USDA Natural Resources
Conservation Service

Ecological site R026XF048CA
CLAYPAN TERRACES

Last updated: 4/10/2024
Accessed: 05/20/2025

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.

MLRA notes

Major Land Resource Area (MLRA): 026X–Carson Basin and Mountains

The area lies within western Nevada and eastern California, with about 69 percent being within Nevada, and 31 percent being within California. Almost all this area is in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. Isolated north-south trending mountain ranges are separated by aggraded desert plains. The mountains are uplifted fault blocks with steep side slopes. Most of the valleys are drained by three major rivers flowing east across this MLRA. A narrow strip along the western border of the area is in the Sierra Nevada Section of the Cascade-Sierra Mountains Province of the Pacific Mountain System. The Sierra Nevada Mountains are primarily a large fault block that has been uplifted with a dominant tilt to the west. This structure leaves an impressive wall of mountains directly west of this area. This helps create a rain shadow affect to MLRA 26. Parts of this eastern face, but mostly just the foothills, mark the western boundary of this area. Elevations range from about 3,806 feet (1,160 meters) on the west shore of Pyramid Lake to 11,653 feet (3,552 meters) on the summit of Mount Patterson in the Sweetwater Mountains.

Valley areas are dominantly composed of Quaternary alluvial deposits with Quaternary playa or alluvial flat deposits often occupying the lowest valley bottoms in the internally drained valleys, and river deposited alluvium being dominant in externally drained valleys. Hills and mountains are dominantly Tertiary andesitic flows, breccias, ash flow tuffs, rhyolite tuffs or granodioritic rocks. Quaternary basalt flows are present in lesser amounts, and Jurassic and Triassic limestone and shale, and Precambrian limestone and dolomite are also present in very limited amounts. Also of limited extent are glacial till deposits along the east flank of the Sierra Nevada Mountains, the result of alpine glaciation.

The average annual precipitation in this area is 5 to 36 inches (125 to 915 millimeters), increasing with elevation. Most of the rainfall occurs as high-intensity, convective storms in spring and autumn. Precipitation is mostly snow in winter. Summers are dry. The average annual temperature is 37 to 54 degrees F (3 to 12 degrees C). The freeze-free period averages 115 days and ranges from 40 to 195 days, decreasing in length with elevation.

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are well drained, are clayey or loamy and commonly skeletal, and are very shallow to moderately deep.

This area supports shrub-grass vegetation characterized by big sagebrush. Low sagebrush and Lahontan sagebrush occur on some soils. Antelope bitterbrush, squirreltail, desert needlegrass, Thurber needlegrass, and Indian ricegrass are important associated plants. Green ephedra, Sandberg bluegrass, Anderson peachbrush, and several forb species also are common. Juniper-pinyon woodland is typical on mountain slopes. Jeffrey pine, lodgepole pine, white fir, and manzanita grow on the highest mountain slopes. Shadscale is the typical plant in the drier parts of the area. Sedges, rushes, and moisture-loving grasses grow on the wettest parts of the wet flood plains and terraces. Basin wildrye, alkali sacaton, saltgrass, buffaloberry, black greasewood, and rubber rabbitbrush grow on the drier sites that have a high concentration of salts.

Some of the major wildlife species in this area are mule deer, coyote, beaver, muskrat, jackrabbit, cottontail, raptors, pheasant, chukar, blue grouse, mountain quail, and mourning dove. The species of fish in the area include trout and catfish. The Lahontan cutthroat trout in the Truckee River is a threatened and endangered species.

LRU notes

The Semiarid Fans and Basins LRU includes basins, alluvial fans and adjacent hill slopes immediately east of the Sierra Nevada mountain range and are affected by its climate or have its granitic substrate. Elevations range from 1355 to 1920 meters and slopes range from 0 to 30 percent, with a median value of 6 percent. Frost free days range from 121 to 170.

Ecological site concept

The Claypan Terraces site is found on alluvial fans and basin floors at slopes less than 30 percent. The elevation is 4,500 to 5,200 feet. The soil is deep with an abrupt textural change at about 4 inches going from a sandy loam to a sandy clay loam and to a silty clay at 10 inches. The soil is well drained with a sandy loam surface texture. Soil has between 5 adn 20 percent cover/volume of rocks on the surface or subsurface.

Similar sites

R026XF066CA	**Stony Claypan 8-10 P.Z.** Site has more than 20 percent rock fragments by cover or volume on the soil surface or subsurface.
R026XY047NV	**DROUGHTY CLAYPAN 8-10 P.Z.** Site has more than 20 percent rock fragments by cover or volume on the soil surface or subsurface.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata*
Herbaceous	(1) *Pseudoroegneria spicata* (2) *Festuca idahoensis*

Physiographic features

The Claypan Terraces site is found on alluvial fans and basin floors at slopes less than 30 percent. The elevation is 4,500 to 5,200 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Basin floor
Runoff class	Very high
Elevation	1,372–1,585 m
Slope	2–30%
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is characterized by cold winters (20 to 40 degrees F) and warm, mostly dry summers (45 to 85 degrees F). The average annual precipitation ranges from 8 to 12 inches, with most falling as snow from November to March.

