

Ecological site R077BY019NM

Salt Flats

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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.

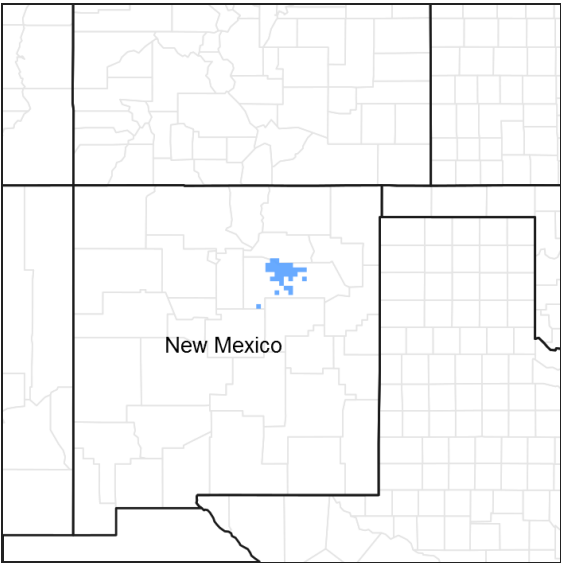


Figure 1. Mapped extent

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.

Classification relationships

Characteristic Soils Are:
La Brier Swastika
Vermejo

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on gently sloping to moderately steep canyon walls, hillsides and mesa tops at elevations of 5,500 to 7,500 feet above sea level. The landscape is typically a complex of small pockets of soil and sandstone outcrop in the form of ledges and escarpments.
Slopes are usually 5 to 15 percent but may range 0 to 25 percent with inclusions of short, steeper slopes.

Table 2. Representative physiographic features

Landforms	(1) Mesa (2) Headwall
Elevation	1,676–2,286 m
Slope	5–15%
Aspect	Aspect is not a significant factor

Climatic features

The climate of this area is classified as “semi-arid continental”.

Precipitation averages 14 to 16 inches. Seventy seven percent of the year’s moisture normally falls during the period of May through October. Practically all of it is brought by brief afternoon and evening thunderstorms. In July and August, normally the wettest months of the year, one can expect about on day in five when rainfall exceeds one-tenth inch. Early spring precipitation in May benefits the cool-season plants. Winter precipitation, supplying 24 percent of the year’s moisture, normally has no more than two days a month with as much as one-tenth inch of moisture. Much of the winter precipitation falls as snow.

Air temperatures vary from a monthly mean of 20 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80’s and low 90’s during the summer. Winter low temperatures fall below the freezing mark much of the time from November through March with minimum temperatures approaching 25 degrees F below zero. Dates of the last killing frost may vary from May 9th through May 17th, and the first killing frost from September 27th to October 8th. The frost-free season ranges from 141 days to 153 days from early May to early October.

Wind velocities for the area average 10 to 12 miles per hour and prevail from the south and southwest. Generally, March is the windiest month. Strong winds during the spring cause rapid drying of the soil surface.

Nearby mountains to the west intercept much of the precipitation from the Pacific storms coming through this area during the winter. About 70 percent of the 14 to 16 inches of annual precipitation falls in the form of rainfall during the frost-free season. About 40 percent of the annual precipitation benefits cool-season plants, 50 percent benefits warm-season plants, and 10 percent falls during the season of plant dormancy. Relative humidity is moderately low. The sun shines approximately 75 percent of the time.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	149 days
Freeze-free period (average)	171 days
Precipitation total (average)	406 mm

Influencing water features

This site is not influenced by water from a wetland or stream.

Soil features

The soils in this site are deep. They are moderately well drained to well drained and have medium to slow runoff. The surface textures range from silty clay loam and saline silty clay loam. The substratum is clay loam and clay. These soils have slow to very slow permeability.

The available water-holding capacity is high. The hazard of soil erosion is moderate to high and hazard of soil blowing is moderate. These soils are affected by salt. Where adequate plant residue is lacking, the soils of this site usually develop a dispersed surface condition, which decreases their low infiltration rate.

