USDA Natural Resources
Conservation Service

Ecological site R035XH802AZ
Loamy Cienega 17-25" p.z.

Accessed: 05/11/2025

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.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 035X–Colorado Plateau

This ecological site occurs in Common Resource Area 35.8 - the Colorado Plateau Ponderosa Pine Forests

The Common Resource Area occurs within the Colorado Plateau Physiographic Province. Elevations range from 6800 to 8500 feet and precipitation averages 17 to 25 inches per year. Vegetation includes ponderosa pine, white fir, aspen, pinyon, juniper, Gambel oak, big sagebrush, ceanothus, blue elderberry, muttongrass, upland sedge, and big wildrye, mountain muhly, Arizona fescue, pine dropseed, and blue grama. The soil temperature regime ranges from mesic to frigid and the soil moisture regime is typic ustic. This unit occurs within the Colorado Plateau Physiographic Province and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Glyceria borealis* (2) *Potamogeton natans*

Physiographic features

This ecological site occurs in rounded closed basins that are typically less than 50 acres in size on undulating high plateaus and mesas. This ecological site benefits from run-on moisture from the adjacent ecological sites. Water is ponded on the site for extended periods of the year. The soils are moderately deep to deep with clay loam to clay textures throughout. Slopes range from 0 to 2 percent.

Table 2. Representative physiographic features

Landforms	(1) Basin floor (2) Depression
Flooding duration	Long (7 to 30 days)
Flooding frequency	Frequent to very frequent
Ponding duration	Long (7 to 30 days)
Ponding frequency	Frequent
Elevation	7,200–8,500 ft
Slope	0–1%
Ponding depth	4–48 in
Aspect	Aspect is not a significant factor

Climatic features

Winter-Summer moisture ratios are typically 70:30 on the west side of this CRA and shift to 60:40 on the east side. Late spring is usually the driest period and early fall moisture can be sporadic. Summer rains fall from June through September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow from October into April. Snowpack can persist for 3-4 months, although it may disappear in exposed areas during prolonged dry weather. Summer daytime temperatures are typically 80-90 F but can exceed 95 F. Winter temperatures around 0 F are common and can reach -25 F.

Table 3. Representative climatic features

Frost-free period (average)	100 days
Freeze-free period (average)	130 days
Precipitation total (average)	25 in

Influencing water features

The soil moisture on this ecological site comes from precipitation and run-on moisture from adjacent sites following storm events. The site occurs as wet meadows with water ponded nearly year around on heavy soils high in clay and organic matter content. The soils are poorly drained. This additional moisture allows this site to produce significantly more vegetation than upland sites that depend entirely on rainfall.

Soil features

The soils are moderately deep to deep. Surface textures of the soil range from clay loam to clay. Typical clay content is 20 to 45% and organic carbon is 5 to 15%.

Soil survey map unit components that have been correlated to this ecological site include;

SSA-715 Ft. Defiance Area AZ/NM 1-Venable family;

Table 4. Representative soil features

Parent material	(1) Alluvium–basalt (2) Residuum–limestone and shale
Surface texture	(1) Mucky clay loam (2) Clay
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Slow to very slow
Soil depth	40–60 in
Surface fragment cover <=3"	0–5%
Electrical conductivity (0-40in)	0–6 mmhos/cm
Soil reaction (1:1 water) (0-40in)	5.6–6.5
Subsurface fragment volume <=3" (Depth not specified)	0%

Ecological dynamics

An ecological site is not a precise assemblage of species for which the proportions are the same from place to place or from year to year. In all plant communities, variability is apparent in productivity and occurrence of individual species. Spatial boundaries of the communities; however, can be recognized by characteristic patterns of species composition, association, and community structure. The historic climax plant community for this ecological site has been described by sampling relict or relatively undisturbed sites and/or reviewing historic records. The historic climax plant community is the plant community that evolved over time with the soil forming process and long term changes in climatic conditions of the area. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site.

Natural disturbances, such as drought, fire, grazing of native fauna, and insects, are inherent in the development and maintenance of these plant communities. The effects of these disturbances are part of the range of characteristics of the ecological site. Fluctuations in plant community structure and function caused by the effects of natural disturbances help establish the boundaries and characteristics of an ecological site. They are accounted for as part of the range of characteristics of the ecological site. Recognizable plant community phases are identified in the reference state of the ecological site. Some sites may have a small range of variation, while others have a large range. Some plant community phases may exist for long periods of time, while others may only occur for a couple of years after a disturbance.

