USDA Natural Resources
Conservation Service

Ecological site R030XA032CA
Sodic Flat

Last updated: 3/10/2025
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 nearly level to gently sloping areas of basin floors and severely wind eroded areas on the margins of playas. Elevations are 2270 to 2375 feet. Slopes range from 0 to 2 percent.

The soils that characterize this site are very deep and moderately well drained. They are formed in lacustrine sediments. Surface textures are loamy sands and fine sandy loams. Subsoils are sandy clay loams.

Associated sites

R030XA025CA	**Saline Bottom** Saline Bottom
R030XA031CA	**Sodic Dunes 5-7" P.Z.** Sodic Dune 5-7

Similar sites

R030XA025CA	**Saline Bottom** Saline Bottom [SPAI, ATCO dominant species, more productive site]
R030XA031CA	**Sodic Dunes 5-7" P.Z.** Sodic Dune 5-7

Table 1. Dominant plant species

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

Physiographic features

This site occurs on nearly level to gently sloping areas of basin floors and severely wind eroded areas on the margins of playas. Elevations are 2270 to 2375 feet. Slopes range from 0 to 2 percent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat (2) Playa
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Occasional

Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	Occasional
Elevation	2,270–2,375 ft
Slope	0–2%
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is characterized by cool, relatively dry winters (30 to 60 degrees F) and hot, dry summers (70 to 100 degrees F). The average annual precipitation ranges from 4 to 6 inches with most falling as rain from November to March. Mean annual air temperature is 60 to 64 degrees F.

The average frost free period is 200 to 250 days.

Table 3. Representative climatic features

Frost-free period (average)	250 days
Freeze-free period (average)	
Precipitation total (average)	6 in

Influencing water features

Soil features

The soils that characterize this site are very deep and moderately well drained. They are formed in lacustrine sediments. Surface textures are loamy sands and fine sandy loams. Subsoils are sandy clay loams. The substratum to 60 inches is fine sandy loam and loamy sand. These soils are moderately to very strongly alkaline and calcareous throughout the profile.
Available water capacity is moderate and the hazard of water erosion is slight. Wind erosion hazard is severe. Effective rooting depth is 60 inches or more, but root growth may be impeded where a dense natric horizon exists. A seasonal water table occurs at depths greater than 60 inches that supplies moisture to deep rooted phreatophytic shrubs and grasses. Additional run-in moisture is received from higher landscapes. Up to 6 inches of ponding may also occur on the small playas after heavy winter rains.

Soil Map Units
112 Challenger-Leuhman complex, 0-9% slopes
127 Leuhman-Cajon-Leuhman, eroded, complex 0-9% slopes
128 Leuhman-Challenger complex, 0-9% slopes
129 Leuhman-Challenger-Cajon complex, 0-15% slopes

Ecological dynamics

Please refer to grouped concept R030XA009CA to view general STM.

The occurrence of ponding will increase the density of inland saltgrass but if ecological condition deteriorates, perennial grasses and forbs decrease. The site will become a community dominated by halophytic shrubs. The loss of perennial cover would allow for the invasion of non-native annual forbs and grasses such as filaree, red brome and schismus. Gully erosion and other accelerated erosion may also occur. Threadleaf snakeweed and saltcedar are also invaders of this site.

The foliage of the saltbushes appears to have fire-retarding qualities associated with the salt content of the leaves. Fire is also infrequent due to the sparse cover. Fire is not recommended as a range management tool as the

erosion hazard is severe and recovery rates are very slow.

Management for this site would be to maintain existing plant cover and protect from excessive disturbance especially when the playas are wet.

State and transition model

Ecosystem states

1. Reference State - Plant Community 1

State 1 submodel, plant communities

1.1. Reference State - Plant Community 1

State 1
Reference State - Plant Community 1

Community 1.1
Reference State - Plant Community 1

The historic site potential is an open community dominated by halophytic scrub, many of them succulent chenopods. Vegetation occurs on the playa or on small mounds of fine-grained soil a few centimeters above the level of the playa. Perennial grasses are common. Perennial and annual forbs are sparse. The representative natural plant community is the Desert Sink Scrub or Shadscale series. This community is dominated by shadscale, Mojave seablite and inland saltgrass. Vegetation occurs predominately on small coppice dunes that are surrounded by small barren playas. Potential vegetative composition is about 20% grasses, 10% forbs, and 70% 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 15% in aggregate

Forest understory. Allow no more than 2% of each species of the grasses group, and no more than 8% in aggregate

Allow no more than 2% of each species of the forbs group, and no more than 5% in aggregate

Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	35	70	140
Grass/Grasslike	10	20	40
Forb	5	10	20
Total	**50**	**100**	**200**

Table 5. Ground cover

Tree foliar cover	0%

Shrub/vine/liana foliar cover	1-4%
Grass/grasslike foliar cover	0-1%
Forb foliar cover	0%
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%

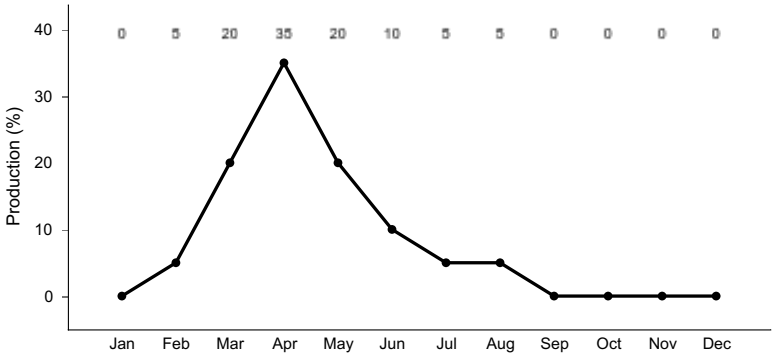

Figure 2. Plant community growth curve (percent production by month). CA3003, Shadscale. Growth starts in early spring. Flowering and seed set occur by July. Seeds stay on the shrub for several months. Dormancy occurs during the hot summer months..

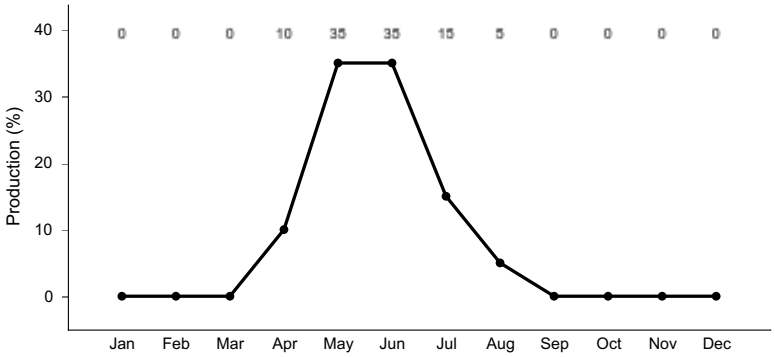

Figure 3. Plant community growth curve (percent production by month). CA3025, Saltgrass. Growth begins in spring and continues through early summer, setting seed in late summer..

Additional community tables

Animal community

This site provides habitat for small mammals such as kangaroo rats and ground squirrels, and fur and game mammals such as coyotes and rabbits. Songbirds are also common. The small playas or "claypans" provide habitats for five species of eubranchiopods including species of tadpole shrimp, clam shrimp, and fairy shrimp. This site is poorly suited for desert tortoise due to the occurrence of ponding and the dense natric horizon which limits burrowing ability.

This site is poorly suited for livestock grazing. It is limited by low production, lack of stock water and the hazard of wind erosion.

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

Pounds/acre
airdry AUM/AC AC/AUM

Normal Year 100 30-60

Hydrological functions

Runoff is ponded to low. Hydrologic soil group D - soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high watertable, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission. Hydrologic conditions: good - >70% ground cover; fair - 30 to 70% ground cover; poor - <30% ground cover.

Soil Series: Leuhman
Hydrologic Group: D
Hydrologic Conditions and Runoff Curves:
Good 84; Fair 86; Poor 88

Recreational uses

This site is valued for open space and is used by mountain bikers, joggers and off-road enthusiasts. Off-road vehicles can easily damage the soil and vegetative cover, and should be restricted to existing roads and trails.

Other information

Military Operations - Vehicles and aircraft should be limited to existing roads and airstrips. Park vehicles on roadways only and avoid playas especially when wet. Limit disturbance or clearing of vegetation to reduce wind erosion. Contain all potentially hazardous materials. Native species indigenous to this site are recommended for any revegetation efforts.

Inventory data references

Sampling technique

_5_ NV-ECS-1
___ SCS-Range 417
___ Other

Type locality

Location 1: Kern County, CA	
Township/Range/Section	T8N R11W S17
General legal description	NE 1/4 Section 17, T8N, R11W South of Rosamond Lake, Los Angeles Co., CA

Contributors

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Approval

Kendra Moseley, 3/10/2025

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	Kendra Moseley
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:**

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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):**

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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:

    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:**
