U.S. Department of the Interior
Bureau of Land Management

Grazing Permit Renewals Environmental Assessment

BILL WILLIAMS COMPLEX AND BISHOP ALLOTMENTS

DOI-BLM-AZ-C030-2021-0041-EA

U.S. Department of the Interior
Bureau of Land Management
Colorado River District
Lake Havasu Field Office
1785 Kiowa Avenue
Lake Havasu City, AZ 86403-2847
928-505-1200

August 2022

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

DOI-BLM-AZ-C030-2021-0041-EA

Compliance for Section 508 of the Rehabilitation Act

The contents of this document, when accessed electronically, may not be fully Section 508 Compliant with all software applications and readers. Please contact the Lake Havasu Field Office for assistance. We will try to assist you as best we can. This may require providing the information to you in a text only format.

Table of Contents

CHAPTER 1 INTRODUCTION 1
1.1 Identifying Information 1
1.1.1 Title, EA Number, and type of Project 1
1.1.2 Location 1
1.2 Purpose and Need 1
1.3 Decision to be Made 1
1.4 Land Use Plan Conformance 1
1.5 Relationship to Statutes, Regulations, Other NEPA Documents 2
CHAPTER 2 ALTERNATIVES 2
2.1 Proposed Action 2
2.2 No Action Alternative 3
2.3 No Grazing Alternative 4
2.4 Reduced Grazing Alternative 1 4
2.5 Reduced Grazing Alternative 2 4
CHAPTER 3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES 6
3.1 Scoping and Issues Identification 6
3.2 Resources Brought Forward for Analysis 7
3.2.1 Soils 7
3.2.2 Vegetation 11
3.2.3 Riparian System 15
3.2.4 Wildlife 19
3.2.5 Cultural Resources 46
CHAPTER 4 CUMULATIVE EFFECTS ANALYSIS 47
4.1 Introduction 47
4.2 Past Actions, Present Actions, and Reasonably Foreseeable Future Actions 48
4.3 Cumulative Impacts Analysis 48
4.3.1 Soils 49
4.3.2 Vegetation 49
4.3.3 Riparian Systems 50
4.3.4 Wildlife 50
4.3.5 Cultural Resources 51
CHAPTER 5 CONSULTATION AND COORDINATION 51
CHAPTER 6 LIST OF PREPARERS 52
APPENDICES 54
Appendix A – Acronyms 54
Appendix B – Citations and References 54
Appendix C – Maps 54
Appendix D – List of Range Improvement Projects 54
Appendix E – Birds of Conservation Concern 54
Appendix F – Special Ephemeral Rule 54
Appendix G – Determination Document 54
Appendix H – Rangeland Health Assessment and Evaluation Report 54
Appendix I – Instruction Memorandum No. AZ-94-018 54
Appendix J – Candidate Conservation Agreement 54
Appendix K – AZ Standards for Rangeland Health and Grazing Administration 54

Appendix L – Response to Public Comments Received..... 54

CHAPTER 1 INTRODUCTION

1.1 Identifying Information

1.1.1 Title, EA Number, and type of Project

Grazing Permit Renewals for the Bill Williams Complex and Bishop Allotments, DOI-BLM-AZ-C030-2021-0041-EA

1.1.2 Location

The Crossman Peak, Planet, Primrose, and Alamo Crossing allotments (collectively known as the Bill Williams Complex) are located in the Colorado River District's (CRD) Lake Havasu Field Office (LHFO), generally along the Bill Williams River (BWR) between Lake Havasu City and Lake Alamo within Mohave County, Arizona. The Bishop allotment is located in CRDs Yuma Field Office (YFO), within La Paz County and directly east of the Cibola National Wildlife Refuge (NWR).

1.2 Purpose and Need

The purpose of this action is to respond to applications for renewal of livestock grazing permits and to consider livestock grazing opportunities on public lands where consistent with management objectives. The need for the Federal action is established by the Bureau of Land Management's (BLM) responsibility under the Taylor Grazing Act of 1934, Title 43 of the Code of Federal Regulations (CFR) §4100, and the Federal Land Policy and Management Act of 1976.

1.3 Decision to be Made

Under the National Environmental Policy Act (NEPA), the BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis in an Environmental Impact Statement. The Lake Havasu Field Office Manager is the Authorized officer responsible for the decisions regarding management of public lands within these allotments. This analysis will help to inform the decision on whether to renew any of the permits, and if so what terms and conditions would apply, as well as whether to convert the Bishop allotment from active (perennial) to ephemeral.

