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Bureau of Land Management

Safford Field Office

Safford, AZ

FINAL

Land Health Evaluation Report

Wildcat Creek Allotment

(No. 06071)

July 8, 2020

Table of Contents

List of Figures

List of Tables

List of Acronyms

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AZGFD	Arizona Game and Fish Department
AUM	Animal unit month
BLM	Bureau of Land Management
BO	Biological Opinion
CFR	Code of Federal Regulations
DPC	Desired plant community
ESD	Ecological site description
ESIS	Ecological Site Information System
FEIS	Final Environmental Impact Statement
GPS	Global positioning system
HCPC	Historical climax plant communities
HUC	Hydrologic unit code
ID	Interdisciplinary
IPaC	Information for Planning and Conservation
LHE	Land health evaluation
LUP	Land use plan
LPI	Line point intercept
MLRA	Major Land Resource Area
NAD	North American Datum
NRCS	Natural Resources Conservation Service
P.L.	Public Law
p.z.	Precipitation zone
PRISM	Parameter-elevation Relationships on Independent Slopes Model
RAS	Rangeland Administration System
RMP	Resource Management Plan
ROD	Record of Decision
RPS	Range Program Summary
spp.	Multiple species of the same genus
Stat	Statute
TEAMS	[USFS] Talent, Expertise, Agility, Mobility, and Simplicity Enterprise Unit
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UTM	Universal Transverse Mercator

1. Introduction

The purpose of this Land Health Evaluation (LHE) report is to determine whether the Arizona standards for rangeland health are being achieved on the Wildcat Creek Allotment, or if the standards are not being achieved, to determine if livestock are the causal factor for not achieving or making significant progress towards achieving land health standards. This evaluation is not a decision document, but a stand-alone report that clearly records the analysis and interpretation of the available inventory and monitoring data.

The Secretary of the Interior approved the Bureau of Land Management (BLM) Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Arizona Standards and Guidelines) in April 1997. Signed by the Arizona BLM State Director, the Arizona Standards and Guidelines provide for full implementation of the standards and guidelines in Arizona BLM-administered land use plans (LUP). Standards and guidelines are implemented by the BLM portions of activity plans (including Allotment Management Plans) and through range improvement-related activities.

Land health standards are measurable and attainable goals for the desired condition of the biological resources and physical components/characteristics of desert ecosystems found within the allotment.

The LHE report ascertains:

1. If standards are being achieved, not achieved, and if significant progress is being made towards achievement of the land health.
2. Whether livestock grazing is a significant causal factor where it is determined that land health standards are not being achieved.

This report covers an evaluation period of ten years (2007-2016). This is a standard evaluation period (10 years) that provides the BLM the ability to collect an adequate amount of information related to grazing use and environmental factors pertaining to the lease renewal process. The evaluation period is also based on when the indicator of rangeland health was conducted on the allotment, which occurred in 2016.

1.1 Consultation, Cooperation and Coordination

A letter to interested publics informing that the Wildcat Creek Allotment was being considered for lease renewal was distributed via certified mail January 31, 2017. A list of the recipients is provided in Appendix D. Data on special status species was obtained from the U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AZGFD).

1.2 Definition of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration

The Arizona standards for rangeland health are expressions of levels of physical and biological condition or degree of function required for healthy, sustainable rangelands and defines minimum resource conditions that must be achieved and maintained. Determination of rangeland health is based upon conformance with these standards.

Guidelines for grazing administration consider the type and level of grazing use. Guidelines for grazing management are types of methods and practices determined to be appropriate to ensure the standards can be met or that significant progress can be made toward meeting the standards. Guidelines are tools that help managers and lessees achieve standards.

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease (Arizona Standards and Guidelines, 1997).

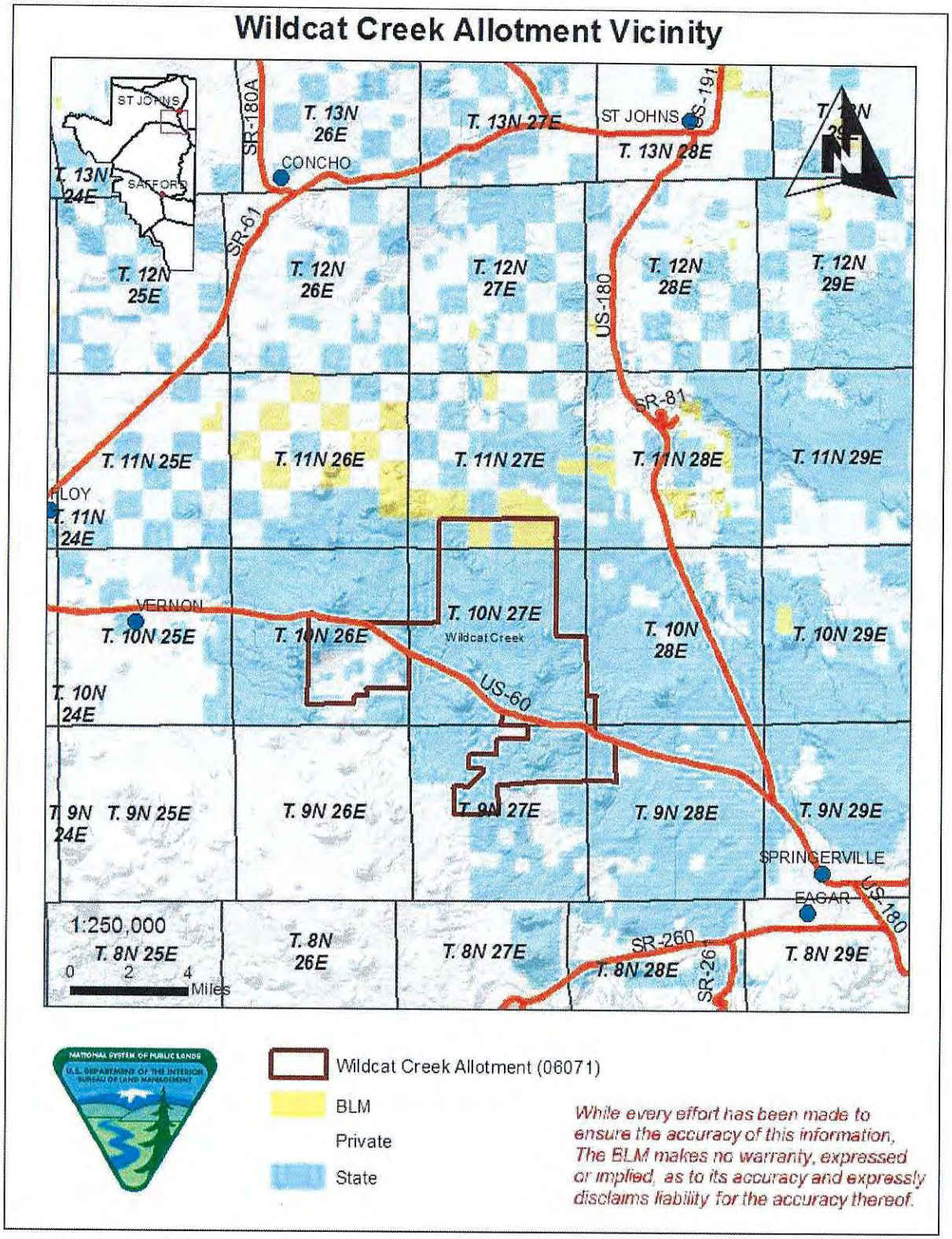
The Arizona Standards and Guidelines identify three standards regarding (1) upland sites, (2) riparian-wetland sites, and (3) desired resource conditions based on specific indicators, as discussed in *Section 5 Rangeland Inventory and Monitoring Methodology* of this document.

2. Allotment Profile and General Description of Key Area

2.1 Location

The Wildcat Creek Allotment (No. 06071) is located in Apache County, Arizona. It is approximately 16 miles southwest of Saint Johns, Arizona. U.S. 60 passes through the allotment, while U.S. 180 parallels the allotment on the east. The northern boundary borders Mud Springs and Wiregrass Lake Allotments. The western, eastern and southern boundaries border a mixture of private and State Land (Figure 1).

Figure 1 Wildcat Creek Vicinity



Source: USDI-BLM 2017, ADOT 2016

2.2 Physical Description

This section describes physical characteristics within the Wildcat Creek Allotment.

2.2.1 Surface Land Ownership

The Wildcat Creek Allotment is comprised predominately of private property and Arizona State Trust lands. The BLM-administered portion of the allotment is 1,483 acres, or approximately five percent of the allotment area. Landownership apportionments are displayed in Table 1.

Table 1 Wildcat Creek Allotment Landownership Acreage

Land Classification	Acres
BLM-administered land	1,483
Arizona State Trust land	27,486
Private property	2,086
Total Acres	**31,055**

Source: USDI-BLM 2018

2.2.2 Precipitation

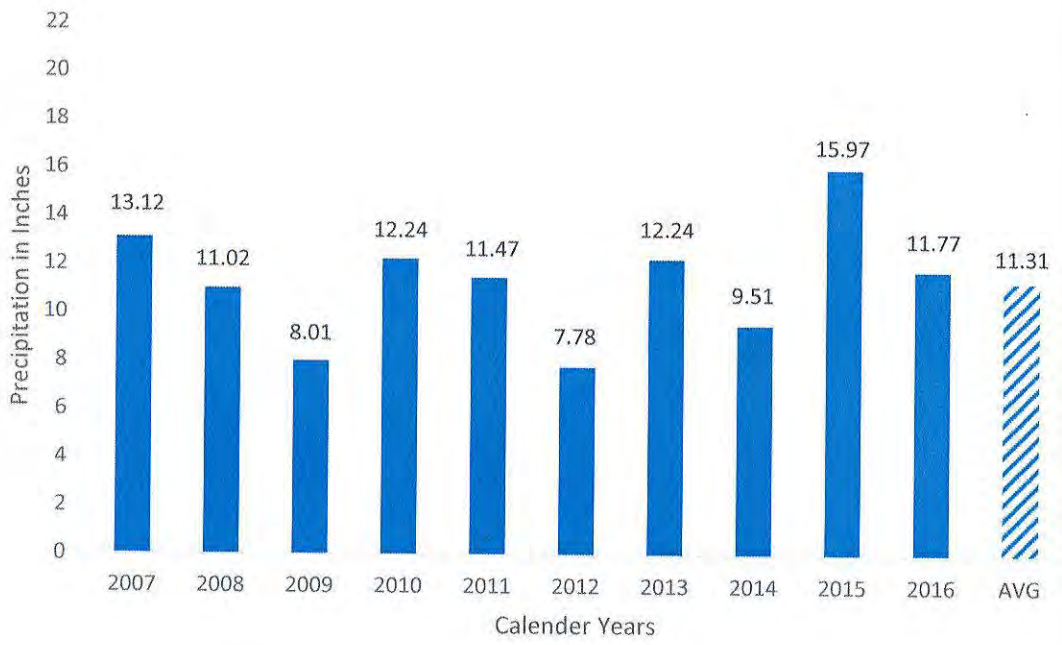
Average annual precipitation for the majority of the Wildcat Creek Allotment ranges from 10-14 inches, with higher elevations receiving 14-18 inches. The average annual rainfall on the Wildcat Creek Allotment is 11.31 inches (Figure 2). The data show that out of 10 years, four were below average and six were above average, with two years (2009 and 2012) being well below the average for this area. Approximately 50-60 percent of the precipitation occurs during July through September.

Precipitation data from Parameter-elevation Relationships on Independent Slopes Model climate datasets (PRISM, 2018) were utilized by selecting a point within a mile of the BLM-administered land within the Wildcat Creek Allotment as follows:

- Latitude: 34.2840
- Longitude: -109.4600
- Elevation: 6,549 feet

Climatic data from this source is not collected from a single station but is modeled using data collected from many stations and physiographic factors in the area.

Figure 2 Average Annual Precipitation from PRISM Time Series Data 2007-2016



2.2.3 Temperatures

The following table (Table 2) presents the minimum, maximum, and average temperature within the Wildcat Creek Allotment between 2007 and 2016.

