UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

STATE: Utah
SITE TYPE: Forestland
ECOLOGICAL SITE NAME: High Mountain Stony Loam (Aspen)
SITE NUMBER: 047CY531UT
MLRA: 047C
Original Site Description: Author: GWL, JLB Date: 08/23/1993
Revised Site Description: Author: Date:
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

(description narrative of this particular site)

1. SOILS

Depth: 40-60 inches
Surface Textures: Gravelly Silt Loam and Extremely Stony Loam
Surface Fragments(<=3" % cover, >3" % cover): 30%
Subsurface Textures:
Subsurface Fragments(<=3" % vol, >3" % vol): 60-75%
Geologic Parent Materials: Glacial Outwash from Metamorphic and Sedimentary
Moisture Regime:
Temperature Regime:
Runoff: Very Rapid
Permeability(min-max): Rapid
Drainage Class(min-max): Well to Excessively Drained
Water Erosion Hazard: Moderate
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): 0.03-0.13

Major Soils Associated With This Site:

Soil Survey Area:
Winnemuca Family GR-SiL 15-30% — clayey-skeletal, montmorillonitic, argic Pachic Cryoborolls
Behanin Family STX-L 10-50% — loamy-skeletal, mixed Pachic Cryoborolls

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

2. PHYSIOGRAPHIC FEATURES

Landform and Position: Glacial Deposits, Outwash Fans, and Mountainsides
Aspect: All

	Minimum	Maximum
Slope:	10	50
Elevation:	7700	10000
Flooding:		
Frequency:		
Duration:		
Ponding:		
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

3. FOREST COMMUNITY TYPE

Overstory: quaking aspen (*Populus tremuloides*)
Understory: mountain brome, Columbia needlegrass
Site Index: 40 to 50

B. CLIMATIC FEATURES

Mean Annual Precipitation (inches): 16-24
Mean Annual Air Temperature: 38-45
Mean Annual Soil Temperature: 41-46
Frost Free Period (days): 40-90
Freeze Free Period (days): 0-0

Temperature and Moisture Distribution:

Temp	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High												
Mean												
Low												

PPT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High												
Mean												
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

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

a. Nature of Forest Community

The overstory tree canopy cover is 50 to 65 percent. Common understory plants are mountain brome, Columbia needlegrass, and cranesbill. Understory composition by air-dry weight is about 55 percent perennial grasses and grasslike plants, 30 percent forbs, and 15 percent shrubs. Understory production ranges from 800 pounds per acre in favorable years to about 400 pounds per acre in unfavorable years. Understory production includes the total annual production of all species within 4 ½ feet of the ground surface.

b. Productivity Rating of Major Understory Species:

Productivity Rating Index: This rating provides an index to the relative importance of species in the understory community as affected by overstory canopy cover.

c. Productivity Index

1	Always present:	More than 50% of total understory production
2	Always present:	25 to 50% of total understory production
3	Generally present:	10-24% of total understory production
4	Frequently present:	5-9% of total understory production
5	Occasionally present:	1-5% of total understory production
6	Rarely present:	Less than 1% of total understory production

2. Plant Community Composition by Overstory Canopy Class

Common Name	National Symbol	0-10%	11-20%	21-35%	36-60%
Mountain brome	BRCA5	3	3	2	1
Nodding brome	BRAN	3	2	2	2
Columbia needlegrass	ACNE9	4	3	3	3
Geyer sedge	CAGE2	3	3	2	2
Nevada bluegrass	PONE3	3	3	3	3
Sticky purple cranesbill	GEVI2	3	3	2	2
Fendler meadowrue	THFE	4	3	2	1
Mountain snowberry	SYOR2	4	3	2	2
Mountain big sagebrush	ARTRV	2	3	4	5
Quaking aspen	POTR5	1	3	4	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:

Total Average Understory Production by Overstory Canopy Class (lbs./acre air–dry weight)

	Open 0-10%	Sparse 11-20%	Medium 21-35%	Dense 36-60%
Favorable Year	1700	1300	800	600
Average Year	1200	900	600	400
Unfavorable Year	900	600	400	200

4. Ground Cover and Structure

a. Vegetative

Vegetation Type	Percent Canopy Cover	Height Range	Percent Basal Area Cover
Grasses & Grass-like (perennial)			
Forbs (perennial)			
Shrubs			
Trees			
Cryptogams			

b. Other

Litter	
Coarse Fragments	
Bare Ground	

5. Ecological Dynamics of the Site

a. Herbaceous:

Vegetation is dominated by grasses and forbs under full sunlight. This stage is experienced after a major disturbance such as crown fire or tree harvest. Skeleton forest (dead trees) remaining after fire or residual trees left following harvest have little or no affect on the composition and production of the herbaceous vegetation.

b. Shrub-Herbaceous:

Herbaceous vegetation and woody shrubs dominate the site. Various amounts of tree seedlings (less than 20 inches in height) may be present up to the point where they are obviously a major component of the vegetal structure. Quaking aspen is very intolerant of shade.

c. Sapling:

In the absence of disturbance, the tree seedlings develop into saplings (20 inches to 4.5 feet in height) with a range in canopy cover of about 5 to 10 percent. Vegetation consists of grasses, forbs, and shrubs in association with tree saplings.

d. Immature Forest:

The visual aspect and vegetal structure are dominated by quaking aspen greater than 4.5 feet in height. Seedlings and saplings are present in the understory. Understory vegetation is moderately influenced by a tree overstory canopy about 10 to 20 percent.