Characteristic Soils Are:

La Brier Swastika

Vermejo

Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Very slow to slow
Soil depth	152–183 cm
Surface fragment cover <=3"	0%
Available water capacity (0-101.6cm)	7.62–15.24 cm
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4

Ecological dynamics

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The site is a grassland characterized by warm-season mid-grasses with an occasional shrub. Shrubs and half-shrubs are sparsely scattered throughout the site. Cool-season species make up a minor component of the plant community. Vegetation that is tolerant to saline or alkaline factors dominates this site. Other grasses that could appear on this site include: bottlebrush squirreltail, plains bristlegrass, nuttail alkaligrass, threeawn spp., dropseed spp., windmill grass, silver bluestem, creeping muhly and sedges. Other shrubs include: rabbitbrush, greasewood and fringed sagewort.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	465	884	1302
Shrub/Vine	45	85	126
Forb	22	43	63
Total	532	1012	1491

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	3-5%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	1-5%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-15%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	30-35%

Figure 5. Plant community growth curve (percent production by month). NM4719, R077BY019NM Salt Flats Reference State. R077BY019NM Salt Flats Reference State.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	4	6	10	25	30	15	5	0	0

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Alkali Sacaton			213–267	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	213–267	–
2	Western wheatgrass			106–160	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	106–160	–
3	Blue Grama			106–160	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	106–160	–
4	Inland saltgrass			54–106	
	saltgrass	DISP	<i>Distichlis spicata</i>	54–106	–
5	Vine-mesquite			54–106	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	54–106	–
6	Alkali and Mat Muhly			33–54	
	scratchgrass	MUAS	<i>Muhlenbergia asperifolia</i>	33–54	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	33–54	–
7	Galleta grass			33–54	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	33–54	–
8	Switchgrass			33–54	
	switchgrass	PAVI2	<i>Panicum virgatum</i>	33–54	–
9	Other grasses			33–54	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	33–54	–
Forb					
10	wild buckwheat			33–54	
	buckwheat	ERIOG	<i>Eriogonum</i>	33–54	–
11	Globemallow spp.			33–54	
	globemallow	SPHAE	<i>Sphaeralcea</i>	33–54	–
12	Annual and Perennial forbs			33–54	
	Forb, annual	2FA	<i>Forb, annual</i>	33–54	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	33–54	–
Shrub/Vine					
13	Fourwing saltbush			54–106	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	54–106	–
	Forb, annual	2FA	<i>Forb, annual</i>	24–57	–
14	Winterfat			33–54	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	33–54	–
15	Other shrubs			33–54	
	oak	QUERC	<i>Quercus</i>	24–57	–
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	33–54	–

Animal community

Habitat for Wildlife:

This site provides habitats, which support a resident animal community that is characterized by coyote, desert

cottontail, meadow mole, sparrow hawk, mourning dove, bull snake and great plains skunk. There maybe seasonal use by pronghorn antelope.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

Soil Series---- Hydrologic Group

La Brier----- C

Swastika----- C

Vermejo----- C

Recreational uses

This site has fair aesthetic appeal due to open spaces dotted with the occasional shrubs. The site has limited recreation potential. Suitability for camping, hiking and picnicking is fairly limited by lack of live water and the lack of shade. Hunting for antelope, rabbit and upland game birds is fair.

Wood products

This site has no significant value for wood products.

Other products

Grazing:

This site is suitable for late winter, spring, and early summer grazing. Forage can best be utilized by grazing cattle or horses due to the coarseness of the forage produced by alkali sacaton. Maximum available forage production from this site can be achieved by mowing in late winter and stocking with cows during the summer, and alternately resting the pasture the following year. Approximately 80 percent of the total annual yield is from species that furnish forage for livestock. Continuous grazing during the spring and summer will cause the more desirable forage plants such as alkali sacaton, western wheatgrass, blue grama, vine-mesquite and fourwing saltbush to decrease. The species most likely to invade this site are ring muhly, broom snakeweed, astragalus species, cholla cactus and plains pricklypear cactus. Species most likely to increase from smaller amounts are inland saltgrass, alkali muhly, mat muhly and rabbitbrush. As the ecological conditions deteriorate, it is accompanied by a sharp increase of inland saltgrass.

Inland saltgrass may eventually dominate the site and there is a reduction of the plant cover. A system of deferred grazing, which varies the time of grazing and rest in a pasture during successive years, is needed to maintain or improve the plant community. Spring rest will allow alkali sacaton sufficient time to green up and will benefit the cool-season grasses such as western

wheatgrass. Occasional summer deferment is needed to maintain the alkali sacaton especially where cattle are concentrated for periods of time during the growing season.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index----- Ac/AUM

100 - 76----- 2.5 – 3.5

75 – 51----- 3.3 – 4.4

50 – 26-----4.3 – 8.0

25 – 0----- 8.0+

Type locality

Location 1: Colfax County, NM
Location 2: Mora County, NM

Location 3: San Miguel County, NM

Location 4: San Miguel County, NM

Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Colfax, Mora, San Miguel, Union.

Contributors

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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:

17. **Perennial plant reproductive capability:**
