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: Mountain Stony Loam (Bitterbrush)
SITE NUMBER: 047CY456UT
MLRA: 047C
Original Site Description: Author: GWL, LLR Date: 04/01/1992
Revised Site Description: Author: Date:
Approved by: Title: State Range Cons. Signed: Pat Shaver 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

(description narrative of this particular site)

1. SOILS

Depth: 40-60 inches
Surface Textures:
Surface Fragments(<=3" % cover, >3" % cover): 10-50%
Subsurface Textures: Loamy-skeletal
Subsurface Fragments(<=3" % vol, >3" % vol): >50%
Geologic Parent Materials: Alluvium, Colluvium and Residuum from Sandstone, Quartzite, and Limestone
Moisture Regime: Ustic
Temperature Regime: Frigid
Runoff: Medium
Permeability(min-max): Moderate
Drainage Class(min-max): Well Drained
Water Erosion Hazard:
Wind Erosion Hazard:
Electrical Conductivity (EC in mmhos/cm):
Sodium Adsorption Ration (SAR):
Soil Reaction (1:1 water):
Soil Reaction (0.1 M CaCl2):
pH Range:
Available Water Capacity (inches): 2.4-6.0

Major Soils Associated With This Site:

Soil Survey Area: 047
Flynncove CB-L, 4-25%; 25-50%
Cathedral FLV-FSL, 4 to 25%
Grapit CNV-Sil, 15-40%
Arid. Argiborolls CBX-SL, 3-10
Borky Family CBV-L, 10 to 25%
Lolo Family STX-FSL, 3 to 10%
Shawmut Family CBX-SL, 4-30%

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

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Mountain Toe Slopes, Mountain Valley Sides, Ridges and Drainageways
Aspect: All

	Minimum	Maximum
Slope:	3	50
Elevation:	6600	9000

Flooding:
- Frequency:
- Duration:

Ponding:
- Depth (inches):
- Frequency:
- Duration:
- Water Table Depth:

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 14-20
Mean Annual Air Temperature: 40-43
Mean Annual Soil Temperature: 43-46
Frost Free Period (days): 60-90
Freeze Free Period (days): 0-0

Temperature and Moisture Distribution:

Temp	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High	34	39	46	56	67	77	86	84	75	63	46	37
Mean												
Low	10	14	20	28	36	42	49	47	39	30	17	13

ppt	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High												
Mean	2.71	2.35	2.22	1.80	1.68	1.27	0.79	1.04	1.11	1.69	1.70	1.87
Low												

Climate Stations: St. ID.: Location: Period: From: To:

(Includes factors such as storm intensity, precipitation dependability, origin and pattern of storms, driest and wettest months, orographic effects, etc.)

Influencing Water Features (if any):

Wetland Description (Cowardin System) System Subsystem Class

Stream Types (Rosgen System) System

C. PLANT COMMUNITY CHARACTERISTICS

1. Potential Plant Community Description and Ecological Factors

The general view of this site is antelope bitterbrush and mountain big sagebrush. The composition by air-dry weight of the potential plant community is approximately 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs.

2. Plant Community Composition by Weight and Percentage

Grasses and Grasslike, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Needleandthread	HECO26		140	210	10	15
Bluebunch wheatgrass	PSSP6		70	140	5	10
Nevada bluegrass	PONE3		70	140	5	10
Letterman needlegrass	ACLE9	1	14	42	1	3
Prairie junegrass	KOMA	1	14	42	1	3
Sheep fescue	FEOC	1	14	42	1	3
Western wheatgrass	PASM	1	14	42	1	3
Geyer sedge	CAGE2	1	14	42	1	3
Bulbous oniongrass	MEBU	1	14	42	1	3
Columbia needlegrass	ACNE3	1	14	42	1	3
Indian ricegrass	ACHY	1	14	42	1	3
Bottlebrush squirreltail	ELEL5	1	14	42	1	3
Sandberg bluegrass	POSE	1	14	42	1	3
Other perennial grasses	PPGG	1	70	140	5	10
Other annual grasses	AAGG	1	70	140	5	10

Forbs, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Arrowleaf balsamroot	BASA3		42	70	3	5
Longleaf hawksbeard	CRAC2		42	70	3	5
American purple vetch	VIAM	2	14	28	1	2
Blue flax	LIPE2	2	14	28	1	2
Spurred lupine	LUCAC3	2	14	28	1	2
Pacific aster	ASCH2	2	14	28	1	2
Wyoming Indian paintbrush	CALI4	2	14	28	1	2
Silverleaf milkvetch	ASAR4	2	14	28	1	2
Grassy rockgoldenrod	PEPU7	2	14	28	1	2
Longleaf phlox	PHLO2	2	14	28	1	2
Sego lily	CANU3	2	14	28	1	2
Louisiana wormwood	ARLU	2	14	28	1	2
Other perennial forbs	PPFF	2	42	70	3	5
Other annual forbs	AAFF	2	42	70	3	5

Shrubs, %

Common Name	National Symbol	Group	Pounds per Acre		% by Weight of Total Composition	
			Low	High	Low	High
Bitterbrush	PUTR2		210	280	15	20
Mountain big sagebrush	ARTRV		140	210	10	15
Utah serviceberry	AMUT		70	140	5	10
Birchleaf mountainmahogany	CEMO2	3	42	70	3	5
Mountain snowberry	SYOR2	3	42	70	3	5
Crispleaf wild buckwheat	ERCO14	3	42	70	3	5
Mountain low rabbitbrush	CHVIL4	3	42	70	3	5
Other shrubs	SSSS	3	70	140	5	10

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	1600	1700
Average Year	1300	1400
Unfavorable Year	900	1000

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range (ft.)	Percent Basal Area Cover
Grasses & Grass-like (perennial)	30	2	15
Forbs (perennial)	5	1	5
Shrubs	40	4	10
Trees			
Cryptogams			

b. Other

Litter	
Coarse Fragments	
Bare Ground	

5. Ecological Dynamics of the Site

As this site deteriorates due to grazing pressure, needleandthread, bluegrass, sheep fescue, palatable forbs, and bitterbrush decrease, while big sagebrush, western wheatgrass, letterman needlegrass, lupine and aster may increase. Fire will kill big sagebrush and often decrease bitterbrush, while western wheatgrass, lupine and low rabbitbrush increase.

