USDA Natural Resources
Conservation Service

Ecological site R030XC019NV
ASPEN THICKET

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Ecological site concept

This site occurs on smooth to usually concave mountain sideslopes with northerly exposures. Slopes range from 30 to 50 percent. Elevations range from 7000 to 9500 feet.

Please refer to group concept R030XC028NV to view the provisional STM.

Associated sites

F030XC280NV	**Pinus ponderosa ssp. scopulorum/Ribes cereum/Pseudoroegneria spicata ssp. spicata**
F030XC282NV	**Abies concolor var. concolor/Ribes cereum**

Similar sites

R030XC026NV	**AVALANCHE CHUTE** Not a stable plant community. Lower aspen cover and production.

Table 1. Dominant plant species

Tree	(1) *Populus tremuloides*
Shrub	(1) *Ribes cereum* (2) *Symphoricarpos oreophilus*
Herbaceous	(1) *Bromus ciliatus*

Physiographic features

This site occurs on smooth to usually concave mountain sideslopes with northerly exposures. Slopes range from 30 to 50 percent. Elevations range from 7000 to 9500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	2,134–2,896 m
Slope	30–50%
Aspect	Aspect is not a significant factor

Climatic features

The primary air masses affecting the Spring Mountains are cold maritime polar air from the Gulf of Alaska and warmer, moist maritime subtropical air from lower latitudes. Occasionally there are invasions of cold continental polar air from northern Canada or the Rocky Mountains. Precipitation in the area results primarily from the passage of cyclones with associated fronts during fall, winter and spring; from closed cyclones in late winter and spring; and from the flow of moist tropical air from the southeast to the southwest quadrant in the summer.

The mean annual precipitation ranges from 16 to over 20 inches in some areas. Mean annual air temperature is 40 to 43 degrees F. The average growing season is about 50 to 80 days.

Snow Course, Spring Mountains, Nevada. Average snow depth and snow water equivalent from 1971 to 2000 at March 1 and April 1 of each year.

Kyle Canyon. (Elevation 8200 feet.) March 1: 36 inch snow depth, 10.9 inches of water equivalent. April 1: 31 inch snow depth, 11.7 inches of water equivalent.

Rainbow Canyon #2 (Elevation 8100 feet) March 1: 44 inch snow depth, 13.8 inches of water equivalent. April 1: 46 inch snow depth, 16.7 inches of water equivalent.

Lee Canyon #2. (Elevation 9000 feet) March 1: 35 inch snow depth, 10.6 inches of water equivalent. April 1: 31 inch snow depth, 11.1 inches of water equivalent.

Lee Canyon #3. (Elevation 8500 feet) March 1: 28 inch snow depth, 8.5 inches of water equivalent. April 1: 24 inch snow depth, 9.1 inches of water equivalent.

Table 3. Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	
Precipitation total (average)	508 mm

Influencing water features

This is an area where snow accumulates and provides moisture late into spring and early summer from snowmelt.

Soil features

The soils associated with this site are very deep and well drained. The site provides a cool, moist environment for plant growth. Heavy snow accumulation on this site persists late into spring and early summer when the soil is not frozen. Snow, slowly melting during this period, is added to the soil moisture supply and is available to plants during the growing season.

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	183 cm
Surface fragment cover <=3"	20–40%
Surface fragment cover >3"	5–10%
Available water capacity (0-101.6cm)	14.48–14.73 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	13–26%

Subsurface fragment volume >3" (Depth not specified)	0–3%

Ecological dynamics

Please refer to group concept R030XC028NV to view the provisional STM.

As ecological condition declines, the aspen overstory is thinned out and permanent openings in the canopy are created. If aspen sucker reproduction is inadequate to replace the overstory mortality, snowberry, and current and other shrubs, grasses, and forbs increase in the understory. With lack of disturbance such as snowbank formation, or an occasional avalanche, conifers such as white fir, limber pine and bristlecone pine will invade the site.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by low-growing quaking aspen. Locally known as “snowbank” aspen, these trees have a stunted growth form and are usually not more than 15 feet tall at maturity. Each site normally represents a single clone of aspen with a common genetic makeup having uniform phenological and physiological characteristics. Fringed brome, slender wheatgrass, snowberry and currant are important understory species associated with this site, and are most prevalent about the periphery of the aspen overstory. Total overstory canopy cover exceeds 60 percent. Understory

vegetation comprises about 20 percent of the total site production. Potential vegetative composition for the understory is about 45 percent grasses, 25 percent forbs and 30 percent shrubs. Overstory tree composition is about 80 percent of the total site production. Approximate ground cover is (basal and crown) is 65 to 75 percent. Total annual air-dry production for all trees, shrubs and herbaceous plants irrespective of height is 1800 pounds per acre for favorable years, 1300 pounds per acre for normal years and 900 pounds per acre for unfavorable years. Total annual air-dry production for all trees, shrubs and herbaceous plants in the understoy to a height of 4.5 feet is 400 pounds per acre for favorable years, 300 pounds per acre for normal years and 100 pounds per acre for unfavorable years.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Tree	807	1166	1614
Grass/Grasslike	91	131	182
Shrub/Vine	61	87	121
Forb	50	73	101
Total	**1009**	**1457**	**2018**

