

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

STATE: Utah

SITE TYPE: Forestland

ECOLOGICAL SITE NAME: High Mountain Loam (Douglas-fir)

SITE NUMBER: 048AY509UT

MLRA: 048A

Original Site Description: Author: DJS

Date: 05/25/1981

Revised Site Description: Author: DJS

Date: 01/25/1994

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:

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

Subsurface Textures: Loams to Clay Loams

Subsurface Fragments(<=3" % vol, >3" % vol):

Geologic Parent Materials: Colluvium from Sedimentary Parent Materials

Moisture Regime:

Temperature Regime:

Runoff:

Permeability(min-max):

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 CaCl<sub>2</sub>):

pH Range:

Available Water Capacity (inches):

Major Soils Associated With This Site:

Soil Survey Area:

Adel CL, High Rainfall, Eroded – fine-loamy, mixed Pachic Cryborolls

Toze L – fine-loamy, mixed, calcic Pachic Cryborolls

Senchert L, Clayey Substratum – fine-loamy, mixed, argic Pachic Cryborolls

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



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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 about 30 to 40 percent. Common understory plants are snowberry, birchleaf mountainmahogany, serviceberry, Gambel oak, Salina wildrye, bluebunch wheatgrass, sedge, and creeping Oregon grape. Understory composition by air-dry weight is about 25 percent perennial grasses and grasslike plants, 10 percent forbs, and 65 percent shrubs. Understory production ranges from 500 pounds per acre in favorable years to about 100 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**

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Common Name	National Symbol	0-10%	11-20%	21-35%	36-60%
Geyer sedge	CAGE2	3	3	2	1
Wheeler bluegrass	PONE2	3	3	2	2
Slender wheatgrass	ELTR7	2	2	3	3
Heartleaf arnica	ARCO9	4	4	3	2
Engelmann aster	ASEN2	4	4	3	3
Birchleaf mountainmahogany	CEMO2	4	4	5	5
Creeping Oregon grape	MARE11	4	4	3	2
Mountain snowberry	SYOR2	2	3	3	3
Mountain lover	PAMY	5	4	3	2
Saskatoon serviceberry	AMAL2	4	4	5	5
Common juniper	JUCO6	5	4	3	2
Woods rose	ROWO	5	4	3	2
Blue elder	SACE3	4	4	5	5
Gambel oak	QUGA6	2	3	4	4

### 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	1100	900	700	500
Average Year	700	500	300	200
Unfavorable Year	550	400	250	100

### 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	
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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.

**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 Douglas-fir 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. Ponderosa pine may be a major seral species with Douglas-fir in certain locations of the site. Lodgepole pine, quaking aspen, canyon maple, and Gambel oak may be minor seral species in some areas.

**e. Mature Forest:**

The visual aspect and vegetal structure are dominated by Douglas-fir that have reached or are near maximal heights for the site. Tree height may reach 100 to 120 feet with a diameter of 15 to 30 inches by the age of 200 to 300 years. Diameter growth slows down and height growth practically ceases after age 200. Rocky Mountain Douglas-fir rarely live more than 400 years. 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 the major overstory tree species 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 trees that have reached maximal heights for the site. 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

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**CMAI:** 30. to 40. cu ft/ac/yr  
2.1 to 2.8 cu m/ha/yr

#### **Fuelwood Production:**

33 to 44 cords per acre per year for stands averaging 30 to 40 feet in height and 50 years of age. 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 232,000 British thermal units (BTU's) per cubic foot or about 23 million BTU's of heat value in a cord of Douglas-fir.

Tree volume per acre: 3000 to 4000 cubic feet/acre/year for stands averaging 30 to 40 feet in height and 50 years of age.

#### **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

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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
Geyer sedge	CAGE2	P	P	U	D
Wheeler bluegrass	PONE2	P	P	P	D
Slender wheatgrass	ELTR7	P	P	D	D
Heartleaf arnica	ARCO9	U	U	U	U
Engelmann aster	ASEN2	D	D	P	P
Creeping Oregon grape	MARE11	U	U	U	D
Birchleaf mountainmahogany	CEMO2	D	D	P	P
Mountain snowberry	SYOR2	U	U	D	D
Common juniper	JUCO6	U	U	U	U
Saskatoon serviceberry	AMAL2	D	U	P	D
Mountain lover	PAMY	U	U	U	U
Woods rose	ROWO	U	U	D	P
Blue elder	SACE3	D	U	D	P
Douglas-fir	PSME	U	U	U	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 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 steeper slopes and on sites having extreme surface stoniness.
- c. Proper spacing is the key to a well managed multiple use and multi-product forest.

**5. Essential Requirements**

- a. Adequately protect from uncontrolled burning.
- b. Protect soils from accelerated erosion.
- c. Apply proper grazing management practices (see management guides)

**6. Silvicultural Practices**

- a. Douglas-fir seedlings establishment may be improved by shade cards that will protect the trees from intense heat on southern or western aspects and by the presence of litter if it does not prevent the seed from reaching moist soil and does not absorb light rain showers.
- b. Prescription burning may be used to reduce competition before replanting a harvested site.
- c. Douglas-fir will not regenerate in the shade. Seed tree harvests may be used to regenerate a site with or without prescription burning. Shelter wood cut should be avoided for Douglas-fir regeneration.
- d. Harvest cut selectively or in small patches (size dependent upon site conditions) to enhance forage production.

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1. Precommercial thinning and improvement cutting – removal of poorly formed, diseased, and low vigor trees of little or no value.
2. Harvest cutting – selectively harvest surplus trees to achieve desired spacing. Save large, healthy, full-crowned trees to mature for the final harvest cut. Do not select only “high grade” trees during thinning.
- e. Pest Control – use necessary and approved control for specific pests or diseases.
- f. Fire hazard – fire is usually not a problem in mature grazed forests. Install firebreaks or firelines as necessary.

## 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**

Youngblood, Andrew P., Mauk, Ronald L., “Coniferous Forest Habitat Types of Central and Southern Utah”  
General Technical Report, INT-187, October 1985, PSME/BERE

“Silvics of North America” Agriculture Handbook 654, Volume 1, Conifers

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