Table 2 Temperatures in Degrees Fahrenheit on Wildcat Creek Allotment

Month	Minimum	Maximum	Average
January	18°F	44°F	47°F
February	22°F	52°F	52°F
March	27°F	60°F	60°F
April	32°F	66°F	69°F
May	40°F	73°F	86°F
June	49°F	86°F	86°F
July	57°F	85°F	85°F
August	55°F	82°F	81°F
September	48°F	78°F	78°F
October	37°F	69°F	69°F
November	26°F	58°F	58°F
December	20°F	47°F	47°F

Source: PRISM, 2018.

2.2.4 Soils

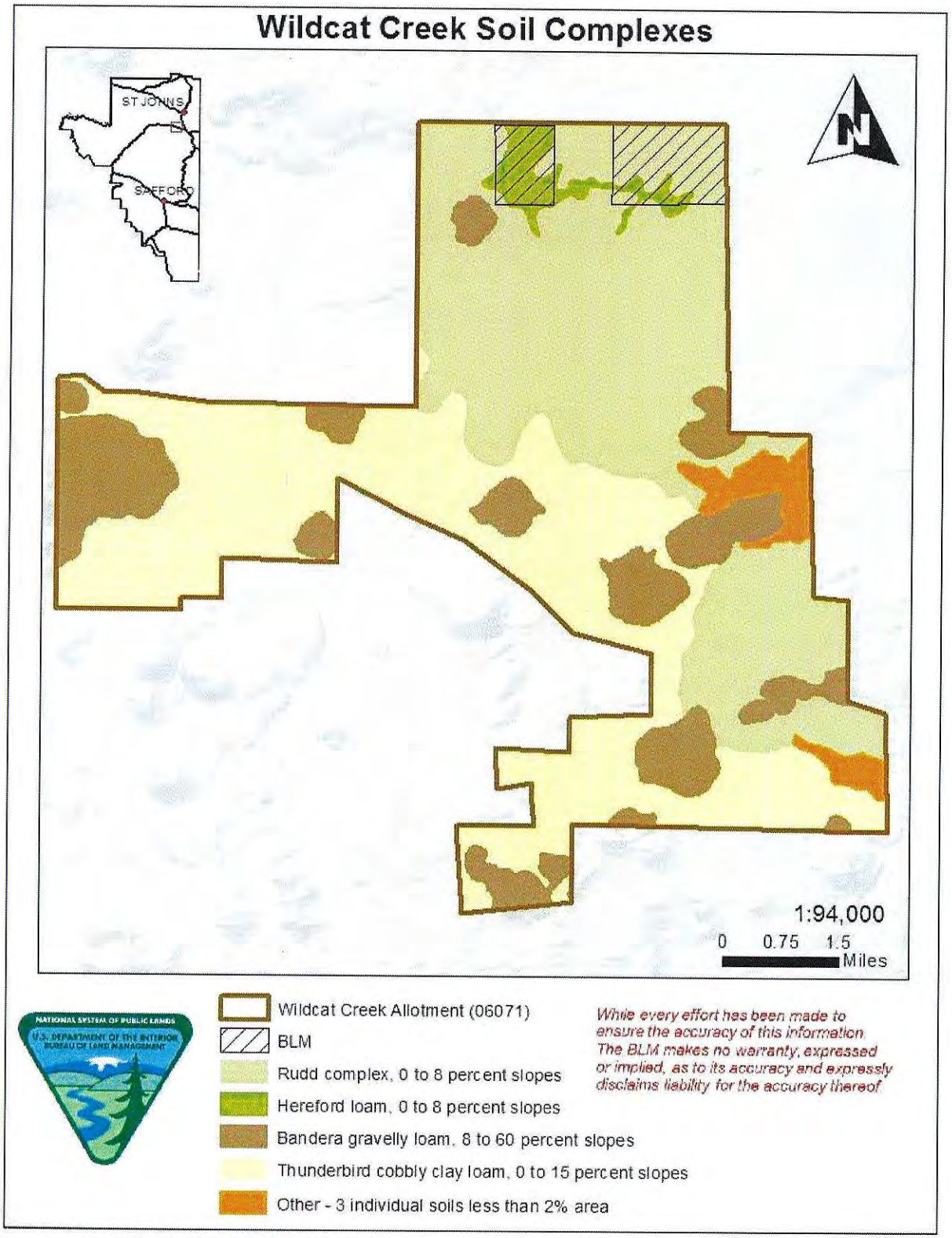
The soil composition on the Wildcat Creek Allotment varies, as presented in Table 3 and Figure 3.

Table 3 Soil Composition within the Wildcat Creek Allotment

Soil Map Unit Name	Allotment Acres	BLM Acres	BLM Composition
Bandera gravelly loam, 8 to 60 percent slopes	4,969	0	0%
Hereford loam, 0 to 8 percent slopes	745	512	34.5%
Rudd complex, 0 to 8 percent slopes	12,701	971	65.5%
Thunderbird cobbly clay loam, 0 to 15 percent slopes	11,708	0	0%
Other – 3 individual soil types/complexes with less than 2 percent area each: - Bandera gravelly loam, 0 to 8 percent slopes - Clover Springs silt loam, 1 to 3 percent slopes - Ziegler gravelly clay loam, 0 to 15 percent slopes	932	0	0%

Source: United States Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS) Web Soil Survey

Figure 3 Soil Complexes on Wildcat Creek Allotment



Source: USDI-BLM 2017, USDA-NRCS 2015

The following soil descriptions occur on BLM-administered lands within the Wildcat Creek Allotment and will be carried forward in this LHE:

- Hereford loam, 0 to 8 percent slopes
- Rudd complex, 0 to 8 percent slopes

Hereford loam, 0 to 8 percent slopes
Hereford soils are on alluvial fans and terraces. These soils formed in alluvium derived from basalt and tuff. Elevations range from 6,700 to 7,500 feet. The mean annual precipitation is 10 to 13 inches. The mean annual air temperature is 46 to 48 degrees Fahrenheit. The frost-free period is 100 to 120 days. This soil is well drained, has medium run off, and moderate slow to very slow permeability.

Rudd complex, 0 to 8 percent slopes
Rudd soils exist on plains. These soils formed in colluvium from weathered basalt. Elevations range from 6,000 to 7,500 feet. The mean annual precipitation is 11 to 13 inches. The mean annual air temperature is 48 to 52 degrees F. The frost-free period is 130 to 140 days. This soil is well drained, has low run off, and moderate permeability.

2.2.5 Watersheds

The allotment lies within two watersheds, the Canero Creek-Little Colorado River and Big Hollow Wash watersheds (HUC-10 1502000104 and 1502000202 respectively). Big Hollow Wash is a tributary to the Little Colorado River. The Little Colorado River, approximately 4.5 miles east of the allotment, is an intermittent stream with some reaches flowing perennially closer to its headwaters. The Little Colorado River is one of two major tributaries in Arizona to the Colorado River and drains the Little Colorado Basin (HUC-6 150200). The Little Colorado Basin has a drainage area of 26,000 square miles extending into New Mexico.

The allotment lies entirely within the "Little Colorado River Plateau" Arizona Department of Water Resources (ADWR) Groundwater Basin and is not within an ADWR Active Management Area. The groundwater basin consists of the following aquifers: unconsolidated alluvium from streams, volcanic bedrock (Lakeside-Pinetop Aquifer), and consolidated sedimentary aquifers (Bidahochi, C, D, N, Springerville, and White Mountain Aquifers) (USEPA 2017).

The nearest surface waters to the allotment are ephemeral washes and natural depressions, primarily having peak flows from precipitation events. Big Hollow Wash originates as Wildcat Creek then confluences with Mallory Draw through the western portion of the allotment, becoming Big Hollow Wash downstream (north) of the allotment. The eastern portion of the allotment contains Atascocita Draw, which flows into Woods Lake approximately one mile east of the allotment. The majority of the allotment is located within a FEMA Zone D floodplain meaning undetermined but possible flood hazard. Big Hollow Wash-Mallory Draw and Atascocita Draw lie within a 100-year (1% chance of flooding in any single year) floodplain. Water quality is monitored and listed by Arizona Department of Environmental Quality (ADEQ) for EPA 303(d) waterbody impairments under the federal Clean Water Act, and there are no impaired waters on the allotment. Lyman Lake lies on the Little Colorado River approximately five miles northeast of the allotment and was found impaired for Mercury in fish from 2004-2010, with probable sources of Atmospheric Deposition and Resource Extraction of Abandoned Mine Lands.

2.2.6 Range Improvements

The Wildcat Creek Allotment consists primarily of private and State Trust lands. There are currently two range improvements occurring on BLM-administered land. These two improvements are boundary fences totaling approximately 4.8 miles.

2.3 Biological Resources

This section discusses the biological resources within the Wildcat Creek Allotment.

2.3.1 Major Land Resource Areas

A Major Land Resource Area (MLRA) is a broad geographic area that is characterized by a particular pattern of soils, climate, water resources, vegetation and land use. Each MLRA, in which rangeland and forestland occur can be further divided into sub-resource areas and further divided into ecological sites. The Wildcat Creek Allotment lies mostly within the MLRA 35-Colorado Plateau and one ecological site description (ESD) from MLRA 39-Arizona and New Mexico Mountains. The MLRA 35-Colorado Plateau can be further divided into sub-resource area 35-1 Mixed Grass Plains which represents the BLM-administered lands of the Wildcat Creek Allotment.

2.3.2 Ecological Sites within the Wildcat Creek Allotment

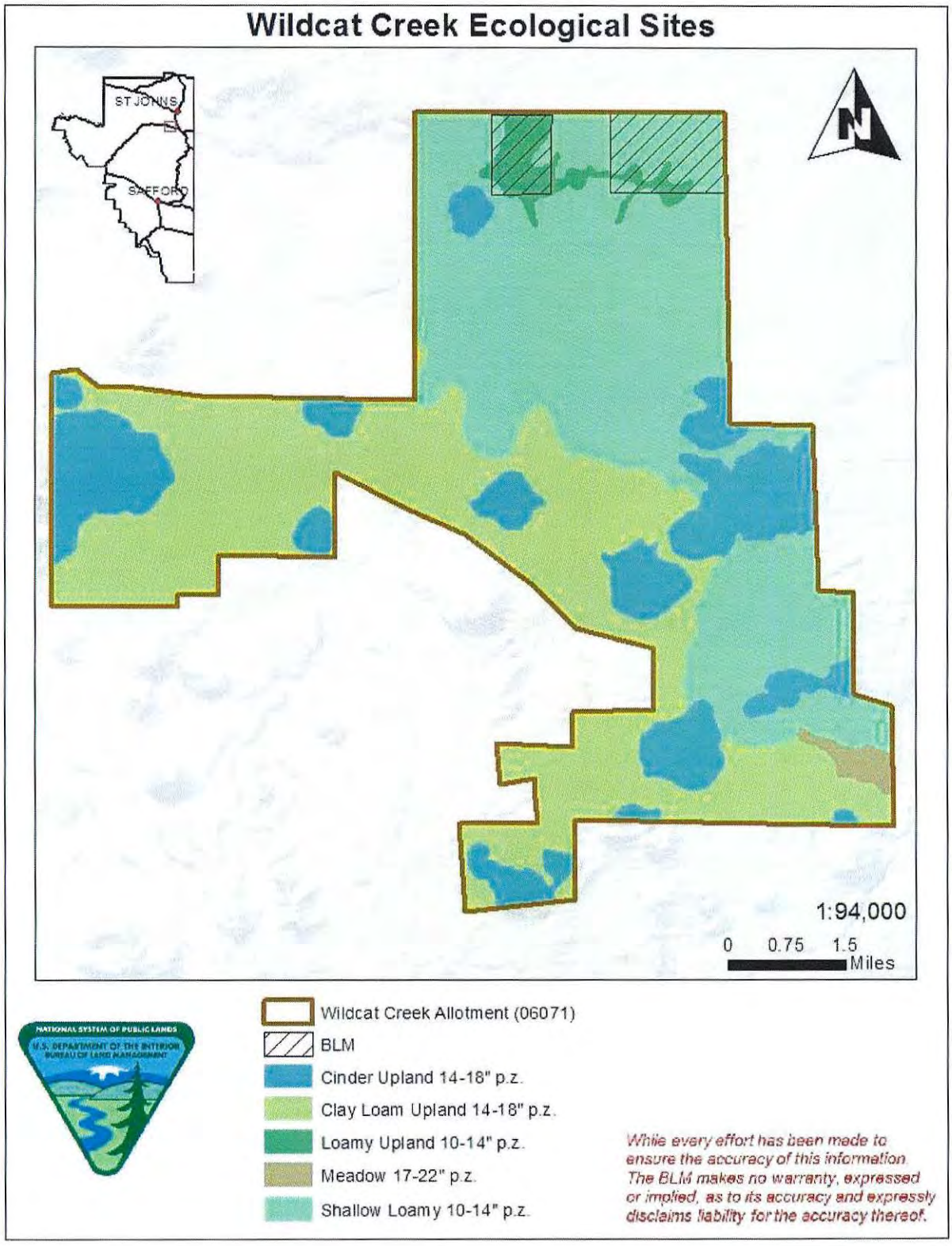
Ecological sites provide a consistent framework for classifying and describing rangeland soils and vegetation, thereby delineating land units that share similar capabilities to respond to management activities or disturbances. The ESDs are developed by the Natural Resources Conservation Service (NRCS). Table 4 and Figure 4 provide a summary of the ecological sites present within the Wildcat Creek Allotment.

