USDA Natural Resources
Conservation Service

# Ecological site R030XA070NV
# CHURNING CLAY 3-5 P.Z.

Last updated: 2/18/2025
Accessed: 05/13/2025

## 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 lake plains. Slopes range from 0 to over 2 percent. Elevations are 2400 to 2600 feet. Surface soil texture ranges from clay loam to clay. Soils are calcareous but low in sodium.

Please refer to group concept R030XA096NV to view the provisional STM.

## Associated sites

| | |
|---|---|
| R030XA073NV | **LIMY 3-5 PZ** |

## Similar sites

| | |
|---|---|
| R030XA063NV | **SANDY 5-7 P.Z.**<br>More productive site; ATCA2 & KRLA2 codominant shrubs; surface soil is sandy |
| R030XA069NV | **LIMY SAND 5-7 P.Z.**<br>ATCA2 & KRLA2 codominant shrubs; surface soil is sandy |
| R030XA011NV | **SILTY TERRACE 5-7 P.Z.**<br>More productive site; ATT0-ATCA2 codominant |
| R030XA064NV | **LOAMY BOTTOM**<br>Less productive site; LEFR2 major shrub |

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | (1) *Atriplex canescens* |
| Herbaceous | Not specified |

## Physiographic features

This site occurs on lake plains. Slopes range from 0 to over 2 percent. Elevations are 2400 to 2600 feet.

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Lake plain |
| Elevation | 732–792 m |
| Slope | 0–2% |
| Aspect | Aspect is not a significant factor |

## Climatic features

The climate is hot and arid, with mild winters and very hot summers. Precipitation is greatest in the winter with a lesser secondary peak in summer, typical of the Mojave Desert. Average annual precipitation is 3 to 5 inches. Mean annual air temperature is 62 to 72 degrees F. The average growing season is about 220 to 290 days.

**Table 3. Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 290 days |
| Freeze-free period (average) | |
| Precipitation total (average) | 127 mm |

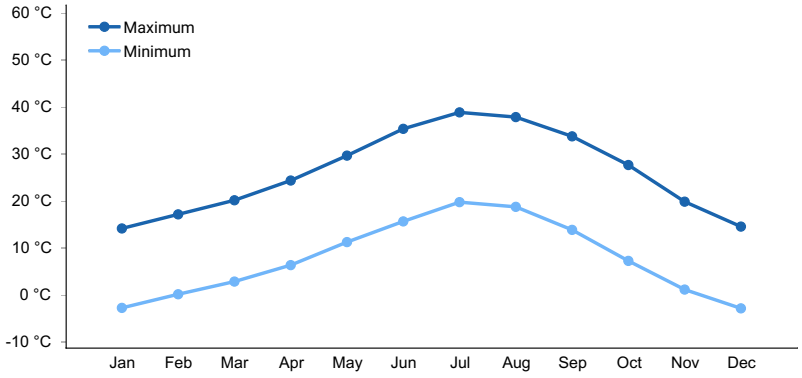


**Figure 1. Monthly average minimum and maximum temperature**

## Influencing water features

There are no influencing water features associated with this site.

## Soil features

The soils associated with this site are very deep alluvium derived from mixed rock sources. Surface soil texture ranges from clay loam to clay. Soils are calcareous but low in sodium. Water intake rates are very slow, available water capacity is moderate, and runoff is very high depending on slope. These soils are well drained. The soil series associated with this site include: Rumpah.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Clay<br>(2) Silty clay |
| Family particle size | (1) Clayey |
| Drainage class | Well drained |
| Permeability class | Very slow |
| Soil depth | 183–213 cm |
| Surface fragment cover <=3" | 0% |
| Surface fragment cover >3" | 0% |
| Available water capacity (0-101.6cm) | 15.75–16 cm |
| Calcium carbonate equivalent (0-101.6cm) | 20–60% |
| Electrical conductivity (0-101.6cm) | 0–16 mmhos/cm |

| | |
|---|---|
| Sodium adsorption ratio (0-101.6cm) | 0–30 |
| Soil reaction (1:1 water) (0-101.6cm) | 7.9–9 |
| Subsurface fragment volume <=3" (Depth not specified) | 0% |
| Subsurface fragment volume >3" (Depth not specified) | 0% |

## Ecological dynamics

Please refer to group concept R030XA096NV to view the provisional STM.

As ecological condition deteriorates, fourwing saltbush production and density decline as wolfberry and white burrobrush increase. Introduced annual forbs and grasses readily invade this site.

Fire Ecology:
Fourwing saltbush is most common under regimes of infrequent fire and moderate browsing. Fire top-kills or kills fourwing saltbush, depending upon ecotype. Fourwing saltbush may sprout after top-kill. Shadscale 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. The mean fire return interval for shadscale communities range from 35 to 100 years. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes by increasing fire frequency under wet to near-normal summer moisture conditions. Nevada ephedra is top-killed by fire. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation and may increase in plant cover.