Deterioration of the plant community, hydrology, or soil site stability on an ecological site can result in crossing a threshold or potentially irreversible boundary to another state, or equilibrium. This can occur as a result of the loss of soil surface through erosion, the loss of the stability of the site due to disturbances that cause active erosion on the site, increases in the amounts and/or patterns or runoff from rainstorms, changes in availability of surface and subsurface water, significant changes in plant structural and functional types, or the introduction of non-native species. When these thresholds are crossed, the potential of the ecological site to return to the historic climax plant community can be lost, or restoration will require significant inputs . There may be multiple states possible for an ecological site, determined by the type and or severity of disturbance.

The known states and transition pathways for this ecological site are described in the state and transition model. Within each state, there may be one or more known plant community phases. These community phases describe the different plant community that can be recognized and mapped across this ecological site. The state and transition model is intended to help land users recognize the current plant community on the ecological site, and the management options for improving the plant community to the desired plant community.

Plant production information in this site description is standardized to the annual production on an air-dry weight basis in near normal rainfall years.

State and transition model

35.8AZ Loamy Cienega 17-25" p.z.
(R035XH802AZ)

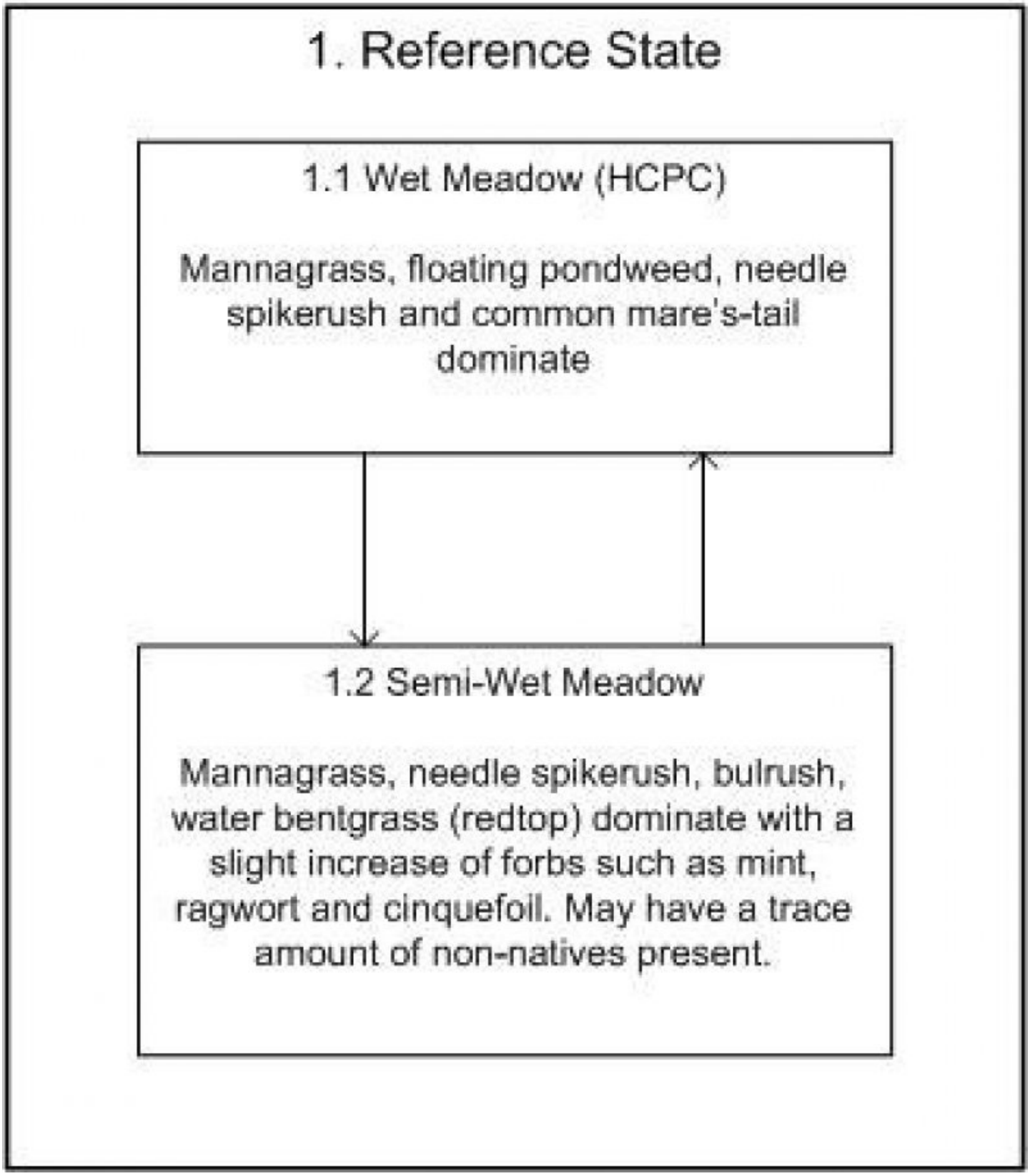

Figure 4. 358 LoamyCienega S&T

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The historic climax plant community is dominated by wetland obligate grases and forbs.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	400	1100	1800
Forb	100	250	400
Total	**500**	**1350**	**2200**

Community 1.2
Semi-Wet Meadow

This plant community is dominanted by manaagrass, needle spikerush, burush, water bentgrass, with a slight incrase in forbs, such as mint, ragwort, and cinquefoil.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Grasses**			400–1800	
	small floating mannagrass	GLBO	*Glyceria borealis*	300–1500	–
	needle spikerush	ELAC	*Eleocharis acicularis*	160–400	–
	bulrush	SCHOE6	*Schoenoplectus*	0–300	–
	common mare's-tail	HIVU2	*Hippuris vulgaris*	0–200	–
	redtop	AGGI2	*Agrostis gigantea*	0–40	–
	water foxtail	ALGE2	*Alopecurus geniculatus*	0–40	–
Forb					
2	**Forbs**			100–400	
	floating pondweed	PONA4	*Potamogeton natans*	200–800	–
	mint	MENTH	*Mentha*	0–60	–
	cinquefoil	POTEN	*Potentilla*	0–40	–
	ragwort	SENEC	*Senecio*	0–40	–
	Forb, perennial	2FP	*Forb, perennial*	0–20	–

Animal community

This ecological site is suitable for grazing by livestock but not generally recommended except in very dry years and on the fringes of the pond.