1.4 Land Use Plan Conformance

The Proposed Action and alternatives are in conformance with the Lake Havasu Field Office Record of Decision/Approved Resource Management Plan (RMP), approved 2007 and the Yuma Field Office Record of Decision/Approved RMP, approved: 2010.

The Proposed Action and alternatives described below are in conformance with the Yuma RMP (BLM 2010), page# 2-87, Management Action/Decision #'s:

> GM-010: Guidelines for grazing administration, as approved in the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration, apply to all livestock grazing activities.
>
> GM-012: Allotments may be classified as ephemeral through Rangeland Health Assessments in accordance with the Special Ephemeral Rule published December 7, 1968 (Appendix F [of the RMP]) when the following criteria are met:
>
> 1. Rangelands are within the hot desert biome;
> 2. Average annual precipitation is less than eight inches;

3. Rangelands produce less than 25 pounds per acre of desirable forage grasses;
4. The vegetative community is composed of less than five-percent desirable forage species;
5. The rangelands are generally below 3,500 feet in elevation;
6. Annual production is highly unpredictable and forage availability is of a short duration;
7. Usable forage production depends on abundant moisture and other favorable climatic conditions; and
8. Rangelands lack potential to improve existing ecological status and produce a dependable supply of forage through intensive rangeland management practices.

The Proposed Action and alternatives described below are in conformance with the Lake Havasu RMP (BLM 2007), page# 46, Management Action/Decision #'s:

> GM-4: Guidelines for grazing administration apply to all livestock grazing activities on BLM-administered-lands.

When the above RMPs were approved, livestock grazing management in both LHFO and YFO was administered by the YFO. In 2018 the administration of the LHFO and YFO grazing allotments was assigned to the LHFO through a Memorandum of Understanding (MOU). Regardless, decisions for grazing management within these allotments fall under both RMPs as described in each.

1.5 Relationship to Statutes, Regulations, Other NEPA Documents

The Proposed Action and alternatives are also consistent with multiple statues, and regulations, including but not limited to the following:

- Federal Land Policy Management Act of 1976;
- The Taylor Grazing Act of 1934;
- Title 43 of the CFR subpart §4100;
- The Endangered Species Act (ESA) of 1973, as amended;
- Migratory Bird Treaty Act;
- Native American Graves Protection and Repatriation Act, 1990;
- American Indian Religious Freedom Act of 1979;
- National Historic Preservation Act (NHPA);
- Archaeological Resources Protection Act of 1979, as amended; and
- The NEPA of 1969.

CHAPTER 2 ALTERNATIVES

2.1 Proposed Action

The Proposed Action is to change the Bishop allotment from an active perennial allotment to an ephemeral use. Additionally, the Proposed Action would renew the Bill Williams Complex and Bishop allotment grazing permits for a period of 10 years with the following terms and conditions (Table 2.1)

Table 2.1 Bill Williams Complex and Bishop Allotment Proposed Terms and Conditions.

Allotment	Number	Livestock Number and Kind		Period of Use	% Public Land	Use Type	AUM*
Crossman Peak	AZ00025	0	Cattle	03/01-02/28 (year-round)	99	Ephemeral	0
Planet	AZ03067	0	Cattle	03/01-02/28 (year-round)	96	Ephemeral	0
Primrose	AZ03069	0	Cattle	03/01-02-28 (year-round)	100	Ephemeral	0
Alamo Crossing	AZ00001	0	Cattle	03/01-02/28 (year-round)	100	Ephemeral	0
Bishop	AZ05009	0	Cattle	03/01-02/28 (year-round)	98	Ephemeral	0
*AUM = Animal Unit Month							

Other Terms and Conditions

Standard terms and conditions are found on Grazing Permit/Lease Form 4130-2a. In addition to the mandatory terms and conditions above, the following terms and conditions would also apply to these allotments under the Proposed Action as described below:

Crossman Peak, Planet, Primrose, Alamo Crossing Allotments

1. When forage conditions warrant, livestock grazing may be authorized upon application to utilize an ephemeral forage crop pursuant to federal grazing regulations, special management requirements, and other guidance including:
    a. No more than 50 percent of available ephemeral forage may be grazed.
    b. Ephemeral grazing may only be authorized when seeds are present on ephemeral forage species.
2. During years when grazing is authorized, the permittee/lessee must properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5). The completed form(s) must be submitted to the BLM, LHFO within 15 days from the last day of authorized grazing use (43 CFR 4130.3-2(d)).

