USDA Natural Resources
Conservation Service

Ecological site R035XB034NM
Sandy Terrace 6-10" sodic

Accessed: 05/12/2025

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.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex obovata*
Herbaceous	(1) *Sporobolus airoides* (2) *Achnatherum hymenoides*

Physiographic features

This site occurs on low stream terraces on valley floors. It does not benefit from run-in water from adjacent areas, nor does it suffer from excessive run-off. Slopes range from 0 to 3 percent. Elevations range from 4,700 to 6,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace
Elevation	4,700–6,000 ft
Slope	0–3%
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation varies from 5 to 8 inches with about 60% of it coming as rain from April through October. May and June are the driest months. Most of the precipitation from November through March comes as snow. High-velocity winds are common in late winter and early spring.

Mean temperatures for the hottest month, July, are about 83 degrees F. The coldest month is January, when the mean temperature is about 27 degrees F. Extreme temperatures of 104 and -17 degrees F have been recorded. The frost-free period ranges from 140 to 160 days.

The cool-season plants start growth in March and end with plant maturity and seed dissemination about mid-June. Warm-season plants grow from June through September, taking advantage of the moisture and warmth from tropical air out of the Gulf of Mexico. About 40 percent of the total precipitation is received during these summer months. The other 60 percent, received from fall through spring, influences cool-season plants.

The tabular climate summary for this ESD was generated by the Climate Summarizer (http://www.nm.nrcs.usda.gov/technical/handbooks/nrph/Climate_Summarizer.xls) using data from the following climate stations (results are unweighted averages):

296098 Newcomb, NM (Period of record = 1948 to 1971)

298284 Shiprock, NM (Period of record = 1926 to 2006)

Table 3. Representative climatic features

Frost-free period (average)	167 days
Freeze-free period (average)	186 days
Precipitation total (average)	7 in

Influencing water features

Soil features

The soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. Surface textures include loamy fine sand. The subsoil has textures of loamy fine sand, loamy very fine sand, clay loam, fine sandy loam, and silty clay loam. Permeability is moderately slow. Available water holding capacity is high. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe. The soils are slightly sodic (SAR 5-13), slightly saline (EC 4-8), and moderately to strongly alkaline (pH 7.9-9.0).

Shiprock SSA:
165 – Jeddito-Escavada Association (Jeddito part)

Additional information may be found in Section II of the Field Office Technical Guide.

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	60 in
Electrical conductivity (0-40in)	4–8 mmhos/cm

Soil reaction (1:1 water) (0-40in)	7.9–9

Ecological dynamics

This site has a plant community made up primarily of grasses, shrubs, and a minor amount of forbs. The reference plant community contains a mixture of cool-season and warm-season grasses.

Plant species most likely to invade or increase on this site when it deteriorates are black greasewood, Torrey seepweed (Mojave seablite), annual grama, Russian thistle, and other annual forbs. Continuous livestock grazing during winter and spring decreases the cool-season grasses and increases lower forage value grasses and shrubs.

The reference plant community has been determined by study of relict areas or areas protected from excessive grazing. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

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

This site has a plant community made up primarily of grasses, shrubs, and a minor amount of forbs. The reference plant community contains a mixture of cool-season and warm-season grasses. Plant species most likely to invade or increase on this site when it deteriorates are black greasewood, Torrey seepweed (Mojave seablite), annual grama, Russian thistle, and other annual forbs. Continuous livestock grazing during winter and spring decreases the cool-season grasses and increases lower forage value grasses and shrubs. The reference plant community has been determined by study of relict areas or areas protected from excessive grazing. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	203	329	455
Shrub/Vine	50	103	156
Forb	5	19	33
Total	**258**	**451**	**644**

Figure 5. Plant community growth curve (percent production by month). NM0382, R035XB034NM-Sandy Terrace 6 to 10 inch sodic-Reference State. R035XB034NM-Sandy Terrace 6 to 10 inch sodic-Reference State.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6	6	7	6	6	5	11	14	12	12	8	7

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	**alkali sacaton**			113–195	
	alkali sacaton	SPAI	*Sporobolus airoides*	113–195	–
2	**Indian ricegrass**			68–130	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	68–130	–
3	**galleta**			23–65	
	James' galleta	PLJA	*Pleuraphis jamesii*	23–65	–
4	**sand dropseed**			0–20	
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–20	–
5	**squirreltail**			0–33	
	squirreltail	ELEL5	*Elymus elymoides*	0–33	–
6	**other perennial grasses**			0–13	
Forb					
7	**perennial forbs**			5–20	
8	**annual forbs**			0–13	
Shrub/Vine					
9	**mound saltbush**			45–98	
	mound saltbush	ATOB	*Atriplex obovata*	45–98	–
10	**fourwing saltbush**			0–7	
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–7	–
11	**shadscale saltbush**			0–7	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	0–7	–
	valley saltbush	ATCU	*Atriplex cuneata*	0–7	–
12	**black greasewood**			5–33	
	greasewood	SAVE4	*Sarcobatus vermiculatus*	5–33	–
13	**other shrubs**			0–13	

Animal community

Livestock -- This site is suitable for grazing by all classes of livestock most seasons of the year and is well suited to planned grazing systems. Soils on this site have a high wind erosion hazard, and with site deterioration, erosion occurs on overgrazed area, roads, livestock trails, and concentration areas.

Wildlife – Mule deer winter on this site. Competition exists between wildlife and livestock during fall and winter.

Hydrological functions

Permeability is moderately slow. Available water holding capacity is high. Runoff is slow, and the hazard of water erosion is slight.

Recreational uses

This site is suited to hunting, horseback riding, and wildlife observation. The general appearance of this site in excellent or good condition is grassland interspersed with shrubs. In poorer conditions, black greasewood often dominates, making an interesting contrast to surrounding sites.

Type locality

Location 1: San Juan County, NM	
Township/Range/Section	T26N R17W S32
General legal description	Little Water Quad – 1 mile N of Little Water, NM – SW ¼ of Sec. 32, T26N, R17W - Navajo Reservation, NM.

Contributors

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Unknown

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	
Approved by	
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:**

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17. **Perennial plant reproductive capability:**
