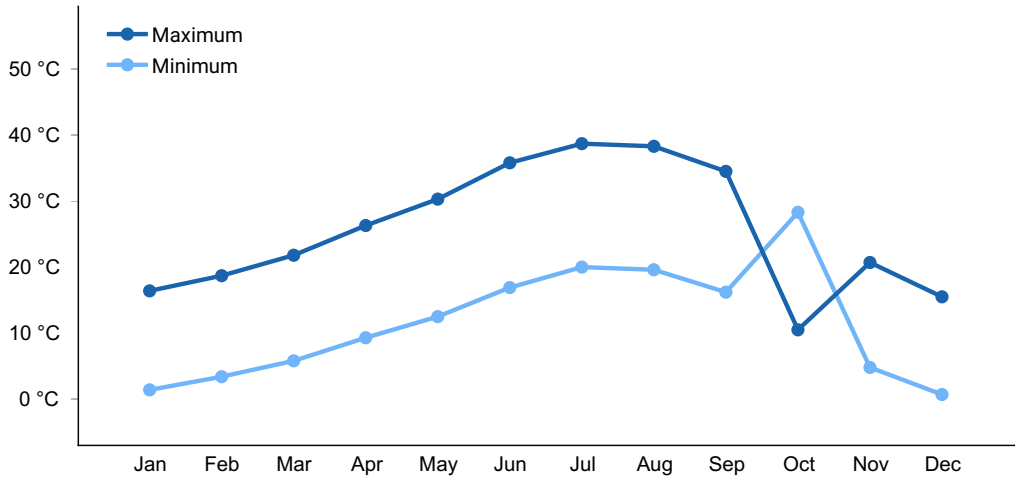

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are well drained and very deep. These soils are saline and sodic. Available water capacity is low to moderate and permeability is moderate to rapid. Effective rooting depth is 60 inches or more. Water tables are greater than 60 inches.

6984702 Calcic Haplosalids-Sodic Haplocalcids complex, 2.8%. Sodic Haplocalcids. Johnson Valley OHV Area Soil Survey

6984730 Calcic Haplosalids-Sodic Haplocalcids-Typic Haplosalids complex, 0-2%. Sodic Haplocalcids. Johnson Valley OHV Area Soil Survey

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to rapid

Soil depth	152 cm
Surface fragment cover <=3"	1–10%
Surface fragment cover >3"	0–2%
Available water capacity (0-101.6cm)	6.78–10.03 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	4–36 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	2–44
Soil reaction (1:1 water) (0-101.6cm)	7.6–8.6
Subsurface fragment volume <=3" (Depth not specified)	1–10%

Ecological dynamics

Please refer to group concept R030XB114NV to view the provisional STM.

The interpretive plant community for this site is the historic climax plant community. This community is dominated by Mojave seablite (*Suaeda moquinii*) and shadscale (*Atriplex confertifolia*). Perennial forbs and grasses are scarce. Annuals are seasonally present. The historic site potential is characterized by widely spaced, succulent shrubs less than a meter tall. Potential vegetative composition is approximately 5% grasses, 5% forbs, and 90% shrubs. This site is stable in this condition.

Species indigenous to this site are recommended for any revegetation efforts. Shadscale and fourwing saltbush has been widely used for rehabilitating disturbed sites. Seeding success is generally sporadic. Seedlings, which tend to be more drought tolerant and less susceptible to predation, may be transplanted. Seedlings are generally transplanted during the early spring.

This site is characterized by low productivity with little plant diversity. Disturbance would allow for the introduction of non-native annuals such as cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*).

State and transition model

Ecosystem states

1. Mojave seablite - Shadscale

State 1 submodel, plant communities

1.1. Mojave seablite - Shadscale

State 1
Mojave seablite - Shadscale

Community 1.1
Mojave seablite - Shadscale

Figure 2. Sodic Loam

The interpretive plant community for this site is the historic climax plant community. This community is dominated by Mojave seablite (*Suaeda moquinii*) and shadscale (*Atriplex confertifolia*). Perennial forbs and grasses are scarce. Annuals are seasonally present. The historic site potential is characterized by widely spaced, succulent shrubs less than a meter tall. Potential vegetative composition is approximately 5% grasses, 5% forbs, and 90% shrubs. This site is stable in this condition. This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and

relative production may change from year to year dependent upon abnormal precipitation or other climatic factors. The historic climax plant community has been determined by study of rangeland relict areas or other protected areas and historical accounts.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	104	156	206
Forb	7	10	15
Grass/Grasslike	1	2	3
Total	**112**	**168**	**224**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	1-3%
Grass/grasslike foliar cover	1%
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%