Bishop Allotment

1. When forage conditions warrant, livestock grazing may be authorized upon application to utilize an ephemeral forage crop pursuant to federal grazing regulations, special management requirements, and other guidance including:
    a. No more than 50 percent of available ephemeral forage may be grazed.
    b. Ephemeral grazing may only be authorized when seeds are present on ephemeral forage species.
2. During years when grazing is authorized, the permittee/lessee must properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5). The completed form(s) must be submitted to the BLM, YFO within 15 days from the last day of authorized grazing use (43 CFR §4130.3-2(d)).

2.2 No Action Alternative

The No Action Alternative would renew the Crossman Peak, Alamo Crossing, and Bishop allotment grazing permits for a period of 10 years with the same terms and conditions, as shown in Table 2.2. No

updates to livestock grazing management, as described in the Proposed Action, would be included on the permits.

Table 2.2 Gazing Permits Terms and Conditions

Allotment	Number	Livestock Number and Kind		Period of Use	% Public Land	Use Type	AUM
Crossman Peak	AZ00025	0	Cattle	03/01-02/28 (year-round)	99	Ephemeral	0
Planet	AZ03067	0	Cattle	03/01-02/28 (year-round)	96	Ephemeral	0
Primrose	AZ03069	0	Cattle	03/01-02-28 (year-round)	100	Ephemeral	0
Alamo Crossing	AZ00001	0	Cattle	03/01-02/28 (year-round)	100	Ephemeral	0
Bishop	AZ05009	50	Cattle	03/01-02/28 (year-round)	98	Active (Perennial)	588

The Crossman Peak, Planet, Primrose, and Alamo Crossing allotments would continue under their ephemeral designation (refer to Appendix F). The vacant Planet and Primrose allotments would be available under their previous grazing permit terms and conditions for application.

2.3 No Grazing Alternative

Under the No Grazing Alternative, livestock grazing would not be authorized on public lands within the allotments for Crossman Peak, Planet, Primrose, Alamo Crossing, and Bishop for a term of 10 years. Applications for grazing permit renewals would be denied and no grazing permits would be offered. Upon expiration of the 10-year period, livestock grazing would be re-evaluated for approval of applications for grazing preferences attached to the current base properties.

2.4 Reduced Grazing Alternative 1

Alternative 1 is the same as the Proposed Action, except grazing permits for the vacant Planet and Primrose allotments would not be offered for a term of 10 years. Upon expiration of the 10-year period, livestock grazing would be re-evaluated for approval of applications for grazing permits attached to the current base properties.

2.5 Reduced Grazing Alternative 2

Alternative 2 is the same as the Proposed Action, except grazing permits for Crossman Peak, Planet, Primrose, and Alamo Crossing would not be offered for a term of 10 years. Upon expiration of the 10-year period, livestock grazing would be re-evaluated for approval of applications for grazing permits attached to the current base properties.

Table 2.3: Comparison of Alternatives

Allotment	Proposed Action	No Action Alternative	No Grazing Alternative	Reduced Grazing Alternative 1	Reduced Grazing Alternative 2
Crossman Peak	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	Grazing permit would be renewed for a period of 10 years under the same terms and conditions.	No grazing permit would be issued for a period of 10 years.	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	No grazing permit would be issued for a period of 10 years.
Planet	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	Grazing permit would be open for public application under the previous terms and conditions.	No grazing permit would be issued for a period of 10 years.	No grazing permit would be issued for a period of 10 years.	No grazing permit would be issued for a period of 10 years.
Primrose	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	Grazing permit would be open for public application under the previous terms and conditions.	No grazing permit would be issued for a period of 10 years.	No grazing permit would be issued for a period of 10 years.	No grazing permit would be issued for a period of 10 years.
Alamo Crossing	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	Grazing permit would be renewed for a period of 10 years under the same terms and conditions.	No grazing permit would be issued for a period of 10 years.	Grazing permit would be renewed for a period of 10 years with new terms and conditions.	No grazing permit would be issued for a period of 10 years.
Bishop	The Bishop allotment would be converted to ephemeral use only with new terms and conditions.	Grazing permit would be renewed for a period of 10 years under the same terms and conditions.	No grazing permit would be issued for a period of 10 years.	The Bishop allotment would be converted to ephemeral use only with new terms and conditions.	The Bishop allotment would be converted to ephemeral use only with new terms and conditions.