Table 4 Ecological Sites Located within Wildcat Creek Allotment

Ecological Site	Allotment Acres	BLM Acres	BLM Composition
Cinder Upland 14-18" p.z. (R035XG704AZ)	5,590	0	0%
Clay Loam Upland 14-18" p.z. (R035XG707AZ)	11,801	0	0%
Loamy Upland 10-14" p.z. (R035XA113AZ)	621	504	34%
Meadow 17-22" p.z. (R039XA108AZ)	310	0	0%
Shallow Loamy 10-14" p.z. (R035XA119AZ)	12,733	979	66%

Source: Natural Resources Conservation Service (NRCS).

Figure 4 Wildcat Creek Allotment Ecological Sites



Source: USDI-BLM 2017, USDA-NRCS 2015

The ESD summaries below are those that actually occur on BLM-administered lands within the Wildcat Creek Allotment. Detailed NRCS ESD reports are stored and accessed within the Ecosystem Dynamics Interpretive Tool (EDIT) available online at https://edit.jornada.nmsu.edu. The ESD reference sheets are considered provisional, meaning the ecological site has undergone quality control and quality assurance, it contains a working state and transition model with enough information to identify the ecological site.

A key attribute of an ecological site is the historic climax plant community (HCPC), or reference state. The HCPC represents the natural potential plant community that has developed on the site according to the following factors: soils, topography, and climate. These collective factors form the basis for classification of rangeland ecological sites.

2.3.2.1 Loamy Upland 10-14" Precipitation Zone (R035XA113AZ)

This ecological site occurs within the Common Resource Area 35.1 - Colorado Plateau Mixed Grass Plains province of northeastern Arizona. Loamy Upland 10-14" Precipitation Zone (p.z.) occurs in an upland position as gently rolling plains, fans and terraces and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Precipitation ranges from 10-14 inches annually, with elevations ranging from 4,800 to 6,300 feet. Long periods with little or no effective moisture are relatively common. Soil moisture on this site is from rainfall between the months of July through September, and the remaining moisture comes as snow during winter. Soils have characteristics of being moderately deep or deeper to any plant root restricting layers.

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The HCPC on this ecological site has a plant community made up primarily of perennial native grassland with warm season and cool season grasses and half shrubs.

Grass species found in the Loamy Upland 10-14" p.z. include but are not limited to: sideoats grama (*Bouteloua curtipendula)*, black grama *(Bouteloua eriopoda),* blue grama *(Bouteloua gracilis),* James' galleta *(Pleuraphis jamesii)* and needle and thread (*Hesperostipa comata*). Shrubs species found include: winterfat (*Krascheninnikovia lantana*), Greene's rabbitbrush (*Chrysothamnus greenei*) and fourwing saltbush (*Atriplex canescens*). Tree species found include: oneseed juniper (*Juniperus monosperma*), and Fremont barberry (*Mahonia fremontii*).

2.3.2.2 Shallow Loamy 10-14" Precipitation Zone (R035XA119AZ)

This ecological site occurs in Common Resource Area 35.1 - Colorado Plateau Mixed Grass Plains. Shallow Loamy 10-14" p.z. occurs in an upland position on structural benches, mesas and ridges. Slopes generally range from 0-15 percent with occasional steeper slopes. It does not benefit significantly from run in moisture or suffer from excessive run off. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin. Precipitation ranges from 10-14 inches annually, with elevations ranging from 4,800 to 6,300 feet.

The HCPC on this ecological site is dominated by cool season grasses with scattered shrubs, forbs and junipers. This plant community is made up primarily of mid and short grasses, shrubs, and a relatively small percentage of forbs and a scattered over story of junipers. There is a mixture of both cool and warm season grasses.

Grass species found in the Shallow Loamy 10-14" p.z. include: needle and thread (*Hesperostipa comata*), New Mexico feather grass (*Hesperostipa neomexicana*), sideoats grama (*Bouteloua curtipendula*), black grama (*Bouteloua eriopoda*), and blue grama (*Bouteloua gracilis*). Forb species found include but are not limited to: sego lily (*Calochortus nuttallii*), whitemargin spurge (*Chamaesyce albomarginata*), and rose heath (*Chaetopappa ericoides*). Shrub species found include: Bigelow sage (*Artemisia bigelovii*), fourwing saltbush (*Atriplex canescens*), and Ephedra (*Ephedra spp.*). Tree species found include: oneseed juniper (*Juniperus monosperma*), Utah juniper (*Juniperus osteosperma*), and pinyon pine (*Pinus edulis*).

2.3.3 Wildlife Resources

This section discusses the wildlife resources in and around the Wildcat Creek Allotment, including threatened and endangered (T&E) species, BLM special status species, and species of economic and recreational. Refer to Appendix A for a list of species.

2.3.3.1 Threatened and Endangered Species

The grazing program for the BLM Gila District, including grazing activities within the Wildcat Creek Allotment, was assessed pursuant to Section 7 of the Endangered Species Act to determine whether the program would jeopardize the continued existence of an endangered or threatened species and/or their designated or proposed critical habitat. The USFWS rendered a Biological Opinion (BO) on the Gila District Livestock Grazing Program #22410-2006-F-0414 (2012). The BO determined that no conservation measures were needed for the Wildcat Creek Allotment due to the absence of the consulted listed species and/or designated critical habitat. Additionally, a query conducted on March 3rd, 2020 of the USFWS Information for Planning and Conservation (IPaC; USDI USFWS N.d.) website identified a total of 10 species listed as threatened, endangered, or proposed species for consideration within the allotment (Appendix A). A report generated on March 26th, 2020 from the Arizona Game and Fish Department Environmental Online Review Tool (AZGFD, N.d.) indicated that there were two additional Federally listed or candidate species with the potential to occur within five miles of the allotment boundary and/or within the allotment.

The IPaC query indicated the Mexican gray wolf as being potentially present within the allotment. This is a regional subspecies of the gray wolf, and it is currently listed as Endangered. Other species indicated in the IPaC report were the New Mexico meadow jumping mouse, Mexican spotted owl, yellow-billed cuckoo, southwestern willow flycatcher, northern Mexican gartersnake, Chiricahua leopard frog, Apache trout, little Colorado spinedace, and Zuni bluehead sucker. The AZGFD report also included the jaguar and black-footed ferret.

Due to an absence of forested habitat on the BLM-administered portions of the allotment, the Mexican spotted owl and Mexican gray wolf are expected to be absent within the jurisdiction of the BLM. The IPaC report indicated that there is designated critical habitat for the Mexican spotted owl within the allotment boundary but its location is within lands administered by the U.S. Forest Service. Overall, the BLM-administered portions of the allotment lack suitable forested habitat to support Mexican gray wolves but is located within a Mexican wolf experimental population area and may be used by wolves for movement between blocks of suitable habitat.

The allotment lacks the basic components that define jaguar habitat based on the description

provided by the USDI USFWS (2013a) Federal Register Notice for designating critical habitat. The jaguar is most commonly found in warm, tropical climates that are usually associated with water. Jaguars are rarely found in extensive arid areas and generally avoid open country like grasslands and Desertscrub as they prefer closed vegetative structures of nearly every tropical forest type. Due to the allotment's biotic communities consisting primarily of Great Basin Conifer Woodland, Petran Montane Conifer Forest, and Plans and Great Basin Grassland communities, jaguars are expected to be absent from the allotment.

The black-footed ferret is associated with native grassland communities and relies solely on prairie dog burrows for shelter and suitable dens to raise their young (USDI USFWS 2017). They are highly specialized predators that rely on prairied dogs for survival, which make up more than 90 percent of their diet (USDI USFWS 2017). Gunnison prairie dogs were noted in the AZGFD report as having the potential to occur in this area based on predicted range models; however, no prairie dogs have been observed on the allotment. Based on the ESDs of this allotment and the results of monitoring data, as described below in Section 6, BLM-administered portions of the allotment contain suitable habitat to support this species if it was present. Due to the lack of their primary prey species and source for burrows, this species is expected to be absent from the allotment.

The New Mexico meadow jumping mouse has exceptionally specialized habitat requirements in order to support its life history needs and maintain an adequate population size (USDI USFWS 2014). They require tall and dense riparian herbaceous vegetation primarily composed of sedges and forbs, which is only found when wetland vegetation achieves full growth potential associated with seasonally available or perennial flowing water (USDI USFWS 2014). This species also requires an intact upland area that is up gradient and beyond the floodplain of rivers and streams and adjacent to riparian areas and wetlands for building nests or using burrows for reproduction and winter hibernating (USDI USFWS 2014).

The Chiricahua leopard frog has various habitat requirements for each stage of its life history. Some of the most important habitat features include permanent or nearly permanent water that is free or relatively free from non-native predators (SESAT 2008). They also require shallow water with emergent and perimeter vegetation that provide areas for egg deposition, tadpole and adult thermoregulation sites, and foraging sites (SESAT 2008). Deeper water, root masses, and undercut banks provide refuge from predators and potential hibernacula during the winter (SESAT 2008). It is also important that the water is relatively clean and not overly polluted by livestock excrement or chemical pollutants (SESAT 2008).

The southwest willow flycatcher is a riparian obligate species that nests and forages in dense riparian habitats along streams, rivers, lakesides, and wetlands at elevations below 8,500 feet (USDI USFWS 2013b). Some of the more common plant species used for nesting are willow, saltcedar, boxelder, Russian olive, buttonbush, and mesquite (USDI USFWS 2013). Migration also occurs along riparian corridors.

The yellow-billed cuckoo is a riparian obligate species that utilize cottonwood gallery forests and may use upland areas for foraging. The allotment does not contain the primary riparian habitat; however, yellow-billed cuckoos may utilize the upland areas temporarily during times of migration.

The Zuni bluehead sucker, little Colorado spinedace, and the Apache trout are not expected to be present within the BLM-administered portions of the allotment due to the absence of perennial riparian areas.

The northern Mexican gartersnake is known to be found in both lotic and lentic habitats including Cienegas, stock tanks, and river habitats including pools and backwaters (USDI USFWS 2016). There are no recorded observations of the northern Mexican gartersnake being present within the allotment, and the lack of appropriate riparian habitat suggests that the northern Mexican gartersnake is absent from the BLM-administered portions of the allotment.

2.3.3.2 BLM Special Status Species

The BLM sensitive species that have suitable habitat present and/or are known to exist or have the potential to exist within this allotment are the northern leopard frog (low potential), bald eagle (wintering only), ferruginous hawk, American peregrine falcon, Northern goshawk, Western burrowing owl, golden eagle, pinyon jay, Arizona myotis, spotted bat, pale Townsend's big-eared bat, and the Gunnison's prairie dog. A total of three USFWS Birds of Conservation Concern (USDI USFWS, 2008) not already addressed as BLM sensitive species have the potential to occur within the allotment and are included in Appendix A. The Birds of Conservation Concern 2008 list considers bird species that are nongame species, gamebirds without a hunting season, subsistence-hunted nongame birds in Alaska, and ESA candidate, proposed, and recently delisted species (USDI USFWS 2008). Data derived from the Arizona Game and Fish Department Environmental Online Review Tool (AZGFD, N.d.) was used for the migratory bird analysis.