Table 7. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	0%
Grass/grasslike basal cover	0%
Forb basal cover	0%
Non-vascular plants	0%
Biological crusts	1-5%
Litter	1-5%
Surface fragments >0.25" and <=3"	5-10%

Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	80-85%

Table 8. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	–	–	–
>0.15 <= 0.3	–	–	–	1-5%
>0.3 <= 0.6	–	–	1-2%	–
>0.6 <= 1.4	–	2-10%	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	–	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–

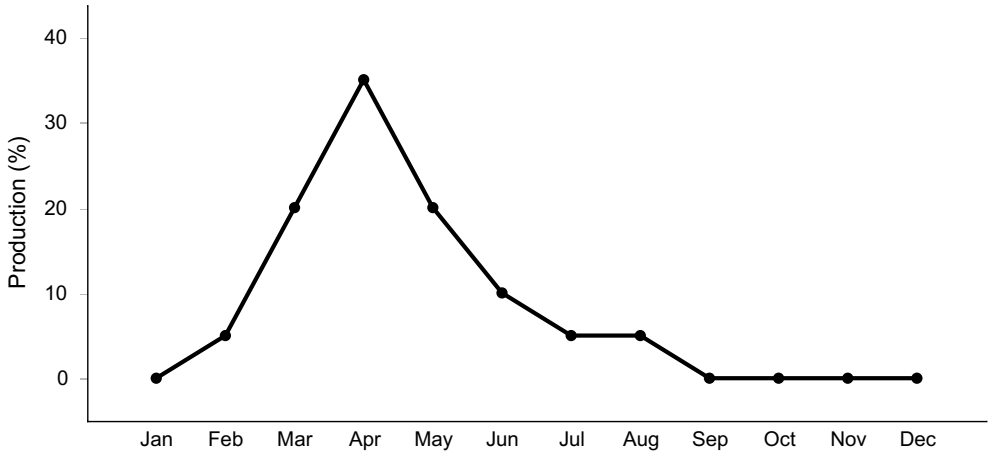

Figure 4. Plant community growth curve (percent production by month). CA3003, Shadscale. Growth starts in early spring. Flowering and seed set occur by July. Seeds stay on the shrub for several months. Dormancy occurs during the hot summer months..

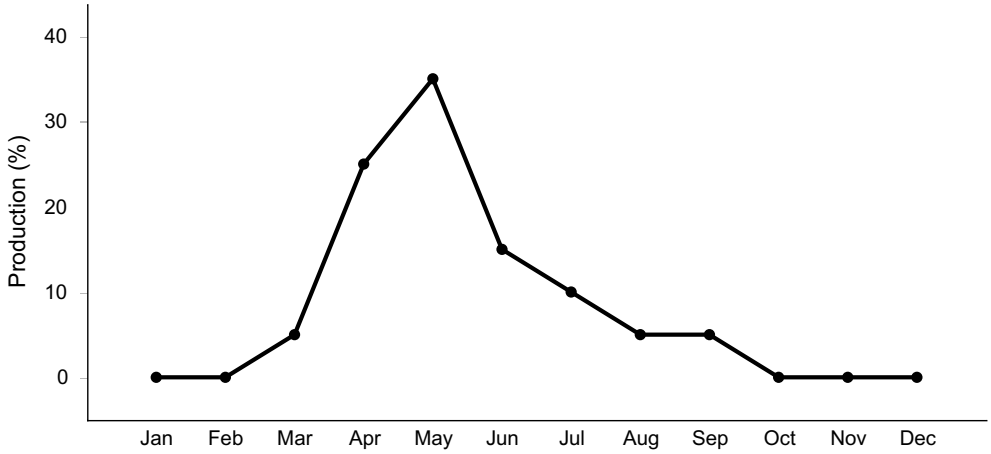

Figure 5. Plant community growth curve (percent production by month). CA3008, Fourwing saltbush. Growth begins in spring to early summer. Flowering occurs from May through September, and fruit ripens from October to December. Seed dispersal occurs from October through April. Seed may remain on the plants from one to two years..

