

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

This draft ecological site description is approved for field use and testing for a one-year period beginning MM, YYYY.  
Additional information and comments on this site should be sent to the Utah State Range Management Specialist.

STATE: Utah

SITE TYPE: Rangeland

ECOLOGICAL SITE NAME: Desert Sandy Loam (Fourwing Saltbush)

SITE NUMBER: 035XY118UT

MLRA: D-35

Original Site Description: Author: GSC

Date: 04/08/1983

Revised Site Description: Author: GSC

Date: 09/13/1993

Revised Site Description: Author: SM

Date: 06/16/2004

Approved by: Title: Signed:

Date:

Ecological Site Definition - A distinctive kind of land, with specific physical characteristics, which differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation, and in its response to management.

## **A. PHYSICAL CHARACTERISTICS**

### **1. SOILS**

Depth: very deep (more than 60 inches)

Surface Textures: loamy fine sand, sandy loam, and fine sand

Surface Fragments (<=3" % cover, >3" % cover): 0 to 5%

Subsurface Textures: loamy fine sand, fine sandy loam, sandy loam, and fine sand

Subsurface Fragments (<=3" % vol. >3" % vol.): 0 to 10%

Geologic Parent Materials: eolian deposits and mixed alluvium derived mainly from eroded sandstone. (Geologic Formation: Entrada Sandstone)

Moisture Regime: Typic Aridic

Temperature Regime: Mesic

Runoff: very low to low

Permeability (min-max): moderately rapid (2.0 to 6.0 in/hr)

Drainage Class (min-max): well drained

Water Erosion Hazard: Slight to moderate

Wind Erosion Hazard: Severe

Electrical Conductivity (EC in mmhos/cm): 0 to 2 mmhos/cm (nonsaline)

Sodium Adsorption Ration (SAR): 0 (nonsodic)

Calcium Carbonate Equivalent (%): 0 – 25%

pH Range (1:1 water): 7.4 to 8.4

Available Water Capacity (inches): 5 to 7.3 inches

Soils are coarse-loamy. Average annual soil loss in potential is less than 0.1 tons/acre. Nepalto has surface fragments of 20-40% and a control section of 30 to 60% with an available water capacity of 2.1 inches and permeability of rapid (6.0 to 20.0 in/hr).

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Major Soils Associated With This Site (*Soil Survey Area + Series Name*):

Grand County – Central Part (624): **Trook** in mapunit 32; **Moepitz variant** in mapunit 37; **Nakai** in mapunits 40, 41, 42, 43 & 65; **Redlands** in mapunit 42

San Juan County – Central Part (638): **Nakai** in mapunits 7, 32, 36 & 37; **Oljeto Family** in mapunit 38

Canyonlands Area (633): **Bluechief** in mapunits 11 & 12; **Nakai** in mapunit 58; **Thoroughfare** in mapunit 88

Capitol Reef NP (685): **Moffat** in mapunit 117

Grand Staircase Escalante NM (686): **Nakai** in mapunits 5046 & 5138; **Nepalto, moist** in mapunit 5069

Henry Mountains (631): **Trachute** in mapunits 111, 112 & 113; **Monue Variant** in mapunit 65; **Monue** in mapunit 64

Glen Canyon NRA: **Bluechief** in mapunit 125; **Fruitland Family** in mapunit 116; **Monue Family** in mapunits 131 & 132; **Monue** in mapunit 133; **Nakai** in mapunits 104, 137 & 141; **Trachute** in mapunits 105, 114 & 178; **Trachute Family** in mapunit 132; **Pagina** in mapunit 146

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

## **2. PHYSIOGRAPHIC FEATURES**

Landform and Position: Gently sloping desert plains, mesas, stream terraces, and broad valleys, sand sheets and drainageways on structural benches.

Aspect: all

	<u>Minimum</u>	<u>Maximum</u>
Slope:	2%	15%
Elevation:	3,800 ft.	5,000 ft.
Flooding:	none	
Frequency:		
Duration:		
Ponding:	none	
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

**B. CLIMATIC FEATURES**

Mean Annual Precipitation (inches): 5 to 9 inches  
 Mean Annual Air Temperature: 52°F to 57°F  
 Mean Annual Soil Temperature: 54°F to 59°F  
 Frost Free Period (days): 160 to 220 days  
 Freeze Free Period (days): 160 to 220 days

Temperature and Moisture Distribution:

Climate Stations: St. ID. : 420688 Location: Big Water, Utah Period: From: 5/1986 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	47.4	54.1	65.0	75.3	84.3	95.2	99.8	96.4	88.3	75.3	58.7	47.0	73.9
Average Mean	35.7	41.4	50.1	59.0	67.3	77.3	82.8	80.5	72.0	59.5	45.3	35.1	58.8
Low Mean	24.1	28.7	35.2	42.6	50.2	59.4	65.9	64.6	55.6	43.7	32.0	23.3	43.8