The allotment offers an array of habitats for migratory birds, providing valuable food and cover. Migratory species of concern that have the highest potential to occur on the allotment include several raptor species (i.e. hawks, eagles, owls, falcons) and a variety of passerine species. No surveys have been conducted specifically within this allotment for this LHE to determine presence, but these species have the potential of occurring if habitat is available. The Gunnison prairie dog utilizes grasslands and open shrub habitat for burrowing and foraging. Bird species utilize the grassland, open shrub, and rocky outcrop habitat for hunting prey. Bat species may occur on the allotment if roosting habitat is available. Generally, the composition, structure, and distribution of habitat for all classifications of sensitive species are intact and would be suitable for use if the species were present.

2.3.3.3 Species of Economic and Recreational Importance

Based on the AZGFD Environmental Online Review Tool report (AZGFD, N.d.), the following species of economic and recreational importance may occur within or in proximity to the Wildcat Creek Allotment: America pronghorn, elk, Merriam's turkey, mule deer, band-tailed pigeon, mountain lion, red squirrel, and the mourning dove. Mountain lions occur in limited numbers or only occasionally on the allotment as resources meet their needs. Grasslands with dispersed shrub thickets, cacti and palo verde offer forage and cover habitat for mule deer, pronghorn, and the mourning dove species. The band-tailed pigeon prefers dry mountain forested habitat, which is absent from this allotment. Elk and Merriam's turkey prefer forested habitat with open grassland meadows and dispersed water and will occur on the allotment in limited numbers. The red squirrel is capable of living in a variety of climates but generally requires forested habitat to some degree for nesting and foraging, which is not present on the BLM-administered portions of

this allotment. Livestock water allows game species to occupy habitat that would only be available ephemerally as precipitation allowed.

2.4 Special Management Areas

There are no special management areas within the Wildcat Creek Allotment.

2.5 Recreation Resources

Dispersed recreation activities that may occur on the Wildcat Creek Allotment, include small and big game hunting, target shooting, hiking, and off-highway vehicle operation. The allotment is comprised of mostly State Trust land, with some private land.

2.6 Cultural Resources

Guideline 3-7 of the Arizona Standards and Guidelines provides that, "Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples."

A Class I cultural resources library records check was conducted April 11, 2017, by Safford Field Office Archaeologist Daniel L. McGrew. This library records search noted that there are no known archaeological sites, properties of traditional religious or cultural importance (i.e., traditional cultural properties), or sacred sites.

3. Grazing Management

This section discusses the grazing history, authorized use, and terms and conditions of the current lease for the Wildcat Creek Allotment.

3.1 Grazing History

The BLM grazing lease for the Wildcat Creek Allotment allows for 23 cattle year-round for a total of 276 animal unit months (AUM) on the BLM-administered land within the allotment. No changes have been made to the permitted AUMs during the evaluation period.

Grazing management on the Wildcat Creek Allotment consists of grazing on State Trust land, private land, and 1,483 acres of public land. For allotments such as Wildcat Creek, livestock grazing is authorized by the BLM under section 15 of the Taylor Grazing Act. The carrying capacity for the whole allotment is not set by the BLM; instead, the lessee is billed for the available forage utilized on public lands only.

3.2 Terms and Conditions for Permitted Use

Grazing use on the Wildcat Creek Allotment is in accordance with the terms and conditions of the term lease. A summary of the current authorized use for the allotment is provided below.

Table 5 Mandatory Terms and Conditions of the Wildcat Creek Allotment Lease

Allotment Name/Number	Livestock Number/Kind	Season of Use	Percent Public Land	Active Use (AUM)
Wildcat Creek No. 06071	23 Cattle	March 1- February 28	100	276

Source: BLM RAS

Existing Other Terms and Conditions:

- In accordance with Sec. 325, Title III, H.R. 2691, Department of the Interior and related agencies Appropriations Act, 2004 (P.L. 108-108), which was enacted on November 10, 2003, this grazing permit or lease is renewed under section 402 of the Federal land Policy and Management Act of 1976, as amended (43 U.S.C. 1752), Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010 ET SEQ.), or, if applicable, section 510 of the California Desert Protection Act (16 U.S.C. 410AAA-50). In accordance with Public Law 108-108 the terms and conditions contained in the expired or transferred permit or lease shall continue in effect under the renewed permit or lease until such time as the Secretary of the Interior completes processing of this permit or lease in compliance with all applicable laws and regulations, at which time this permit or lease may be canceled, suspended, or modified, in whole or in part, to meet the requirements of such applicable laws and regulations.
- In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements shall not be placed within 1/4 mile of any riparian area, wet

meadow or watering facility (either permanent or temporary) unless stipulated through a written agreement or decision in accordance with 43 Code of Federal Regulations (CFR) 4130.3-2 (C).

- If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; U.S.C. 3001) are discovered, the Permittee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the Authorized Officer of the discovery. The Permittee shall continue to protect the immediate area of the discovery until notified by the Authorized Officer that operations may resume.
- In accordance with 43 CFR 4130.8-1 (F): Failure to pay grazing bills within 15 days of the due date specified in the bill shall result in a late fee assessment of $25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed $250.00. Payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR Sec. 4140.1 (B) (1) and shall result in action by the authorized officer under 43 CFR Secs. 4150.1 and 4160.1-2.

4. Objectives

This section provides an overview of the Safford Field Office management objectives that are associated with the Wildcat Creek Allotment per the Phoenix Resource Management Plan (RMP) (BLM, 1989), as amended by the decision record for Arizona Standards and Guidelines. The Phoenix RMP incorporates by reference the decisions from the Eastern Arizona Grazing Final Environmental Impact Statement (FEIS) Record of Decision (ROD) (1987).

4.1 Land Use Plan Management Objectives

- Grazing Management (GM)-02: The grazing program in the area is managed under the provisions of the Taylor Grazing Act of 1934, Federal Land Policy and Management Act of 1976 (FLPMA), and the Public Rangelands Improvement Act of 1978. [Phoenix] RMP page 14-15.
- GM-03: Management of rangeland resources is guided by the Range Program Summary (RPS) ROD, which selected the Preferred Alternative analyzed in the 1987 Arizona Grazing FEIS. [Phoenix] RMP page 15.
- Wildlife/Fisheries (WF)-03: Wildlife and plants which are federally listed or proposed for listing as either threatened or endangered are protected under provisions of the Endangered Species Act of 1973, as amended. [Phoenix] RMP page 15.
- WF-04: It is BLM policy to avoid jeopardizing the continued existence of any listed or proposed species and to actively promote species recovery. [Phoenix] RMP page 15.
- WF-05: It is BLM policy to manage federal candidate species and their habitat to prevent the need for listing as threatened or endangered. [Phoenix] RMP page 15.

Further, the Phoenix RMP provides the following grazing management objectives: 1) to restore and improve rangeland condition and productivity, 2) to provide for use and development of rangeland, 3) to maintain and improve habitat and viable wildlife populations, 4) to control future management actions and 5) to promote sustained yield and multiple use.

4.2 Allotment-Specific Objectives

The Wildcat Creek Allotment is subject to the following land health objectives as established in the Arizona Standards for Rangeland Health.

4.2.1 Land Health Standards

Standard 1 - Upland Sites

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Standard 2 - Riparian-Wetland Site

Objective: Riparian-wetland areas are in proper functioning condition.

Standard 3 - Desired Resource Conditions

Objective: Productive and diverse upland and riparian-wetland communities of native species exist and are maintained.

4.2.2 Key Area Objectives

In grazing administration, a key area is defined as a relatively small portion of a range selected because of its location, use, or grazing value as a monitoring point for grazing use. Key areas are indicator areas that reflect what is happening on a larger area as a result of on-the-ground management actions.

In 2016, the key area monitoring was conducted by U.S. Forest Service (USFS) Talent, Expertise, Agility, Mobility, and Simplicity Enterprise Unit (TEAMS). The key area, W-1, for the Wildcat Creek Allotment was established in the Shallow Loamy 10-14" p.z. (R035XA119AZ) ecological site. This key area occurs on BLM-administered land and is approximately one mile from water, which is expected to adequately represent livestock utilization for the majority of the allotment due to the distance cattle travel from water. This distance from water is appropriate for indicating vegetation changes that would be tied to livestock management.

Although there are two ecological sites on BLM-administered lands within the allotment, only one key area was established. Key areas are indicator areas that are able to reflect what is happening on a larger area as a result of on-the-ground management actions. A key area should be a representative sample of a large stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, or watershed area, etc., depending on the management objectives being addressed by the study (USDI-BLM et al., 1996). This key area (W-1) was a representative sample of the majority of the grazing allotment and was chosen because it is representative of the vegetation composition, soils, and vegetative production on BLM-administered land for the allotment. Therefore, assessments of the other ecological sites present on BLM-administered land within the Wildcat Creek Allotment have not been undertaken, as they would not provide additional meaningful data to inform the LHE.

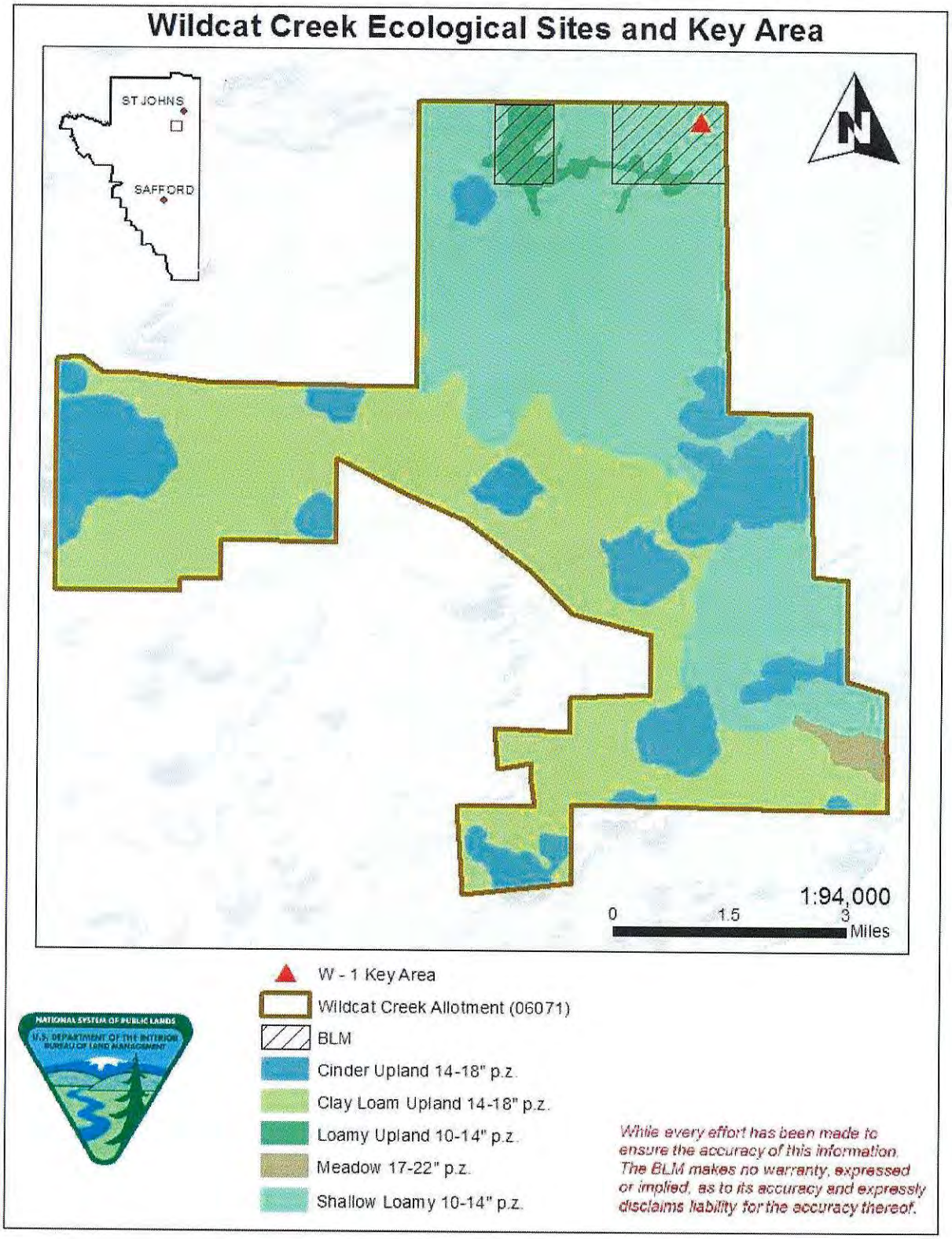
Addressed in this LHE report are the results from the key area monitoring conducted by U.S. Forest Service (USFS) TEAMS in 2016. Information for key area W-1 on the Wildcat Creek Allotment is presented in Table 6 and Figure 5 below.

