USDA Natural Resources
Conservation Service

Ecological site R030XA064NV
LOAMY BOTTOM

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 axial-stream floodplains. Slope gradients of 0 to 2 percent are most typical. Elevations are 1000 to about 5400 feet. The soils associated with this site are very deep alluvium derived from mixed rock sources. Surface soil textures are gravelly sandy loams to silt loams.

Please refer to group concept R030XB045CA to view the provisional STM.

Associated sites

R030XA058NV	**LIMY 5-7 P.Z.**

Similar sites

R030XA011NV	**SILTY TERRACE 5-7 P.Z.** ATTO-ATCA2 codominant; ATCO major shrub

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex canescens* (2) *Prosopis*
Herbaceous	(1) *Sporobolus airoides* (2) *Leymus cinereus*

Physiographic features

This site occurs on axial-stream floodplains. Slope gradients of 0 to 2 percent are most typical. Elevations are 1000 to about 5400 feet.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Ponding frequency	None
Elevation	305–1,646 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 8 inches. Mean annual air temperature is 55 to 76 degrees F. The average growing season is about 120 to 360 days.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	
Precipitation total (average)	203 mm

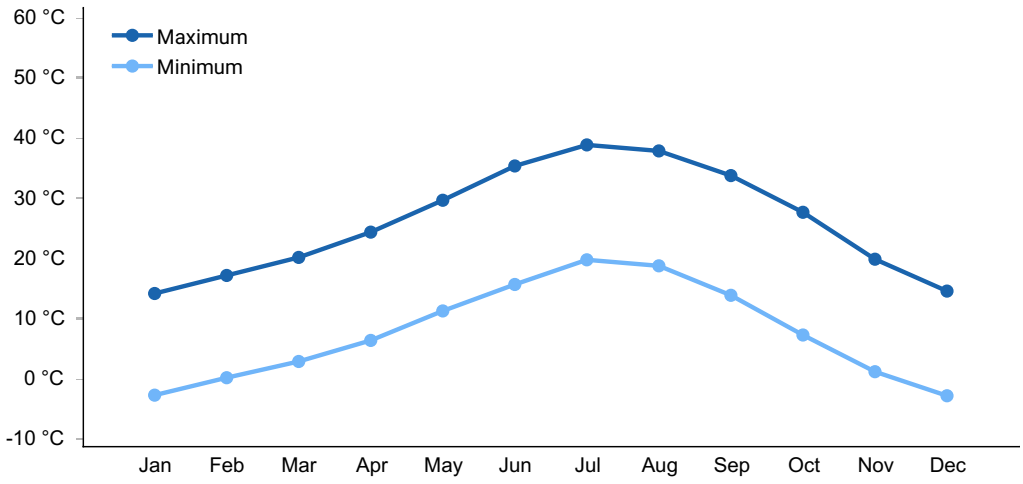

Figure 1. Monthly average minimum and maximum temperature

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 textures are gravelly sandy loams to silt loams. Water intake rates are slow and available water capacity is high. These soils are well drained and runoff is high. The soil series associated with this site include: Bobnbob.

Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Fine sandy loam (3) Clay
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow
Soil depth	183–213 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	19.81–20.07 cm
Calcium carbonate equivalent (0-101.6cm)	15–60%
Electrical conductivity (0-101.6cm)	0–8 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–12
Soil reaction (1:1 water) (0-101.6cm)	8.2–9.6
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Please refer to group concept R030XB045CA to view the provisional STM.

As ecological condition deteriorates, mesquite and rabbitbrush increase as alkali sacaton, basin wildrye, and fourwing saltbush decrease. With continued site degradation mesquite

will dominant the plant community. The woody species likely to invade this site is tamarisk, and severely degraded communities can regress to essentially a monoculture saltcedar.

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. Following top-kill by fire, numerous sprouts arise from the underground buds. Mortality is low in honey mesquite, particularly in lowland areas where root systems are well developed. Screwbean mesquite can survive fire, but little is known of the adaptations that allow for this. Weak resprouting after fire has been reported, but whether this was from surviving apical buds or adventitious buds on the root crown, as in other southwestern mesquites is not discussed. In desert shrublands fire is rare due to lack of continuous fuels. The expansion of invasive annuals such as cheatgrass and red brome can increase the frequency of fire in these ecosystems. Fires in saltbush vegetation are likely to be more severe and spread faster with increasing fuel porosity, decreasing levels of moisture, and increasing amounts of fine fuels and dead vegetation. Little is known of the role of fire in riparian habitats of the desert Southwest. Big saltbrush produces abundant seeds and is demonstrably fire resistant. Big saltbrush has been shown to have reduced flammability due to high moisture and ash contents. More research is needed to fully understand the ability of big saltbrush to recover from fire and recolonize burned areas. However, big saltbrush is likely to have the best chance of persistence when prefire plant moisture contents are high and fire severity and frequency are low. Records of fire occurrence in sacaton grasslands are rare. Alkali sacaton is classified as tolerant of, but not resistant to fire. Top-killing by fire is probably frequent, and the plants can be killed by severe fire. Basin wildrye is top-killed by fire. Older basin wildrye plants with large proportions of dead material within the perennial crown can be expected to show higher mortality due to fire than younger plants having little debris. Basin wildrye is generally tolerant of fire but may be damaged by early season fire combined with dry soil conditions.

