

# Ecological site R035XB035NM

## Sandy Upland

### 6-10"

Last updated: 5/20/2025  
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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 as treads of high stream terraces, fan terraces, and stable dunes of undulating plateaus and structural benches. Slopes range from 0 to 8 percent. The soils are deep to very deep and somewhat excessively to excessively well drained. They are formed in eolian deposits, residuum, and alluvium derived from sandstone. Surface textures include sand, fine sand, loamy fine sand, and loamy sand.

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Ephedra xarenicola</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

#### Physiographic features

This site occurs as treads of high stream terraces, fan terraces, and stable dunes of undulating plateaus and structural benches. It does not benefit from run-in moisture from adjacent areas, nor does it suffer from excessive loss from runoff. It occurs on all exposures. Slopes range from 0 to 8 percent. Elevations range from 4,700 to 5,900 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Stream terrace (2) Dune (3) Cuesta
Flooding frequency	None
Ponding frequency	None
Elevation	1,430 – 1,800 m
Slope	0 – 10 %

Water table depth	150 cm
Aspect	Aspect is not a significant factor

### Climatic features

Mean annual precipitation varies from 7 to 10 inches. About 60 percent of this moisture comes as rain from April through October. May and June are the driest months. Most of the moisture from November through March comes as snow. Winds of high velocity during late winter and early spring are common.

Mean temperature for the hottest month, July, is about 83 degrees F. Mean temperature for the coldest month, January, is about 27 degrees F. Extreme temperatures of 104 degrees F 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. During June, July, August, and September, the warm-season plants make optimum growth taking advantage of the warm temperature and moisture 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 during the fall-winter-spring months influences cool-season plants.

**Table 3 Representative climatic features**

Frost-free period (average)	160 days
Freeze-free period (average)	170 days
Precipitation total (average)	250 mm

### Influencing water features

This site is not influenced by water from wetland or stream. It does not benefit from run-in moisture from adjacent areas, nor does it suffer from excessive loss from runoff.

### Soil features

The soils are deep to very deep and somewhat excessively to excessively well drained. They are formed in eolium, residuum, and alluvium derived from sandstone. Surface textures include sand, fine sand, loamy fine sand, and loamy sand. The subsoil has textures of loamy fine sand, channery fine sand, loamy sand, and fine sand. Permeability is moderately rapid to rapid. Available water holding capacity to a depth of 40 inches is very low to low. Runoff is negligible to low, and the hazard of water erosion is slight. The hazard of soil blowing is severe. The soils are neutral to strongly alkaline (pH 6.6-9.0), nonsodic to slightly sodic (SAR 0-10), and nonsaline to slightly saline (EC 0-4).

Characteristic taxonomic units are:

Shiprock SSA:

115-Denazar-Farb fine sands (Denazar part)

120-Nageezi-Denazar Association (Denazar part)

133-Razito sand

145-Razito-Huerfano Complex (Razito part)

275-Razito loamy sand

Other soils included are:

**Table 4. Representative soil features**

Surface texture	(1) Sand (2) Fine sand (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Moderately rapid to rapid
Soil depth	100 – 160 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	7.62 – 10.16 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 30 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %

Subsurface fragment volume >3" (Depth not specified)	0 – 30 %
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## Ecological dynamics

This site has a plant community made up primarily of grasses with some shrubs and minor amounts of forbs. In the historic climax plant community, there is a mixture of both cool- and warm-season grasses. Plant species most likely to invade or increase on this site when it deteriorates are annual bursage (flatspine bur ragweed), annual mustard spp., sandhill muhly, Greene's rabbitbrush, sandy jointfir, (sand Mormon tea), and Cutler's jointfir (Cutler Mormon tea). Continuous livestock grazing during winter and spring decreases the cool-season grasses, which are replaced by lower forage value species.

## State and transition model

### Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Indian ricegrass</b>			90-135	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	90-135	–
2	<b>galleta</b>			22-45	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	22-45	–
3	<b>sand dropseed</b>			6-22	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	4-22	–
4	<b>spike dropseed</b>			0-11	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	0-13	–
5	<b>mesa dropseed</b>			6-22	
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	4-22	–
6	<b>giant dropseed</b>			0-11	
	giant dropseed	SPGI	<i>Sporobolus giganteus</i>	0-9	–
7	<b>blue grama</b>			6-22	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	4-22	–
8	<b>Fendler's threeawn</b>			0-6	
	Fendler's threeawn	ARPUF	<i>Aristida purpurea var. fendleriana</i>	0-4	–
9	<b>sandhill muhly</b>			6-22	
	sandhill muhly	MUPU2	<i>Muhlenbergia pungens</i>	4-22	–
10	<b>needle and thread</b>			0-11	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	0-9	–
11	<b>other perennial grasses</b>			0-11	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-13	–
<b>Forb</b>					
12	<b>globemallow</b>			0-6	
	globemallow	SPHAE	<i>Sphaeralcea</i>	0-4	–
13	<b>rose heath (smallflower aster)</b>			0-6	
	rose heath	CHER2	<i>Chaetopappa ericoides</i>	0-4	–
14	<b>other perennial forbs</b>			0-11	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-9	–
15	<b>annual forbs</b>			0-11	

	Forb, annual	2FA	<i>Forb, annual</i>	0-9	-
<b>Shrub/Vine</b>					
16	<b>sandy jointfir (sand Mormon tea)</b>			22-45	
17	<b>Cutler's jointfir (Cutler Mormon tea)</b>			0-11	
	Cutler's jointfir	EPCU	<i>Ephedra cutleri</i>	0-9	-
18	<b>broom snakeweed</b>			0-22	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0-22	-
19	<b>Greene's rabbitbrush</b>			0-11	
	Greene's rabbitbrush	CHGR6	<i>Chrysothamnus greenei</i>	0-9	-
20	<b>plains pricklypear</b>			0-6	
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0-4	-
21	<b>fourwing saltbush</b>			0-11	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0-9	-
22	<b>winterfat</b>			0-6	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0-4	-
23	<b>narrowleaf yucca</b>			0-6	
	narrowleaf yucca	YUAN2	<i>Yucca angustissima</i>	0-4	-
24	<b>other shrubs</b>			0-11	

## Animal community

Fair to good plant diversity makes this site suitable for grassland wildlife species.

## Hydrological functions

This site normally receives about 7-10 inches of annual precipitation. Most summer rainfall occurs as brief, sometimes heavy, thunderstorms. Slopes range from 0-8%. The soils are deep to very deep and somewhat excessively to excessively well drained. Surface and subsurface horizons are coarse-textured. Permeability is moderately rapid to rapid. Available water holding capacity is very low to low. Runoff is negligible to low, and the hazard of water erosion is slight.

## Recreational uses

Hunting, horseback riding, and wildlife observation are occasional recreation activities on this site. The grassy aspect of this site provides aesthetic appeal.

## Wood products

This site has no significant value for wood products.

## Other products

Grazing: This site is suitable for yearlong grazing by all classes of livestock. Grazing systems adapt well to this site and should be used. Soils on this site have a high wind erosion hazard; when the site is deteriorated, erosion occurs on overgrazed areas, roads, cattle trails, and high-use areas.

## Inventory data references

The potential historic climax plant community has been determined by study of range 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.

## Type locality

Location 1: San Juan County, NM

Township/Range/Section	T23N R15W S17
General legal description	Between Hunter Wash and Chaco River – Section 17, Township 23N, Range 15W – Navajo Reservation, NM.

**Contributors**

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**Approval**

Kendra Moseley, 5/20/2025

**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	06/17/2026
Approved by	
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):

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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

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10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

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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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