

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

STATE: Utah

SITE TYPE: Forestland

ECOLOGICAL SITE NAME: High Mountain Loam (Subalpine fir)

SITE NUMBER: 025XY510UT

MLRA: 025

Original Site Description: Author: DJS

Date: 02/10/1994

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: <60 inches

Surface Textures:

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

Subsurface Textures:

Subsurface Fragments(<=3" % vol, >3" % vol): 35-60%

Geologic Parent Materials: Colluvium from Schist and Quartzite

Moisture Regime:

Temperature Regime:

Runoff:

Permeability(min-max): Moderate to Moderately Rapid

Drainage Class(min-max):

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: Medium Acid to Slightly Acid

Available Water Capacity (inches):

Major Soils Associated With This Site:

*(Soil Survey Area + Series Name)*

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

#### **2. PHYSIOGRAPHIC FEATURES**

Site Type: Forestland  
 Ecological Site Name: High Mountain Loam (Subalpine fir)  
 Site Number: 025XY510UT

Landform and Position: Mountain Slopes  
 Aspect:

	<u>Minimum</u>	<u>Maximum</u>
Slope:	20	60
Elevation:	8000	9000
Flooding:		
Frequency:		
Duration:		
Ponding:		
Depth (inches):		
Frequency:		
Duration:		
Water Table Depth:		

**3. FOREST COMMUNITY TYPE**

Overstory: subalpine fir (*Abies lasiocarpa*)  
 Understory: western thimbleberry, creeping Oregon grape, and mountain snowberry  
 Site Index: 28 to 33

**B. CLIMATIC FEATURES**

Mean Annual Precipitation (inches): 25-35  
 Mean Annual Air Temperature: 39-44  
 Mean Annual Soil Temperature: 41-46  
 Frost Free Period (days): 20-60  
 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:

Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT

(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**

On exposed sites near timberline, subalpine fir is often reduced to a prostrate shrub; but, under closed-forest conditions, it attains diameters of 12-24 inches and heights of 45-100 feet, depending upon the site quality and stand density.

The overstory tree canopy cover is about 50 percent. Common understory plants are ross sedge, slender wheatgrass, heartleaf arnica, western thimbleberry, and creeping Oregon grape. Understory composition by air-dry weight is about 10 percent perennial grasses and grasslike plants, 10 percent forbs, and 80 percent shrubs. Understory production ranges from 100 pounds per acre in favorable years to about 40 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	0-10%	11-20%	21-35%	36-60%
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Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT

	Symbol				
Ross sedge	CARO5	3	3	2	1
Kentucky bluegrass	POPR	3	3	3	4
Muttongrass	POFE	3	3	4	5
Slender wheatgrass	ELTR7	2	3	4	4
King fescue	FEKI2	3	3	4	5
Heartleaf arnica	ARCO9	4	4	4	3
Mountain snowberry	SYOR2	2	3	3	3
Western thimbleberry	RUPA	3	3	2	2
Creeping Oregon grape	MARE11	4	3	3	2

### **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	
Coarse Fragments	
Bare Ground	

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

#### a. Herbaceous:

Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT

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 effect 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. Under natural conditions fir seeds lie dormant under the snow and germinate the following spring. Although germination and early survival of subalpine fir are generally best on exposed mineral soil and moist humus, the species is less exacting in its seedbed requirements than most of its common associates. Establishment and early survival of subalpine fir are favored by relatively deep shade. It grows very slowly at first and growth is never rapid. Trees 10 to 20 inches in diameter are often 150 to 200 years old.

**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 subalpine 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.

**e. Mature Forest:**

The visual aspect and vegetal structure are dominated by subalpine fir that have reached or are near maximal heights for the site. Trees attain heights of 60-100 feet with diameters of 18 to 24 inches. Tree canopy cover ranges from 20 to 40 percent. Subalpine fir grows in pure stands most often on sites so severe that it has little commercial value. 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

<b>CMAI:</b>	34. to 39.	cu ft/ac/yr
	2.4 to 2.7	cu m/ha/yr

**Fuelwood Production:**

49 to 58 cords per acre per year for stands averaging 28 to 33 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

Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT

feet of solid volume wood per cord, there are about 176,000 British thermal units (BTU's) per cubic foot or about 15 million BTU's of heat value in a cord of subalpine fir.

Tree volume per acre: 4450 to 5250 cubic feet/acre/year for stands averaging 31 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

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

Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT

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
Ross sedge	CARO5	D	U	U	U
Slender wheatgrass	ELTR7	P	P	D	D
Muttongrass	POFE	P	P	P	D
Kentucky bluegrass	POPR	P	P	P	P
King fescue	FEKI2	D	P	U	U
Heartleaf arnica	ARCO9	U	U	D	U
Mountain snowberry	SYOR2	U	U	D	D
Creeping Oregon grape	MARE11	U	U	U	D
Woods rose	ROWO	U	U	D	P
Western thimbleberry	RUPA	U	U	D	D
Subalpine fir	ABLA	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 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

Site Type: Forestland

Ecological Site Name: High Mountain Loam (Subalpine fir)

Site Number: 025XY510UT


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**

- Potential for sheet and rill erosion is moderate to severe depending on slope.
- Moderate to severe equipment limitations on steeper slopes and on sites having extreme surface stoniness.
- Proper spacing is the key to a well managed multiple use and multi-product forest.

### **5. Essential Requirements**

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

### **6. Silvicultural Practices**

- Harvest cut selectively or in small patches (size dependent upon site conditions) to enhance forage production.
  - Thinning and improvement cutting – removal of poorly formed, diseased, and low vigor trees.
  - Harvest cutting – selectively harvest surplus trees to achieve desired spacing. Save large, healthy, full-crowned trees. Do not select only “high grade” trees during harvest.
- Prescription burning program – to maintain desired canopy cover and manage site reproduction.
- Selective tree removal on suitable sites – to enhance forage production and manage site reproduction.
- Pest Control – use necessary and approved control for specific pests or diseases.
- Fire hazard – fire is usually not a problem in mature grazed stands.

### **7. Other uses**

## **E. THREATENED AND ENDANGERED SPECIES**

### 1. Plants