Water fowl and other water loving wildlife frequent this site especially in the warm summer months.

Hydrological functions

The site has shallow ponded water for extended periods of the year.

Recreational uses

This site occurs at high elevations and may not be accessible during the winter. Uses include wildlife observation and photography.

Wood products

No wood products are produced on this site.

Inventory data references

Information from 5 AZ-ECS-1 forms.

Type locality

Location 1: Apache County, AZ	
Township/Range/Section	T22N R20W S23
General legal description	Aproximately 8 miles South West of Toadlena, Navajo Indian Reservation.

Other references

Updates and revisions for this ESD were conducted as part of a 2007-2012 Interagency Technical Assistance Agreement between the Bureau of Indian Affairs–Navajo Region and the NRCS-Arizona.

Contributors

Ken Gishi
Larry D. Ellicott

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)	Steve Barker
Contact for lead author	NRCS State Rangeland Management Specialist, Phoenix AZ
Date	09/24/2012
Approved by	Steve Barker
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** No rills are present.

---

2. **Presence of water flow patterns:** No water flow patterns are present.

---

3. **Number and height of erosional pedestals or terracettes:** No pedestals or terracettes are present.

---

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically less than 5%, but it can increase when the site goes dry for extended perids.

---

5. **Number of gullies and erosion associated with gullies:** No gullies are present.

---

6. **Extent of wind scoured, blowouts and/or depositional areas:** No wind scoured areas are present.

---

7. **Amount of litter movement (describe size and distance expected to travel):** All litter stays where it falls, with little movement.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** High organic matter soils will have an index value of 5 to 6.

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The soil has subangular to blocky structure with high organic matter (5-15%)

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The plant community is herbaceous, and distributed evenly across the site.

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layers are present. Soil freeze/thaw keeps them from forming.

---

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: Perennial Grasses > Perennial Forbs

    Sub-dominant:

    Other:

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality of 5 to 10 percent each year is normal.

---

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

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production is 1350 lbs/ac.

---

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:** Potential invasive species includes aquatic noxious weeds such as hydrilla.

---

17. **Perennial plant reproductive capability:** All plants on the site reproduce through seeds, or spready by stolons and rhizomes.