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	3.16	1.66	2.93	2.14	1.18	0.67	1.33	2.29	2.66	3.53	1.33	0.93	9.00
Average Mean	0.52	0.66	0.64	0.43	0.33	0.14	0.52	0.72	0.74	0.85	0.43	0.29	6.27
Lowest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	3.22

Climate Stations: St. ID. : 420788 Location: Bluff, Utah Period: From: 1/1928 To: 7/2003

Temperature	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
High Mean	42.8	51.4	61.2	70.9	80.6	91.1	96.2	93.4	85.6	72.0	55.8	44.4	70.4
Average Mean	30.4	37.8	45.8	54.4	63.4	72.4	79.0	76.9	67.9	54.9	40.9	31.6	54.6
Low Mean	17.9	24.1	30.4	38.0	46.3	53.7	61.7	60.3	50.2	37.8	26.0	18.9	38.8

Precipitation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Highest	3.41	2.49	3.03	2.10	2.43	1.05	3.96	4.10	3.22	6.35	2.77	2.84	15.69
Average Mean	0.72	0.69	0.62	0.49	0.42	0.21	0.69	0.86	0.81	0.96	0.60	0.70	7.77
Lowest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00

Approximately 65–70% occurs as rain from March through October. On the average, April, May, and June are the driest months and August, September, and October are the wettest months. Precipitation is extremely variable from month to month and from year to year. Much of the precipitation occurs as convection thunderstorms.

Influencing Water Features (if any):

<u>Wetland Description</u> (Cowardin System)	<u>System</u>	<u>Subsystem</u>	<u>Class</u>
None			
<u>Stream Types</u> (Rosgen System)	<u>System</u>		
None			

### **C. PLANT COMMUNITY CHARACTERISTICS**

#### **1. Potential Plant Community Description and Ecological Factors**

(Includes dominant vegetative aspect, cool-season and warm-season components, typical plant spacing, etc.)

The dominant aspect of the plant community is Indian ricegrass and fourwing saltbush. The composition by air-dry weight is approximately 65% perennial grasses, 20% forbs, and 15% shrub. In average years, plants begin growth around February 20 and end growth around October 30.

#### **2. Plant Community Composition by Weight and Percentage**

##### Grasses and Grasslike, 55-65%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Indian Ricegrass	ACHY	0	100	135	25	30
Galleta	PLJA	0	40	68	10	15
Spike Dropseed	SPCO4	0	12	23	3	5
Sand Dropseed	SPCR	0	12	23	3	5
Mesa Dropseed	SPFL2	0	12	23	3	5
Sandhill Muhly	MUPU2	1	4	14	1	3
Purple Threeawn	ARPU9	1	4	14	1	3
Other Perennial Grasses	PPGG	1	12	23	3	5
Other Annual Grasses	AAGG	1	12	23	3	5

##### Forbs, 15-25%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Gooseberryleaf Globemallow	SPGR2	0	12	23	3	5
Painted Milkvetch	ASCE	0	12	23	3	5
Pacific Aster	ASCH2	2	4	14	1	3
Matted Crinklemat	TILA6	2	4	14	1	3
Stemless Four-nerve Daisy	TEACA2	2	4	14	1	3
Snowball Sand Verbena	ABFR2	2	4	14	1	3
Thorn Skeletonweed	STSP6	2	4	14	1	3
Paria Spurge	EUNE2	2	4	14	1	3
Brenda's Yellow Cryptantha	CRFL5	2	4	14	1	3
Rusty Lupine	LUPU	2	4	14	1	3
Other Perennial Forbs	PPFF	2	40	68	10	15
Other Annual Forbs	AAFF	2	40	68	10	15

Shrubs, 10-20%

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Fourwing Saltbush	ATCA2	0	40	68	10	15
Cutler Mormontea	EPVIV2	3	4	14	1	3
Winterfat	KRLA2	3	4	14	1	3
Broom Snakeweed	GUSA2	3	4	14	1	3
Sand Buckwheat	ERLE9	3	4	14	1	3
Bigelow Sagebrush	ARBI3	3	4	14	1	3
Yellow Rabbitbrush	CHVI8	3	4	14	1	3
Fremont Smokebush	PSFR	3	4	14	1	3
Desert Pepperweed	LEFR2	3	4	14	1	3
Sand Sagebrush	ARFI2	3	4	14	1	3
Plains Pricklypear	OPPO	3	4	14	1	3
Pillar False Gumweed	VAST3	3	4	14	1	3
Shadscale	ATCO	3	4	14	1	3
Other Shrubs	SSSS	3	12	23	3	5

**3. Plant Community Annual Production**

At the highest potential similarity index, this site will produce approximately the following amount of air-dry herbage, expressed as pounds/acre:

