# Ecological site R030XB036NV
# DROUGHTY LOAM 5-7 P.Z.

Last updated: 2/18/2025
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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.

## Ecological site concept

This site occurs on inset fans on all exposures. Slopes range from 0 to 30 percent, but slope gradients of 2 to 8 percent are most typical. Elevations are 3000 to 5000 feet. The soils associated with this site are very deep and have formed in mixed alluvium. Runoff is medium and permeability is moderately slow. Available water holding capacity is low.

Please refer to group concept R030XB148CA to view the provisional STM.

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | (1) *Grayia spinosa* |
| Herbaceous | (1) *Pleuraphis rigida* |

## Physiographic features

This site occurs on inset fans on all exposures. Slopes range from 0 to 30 percent, but slope gradients of 2 to 8 percent are most typical. Elevations are 3000 to 5000 feet.

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Inset fan |
| Elevation | 3,000–5,000 ft |
| Slope | 2–8% |
| Aspect | Aspect is not a significant factor |

## Climatic features

The climate of the Mojave Desert has extreme fluctuations of daily temperatures, strong seasonal winds, and clear skies. The climate is arid and is characterized with cool, moist winters and hot, dry summers. Most of the rainfall falls between November and April. Summer convection storms from July to September may contribute up to 25 percent of the annual precipitation. Average annual precipitation is 5 to 7 inches. Mean annual air temperature is 57 to 61 degrees F. The average growing season is about 190 to 220 days.

**Table 3. Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 220 days |
| Freeze-free period (average) | |

| | |
|---|---|
| Precipitation total (average) | 7 in |

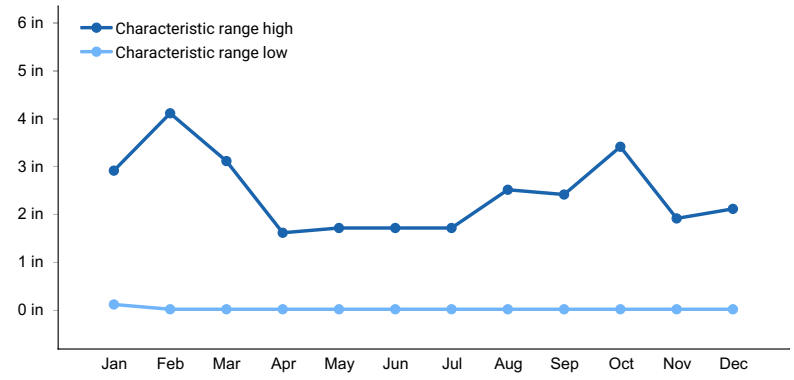


**Figure 1. Monthly precipitation range**

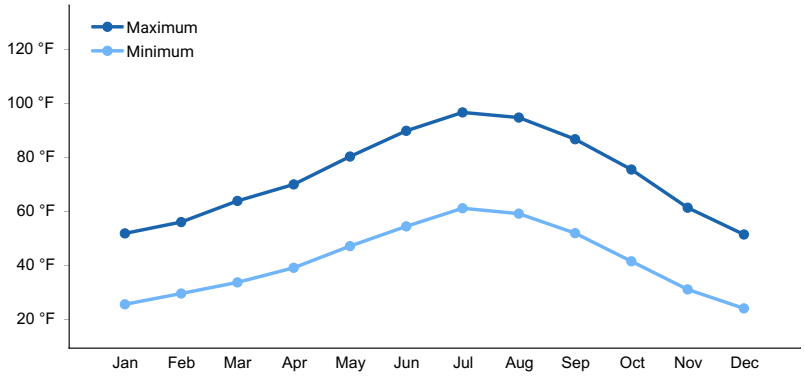


**Figure 2. Monthly average minimum and maximum temperature**

## Influencing water features

There are no influencing water features associated with this site.

## Soil features

The soils associated with this site are very deep and have formed in mixed alluvium. Runoff is medium and permeability is moderately slow. Available water holding capacity is low. The soil series associated with this site include: Geta.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Gravelly sandy loam<br>(2) Fine sandy loam<br>(3) Very fine sandy loam |
| Family particle size | (1) Loamy |
| Drainage class | Well drained |
| Permeability class | Moderately slow |
| Soil depth | 72–84 in |
| Surface fragment cover <=3" | 11–25% |
| Surface fragment cover >3" | 0% |
| Available water capacity (0-40in) | 4.4–4.5 in |
| Calcium carbonate equivalent (0-40in) | 5–15% |

| | |
|---|---|
| Electrical conductivity (0-40in) | 0–4 mmhos/cm |
| Sodium adsorption ratio (0-40in) | 1–12 |
| Soil reaction (1:1 water) (0-40in) | 7.9–9 |
| Subsurface fragment volume <=3" (Depth not specified) | 11–25% |
| Subsurface fragment volume >3" (Depth not specified) | 0% |

## Ecological dynamics

Please refer to group concept R030XB148CA to view the provisional STM.

As ecological condition deteriorates, Anderson wolfberry, banana yucca and horsebrush increase while bush muhly, Indian ricegrass, spiny hopsage and bud sagebrush decrease. Species likely to invade this site are annuals such as red brome. Big galleta may initially increase with livestock grazing, but will eventually decrease with abusive grazing management.