Table 3. Representative climatic features

Frost-free period (characteristic range)	
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	203-305 mm
Frost-free period (average)	108 days
Freeze-free period (average)	135 days

Precipitation total (average)	254 mm

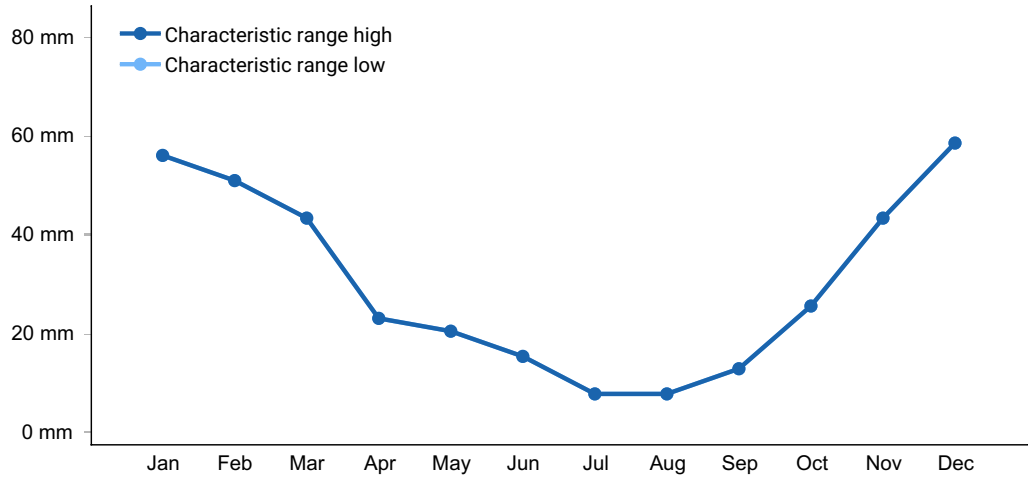


Figure 1. Monthly precipitation range

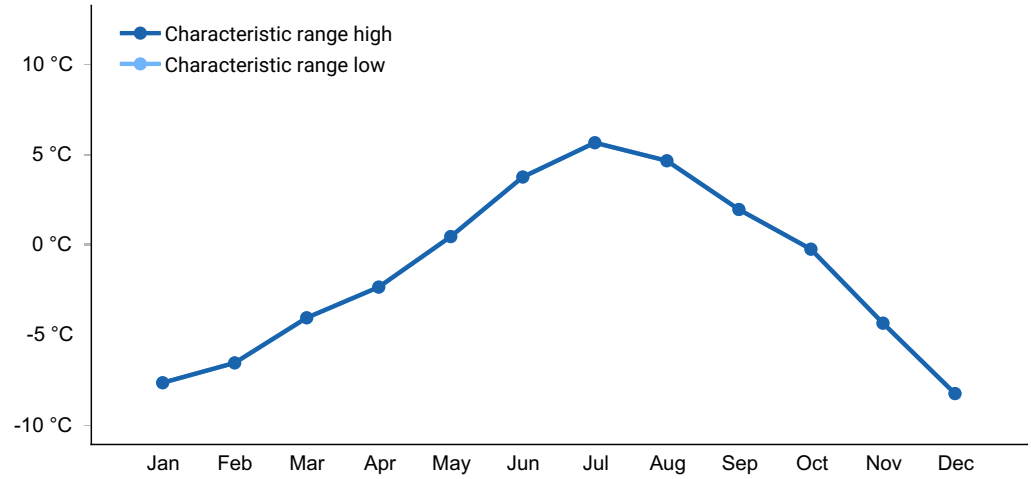


Figure 2. Monthly minimum temperature range

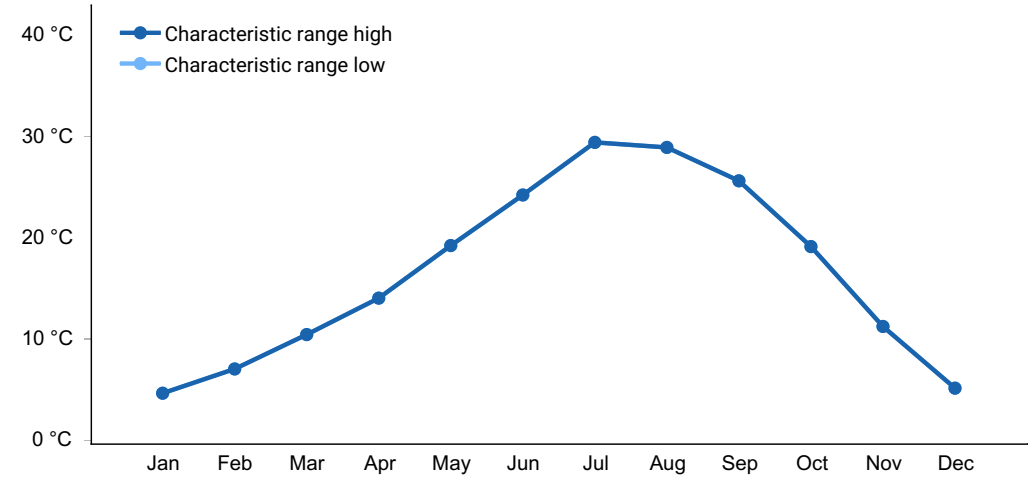


Figure 3. Monthly maximum temperature range

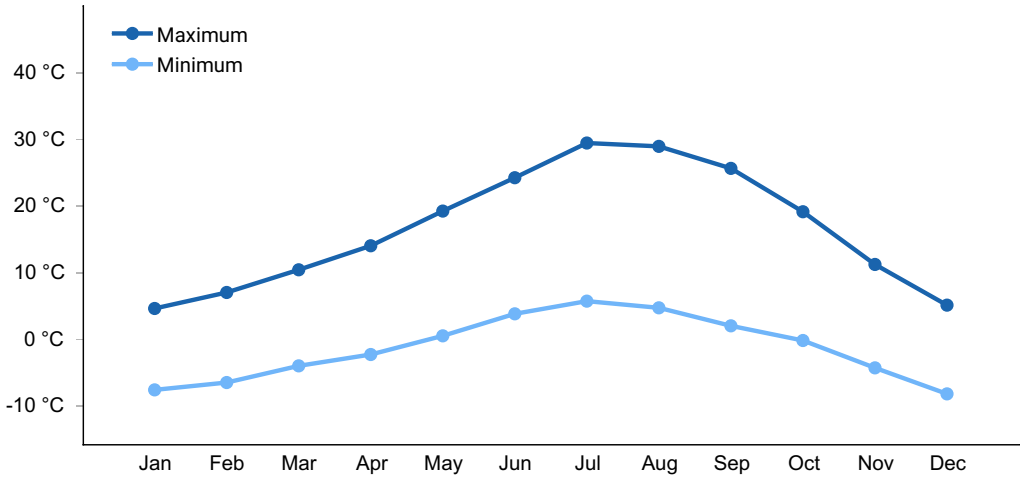


Figure 4. Monthly average minimum and maximum temperature

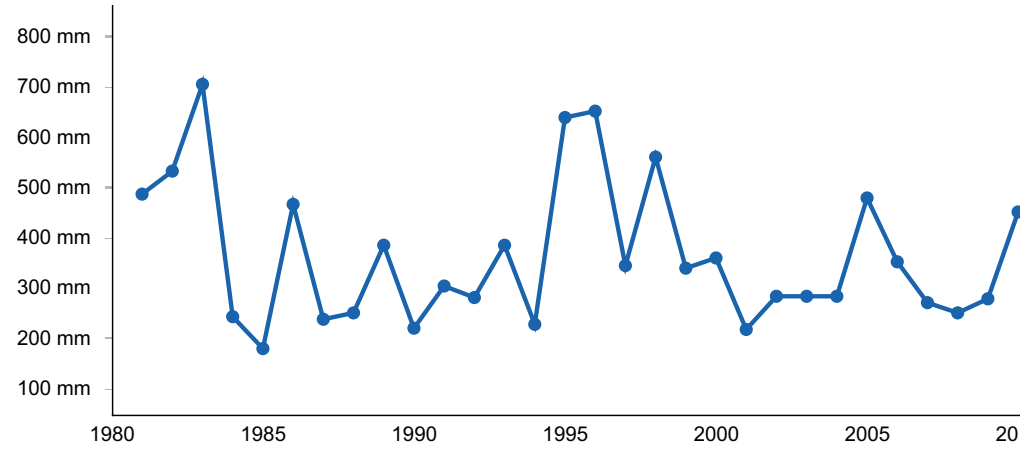


Figure 5. Annual precipitation pattern

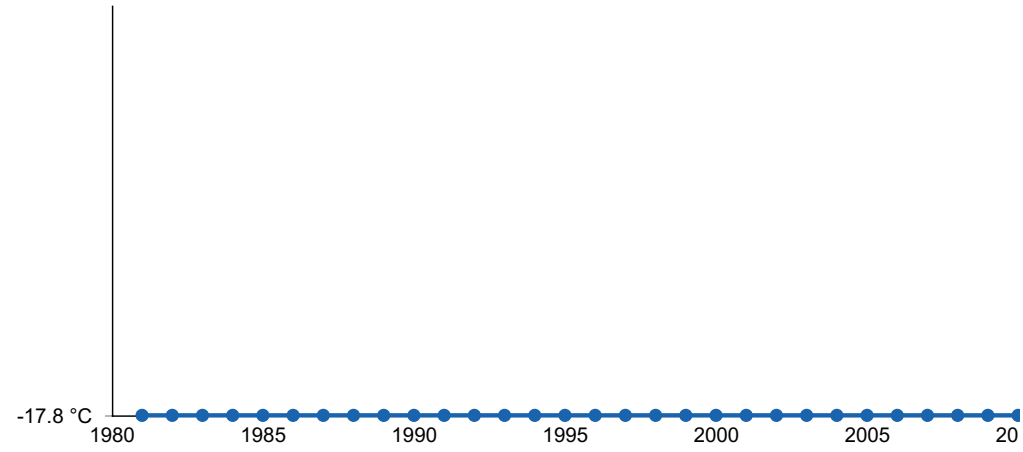


Figure 6. Annual average temperature pattern

Climate stations used

- (1) VINTON [USC00049351], Chilcoot, CA

Influencing water features

The Claypan Terraces site is not influenced by water features.

Soil features

The soil is deep and well drained. It was formed in lacustrine deposits. The soil has an abrupt textural change at about 4 inches going from a sandy loam to a sandy clay loam and to a silty clay at 10 inches. The soil is well drained with a sandy loam surface texture. The site is correlated to Reba (ReE) in soil survey area CA614.