Table 6 Location of the Wildcat Creek Allotment Key Area

Key Area	Ecological Site	Ecological Site ID	GPS Coordinates (NAD 83 CONUS)
W-1	Shallow Loamy 10-14" p.z.	R035XA119AZ	UTM 12S 642473 m East 3797774 m North

Source: USDA-NRCS 2015, USDA-USFS TEAMS

Figure 5 Wildcat Creek Allotment Ecological Sites and Key Area



Source: USDI-BLM 2017, USDA-NRCS 2015

Standard 1 - Upland Sites

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion that are None to Slight or Slight to Moderate are appropriate for this ecological site as indicated by ground cover, litter, rock, vegetative (canopy) cover, and signs of erosion. This objective applies to the key area and corresponding ecological site. A departure rating of Moderate or greater would indicate that the key area is not achieving this standard. A departure rating of None to Slight or Slight to Moderate would indicate that the key area is achieving this standard.

Standard 2 - Riparian-Wetland Site

Objective: Riparian-wetland areas are in proper functioning condition.

Standard 2 is **not applicable** because no riparian-wetland sites exist within the Wildcat Creek Allotment.

Standard 3 - Desired Resource Conditions

Objective: Productive and diverse upland and riparian-wetland communities of native species exist and are maintained.

Desired plant community (DPC) objectives are criteria established to evaluate a site's capability of achieving desired resource conditions. DPC objectives are typically specific to the ecological site within the allotment. For further information on how DPC objectives were established refer to Appendix C: Desired Plant Community Composition

Desired resource conditions are based upon the following DPC objectives:

- Canopy/Basal cover
- Plant community composition
- Bare ground
- Litter

Canopy/Basal Cover

The ESD reference sheet for Shallow Loamy 10-14" p.z. (R035XA119AZ) characterizes the site by a relatively uniform distribution of mostly grasses with some shrubs and a few forbs, and some locations have an open scattered tree canopy. The cover values, especially basal cover, is reduced by the amount of rock fragment ground cover. Both cover values, particularly canopy cover, decrease during prolonged drought. This site's reference sheet indicates that canopy cover averages 35 percent and basal cover averages 10 percent (Indicator 10). The DPC objectives are as follows:

- Maintain Canopy Cover on average at 35 percent
- Maintain Basal Plant Cover on Average at 10 percent

Plant Community Composition

The ESD reference sheet for Shallow Loamy 10-14" p.z. (R035XA119AZ) characterizes the

plant community by a relatively uniform distribution of mostly grasses with some shrubs and a few forbs, and some locations have an open scattered tree canopy.

This sites' reference sheet provides information on annual production by plant type and canopy cover, this information can be used to calculate species composition for a given ecological site. The data from the Shallow Loamy 10-14" p.z. (R035XA119AZ) Ecological site is summarized in Appendix C, along with the methodologies used to calculate species composition.

The DPC objectives for plant community composition are to maintain grasses at 57-78 percent, shrubs at 13-29 percent, forbs at 3-8 percent, and trees at 2-6 percent. This plant community composition objective is considered adequate for providing cover and forage for wildlife and livestock. Refer to

Bare Ground

The ESD reference sheet for Shallow Loamy 10-14" p.z. (R035XA119AZ) characterizes the site as having a varying composition and production, due to the yearly conditions, location, aspect, and the natural variability of the soils.

This site's reference sheet indicates that bare ground has an acceptable average range of 20-40 percent (Indicator 4). Sites with a greater cover of rock fragments or bedrock have less bare ground.

Litter Cover

The ESD reference sheet for Shallow Loamy 10-14" p.z. (R035XA119AZ) characterizes litter cover as mostly herbaceous, but up to one third may be woody. Fine litter will be transported by wind and in short water flow pathways, while a small percentage stays in place and heavier, coarse woody litter and duff will accumulate under shrub and tree canopies. Litter movement may be greater on very shallow soils or in areas adjacent to large expanses of rock outcrop. There is generally less litter on rocky sites. Litter amounts increase during the first few years of drought then decrease in later years. This site's reference sheet indicates that the acceptable litter average is 20-30 percent (Indicator 14).

Summary

In summary, the Wildcat Creek Allotment desired resource conditions, based on the Shallow Loamy 10-14" p.z. (R035XA119AZ) ecological site, are presented as the following evaluation area DPC objectives:

- Maintain an average canopy cover of 35 percent and an average basal cover at 10 percent.
- Maintain a plant community composition at 57-78 percent grasses, 13-29 percent shrubs, 3-8 percent forbs, and 2-6 percent trees.
- Maintain bare ground between 20-40 percent.
- Maintain litter cover between 20-30 percent.

The recommended levels of canopy and basal vegetative cover will provide sufficient cover for wildlife species, such as antelope and small game, and will prevent accelerated erosion and

provide site stabilization. In addition, maintaining the DPC objectives for plant community composition for grasses, shrubs and forbs, will provide important nesting and escape cover for birds, as well as provide adequate forage for wildlife and livestock on the Wildcat Creek Allotment while continuing to achieve land health standards.

BLM-administered land is only five percent of the overall Wildcat Creek Allotment, which is generally intermingled in checkerboard fashion with state, private, and other land ownerships. As a Section 15 lease, there are limitations to the degree in which the BLM can control or influence plant community changes across the broader allotment. The DPC objectives established above are realistic in terms of what is possible to achieve within the BLM-administered portions of the allotment.

5. Rangeland Inventory and Monitoring Methodology

The Arizona standards for rangeland health were assessed for the Wildcat Creek Allotment by a USFS interdisciplinary (ID) team on May 12, 2016. The ID team consisted of a rangeland management specialist and a wildlife biologist. Documents and publications used in the assessment process include the Web Soil Survey (NRCS, 2017), ESDs located within MRLA 35 (NRCS, 2009), Interpreting Indicators of Rangeland Health Technical Reference 1734-6 (USDI-BLM et al., 2005), Sampling Vegetation Attributes (USDI-BLM et al., 1996), and the National Range and Allotment Handbook (USDA-NRCS, 2003). A complete list of references is included at the end of this document. All are available for public review in the BLM Safford Field Office. The ID team used rangeland monitoring data and professional observations to assess conformance with the Arizona standards for rangeland health.

5.1 Monitoring Protocols

Monitoring occurred on the Wildcat Creek Allotment at key area W-1. Quantitative measurements for cover and species composition were collected along each transect utilizing the line point intercept monitoring method and were analyzed in conjunction with qualitative indicators of soil quality, hydrologic function, and biological health through the indicators or rangeland health protocol. This was completed to assess the existing conditions within the ecological site Shallow Loamy 10-14" p.z. (R035XA119AZ). The existing conditions were compared to site specific reference conditions established by the NRCS, which are considered to be representative of relatively undisturbed states within a given soil-plant community type. This comparison between existing and reference conditions determines the level of departure from the potential natural community.

The key area was recorded with a global positioning system (GPS) unit using a projection of North American Datum (NAD) 83. Inventory and monitoring data are provided in Appendix B.

5.1.1 Line Point Intercept

The method used to obtain transect data pertaining to species composition and soil cover is line point intercept (LPI). This method consists of a horizontal, linear measurement of plant intercepts along the course of a line (tape) 100 feet in length. The LPI is a rapid and accurate method for measuring occurrence of grass or grass-like plants, forbs, shrubs, and trees in which vegetation composition is extrapolated. It also quantifies soil cover, including vegetation, litter, rocks, and biotic crusts. These measurements are indicators of wind and water erosion, water infiltration, and the ability of the site to resist and recover from degradation.

5.1.2 Interpretive Indicators of Rangeland Health

The five steps for an Interpretive Indicators of Rangeland Health Assessment (IIRHA) are protocols for evaluating the three rangeland health attributes (soil and site stability, hydrologic function, and biotic integrity), as outlined in Technical Reference 1734-6. They are:

Step 1. Identify the Key Area; Determine the Soil and Ecological Site

Step 2. Obtain or Develop the Reference Sheet and the Corresponding Evaluation Matrix

Step 3. Collect Supplementary Information

Step 4. Rate the 17 Indicators on the Evaluation Sheet

Step 5. Determine the Functional Status of the Three Rangeland Health Attributes:

1. Soil and site stability (S) – The capacity of an area to limit redistribution and loss of soil resources (including nutrients and organic matter) by wind and water.
2. Hydrologic function (H) – The capacity of an area to capture, store, and safely release water from rainfall, run-on and snowmelt (where relevant), to resist a reduction in this capacity, and to recover this capacity when a reduction does occur.
3. Biotic integrity (B) – The capacity of the biotic community to support ecological processes within the normal range of variability expected for the site, to resist a loss in the capacity to support these processes, and to recover this capacity when losses do occur. The biotic community include plants, animals, and microorganisms occurring both above and below ground.

The IIRH assessment provides information on the functioning of ecological processes (water cycle, energy flow, and nutrient cycle) relative to the reference state for the ecological site or other functionally similar unit for that land area. This assessment provides information that is not available with other methods of evaluation. It gives an indication of the status of the three rangeland attributes chosen to represent the health of the "key area" (i.e., the area where the evaluation of the rangeland health attributes occurs). The following are the 17 indicators that are evaluated during an IIRH assessment and the attribute(s) they measure:

1. Rills: S, H
2. Water Flow Patterns: S, H
3. Pedestals and/or Terracettes: S, H
4. Bare Ground: S, H
5. Gullies: S, H
6. Wind-Scoured, Blowout, and/or Depositional Areas: S
7. Litter Movement: S
8. Soil Surface Resistance to Erosion: S, H, B
9. Soil Surface Loss or Degradation: S, H, B
10. Plant Community Composition and Distribution Relative to Infiltration and Run off: H
11. Compaction Layer: S, H, B
12. Functional/Structural Groups: B
13. Plant Mortality/Decadence: B
14. Litter Amount: H, B
15. Annual Production: B
16. Invasive Plants: B
17. Reproductive Capability of Perennial Plants: B

Attribute ratings reflect the degree of departure from expected levels for each indicator per the ecological site reference sheet. The degree of departure may be categorized (rated) as:

- Extreme to Total
- Moderate to Extreme
- Moderate
- Slight to Moderate
- None to Slight

6. Management Evaluation and Summary of Studies Data

The following information is the evaluation and summary of the 2016 inventory and monitoring that have been conducted on the Wildcat Creek Allotment.

6.1 Actual Use

Full permitted AUMs have been implemented on the Wildcat Creek Allotment and are authorized as a section 15 grazing lease. AUMs are calculated for BLM-administered land only. Lessees are billed for their maximum use available on public lands unless nonuse is requested and approved. Nonuse by the lessee was not requested during the evaluation period.