## State and transition model

**Ecosystem states**

1. Reference Plant Community

**State 1 submodel, plant communities**

1.1. Reference Plant Community

## State 1
## Reference Plant Community

## Community 1.1
## Reference Plant Community

The reference plant community is dominated by fourwing saltbush. Potential vegetative composition is about 5% grasses, 10% perennial and annual forbs and 85% shrubs. Approximate ground cover (basal and crown) is 2 to 8 percent.

**Table 5. Annual production by plant type**

| Plant Type | Low (Kg/Hectare) | Representative Value (Kg/Hectare) | High (Kg/Hectare) |
|---|---|---|---|
| Shrub/Vine | 25 | 95 | 191 |
| Forb | 2 | 11 | 22 |
| Grass/Grasslike | 1 | 6 | 11 |
| **Total** | **28** | **112** | **224** |

## Additional community tables

**Table 6. Community 1.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production (Kg/Hectare) | Foliar Cover (%) |
|---|---|---|---|---|---|
| **Grass/Grasslike** | | | | | |
| 1 | **Perennial grasses** | | | 1–11 | |
| | Indian ricegrass | ACHY | *Achnatherum hymenoides* | 1–6 | – |
| | desert needlegrass | ACSP12 | *Achnatherum speciosum* | 1–6 | – |
| | threeawn | ARIST | *Aristida* | 1–6 | – |
| | low woollygrass | DAPU7 | *Dasyochloa pulchella* | 1–6 | – |
| **Forb** | | | | | |
| 2 | **Perennial Forbs** | | | 2–9 | |
| | desert globemallow | SPAM2 | *Sphaeralcea ambigua* | 1–3 | – |
| 3 | **Annual forbs** | | | 1–11 | |
| | spineflower | CHORI2 | *Chorizanthe* | 1–3 | – |
| | desert trumpet | ERIN4 | *Eriogonum inflatum* | 1–3 | – |
| **Shrub/Vine** | | | | | |
| 4 | **Primary shrubs** | | | 55–95 | |
| | fourwing saltbush | ATCA2 | *Atriplex canescens* | 50–73 | – |
| | shadscale saltbush | ATCO | *Atriplex confertifolia* | 2–11 | – |
| | spinescale saltbush | ATSP | *Atriplex spinifera* | 1–6 | – |
| | Nevada jointfir | EPNE | *Ephedra nevadensis* | 1–6 | – |
| 5 | **Secondary shrubs** | | | 17–50 | |
| | spiny hopsage | GRSP | *Grayia spinosa* | 1–6 | – |
| | burrobrush | HYSA | *Hymenoclea salsola* | 1–6 | – |
| | desert-thorn | LYCIU | *Lycium* | 1–6 | – |

## Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production. Fourwing saltbush is 1 of the most palatable shrubs in the West. It provides nutritious forage for all classes of livestock. Fourwing saltbush is adapted to browsing, and may show compensatory growth after stem removal. Old crown wood can produce vigorous sprouts after new growth is browsed; however, plants decline when subjected to overuse. Shadscale provides good browse for domestic sheep and goats. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. Shadscale tends to be browse tolerant. Heavy grazing during the winter and/or spring reduces shadscale. Die-off can also occur during extended periods of high precipitation. Shadscale is tolerant of early spring light-intensity browsing. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Nevada ephedra is usually grazed heavily and seems to be perfectly safe for grazing livestock since it induces neither toxicity in ewes or cows, nor congenital deformities in lambs.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

Wildlife Interpretations:
Fourwing saltbush provides valuable habitat and year-round browse for wildlife. Shadscale is a valuable browse species providing a source of palatable, nutritious forage for a wide variety of wildlife. The fruits and leaves are a food source for deer, desert bighorn sheep and pronghorn antelope. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. Mountain quail eat Ephedra seeds.

## Hydrological functions

Runoff is very high. Permeability is very slow.

## Other products

Seeds of shadscale were used by Native Americans for bread and mush. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage.

## Type locality

| Location 1: Nye County, NV | |
|---|---|
| Township/Range/Section | T20S R53E S16 |
| General legal description | Pahrump Valley, about 4 miles west of Pahrump, Nye County, Nevada. This site also occurs in western Clark County and southwestern Nye County, Nevada. |
| Location 2: Nye County, NV | |
| Township/Range/Section | T20S R53E S15 |
| General legal description | Pahrump Valley, about 4 miles west of Pahrump, Nye County, Nevada. This site also occurs in western Clark County and southwestern Nye County, Nevada. |

## Other references

Fire Effects Information System (Online; http://www.fs.fed.us/database/feis/plants/).

USDA-NRCS Plants Database (Online; http://www.plants.usda.gov).

## Contributors

HA

## Approval

Kendra Moseley, 2/18/2025

## 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 | 05/13/2025 |
| 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):**

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:**

---