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 alkali sacaton, basin wildrye, fourwing saltbush, and mesquite. Potential vegetative composition is about 60% grasses, 5% forbs and 35% shrubs. Approximate ground cover (basal and crown) is 15 to 30 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	538	1009	1681
Shrub/Vine	314	588	981
Forb	45	84	140
Total	**897**	**1681**	**2802**

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	**Primary Perennial Grasses**			757–1345	
	alkali sacaton	SPAI	*Sporobolus airoides*	504–841	–
	basin wildrye	LECI4	*Leymus cinereus*	252–504	–
2	**Secondary Perennial Grasses**			34–135	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	9–84	–
	squirreltail	ELEL5	*Elymus elymoides*	9–84	–
Forb					
3	**Perennial forbs**			34–135	
	dock	RUMEX	*Rumex*	9–50	–
4	**Annual**			1–50	
Shrub/Vine					
5	**Primary shrubs**			420–841	
	fourwing saltbush	ATCA2	*Atriplex canescens*	252–420	–
	mesquite	PROSO	*Prosopis*	84–252	–
	Torrey's saltbush	ATTO	*Atriplex torreyi*	84–168	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	43–127	–
	screwbean mesquite	PRPU	*Prosopis pubescens*	43–127	–
6	**Secondary shrubs**			84–252	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	17–50	–
	jointfir	EPHED	*Ephedra*	17–50	–
	rubber rabbitbrush	ERNAO	*Ericameria nauseosa ssp. consimilis var. oreophila*	17–50	–

Animal community

Livestock Interpretations:
This site is suitable for livestock grazing. Alkali sacaton is a valuable forage species in arid and semiarid regions. Plants are tolerant to moderate grazing and can produce abundant herbage utilized by livestock. The early growth and abundant production of basin wildrye may make it a valuable source of forage for livestock. It is important forage for cattle and is

readily grazed by cattle and horses in early spring and fall. However, cattle weight may decrease during use of basin wildrye. Though unpalatable during the winter, basin wildrye may be utilized more frequently by livestock when snow has covered low shrubs and other grasses. 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. Numerous domestic animals consume and disperse honey mesquite seed. The fruit of honey mesquite is valuable forage for livestock. Cattle, horses, domestic sheep and goats, mules, and burros eat large quantities of the ripe fruit during summer and fall. Livestock do not consume the foliage to any great extent. Foliage consumption is high only during drought years, especially in the early spring when other forage is sparse. Honey mesquite increases on ranges where heavy overgrazing has removed more palatable species. Cattle are also known to eat screwbean mesquite pods. However it is possible that the spines of screwbean mesquite deter some browsers. Although screwbean mesquite is an important part of the diet for many species, it is not recommended as animal feed. Big saltbrush is important and is used to some extent as livestock forage. Leaves and seeds of big saltbrush are eaten by many species of livestock.

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. Mesquite browse is generally not a very important wildlife food source. Wild turkeys, round-tailed ground squirrels, cottontails, and woodrats consume some leaves. Jackrabbits consume large amounts of honey mesquite. The sweet, nutritious seed pods of honey mesquite are highly palatable to all types of small and large wildlife species. Screwbean mesquite is important as cover and food to wildlife. Species noted to eat mesquite pods or leaves were white-winged doves, ravens, hooded skunks, and deer. Leaves and seeds of big saltbrush are eaten by many species like the mule deer and pronghorn antelope. The western salt desert shrub and grassland communities where alkali sacaton is common support an abundance of mule deer, pronghorn, carnivores, small mammals, birds, amphibians, and reptiles. The early growth and abundant production of basin wildrye may make it a valuable source of forage for wildlife. Though unpalatable during the winter, basin wildrye may be utilized more frequently by wildlife when snow has covered low shrubs and other grasses. Basin wildrye provides winter forage for elk and mule deer, though use is often low compared to other native grasses.

Hydrological functions

Runoff is high. Permeability is slow.

Other products

Screwbean mesquite was a food source for many southwestern tribes, including the Chauilla, Pima, Apache, Cocopa, and Quechan. The Chauilla Indians prepared and used the sweet, dried pods in the much same way as other mesquite pods, by grinding them into meal for bread or gruel. Other tribes, such as the Pima, preferred to pit-cure the pods before eating or further processing. In addition, the pods or meal could be used to make beverages and a syrup was made by boiling the pods.

Other information

Alkali sacaton is one of the most commonly used species for seeding and stabilizing disturbed lands. Due to alkali sacaton’s salt tolerance, is recommended for native grass seeding on subirrigated saline sites. Screwbean mesquite has been used in revegetation efforts in areas dominated by tamarisks. It can be planted on sites with higher salt concentrations than many other native riparian species can tolerate. Big saltbrush is a recommended revegetation species in riparian areas and has also been used in revegetation projects in other habitats and outside its native distribution. It has been utilized in soil stabilization and improvement or creation of habitat and forage for wildlife.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T20S R53E S7
General legal description	Pahrump Valley area, within main drainageway about 4 miles west of Pahrump, 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

GKB

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	12/19/2025
Approved by	Kendra Moseley
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:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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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:

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17. **Perennial plant reproductive capability:**