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	0	5	20	50	5	10	5	5	0	0
Name	PNC											
ID Number	UT4561											
Description	Excellent Condition											

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth	0	0	0	0	30	50	0	10	10	0	0	0
Name	Good Condition No.1											
ID Number	UT4562											
Description	needlegrass, bluegrass, bitterbrush											

7. Aspect Differences Near MLRA Boundaries

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

8. Associated Sites Within MLRA

047CY430UT
Mountain Loam (Mountain big sagebrush)

047CY446UT
Mountain Shallow Loam (Mountain big sagebrush)

047CY446UT
Mountain Stony Loam (Browse)

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 provides grazing for cattle and sheep in late spring, summer, and fall.

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

Species	Oct-Nov	Dec-Feb	Mar-May	Jun-Sep

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

2. Wildlife

a. Site Factors Influencing Management

The factors include location of water and the condition of the plant community. Topography on this site is broken and provides good diversity of cover and food.

b. List of Potential Species Present

Wildlife using this site include sage grouse, rabbit, coyote, mule deer and elk.

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 →				
Plant Species ↓	Use	Season	Use	Season

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

This site offers color and aesthetic appeal in spring, summer and fall. Recreation activities include hiking and hunting.

4. Wood Products

None

5. Other Uses

E. THREATENED AND ENDANGERED SPECIES

1. Plants

2. Animals

F. MODAL LOCATION AND DOCUMENTATION

State: Utah County:
Latitude: Longitude:

Modal Soil: Flynncove CB-L, 4 to 25% — loamy-skeletal, mixed Aridic Argiborolls

Type Location: NW ¼, NE ¼, SW ¼, Section 36, Township 1S, Range 24E

General Legal Description:

Field Office Site Location
Roosevelt

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					

Other References

Attachment 1

Ecological Reference Worksheet

Author(s)/participant(s): V. Keith Wadman
Contact for lead author: _____ **Reference site used?** Yes/No
Date: 6/28/04 **MLRA:** 047C **Ecological Site:** Mountain Stony Loam (047CY456UT) Bitterbrush, Mountain big sagebrush, Needleandthread, Bluebunch wheatgrass) **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: Minor rill development in exposed areas. Rills present should be short on flatter slopes but may become longer (4 to 8 feet) as slope steepens. They should be somewhat widely spaced (3 to 6 feet), and follow the surface micro-features. Old rills should be weathered and muted in appearance. The presence of surface coarse fragments may reduce rill formation.

2. Presence of water flow patterns: Flow patterns wind around surface rock & perennial plant bases and show minor evidence of erosion. They are somewhat short and stable and there is only minor evidence of deposition. Evidence of flow will increase somewhat with slope.

3. Number and height of erosional pedestals or terracettes: Plants may show minor pedestialing on their down slope side. Terracettes should be few and stable.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bareground): 20 – 30%. (Soil surface is typically covered by 50% rock).

5. Number of gullies and erosion associated with gullies: Few. Gullies should show only minor signs of active erosion and should be mostly stabilized with vegetation. Gullies may show slightly more indication of erosion as slope steepens. The presence of surface rock may mask erosion indicators.

6. Extent of wind scoured, blowouts and/or depositional areas: None. Wind caused blowouts and deposition are not present.

7. Amount of litter movement (describe size and distance expected to travel): Some down slope redistribution caused by water. Some litter removal may occur in flow channels with deposition occurring at points of obstruction. Litter movement will increase with slope.

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 5. 20 to 30% may have a rating of 3 to 4. The average should be a 4. Litter accumulation and cryptogamic crusts reduce erosion. The presence of surface rock also reduces site erosion.

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 2 to 3 inches. Structure typically ranges from fine to medium granular. Color typically is grayish brown (10YR4/2) to dark brown (7.5YR4/2). A mollic epipedon typically reaches a depth of 10 to 15 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 will increase and infiltration will 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. Some soils have an argillic horizon at about 8 inches that could be mistaken for a compaction layer.

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 40-60 years. Perennial bunchgrasses, non-sprouting shrubs > sprouting shrubs, perennial & annual forbs > invaders such as Cheatgrass, Peppergrass & Annual mustards. Dominants: Needleandthread, Bluebunch wheatgrass & Bitterbrush; Sub-dominants: Mountain big sagebrush, Utah serviceberry, & Nevada bluegrass. The perennial bunchgrass/non-sprouting shrub functioning group is 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 bunchgrasses should be present. Slight decadence in the principle shrubs could occur near the end of the fire cycle.

14. Average percent litter cover (20-25%) and depth (.07-1.25 inch).

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1300 - 1400 #/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": Cheatgrass, Green rabbitbrush, Sandberg bluegrass & Annual forbs.

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