Table 6. Ground cover

Tree foliar cover	50-70%
Shrub/vine/liana foliar cover	10-25%
Grass/grasslike foliar cover	1-3%
Forb foliar cover	1-2%
Non-vascular plants	1-2%
Biological crusts	0%
Litter	30-60%
Surface fragments >0.25" and <=3"	20-40%
Surface fragments >3"	5-10%
Bedrock	1-5%
Water	0-1%
Bare ground	1-5%

Additional community tables

Table 7. Community 1.1 plant community composition

					Foliar

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			87–117	
	fringed brome	BRCI2	*Bromus ciliatus*	58–73	–
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	29–44	–
2	**Secondary Perennial Grasses**			15–29	
	golden sedge	CAAU3	*Carex aurea*	2–10	–
	manyrib sedge	CAMU6	*Carex multicostata*	2–10	–
	Ross' sedge	CARO5	*Carex rossii*	2–10	–
	squirreltail	ELEL5	*Elymus elymoides*	2–10	–
	muttongrass	POFE	*Poa fendleriana*	2–10	–
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	2–10	–
Forb					
3	**Primary Perennial Forbs**			29–44	
	whitespine thistle	CICL2	*Cirsium clokeyi*	29–44	–
4	**Secondary Perennial Forbs**			29–44	
	Charleston Mountain angelica	ANSC9	*Angelica scabrida*	2–10	–
	western columbine	AQFO	*Aquilegia formosa*	2–10	–
	brittle bladderfern	CYFR2	*Cystopteris fragilis*	2–10	–
	scented shootingstar	DORE	*Dodecatheon redolens*	2–10	–
	feathery false lily of the valley	MARA7	*Maianthemum racemosum*	2–10	–
	firecracker penstemon	PEEA	*Penstemon eatonii*	2–10	–
	Charleston lousewort	PESEC	*Pedicularis semibarbata var. charlestonensis*	2–10	–
Shrub/Vine					
5	**Primary Shrubs**			45–102	
	wax currant	RICE	*Ribes cereum*	29–58	–
	mountain snowberry	SYOR2	*Symphoricarpos oreophilus*	15–29	–
	Woods' rose	ROWO	*Rosa woodsii*	1–15	–
6	**Secondary Shrubs**			1–15	

	oceanspray	HODI	*Holodiscus discolor*	3–7	–
	gooseberry currant	RIMO2	*Ribes montigenum*	3–7	–
Tree					
7	**Primary Trees**			729–1166	
	quaking aspen	POTR5	*Populus tremuloides*	729–1166	–
8	**Secondary Trees**			1–219	
	Rocky Mountain maple	ACGLD3	*Acer glabrum var. diffusum*	8–44	–
	limber pine	PIFL2	*Pinus flexilis*	8–44	–
	Great Basin bristlecone pine	PILO	*Pinus longaeva*	8–44	–
	ponderosa pine	PIPO	*Pinus ponderosa*	8–44	–

Animal community

Livestock Interpretations:
This site is not suited to livestock grazing due to steepness of the terrain.

Wildlife Interpretations:
Open and sparse tree canopies on this site provide forage and browse, and medium to dense tree canopies provide shelter and protection for mule deer and elk. This site may be used by a variety of upland game species including rabbits and grouse. Various songbirds, rodents, reptiles and associated predators natural to the area also use this woodland for forage and cover.

Hydrological functions

Runoff is high and permeability is moderate.

Wood products

Quaking aspen wood is little used in the West, except in Colorado, where it is used for pulp and particleboard. Specialty products from quaking aspen wood include excelsior, matchsticks, and tongue depressors. Quaking aspen pellets are used for fuel.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T19 S R56 E S12 SW
UTM zone	N

UTM northing	4017775
UTM easting	622304
General legal description	Upper portion of the Deer Creek drainage, Spring Mountains, Clark County, Nevada.

Other references

Clokey, I. 1951. Flora of the Charleston Mountains Clark County, Nevada. University of California Press, Berkeley and Los Angeles.

Fire Effects Information System [Online]http://www.fs.fed.us/feis

Glenne, G. and D.Johnson. 2002. Guide to Species of Concern in the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. USFS, Las Vegas, NV.

Lanner, R.M. 1984. Trees of the Great Basin. University of Nevada Press, Reno NV.

Nachlinger, J. and G. Reese. 1996. Plant Community Classification of the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. The Nature Conservancy. Reno, Nevada.

Contributors

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	12/07/2025
Approved by	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