Table 7 Actual Use on Wildcat Creek Allotment

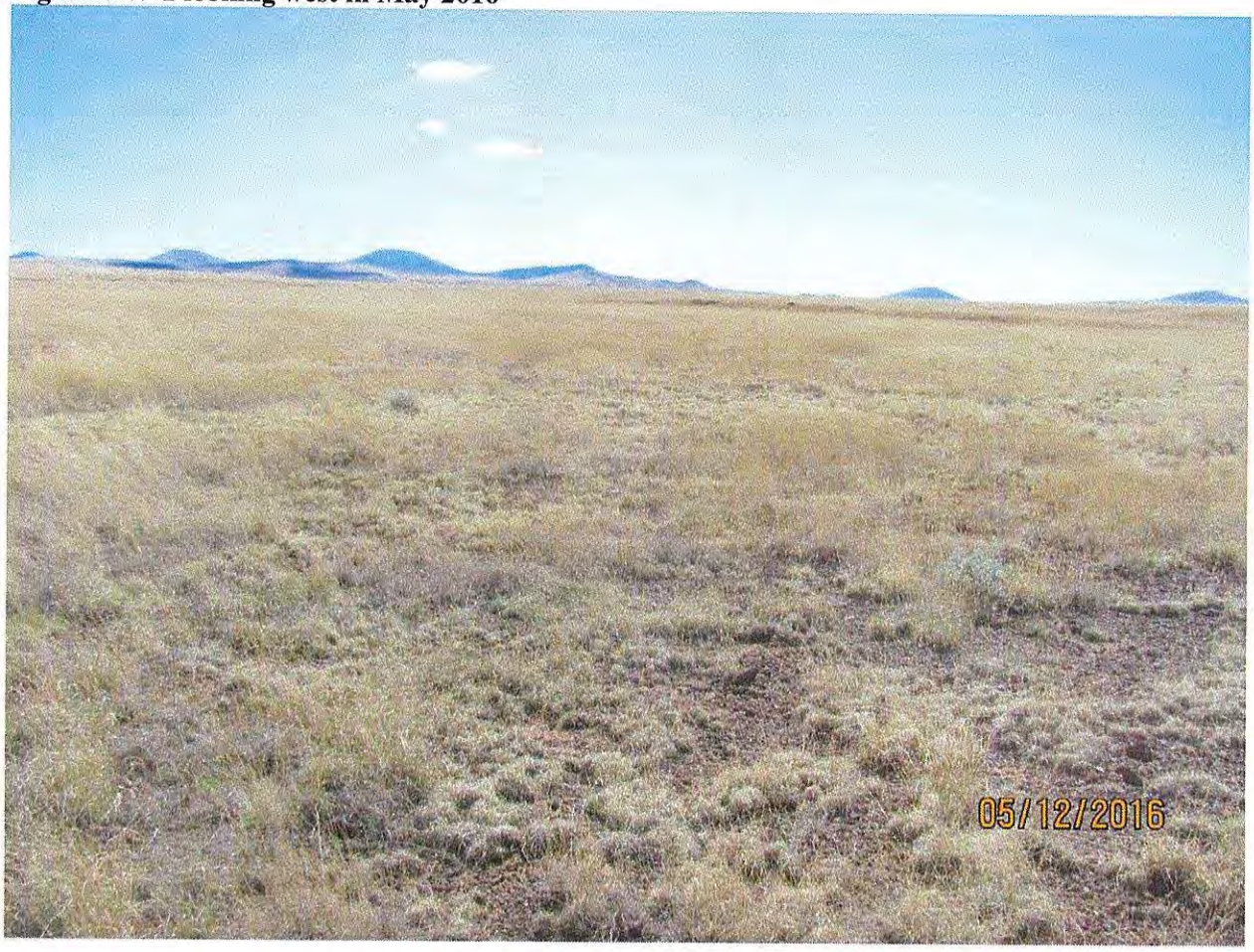
Grazing Fee Year	Permitted AUMs	Actual AUMs	% AUMs Used
2007	276	276	100%
2008	276	276	100%
2009	276	276	100%
2010	276	276	100%
2011	276	276	100%
2012	276	276	100%
2013	276	276	100%
2014	276	276	100%
2015	276	276	100%
2016	276	276	100%

Source: BLM RAS billing statements.

6.2 Interpreting Indicators of Rangeland Health

A IIRH assessment was completed at key area W-1 (refer to Figure 6).

Figure 6 W-1 looking west in May 2016



The IIRH assessment evaluates three interrelated attributes, soil/site stability, hydrologic function, and biotic integrity and is designed to be used at the ecological site scale. Ratings of Moderate or more are considered to indicate resource concerns for soil erosion, water quantity, and plant productivity. It is important to remember that these ratings are made relative to the potential for the site. For example, a site with highly erodible soils and low potential for stabilizing vegetation may be rated as having a Slight departure from reference conditions even though the actual amount of soil movement is significant, while a site with a high potential for stability rated "Moderate" may have relatively little soil movement. A summary of the assessment conducted at key area W-1 on the Wildcat Creek Allotment is presented in Table 8 below.

Table 8 Summary of IIRH Assessment Ratings

Key Area	Ecological Site	Range Health Attributes – Degree of Departure		
		Soil and Site Stability	Hydrologic Function	Biotic Integrity
W-1	Shallow Loamy 10-14" p.z. (R035XA119AZ)	None to Slight	None to Slight	None to Slight

17 Indicators: Key Area W-1 (Shallow Loamy 10-14" p.z. [R035XA119AZ])

For the 17 indicators of rangeland health, the ecological site reference sheet condition indicates:

1. Few rills may occur on steeper slopes due to moderate permeability, rapid runoff, and shallow soil depths. Rills should be very uncommon in areas that have a lot of rock fragments on the surface and in the soil profile.
2. Water flow patterns may be common due to slow to moderate permeability, rapid runoff, and shallow depth of soils. Flow patterns will increase after drought dieback. There will be more water flow patterns on very shallow (<10") soils and in areas adjacent to large expanses of rock outcrop.
3. A few pedestals and terracettes may form, but they should be very short.
4. Bare ground ranges from 20-40 percent. Sites with greater cover of rock fragments or bedrock have less bare ground. The site has an average available water capacity of two inches, so potential to produce plant cover is very low, except in areas where plants have access to water in bedrock crops. Drought may cause an increase in bare ground.
5. No gullies or erosion should be present.
6. No wind scoured, blowouts and/or depositional areas should be present.
7. Herbaceous and fine woody litter will be transported in water flow pathways. Coarse woody litter will remain under shrub and tree canopies. Litter movement may be greater on very shallow soils or in areas adjacent to large expanses of rock outcrops.
8. Soil aggregate stability ratings average 5 under plant canopies and 3 in the interspaces. Many areas are protected by blue grama root mats and rock fragments. Soil surface textures range from sandy loam to clay loam. Many soils have a significant amount of rock fragment armor on the surface and in the profile. When well vegetated or covered with rock armor, soils have a high resistance to both water and wind erosion.
9. Surface structure is predominantly granular (weak fine, moderately fine, and very strong) but some soils have sub angular blocky (weak to moderate, fine to medium) or massive surface structures. Some soils have a platy (weak, medium) surface structure. Surface thickness typically ranges from 1-12 inches. Surface color varies depending on parent material.
10. This site is characterized by a relatively uniform distribution of mostly grasses with some shrubs and a few forbs. Some locations have an open scattered tree canopy. Canopy cover averages 35 percent (20 percent grasses, 3 percent forbs, 10 percent shrubs, 2 percent trees). Basal cover of plants averages 10 percent (8 percent grasses, 1 percent forbs, 1 percent shrubs, trace moss/lichen). The cover (especially basal cover) is

reduced by the amount of rock fragment ground cover. Both cover values (especially canopy cover) decrease during a prolonged drought. This type of plant community is moderately effective at capturing and storing precipitation.

11. The occurrence of compaction layers should be rare to none. These soils are not easily compacted due to large amount of rock fragments on the surface and in the profile. In areas without significant rock fragments, however, most soil types may be easily compacted when wet. One soil sometimes has a natural platy surface structure.
12. Dominant: cool season bunchgrasses. Sub-dominant: warm season bunchgrasses >warm season colonizing grasses>shrubs. Minor: forbs > trees > cacti. Trace: cool season colonizing grasses = annual grasses
13. All functional groups are adapted for survival except during the most severe droughts. Severe winter droughts affect shrubs and trees the most. Severe summer droughts affect grasses the most. Very shallow (<10") soils will show the most mortality in all functional groups.
14. This site is comprised mostly of herbaceous litter, but up to 1/3 may be woody litter. Litter amounts increase during the first few years of drought, then decrease in later years. Average percent litter cover ranges from 20-30 percent and depth 1/8 to 1/4 inches.
15. Expected annual production is 250-500 lbs./acre (dry weight) in drought years; 400-650 lbs./acre in median years; 550-800 lbs./acre in wet years.
16. Greene's rabbitbrush, Douglas rabbitbrush, broom snakeweed, baby aster, and Whipple cholla cactus are native to the site, but have the potential to increase and dominate the area after disturbance. Oneseed juniper is native to the site but has the potential to increase and dominate after unmanaged grazing and/or fire exclusion. Russian thistle is an exotic forb that can invade the site from neighboring farm fields and disturbed lands if the soil is disturbed.
17. All plants native to this site are adapted to the climate and are capable of producing seeds, stolons and rhizomes in all but the most severe droughts.

Rangeland Health Attribute 1: Soil and Site Stability

There were no rills or gullies observed, these indicators were rated None to Slight. Water flow patterns, pedestals and/or terracettes were not observed and were rated None to Slight. Bare ground was measured at one percent, the site has 60 percent canopy cover in addition to the soils being well armored by rock fragments and was rated None to Slight. There was no evidence of wind-scouring observed and was rated None to Slight. All litter size classes remained at the base of plants with little to no movement, and was rated None to Slight. Soil surface resistance to erosion was rated None to Slight. The soil surface is naturally armored, rock or rock fragments greater than one quarter and less than or equal to three inches covered 56 percent, while fragments greater than three inches covered 16 percent of the soil surface. Canopy cover was measured at 60 percent and 23 percent basal cover. Soil surface loss or degradation was None to Slight as soils are stable and in place. Compaction layers were not present and not restricting water infiltration or root penetration and was rated None to Slight.

Ten indicators for soil and site stability were rated None to Slight. Therefore, the overall rating for the soil and site stability attribute is None to Slight.

Rangeland Health Attribute 2: Hydrologic Function

There were no rills or gullies observed, these indicators were rated None to Slight. Water flow patterns, pedestals and/or terracettes were not observed and were rated None to Slight. Bare ground was measured at one percent, the site has 60 percent canopy cover in addition to the soils being well armored by rock fragments and was rated None to Slight. Soil surface resistance to erosion was rated None to Slight. Soil surface is naturally armored, rock or rock fragments greater than one quarter and less than or equal to three inches covered 56 percent, while fragments greater than three inches covered 16 percent of the soil surface. Canopy cover was measured at 60 percent and 23 percent basal cover. Soil surface loss or degradation was None to Slight as soils are stable and in place. Compaction layers were not present and not restricting water infiltration or root penetration and was rated None to Slight. Litter was measured at 29 percent and within the reference sheet parameters, therefore rated None to Slight. Plant community composition and distribution relative to infiltration was rated None to Slight. Vegetative cover is comprised of primarily perennial grasses and a small number of shrubs (see Appendix B). This vegetation composition is effective at soil stability due to the basal area cover and root systems that are not restricted by a compaction layer. This ecological site has a moderate permeability, this combined with the plant community makes it moderately effective at capturing and storing precipitation.

Ten indicators for hydrologic function were rated None to Slight. Therefore, the overall rating for the hydrologic function attribute is None to Slight.

Rangeland Health Attribute 3: Biotic Integrity

Soil surface resistance to erosion was rated None to Slight. Soil surface is naturally armored, rock or rock fragments greater than one quarter and less than or equal to three inches covered 56 percent, while fragments greater than three inches covered 16 percent of the soil surface. Canopy cover was measured at 60 percent and 23 percent basal cover. Soil surface loss or degradation was None to Slight as soils are stable and in place. Compaction layers were not present and not restricting water infiltration or root penetration and was rated None to Slight.