e. Mature Forest:

The visual aspect and vegetal structure are dominated by quaking aspen that have reached or are near maximal heights for the site. Trees have developed tall, straight, clear stems with short, high rounded crowns. Natural pruning is excellent and long, clean stems are usually produced when side shade is present. Tree canopy cover ranges from 20 to 40 percent. Understory vegetation is strongly influenced by tree competition, overstory shading, duff accumulation, etc. Few seedlings and/or saplings of quaking aspen occur in the understory.

f. Climax Forest:

In the absence of wildfire or other naturally occurring disturbances, the tree canopy on this site can become very dense. This stage is dominated by quaking aspen that have reached maximal heights for the site. Trees have straight, clear stems with short, high rounded crowns. Understory vegetation is sparse to absent due to tree competition, overstory shading, duff accumulation, etc. Tree canopy cover is at a maximum for the site and is commonly greater than 50 percent.

6. Productivity Capacity

Productivity Class: 1.0

CMAI: 16 to 21 cu ft/ac/yr
1.1 to 1.5 cu m/ha/yr

Fuelwood Production:

8 to 10 cords per acre per year. Firewood is commonly measured in cords, or a stacked unit equivalent to 128 cubic feet. Assuming an average of 90 cubic feet of solid volume wood per cord, there are about 196,400 British thermal units (BTU's) per cubic foot or about 17 million BTU's of heat value in a cord of quaking aspen.

Saw timber: 200 to 300 board-feet per acre per year.

Plant Communities & Transitional Pathways

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

7. Plant Growth Curves

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent Growth												
Name												
ID Number												
Description												

8. Aspect Differences Near MLRA Boundaries

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

9. Associated Sites Within MLRA

(Give site name and number)

10. Correlated Sites in Other States

(Give site name and number)

D. MAJOR USES OF THIS SITE

1. Forage Products

a. Livestock Grazing

This site is suited to cattle and sheep grazing during the summer and fall. Livestock will often concentrate on this site taking advantage of the shade and shelter offered by the tree overstory. Many areas are not used because of steep slopes or lack of adequate water. Attentive grazing management is required due to steep slopes and erosion hazards. Harvesting trees under a sound management program can open up the tree canopy to allow increased production of understory species desirable for grazing.

b. Initial Stocking Rates

Stocking rates vary in accordance with such factors as kind and class of grazing animal, season of use, and fluctuation in climate. Actual use records for individual sites, together with a determination of the degree to which the sites have been grazed and an evaluation of trend in site condition, offer the most reliable basis for developing initial stocking rates.

Selection of initial stocking rates for given grazed units is a planning decision. This decision should be made only after careful consideration of the total resources available, evaluation of alternatives for use and treatment, and establishment of objectives by the decisionmaker.

c. Forage Value Rating (P) Preferred, (D) Desirable, (U) Undesirable

Common Name	National Symbol	Relative Forage Value for:			
		Cattle	Horses	Sheep	Deer
Slender wheatgrass	ELTR7	P	P	D	D
Mountain brome	BRCA5	P	P	D	D
Bluebunch wheatgrass	PSSP6	P	P	D	D
Columbia needlegrass	ACNE9	P	P	D	D
Nevada bluegrass	PONE3	P	P	P	D
Geyer sedge	CAGE2	P	P	U	D
Sticky purple cranesbill	GEVI2	U	U	D	D
Mountain snowberry	SYOR2	U	U	D	D
Mountain big sagebrush	ARTRV	U	U	D	D
Quaking aspen	POTR5	D	D	P	D

d. 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

b. List of Potential Species Present

Wildlife species seeking food and cover in this forest site include moose, elk, mule deer, bear, porcupine, snowshoe hare, owl, and woodpecker.

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

4. Limitations and Considerations

a. Potential for sheet and rill erosion is moderate to severe depending on slope.

b. Moderate to severe equipment limitations on wet soils during critical times of the year.

c. Proper spacing is the key to a well managed, multiple use and multi-product aspen forest.

5. Essential Requirements

a. Adequately protect from high intensity wildfire.

b. Protect soils from accelerated erosion.

c. Apply proper grazing management practices (see management guides)

6. Silvicultural Practices

a. Harvest cut selectively or in small patches (size dependent upon site conditions) to enhance forage production.

   1. Thinning and improvement cutting – removal of poorly formed, diseased, and low vigor trees for fuelwood.

   2. Harvest cutting– selectively harvest surplus trees to achieve desired spacing. Harvest stands in small blocks of 1/5 to ½ acre with slash left in place to shelter emerging aspen suckers from browsing.

   3. Spacing guide: A spacing of about 15 X 15 feet is considered desirable for multiple use management during period of stand maturity.

b. Selective tree removal on suitable sites to enhance forage production and manage site reproduction.

7. Other uses

E. THREATENED AND ENDANGERED SPECIES

1. Plants

2. Animals

F. MODAL LOCATION AND DOCUMENTATION

State: County:
Latitude: Longitude:
Section: Township: Range:

General Legal Description:

Field Office Site Location

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					

Other References

Mueggler, Walter F., 1988 Aspen Community Types of the Intermountain Region, General Technical Report, INT-250, page 42, POTR/SYOR/BRCA

Nevada Soil Conservation Service Forest Suitability Group Description 028BY067NV