Fire Ecology:
Fires in the Mojave Desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fires in spiny hopsage sites generally occur in late summer when plants are dormant, and sprouting generally does not occur until the following spring. Spiny hopsage is considered to be somewhat fire tolerant and often survives fires that kill sagebrush. Mature spiny hopsage generally sprout after being burned. Spiny hopsage is reported to be least susceptible to fire during summer dormancy. 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. Fire typically destroys aboveground parts of Anderson wolfberry, but the degree of damage to the plant depends on fire severity. Fire most likely top-kills big galleta. Big galleta sprouts from rhizomes following fire. Damage to big galleta from fire varies, depending on whether big galleta is dormant when burned. If big galleta is dry, damage may be severe. However, when plants are green, fire will tend to be less severe and damage may be minimal, with big galleta recovering quickly. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas. Bush muhly regenerates following fire from soil-stored seed. Fire probably top-kills bush muhly. Burning causes at least short-term decline of bush muhly. Recovery time is thought to vary considerably and is probably dependent on postfire weather and competition.

## 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 plant community is dominated by spiny hopsage, Nevada ephedra and big galleta. Other important species on this site are Anderson wolfberry, Indian ricegrass and bush muhly. Potential vegetative composition is about 50% grasses, 10% annual and perennial forbs, and 40% shrubs. Approximate ground cover (basal and crown) is 25 to 35 percent.

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

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|---|---|---|---|
| Grass/Grasslike | 400 | 500 | 650 |
| Shrub/Vine | 320 | 400 | 520 |
| Forb | 80 | 100 | 130 |
| **Total** | **800** | **1000** | **1300** |

## Additional community tables

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

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|---|---|---|---|---|---|
| **Grass/Grasslike** | | | | | |
| 1 | **Primary Perennial Grasses** | | | 400–600 | |
| | big galleta | PLRI3 | *Pleuraphis rigida* | 250–350 | – |
| | Indian ricegrass | ACHY | *Achnatherum hymenoides* | 100–150 | – |
| | bush muhly | MUPO2 | *Muhlenbergia porteri* | 50–100 | – |
| 2 | **Secondary Perennial Grasses** | | | 50–100 | |
| | purple threeawn | ARPU9 | *Aristida purpurea* | 5–30 | – |
| | low woollygrass | DAPU7 | *Dasyochloa pulchella* | 5–30 | – |
| | squirreltail | ELEL5 | *Elymus elymoides* | 5–30 | – |
| 3 | **Annual Grasses** | | | 1–30 | |
| **Forb** | | | | | |
| 4 | **Perennial forbs** | | | 20–100 | |
| | woolly desert marigold | BAPL3 | *Baileya pleniradiata* | 5–20 | – |
| | desert globemallow | SPAM2 | *Sphaeralcea ambigua* | 5–20 | – |
| 5 | **Annual forbs** | | | 1–50 | |
| **Shrub/Vine** | | | | | |
| 6 | **Primary shrubs** | | | 270–500 | |
| | spiny hopsage | GRSP | *Grayia spinosa* | 150–250 | – |
| | Nevada jointfir | EPNE | *Ephedra nevadensis* | 100–150 | – |
| | water jacket | LYAN | *Lycium andersonii* | 20–100 | – |
| 7 | **Secondary shrubs** | | | 50–100 | |
| | rayless goldenhead | ACSP | *Acamptopappus sphaerocephalus* | 10–30 | – |
| | fourwing saltbush | ATCA2 | *Atriplex canescens* | 10–30 | – |
| | burrobrush | HYSA | *Hymenoclea salsola* | 10–30 | – |
| | winterfat | KRLA2 | *Krascheninnikovia lanata* | 10–30 | – |
| | longspine horsebrush | TEAX | *Tetradymia axillaris* | 10–30 | – |
| | banana yucca | YUBA | *Yucca baccata* | 10–30 | – |

## Animal community

Livestock Interpretations:
This site is suitable for livestock grazing. Big galleta is considered a valuable forage plant for cattle and domestic sheep. Its coarse, rigid culms make it relatively resistant to heavy grazing and trampling. Indian ricegrass is highly palatable to all classes of livestock in both green and cured condition. It supplies a source of green feed before most other native grasses have produced much new growth. Bush muhly is readily eaten by livestock throughout the year when available; however, it is usually not abundant enough to provide much forage. It is grazed heavily in winter when other species become scarce. Because of its branching habit, it is extremely susceptible to heavy grazing. Bush muhly is damaged when continuously grazed to a stubble height of less than 4 inches (10 cm). Spiny hopsage as being browsed by livestock in the fall, winter, and spring. Spiny hopsage is used as forage to at least some extent by domestic sheep and goats. The large quantities of seeds produced are valuable for fattening domestic sheep. Spiny hopsage readily establishes and increases on overgrazed and denuded ranges. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Anderson wolfberry is sometimes used as forage by livestock and feral burros.

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:
Spiny hopsage provides a palatable and nutritious food source for big game, particularly during late winter through spring. 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. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. In Nevada it is consumed by desert bighorns. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. In Nevada, Indian ricegrass may even dominate jackrabbit diets during the spring through early summer months. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground. The palatability of bush muhly for wildlife species is rated fair to poor.

## Hydrological functions

Runoff is medium. Permeability is moderately slow.

## Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Some Native American peoples traditionally ground parched seeds of spiny hopsage to make pinole flour. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

## Other information

Big galleta's clumped growth form stabilizes blowing sand. Spiny hopsage has moderate potential for erosion control and low to high potential for long-term revegetation projects. It can improve forage, control wind erosion, and increase soil stability on gentle to moderate slopes. Spiny hopsage is suitable for highway plantings on dry sites in Nevada. Anderson wolfberry is also used as an ornamental valued chiefly for its showy red berries.

## Type locality

| Location 1: Lincoln County, NV | |
|---|---|
| Township/Range/Section | T5S R61E S9 |
| General legal description | Six-Mile Flat area, Lincoln County, Nevada. This site also occurs in Clark 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

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## 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 | 05/10/2025 |
| 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:**

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