Functional structural groups were rated None to Slight. Functional structural groups were mostly as described in the ESD, with relatively even distribution of mostly grasses with some shrubs and a few forbs, it was noted that cool season grasses were lacking, however there was good cover with warm season grasses. Plant mortality/decadence was rated None to Slight, as all age classes were evenly represented. The ESD describes the current functional group as being adapted to survival in all years, except during the most severe droughts. Litter was measured at 29 percent, therefore rated None to Slight. Annual production was rated as None to Slight and is appropriate for the site. Invasive plants were not present and were rated None to Slight. Reproductive capability of perennial plants was rated None to Slight, as the native plants are adapted to the climate and are capable of reproducing except during the most severe droughts.

Nine indicators for biotic function were rated as None to Slight. Therefore, the overall rating for the biotic function attribute is None to Slight

Determinations of Land Health Standards

6.3 Standard 1: Upland Sites

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and land form (ecological site).

Determination:
☒ Meeting the Standard
☐ Not Meeting the Standard; Making Significant Progress Toward Standard
☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard

Rationale:
Overall, the soils throughout the Wildcat Creek Allotment are productive, stable, and in a sustainable condition. The key area monitoring data reflects the conditions described in the ESD. The data at the key area shows that canopy cover, litter, and rock cover are adequate to ensure soil stabilization and appropriate permeability rates within the ecological sites. Little to no sign of erosion was observed at the site. Since there were no rills or gullies present, the indicators were rated None to Slight. Pedestals and/or terracettes were rated None to Slight and were not observed. Wind-scouring and litter movement were both rated None to Slight, as no wind-scouring was observed, and litter remained at the plant base.

6.4 Standard 2: Riparian-Wetland Sites

Objective: Riparian-wetland areas are in proper functioning condition.

Determination:
☐ Meeting the Standard
☐ Not Meeting the Standard; Making Significant Progress Toward Standard
☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard
☒ Standard Does Not Apply

Rationale:
There are no riparian-wetland sites located on the BLM-administered portions of the Wildcat Creek Allotment. The U.S. Fish and Wildlife Service rendered Biological Opinion (BO) on the Gila District Livestock Grazing Program #22410-2006-F-0414 (2012). Although Table 3 of the BO shows that the Wildcat Creek Allotment contained 52 acres of "not yet evaluated" riparian habitat, it also acknowledges in Table 1 that the Wildcat Creek Allotment contained no riparian habitat. This has been determined through site visits, a review by the Safford Field Office Hydrologist using GIS and aerial imagery and is addressed in section 2.2.5 of this document.

6.5 Standard 3: Desired Resource Conditions

Objective: Productive and diverse upland and riparian-wetland communities of native species exist and are maintained.

Determination:

☒ Meeting the Standard
☐ Not Meeting the Standard; Making Significant Progress Toward Standard
☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard

Rationale:
Based on the monitoring data and this evaluation, current livestock grazing is allowing the Wildcat Creek Allotment to maintain and achieve the DPC objectives identified in *Section 4.2.2 Key Area Objectives,* for continued land health and wildlife habitat. The IIRH assessment indicates that soil and site stability, hydrologic function, and biotic integrity attributes are meeting the standard as outlined in Standard 1 for this site. LPI data and the IIRH assessment indicate that the site is achieving the objectives for canopy cover, plant community composition, bare ground, and litter. The grass, shrub and forb composition and density are sufficient to provide forage and shelter for livestock and the wildlife species discussed in Section 2.3.3.

The DPC objectives for canopy cover are established as follows: maintain an average canopy cover at 35 percent, and an average basal cover at 10 percent. The data collected for the LHE indicates:

> W-1: Canopy cover was measured at 60 percent, and basal cover at 23 percent. Both measurements are within or exceed the range of acceptability for the objective. Exceeding the canopy cover objective increases the amount of shelter for a variety of wildlife species, will more efficiently prevent accelerated erosion, and provides site stabilization. The DPC objectives for canopy cover on the Wildcat Creek Allotment are being achieved.

The DPC objectives for plant community compositions are established as follows: Maintain an average of 57-78 percent grasses, 13-29 percent shrubs, 3-8 percent forbs, and 2-6 percent trees. (Refer to Appendix C). The data collected for the LHE indicates:

> W-1: Plant community composition gathered through LPI data (see Appendix B) is as follows, grasses are the dominant vegetation type at 92 percent composition, followed by shrubs at six percent, forbs at two percent and no trees were observed during monitoring.
>
> The average compositions calculated from the ESD reference sheet can show variance from the actual data gathered during the LPI monitoring method. The IIRH technical reference 1734-6 provides a departure matrix for the indicators, Indicator ten "Effects of Plant Community Composition and Distribution on Infiltration" is measured by reduction of infiltration. This indicator was rated "none to slight" in the IIRH assessment completed for key area W-1. Grasses remained the dominant group of vegetation followed by shrubs and forbs. Shrubs were slightly below the ranges established from the ESD sheet, but the overall impact of infiltration would not be affected by these subtle differences. The composition of grasses and shrubs indicates that there is suitable habitat to support a variety of raptor and passerine species, as well as the black-footed ferret and Gunnison's prairie dog, and many of the game species discussed in Section 2.3.3. Overall the DPC objectives for plant community composition on the Wildcat Creek Allotment is being achieved.

The DPC objective is to maintain bare ground between 20-40 percent and was deemed sufficient for preventing accelerated erosion. The data collected for the LHE indicates:

> W-1: Bare ground was measured at one percent. This was due to the presence of rock or rock fragments on the site, reducing the bare ground and providing resistance to erosion. Some bare ground is needed to provide burrowing opportunities for the western burrowing owl, black-footed ferret and the Gunnison's prairie dog, but maintaining a low percentage is also desirable in order to decrease the chance of soil erosion and improve the site's water infiltration. The DPC objective for bare ground on the Wildcat Creek Allotment is being achieved and exceeded.

The DPC objective for litter is a range of 20-30 percent. Data collected for the LHE indicates:

> W-1: Litter was measured at 29 percent. Overall, the DPC objective for litter on the Wildcat Creek Allotment is being achieved.

7. Recommended Management Actions

7.1 Terms and Conditions

Based on the determinations in *Section 7 Determinations of Land Health Standards*, the following management actions are recommended:

1. Grazing management on the Wildcat Creek Allotment will continue in accordance with the mandatory terms and conditions of the term lease, as follows:

Allotment Name/ Number	Livestock Number/Kind	Grazing Period Begin - End	% Public Land	Active Use (AUM)
Wildcat Creek (No. 06071)	23 Cattle	3/1 - 2/28 Yearlong	100	276

2. Continue with the current Other Terms and Conditions:

   - In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements shall not be placed within a 1/4 mile of any riparian area, wet meadow or watering facility (either permanent or temporary) unless stipulated through a written agreement or decision in accordance with 43 CFR 4130.3-2(c).

3. Add to the current Other Terms and Conditions:

   - The Lessee shall submit upon request a report of the actual grazing use made on this allotment for the previous grazing period, March 1 to February 28 upon request. Failure to submit such a report by March 15 of the current year may result in suspension or cancellation of the grazing lease.

   - Lessee shall provide reasonable administrative access across private and leased lands to the BLM for the orderly management and protection of the public lands

4. The following Other Terms and Conditions should be deleted as it is a duplicate of the Standard Terms and Conditions associated with this BLM lease:

   - In accordance with 43 CFR 4130.8-1 (F): Failure to pay grazing bills within 15 days of the due date specified in the bill shall result in a late fee assessment of $25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed $250.00. Payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR Sec. 4140.1 (B) (1) and shall result in action by the authorized officer under 43 CFR Secs. 4150.1 and 4160.1-2.
   - If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; U.S.C. 3001) are discovered, the Permittee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the Authorized Officer of the discovery. The Permittee shall continue to protect the immediate area of the discovery until notified by the Authorized Officer that operations may resume.

5. The following statement will be removed as it is not a Term and Condition

   - In accordance with Sec. 325, Title III, H.R. 2691, Department of the Interior and related agencies Appropriations Act, 2004 (P.L. 108-108), which was enacted on November 10, 2003, this grazing permit or lease is renewed under section 402 of the Federal land Policy and Management Act of 1976, as amended (43 U.S.C. 1752), Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010 ET SEQ.), or, if applicable, section 510 of the California Desert Protection Act (16 U.S.C. 410AAA-50). In accordance with Public Law 108-108 the terms and conditions contained in the expired or transferred permit or lease shall continue in effect under the renewed permit or lease until such time as the Secretary of the Interior completes processing of this permit or lease in compliance with all applicable laws and regulations, at which time this permit or lease may be canceled, suspended, or modified, in whole or in part, to meet the requirements of such applicable laws and regulations.

8. List of Preparers

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Troy Grooms and Doug Middlebrook, USFS TEAMS

9. Consultation

Arizona Game and Fish Department
USFWS, Arizona Ecological Services
Norman R. and Karen Brown, Wildcat Creek Allotment Lessee

10. Authorized Officer Concurrence

I have reviewed the determinations presented in *Section 8 Determinations of Land Health Standards* and the grazing and other management actions identified in *Section 9 Recommended Management Actions*.

___ I concur with the conclusions and recommendations as written.

___ I do not concur.

___ I concur, but with the following modifications.

(for) 7/8/2020

Scott C. Cooke
Field Manager
BLM Safford Field Office

Date

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Appendix A. Wildlife

Threatened & Endangered Species			
Species	**Status**	**Critical Habitat**	**Comments**
Chiricahua leopard frog *Rana chiricahuensis*	Threatened	Designated	Chiricahua leopard frog occurs in wetlands of the sky island regions of central and southeast Arizona. There are no natural wetlands within the BLM-administered portions of the allotment and there are no known populations of the species at the man-made water source. The USFWS issued a letter of concurrence (USDI USFWS 2012) for the determination of "may affect, not likely to adversely affect" regarding the Gila District Grazing Program's actions. Conservation measures will continue to be followed and implemented.
Mexican spotted owl *Strix occidentalis lucida*	Threatened	Designated	This species occurs in the oak woodland and mixed conifer forests of mountainous areas of Arizona. There is no suitable habitat on the BLM-administered portions of the Wildcat Creek Allotment to support Mexican spotted owl and there is no critical habitat within the allotment. The USFWS issued a letter of concurrence (USDI USFWS 2012) for the determination of "may affect, not likely to adversely affect" regarding the Gila District Grazing Program's actions. Conservation measures will continue to be followed and implemented.
Southwestern willow flycatcher *Empidonax traillii extimus*	Endangered	Designated	This species is associated with riparian systems that consist of cottonwoods, willows, and saltcedar. There are no riparian systems with these habitat components on the BLM-administered portions of the allotment. This species was formally consulted on in the 2012 BO (USDI USFWS 2012) and conservation measures were provided for the allotments containing critical habitat for this species, which does not include the Wildcat Creek Allotment.

Yellow-billed cuckoo (distinct population segment) *Coccyzus americanus*	Threatened	Proposed	Yellow-billed cuckoos primarily occur in cottonwood-willow gallery forests of riparian zones of Arizona. The Wildcat Creek Allotment does not have habitat considered suitable for this species, however cuckoos may utilize upland areas of the allotment, comprised of pinyon-juniper, for 2-3 weeks prior to migration to and from suitable breeding habitat (Hughes 2015). Due to the short duration of potential occurrence and the lack of nearby habitat, the species is unlikely to be present.
Black-footed ferret *Mustela nigripes*	Endangered	No Designation	The black-footed ferret relies solely on native grasslands and the presence of prairie dogs for their prey source and for providing burrows to use for shelter and nesting. The BLM-administered portions of the Wildcat Creek Allotment provide suitable grassland habitat to support this species; however, no prairie dogs are known to occur within the allotment. Due to the absence of the key prey source this species is expected to be absent from the allotment.
Jaguar *Panthera once*	Endangered	Designated	The Wildcat Creek Allotment is not within the designated critical habitat. The USFWS issued a letter of concurrence (USDI USFWS 2012) for the determination of "may affect, not likely to adversely affect" regarding the Gila District Grazing Program's actions. Conservation measures will continue to be followed and implemented.
Mexican wolf *Canis lupus baileyi*	Endangered, experimental	No Designation	No wolves occur within the action area. If individual wolves disperse from the experimental population into the action area, humans working near individuals could disturb the wolves, but they would only move to other areas. Livestock grazing would be managed to improve or maintain the productivity of the area and would not affect the native prey base of the wolf. The USFWS issued a letter of concurrence (USDI USFWS 2012) for the determination of "may affect, not likely to adversely affect" regarding the Gila District Grazing Program's actions. Conservation measures will continue to be followed and implemented.