	Low	High
Favorable Year	500	550
Average Year	400	450
Unfavorable Year	250	300

**4. Ground Cover and Structure**

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)	40	0.5-2 ft.	15
Forbs (perennial)	10	0.5-1 ft.	5
Shrubs	5	1-3 ft.	1
Trees	-	-	-
Cryptogams	0-5	0.1-1 cm	0-5

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b. Other

Litter	0-5
Coarse Fragments	0-5
Bare Ground	40-50

### **5. Ecological Dynamics of the Site**

(Includes a discussion of seral stages; fire influence and effects; effects of prolonged wet or dry periods; resistance to change; the influence of such things as grazing, rodent concentrations, insects, diseases, introduced species, and soil erosion or deposition; other stable vegetative states associated with this site as a result of extreme disturbance)

As ecological condition deteriorates due to overgrazing, Indian ricegrass and Fourwing saltbush decrease while broom snakeweed, cutler mormontea, milkvetch and low lupine increase. Cheatgrass, Russian thistle, rushpea, common ragweed, and occasionally blackbrush are most likely to invade this site.

Suitability for rangeland seeding is very poor, the major limiting factor are low precipitation and the severe hazard of erosion by wind. The suitability for livestock grazing is good.

### **Plant Communities & Transitional Pathways**

(Show a steady state diagram with influences to move from one steady state to another)

### **6. Plant Growth Curves**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	5	25	65	5	0	0	0	0	0	0
Name	PNC											
ID Number	UT1181											
Description	Excellent Condition											

### **7. Similar Sites**

(Give related range sites in MLRA's above and below)

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**8. Associated Sites Within MLRA**

(Give site name and number)

Alkali Flat (Greasewood)	035XY009UT
Semiwet Saline Streambank (Fremont Cottonwood)	035XY012UT
Sandy Bottom (Fourwing Saltbush)	035XY015UT
Desert Loam (Shadscale)	035XY109UT
Desert Sand (Sand Sagebrush)	035XY115UT
Desert Sandy Loam (Blackbrush)	035XY121UT
Desert Shallow Loam (Shadscale)	035XY122UT
Desert Shallow Clay (Mat Saltbush)	035XY124UT
Desert Shallow Sandy Loam (Shadscale)	035XY130UT
Desert Shallow Sandy Loam (Blackbrush)	035XY133UT
Desert Stony Loam (Shadscale-Bud Sagebrush)	035XY136UT
Desert Very Shallow Gypsum (Torrey Mormonlea)	035XY142UT
Desert Clay (Shadscale)	034XY104UT

**9. Correlated Sites in Other States**

(Give site name and number)

**D. MAJOR USES OF THIS SITE**

**1. Livestock**

a. Site Factors Influencing Management

This site is properly grazed by cattle and sheep during any season of the year.

b. Guide to Forage Quality (Plant preference by season)

Species - Cattle	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	VG	F, G	VG	VG
Spike Dropseed	F, G	P	VG	F, G
Sand Dropseed	P	P	F, G	F, G
Mesa Dropseed	P	P	F, G	F, G
Gooseberryleaf Globemallow	F, G	P	F, G	F, G
Painted Milkvetch	-	-	P	P
Fourwing Saltbush	F, G	VG	F, G	F, G

Species – Sheep	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep
Indian Ricegrass	F, G	VG	VG	VG
Galleta	F, G	F, G	VF	F, G
Spike Dropseed	P	P	F, G	F, G
Sand Dropseed	P	P	F, G	F, G
Mesa Dropseed	P	P	F, G	F, G
Gooseberryleaf Globemallow	F, G	P	VG	F, G
Painted Milkvetch	-	-	F	P
Fourwing Saltbush	VG	VG	VG	VG

VG = Very Good    G = Good    F = Fair    P = Poor

## 2. Wildlife

### a. Site Factors Influencing Management

This site provides food and cover for wildlife.

### b. List of Potential Species Present

Wildlife using this site includes jackrabbit, coyote, bobcat, sparrow, hawk, kangaroo rat, mice, and snake.

This is a short list of the more common species found. Many other species are present as well and migratory birds are present at times.

### c. Guide to Forage Preference of Managed Wildlife Species

Wildlife Species →	Mule deer		Elk	
	Use	Season	Use	Season
Indian Ricegrass	A	F, W, Sp, Su	A	F, W, Sp, Su
Galleta	B	F, W, Sp, Su	B	F, W, Sp, Su
Spike Dropseed	B	F, W, Sp, Su	C	F, W, Sp, Su
Sand Dropseed	C	F, W, Sp, Su	C	F, W, Sp, Su
Mesa Dropseed	C	F, W, Sp, Su	C	F, W, Sp, Su
Gooseberryleaf Globemallow	B	F, W, Sp, Su	B	F, W, Sp, Su
Painted Milkvetch	B	F, W, Sp, Su	C	F, W, Sp, Su
Fourwing Saltbush	A	F, W, Sp, Su	B	F, W, Sp, Su

Use - A = preferred or desirable  
 B = some use, but less important  
 C = little use or used occasionally

Season - F = fall (Oct-Nov)  
 W = winter (Dec-Feb)  
 Sp. = spring (Mar-May)  
 Su. = summer (Jun-Sep)

## 3. Recreational Uses

Recreation activities are hiking and hunting.