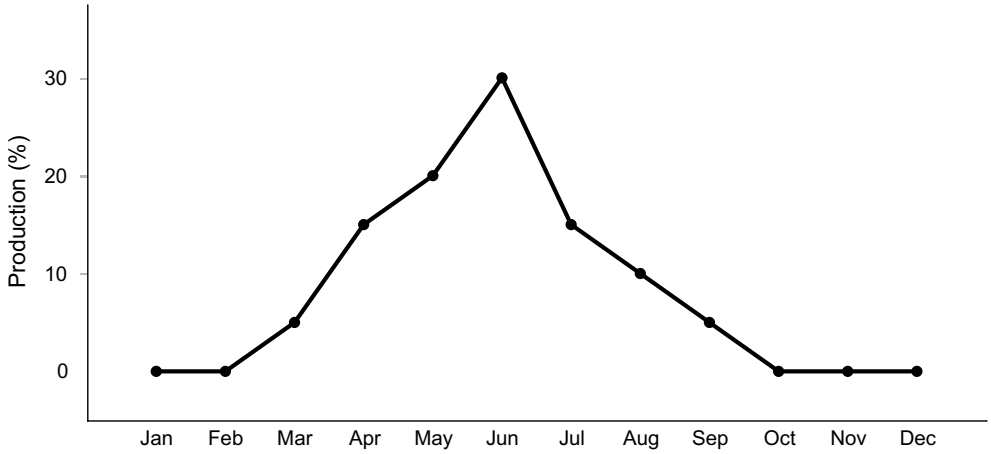

Figure 6. Plant community growth curve (percent production by month). CA3010, Mojave Seablite. Growth begins in early spring; flowering occurs from July to September..

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial Grass**			1–3	
	Grass, perennial	2GP	*Grass, perennial*	1–17	–
Forb					
3	**Perennial Forbs**			2–4	
	desert princesplume	STPI	*Stanleya pinnata*	2–4	–
4	**Annual Forbs**			4–10	
	pincushion flower	CHFR	*Chaenactis fremontii*	3–7	–
	devil's spineflower	CHRI	*Chorizanthe rigida*	1–3	–
Shrub/Vine					
5	**Other Shrubs**			103–201	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	56–112	–
	Mojave seablite	SUMO	*Suaeda moquinii*	34–64	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	13–25	–
6	**Other Shrubs**			1–6	
	burrobush	AMDU2	*Ambrosia dumosa*	1–3	–
	cattle saltbush	ATPO	*Atriplex polycarpa*	0–1	–
	desert pepperweed	LEFR2	*Lepidium fremontii*	0–1	–

Animal community

This site has low species diversity. Small mammals, coyotes and black-tailed jackrabbits may occur. Common lizards include western whiptails. Common birds include horned larks and common ravens. The twigs and foliage of the saltbush provide forage for black-tailed jackrabbits and small mammals. The seeds are consumed by small mammals and birds. The shrubs also provide cover.

Plant use by selected wildlife species includes:
Mojave seablite is used by Black-tailed jackrabbits, non-game birds and small mammals, but the degree of utilization is unknown.

Shadscale and fourwing saltbush are desirable species providing food and cover to Black-tailed jackrabbits, non-game birds and small mammals.

Recreational uses

High off-road vehicle usage due to proximity to dry lake beds. Dry lake beds act as staging areas and camp sites for off-roading enthusiasts.

Inventory data references

Data Source:NV-ECS
Number of Records:1
Sample Period:8/02
State:CA
County:San Bernardino

Data Source:Line Transects
Number of Records:2
Sample Period:7/02-8/02
State:CA
County:San Bernardino

Type locality

Location 1: San Bernardino County, CA	
UTM zone	N
UTM northing	3807166
UTM easting	546276
Latitude	34° 24′ 15″
Longitude	116° 29′ 47″
General legal description	Means Lake, Johnson Valley, California. Elevation 2650 feet.

Other references

Hickman, J.C. (ed).1993. The Jepson Manual: Higher plants of California. University of California Press, Berkeley, CA.

U.S. Department of Agriculture, NRCS. National Range and Pasture Handbook, September 1997.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire

Sciences Laboratory. 2002. Fire Effects Information System [Online] Available: http://www.fs.fed.us/database/feis/plants)

Western Regional Climate Center, Desert Research Institute, Reno, Nevada (http://www.wrcc.dri.edu/index.html)

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)	
Contact for lead author	
Date	12/08/2025
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:**

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:

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

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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):**

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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:**

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17. **Perennial plant reproductive capability:**