New Mexico meadow jumping mouse *Zapus hudsonius luteus*	Endangered	Designated	The New Mexico meadow jumping mouse has exceptionally specialized habitat requirements that include tall, dense riparian herbaceous vegetation primarily composed of sedges and forbs. This is only found when wetland vegetation achieves full growth potential associated with seasonally available or perennially flowing water. The BLM-administered portions of the Wildcat Creek Allotment do not contain these habitat components.
Northern Mexican gartersnake *Thamnophis eques megalops*	Threatened	Proposed	The northern Mexican gartersnake is a riparian obligate species. No suitable habitat exists on the BLM-administered portions of the Wildcat Creek Allotment to support this species.
Apache trout *Oncorhynchus apache*	Threatened	No Designation	No suitable aquatic habitat exists on the BLM-administered portions of the Wildcat Creek Allotment to support this species.
Little Colorado spinedace *Lepidomeda vittata*	Threatened	Designated	No suitable aquatic habitat exists on the BLM-administered portions of the Wildcat Creek Allotment to support this species. This species was consulted on in the 2012 BO (USDI USFWS 2012) and conservation measures were provided for the allotments containing critical habitat for this species, which does not include the Wildcat Creek Allotment.
Zuni bluehead sucker *Catastomus discobolus yarrowi*	Endangered	Designated	No suitable aquatic habitat exists on the BLM-administered portions of the Wildcat Creek Allotment to support this species.

Migratory Birds, Birds of Conservation Concern [1, 2]	
Species	**Comments**
American peregrine falcon *Falco peregrinus*	Addressed as BLM Sensitive in table below.
Bald eagle *Haliaeetus leucocephalus*	Addressed as BLM Sensitive in table below.

[1]The migratory birds species listed are species of particular conservation concern (e.g. Birds of Conservation Concern) that may occur on or near the allotment. It is not a list of every bird species that may be found in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. This list was compiled from data provided for multiple allotments in the region, including this allotment.

[2] Habitat information and determinations compiled from species profiles found on USFWS website. https://ecos.fws.gov

Migratory Birds, Birds of Conservation Concern [1,2]	
Common Black Hawk *Buteogallus anthracinus*	The Common black hawk is known to occur and nest along the riparian gallery forests, which do not occur on the Wildcat Creek Allotment. The species will not be impacted.
Ferruginous Hawk *Buteo regalis*	Addressed as BLM Sensitive in table below.
Golden eagle *Aquila chrysaetos*	Addressed as BLM Sensitive in table below.
Grace's warbler *Setophaga graciae*	Grace's warbler is found in open pine forest, pine-oak association, and pine savanna. Little of this habitat exists on this allotment. The species will not be impacted.
Lewis's woodpecker *Melanerpes lewis*	Lewis's woodpecker occurs in mature and burned pine forest and cottonwood. Little of this habitat exists on this allotment. The species will not be impacted.
Northern goshawk *Accipiter gentillis*	Addressed as BLM Sensitive in table below.
Pinyon jay *Gymnorhinus cyanocephalus*	Addressed as BLM Sensitive in table below.
Western burrowing owl *Athene cunicularia*	Addressed as BLM Sensitive in table below.

BLM Sensitive Species	
Species	**Comments**
Amphibians	
Northern leopard frog *Lithobates pipiens*	No perennial water or suitable aquatic habitat exist on the Wildcat Creek Allotment. Low potential of occurrence and likely no impact of livestock on the Northern leopard frog.
Birds	
American peregrine falcon *Falco peregrinus*	American peregrine falcons occur all throughout North America in open landscapes with cliffs for their nest sites. They can also be found along rivers and coastlines or in cities. During migration, they are most often found along barrier islands, mudflats, coastlines, lake edges, and mountain chains. These habitat elements are not present on the Wildcat Creek Allotment so there would be a low potential for occurrence, and likely no impact of livestock on the American peregrine falcon.
Bald eagle (wintering) *Haliaeetus leucocephalus*	Wintering bald eagles occur along the Little Colorado river and may use the allotment as foraging habitat. There are no known impacts of livestock on bald eagles.
Ferruginous hawk *Buteo regalis*	Ferruginous hawk nest in grasslands, shrublands and forest lands. Suitable nesting habitat occurs on the Wildcat Creek Allotment. There are no known impacts of livestock on ferruginous hawks.
Golden eagle *Aquila chrysaetos*	There is no suitable nesting habitat for golden eagles on the Wildcat Creek Allotment. Golden eagles may fly and hunt over the areas of the allotment. There are no known impacts of livestock on golden eagles.
Northern Goshawk *Accipiter gentillis*	Northern goshawk inhabits pine forests of mountains regions of the southwest. This habitat does not exist on the allotment.
Pinyon jay *Gymnorhinus cyanocephalus*	Pinyon jay occurs in pinyon-juniper woodland. This habitat is available on the allotment in limited amounts; therefore, this species may be impacted by livestock browsing seedling trees or low-hanging branches. This species is known to travel vast distances in response to localized abundance or shortages of forage. The objectives set in this document will not alter the production of forage for this species, resulting in impacts that are less than significant.
Western burrowing owl *Athene cunicularia*	Burrowing owls live in open, treeless areas with low, sparse vegetation, usually on gently sloping terrain. They can be found in grasslands, deserts, and sagebrush-steppe environments as well as golf courses, pastures, agricultural fields, airport medians, and road embankments. They are often associated with high densities of burrowing mammals such as prairie dogs, ground squirrels, and tortoises. This allotment supports the appropriate habitat for this species but lacks a high density of other burrowing mammals. This species is likely to have a low occurrence on the allotment and impacts of livestock would likely not affect this species.
Fish	
No perennial water or suitable aquatic habitat exist on the Wildcat Creek Allotment.	
Invertebrates	
There are no BLM sensitive invertebrates known to occur in the Wildcat Creek Allotment.	
Mammals	
Arizona myotis *Myotis occultus*	Arizona myotis occurs in ponderosa pine and oak-pine woodlands near water. Little of this habitat exists on this allotment. The species will not be impacted.

Gunnison's prairie dog *Cynomys gunnisoni*	The Gunnison's prairie dog is not known to be present on the allotment, however suitable habitat does exist and may be colonized if the species becomes more abundant in the surrounding area. This species will not be impacted.
Pale Townsend's big-eared bat *Corynorhinus townsendii*	This species occurs in pine forests and arid desert scrub, always near caves or other roosting sites. Little of this habitat occurs on the allotment. This species will not be impacted.
Spotted bat *Euderma maculatum*	Spotted bats inhabit desert scrub and open forests and are always associated with a water source such as a spring, river, creek or lake. Little of this habitat occurs on the allotment. This species will not be impacted.
Reptiles	
There are no BLM sensitive reptiles known to occur in the Wildcat Creek Allotment.	
Plants	
There are no BLM sensitive plants known to occur in the Wildcat Creek Allotment.	

Species of Economic and Recreational Importance	
Common Name	Scientific Name
America pronghorn	*Antilocapra americana*
Band-tailed pigeon	*Patagioenas fasciata*
Elk	*Cervus canadensis*
Merriam's turkey	*Meleagris gallopavo merriami*
Mule deer	*Odocoileus hemionus*
Mountain lion	*Puma concolor*
Mourning dove	*Zenaida macroura*
Red squirrel	*Sciurus vulgaris*

Appendix B. USFS TEAMS Monitoring Data 2016

Summary of W-1 Line Point Intercept monitoring data.

Key Area Information	Species	Line point intercept cover at WC-1	
		Canopy	Basal
Wildcat Creek Allotment	Blue Grama *(Bouteloua gracilis)*	42%	17%
Ecological Site ID: R035XA119AZ	James' galleta *(Pleuraphis jamesii Torr.)*	13%	5%
UTM 12S 642473 m East 3797774 m North	Winterfat *(Krascheninnikovia lanata)*	2%	0%
	Threeawn (*Aristida L.*)	2%	0%
	Perennial forbs	1%	1%
	Globe Mallow (Sphaeralcea ambigua)	0%	0%

Cover/Litter/Bare Ground	
Bare Ground	1%
Basal Cover	23%
Canopy Cover	60%
Litter	29%
Surface Fragments > ¼" & < = 3"	56%
Surface Fragments > 3"	16%

Desired Plant Community with species composition and Functional/Structural Plant Group ranking at W-1.

DPC Objectives for Plant Community Composition for Shallow Loamy 10-14" p.z. (R035XA119AZ)	Species Composition W-1	Functional/Structural Group Ranking
Grasses 57-78% Composition	BOGR2 – 68% PLJA – 21% ARIST– 3%	Dominant
	Total – 92%	
Shrubs 13-29% Composition	KRLA2 3% SPAM 3%	Minor
	Total – 6%	
Forbs 3-8% Composition	PPFF 2%	Minor
	Total – 2%	
Trees 2-6%	None observed	None observed

[1] Dominant (D) roughly 40-100% composition, Sub-dominant (S) roughly 10-40% composition, Minor Composition (M) roughly 2-10% composition, or Trace (T) roughly <2% composition.

Appendix C: Desired Plant Community Composition

The table below presents the process used for establishing Desired Plant Community Composition for the Shallow Loamy 10-14" p.z. Ecological Site. Step 1 demonstrates the process of calculating species composition using canopy cover data, this data was taken directly from indicator ten of the ESD sheet. Step 2 uses the same process but is calculated using annual production by plant type, also obtained from the ESD sheet. Step 3 of the table are the combined results based on the calculations done in Step 1 and Step 2.

Desired Plant Community Composition Methodology

ESD = Ecological Site Description for Shallow Loamy 10-14" p.z. (R035XA119AZ)

Step 1: DPC Composition Averages based on Canopy Cover from Indicator 10

Methodology: Average % composition by vegetation type = vegetation type divided by total Avg. (Note all values rounded to the nearest percent)

ESD Canopy Cover Total Vegetation	Average 35%	Average Plant type Composition
ESD Canopy Cover – Grasses	Average 20%	20/35 = Avg. composition of grasses 57%
ESD Canopy Cover – Shrubs	Average 10%	10/35 = Avg. composition of shrubs 29%
ESD Canopy Cover – Forbs	Average 3%	3/35 = Avg. composition of forbs at 8%
ESD Canopy Cover – Trees	Average 2%	2/35 = Avg. composition of trees at 6%

Step 2: DPC Composition Averages based on Annual Production by Plant Type Provided by ESD Reference Sheet

Methodology: Species Composition = Vegetation type production / Total production for respective year (Note all values rounded to the nearest percent)

Vegetation Type	*Low Production Year (drought/dry)*	*Representative Values (median)*	*High Production Year (wet)*
Grass	390/500 = 78%	475/650 = 73%	570/800 = 71%
Shrub	65/500 = 13%	100/650 = 15%	130/800 = 16%
Forb	35/500 = 7%	50/650 = 8 %	65/800 = 8%
Tree	10/500 = 2%	25/650 = 4%	35/800 = 5%

Step 3: Desired Plant Community Composition Objectives for Shallow Loamy 10-14" p.z. (R035XA119AZ)

Methodology: The DPC objectives were established using the percentages calculated from both canopy cover (Step 1) and annual production (Step 2). The two were compared and the low and high percentages were used to establish a range of acceptable plant composition by vegetation type, the DPC objectives are presented below.

Vegetation Type	Range of Acceptable Composition
Grasses	57-78%
Shrubs	13-29%
Forbs	3-8%
Trees	2-6%

Appendix D: Interested Public

Arizona Cattle Growers
1811 S Alma School Rd#255
Mesa, AZ 85210

Arizona Game and Fish Department
WMHB – Project Evaluation Program
5000 West Carefree Highway
Phoenix, AZ 85086-5000

Arizona Game and Fish Department
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