Table 4. Representative soil features

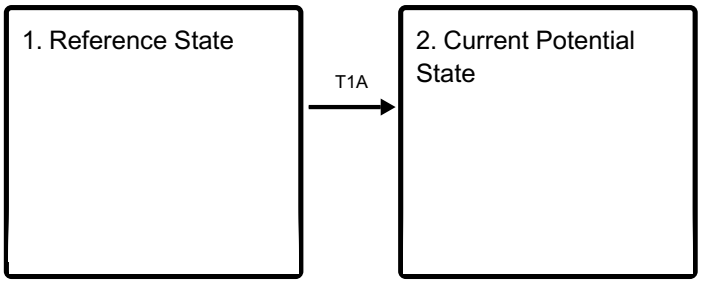
Parent material	(1) Lacustrine deposits
Surface texture	(1) Sandy loam
Drainage class	Well drained
Permeability class	Slow
Surface fragment cover <=3"	13%
Surface fragment cover >3"	2%
Available water capacity (Depth not specified)	11.18–14.22 cm
Calcium carbonate equivalent (Depth not specified)	1–5%
Electrical conductivity (Depth not specified)	0–2 mmhos/cm
Sodium adsorption ratio (Depth not specified)	0
Soil reaction (1:1 water) (Depth not specified)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	18%
Subsurface fragment volume >3" (Depth not specified)	2%

Ecological dynamics

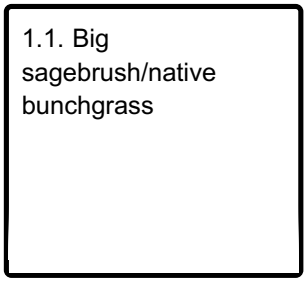
Claypan Terraces needs addition field work to adequately describe site dynamics. Soil data show that the site was dominated by big sagebrush, bluebunch wheatgrass, and Idaho fescue at the time of the survey. It is likely that over time, non-native species have established on the site.

State and transition model

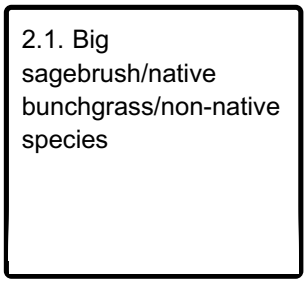
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Reference State

This state is contains only one plant community phase. Further field work is needed to develop the STM.

Community 1.1
Big sagebrush/native bunchgrass

Community Phase 1.1 is dominated by big sagebrush and native bunchgrasses.

Dominant plant species

- big sagebrush (*Artemisia tridentata*), shrub
- bluebunch wheatgrass (*Pseudoroegneria spicata*), grass
- Idaho fescue (*Festuca idahoensis*), grass

State 2
Current Potential State

The Current Potential State is assumed to occur, but not documented. It will contain non-

native plant species in the community.

Community 2.1
Big sagebrush/native bunchgrass/non-native species

Community Phase 2.1 contains non-native plant species in the community.

Transition T1A
State 1 to 2

Non-native plant species establishment.

Additional community tables

Inventory data references

NASIS data from soil survey area CA614.

Contributors

Sarah Quistberg

Approval

Kendra Moseley, 4/10/2024

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	05/20/2025
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:**

    _____

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:**