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#### 4. Wood Products

None.

#### 5. Other Uses

The soil is in hydrologic group B. The hydrologic curve numbers are 61 to 79 depending on watershed condition.

### E. THREATENED AND ENDANGERED SPECIES

1. Plants – This section will be added as information is available.
2. Animals – This section will be added as information is available.

### F. MODAL LOCATION AND DOCUMENTATION

State: County:  
 Latitude: Longitude:  
 Section: Township: Range:  
 General Legal Description:

Capitol Reef: **Moffat**: Lower Halls Creek -1,900 ft. W & 2,000 ft. N of the SE corner of Sec. 12, T. 37S., R. 9E.

GSENM: **Nakai**: SE of Escalante, along the Hole-in-the-Rock Road, near the Dry Fork of Coyote Gulch and Sooner Bench; and near the towns of Big Water and Church Wells, along Hwy. 89 to the Paria Ranger Station. (Modal: Latitude 37° 19' 12.34" N Longitude 111° 2' 36.03" W) **Nepalto, moist**: SE of Escalante, along the Hole-in-the-Rock Road, in drainages below the escarpment of Fiftymile Bench near Sooner Bench (Modal: Latitude 37° 9' 12" N Longitude 111° 5' 37" W)

#### Field Office Site Location

Panguitch, Richfield and Monticello Field Offices

Legal Description:

#### Data Collected and References

Sampling Source	Number of Records	Range Similarity Index			
		> 76%	51-75%	26-50%	0-25%
NRCS - ECS - 417					
UTAH - RANGE - 2					
Permanent Transect Location					

#### 4. Other References

## Attachment 1

Ecological Reference Worksheet
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Author(s)/participant(s): V. Keith Wadman  
 Contact for lead author: \_\_\_\_\_ Reference site used? Yes/No  
 Date: 6/21/04 MLRA: 035X Ecological Site: Desert Sandy loam (035XY118UT) Fourwing saltbrush. This must be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

**Indicators** For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for each community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: None to few. Any rills present should be somewhat short in length (less than 4 feet long) and follow the surface micro-features. Old rills will weather quickly because of loose surface textures. An increase in rill formation may be seen after major disturbance events such as severe thunderstorms.

2. Presence of water flow patterns: Flow patterns wind around perennial plants bases and show minor evidence of erosion. They are short and stable and there is slight evidence of deposition.

3. Number and height of erosional pedestals or terracettes: Plants should show no pedestaling. Terracettes should be absent.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bareground): 40 - 60%.

5. Number of gullies and erosion associated with gullies: None to few. Any gullies present should show little sign of active erosion and should be stabilized with vegetation.

6. Extent of wind scoured, blowouts and/or depositional areas: Slight wind generated soil movement is normal. Wind caused blowouts and deposition are mostly stable or have healed over. Slight coppice mounding around perennial vegetation is common. Increased wind generated soil movement can occur after severe wind events.

7. Amount of litter movement (describe size and distance expected to travel): Some redistribution caused by both wind and water. Minor litter removal may occur in flow channels with deposition occurring at points of obstruction. Fine litter may be removed from the site by wind action.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values for both plant canopy and interspaces, if different): 70 to 80% of this site should have an erosion rating of 4 or 6. 20 to 30% may have a rating of 3 to 4. The average should be a 4.

9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different): Soil surface varies from 1 to 5 inches. Structure is weak platy. Color is reddish yellow (5YR6/6). An ochric epipedon extends to about 5 inches.

10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff can increase and infiltration be reduced.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None.

12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: », >, = to indicate much greater than, greater than, and equal to): Assumed fire cycle of 60-70+ years. Perennial bunchgrasses, non-sprouting shrubs > rhizomatous grasses, sprouting shrubs, annuals > invaders such as Russian thistle & Rush pea. Dominants: Fourwing saltbush & Indian ricegrass; Sub-dominants: Galleta, & Mormontea. The perennial grass/non-sprouting shrub functioning groups are expected on this site.

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): All age classes of perennial grasses should be present.

14. Average percent litter cover (5-10%) and depth (.25-.50 inch).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 400 - 450 #/acre on an average year.

16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": Low green rabbitbrush, Pricklypear, Rush pea.

17. Perennial plant reproductive capability: All perennial plants should have the ability to reproduce in all years, except in extreme drought years.