CHAPTER 3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Scoping and Issues Identification

Notification of the Determination Document (see Appendix G for Determination Document) preparation was sent to all the permittees holding a grazing permit for the Crossman Peak, Alamo Crossing, and Bishop allotments (Planet and Primrose are currently vacant) on April 5, 2022. The letter explained that following the Determination Document the development of the environmental assessment (EA) regarding grazing permit renewals would begin. The letter served as the opportunity for the permittees to present their preferred alternative for the BLM to consider via in writing or through the annual grazing form 4130-001.

On April 18, 2022, a notification letter to the permittees and the interested parties was sent to notify that the LHFO completed the Determination Document and to formally announce the start of the public scoping period for the EA. The LHFO requested input in identifying potential issues and concerns, impacts, potential alternatives, and other applicable knowledge to help in preparation of the EA. The scoping period was from April 18, 2022, to May 20, 2022.

The BLM considered scoping comments and specialist input to determine issues pertaining to environmental resources in accordance with the guidelines found in the BLM NEPA Handbook (BLM 2008). Once issues were identified, impact indicators were selected to assess the impacts of alternatives and used as a basis for future monitoring. The key issues identified are stated in the table below.

Table 3.1: Resources Identified for Detailed Analysis

Resource	Issue Pertaining to Resource	Impact Indicator
Soils		
	Soil quality/structure	• Presence of topsoil and compaction
Vegetation		
	Plant community potential	• Species presence (native and invasive) • Seed bank recovery • Plant community state
Riparian System		
	Floodplain	• Ability to withstand flood event
	Fish Habitat	• Presence of facultative and obligate vegetation
	Water quality	• Sedimentation loading
	Riparian Community	• Species presence (native and invasive) • Expanding or degrading
Wildlife		
	Habitat quality	• Community state
	Competition on limited resources	• Availability of forage supply, lbs/acre
Cultural Resources		
	Historic/Cultural sites	• Destruction and loss

The following resources and uses were also considered and evaluated by the BLM interdisciplinary team, however for the reasons discussed in the table below, they have been determined to not warrant further analysis in this EA.

Table 3.2: Resources/Uses Not Included for Detailed Analysis in the EA

Resources	Rationale for Not Further Discussing in Detail in the EA
Air Quality	None of the activities described in the alternatives would be expected to have a measurable impact on the quality of air nor exceed any air quality standards for the area. Some fugitive dust could be expected from livestock movement in areas where the soil is loose however this would not contribute to exceeding any air quality standards.
Environmental Justice and Socio-Economics	None of the alternatives would cause significant socio-economic changes. Though the grazing allotments could possibly be used ephemerally to generate income, none of the allotments included in this analysis has been applied for 30-40 years. Therefore, there is not likely to be any measurable economic changes to persons affected by any of the alternatives. None of the alternatives would cause disproportionate impacts to minority or low-income communities.
Floodplains	The only floodplain present in the project area is associated with the BWR. Effects to the BWR floodplain are discussed in the analysis below. The management proposed under the alternatives would not authorize any new floodplain development on public lands as discussed in Executive Order 11988.
Fire Management	None of the alternatives would impede fire management efforts or involve changes to current fire management practices.
Native American Religious Concerns	Potentially interested Tribes were consulted and given the opportunity to provide input and comment. The BLM has received no comments to date identifying any areas of religious concern or other concerns with the proposed alternatives. Cultural impacts are analyzed in chapter 3.
Recreation	No project specific recreational issues were identified. Recreation in the area is dispersed and would not be impacted by any changes made to livestock grazing in these allotments.
Waste – Hazardous or Solid	No hazardous or solid wastes are known to be located within the project area. Nor would any be generated by any of the alternatives.
Wild and Scenic Rivers	No Wild or scenic rivers are located within the project area.
Wild Burros	Wild burros are discussed as part of the cumulative effects analysis in chapter 4, however, none of the alternatives propose changes that would affect the management of wild burros in these areas.
Wilderness	Two Wilderness Areas are found partially within the project area, Swansea Wilderness and Rawhide Mountains Wilderness. None of the alternatives would be expected to have impacts on wilderness resources at any levels more than those that would occur outside the boundaries from any of the alternatives. Livestock grazing is a permissible use within the two wilderness areas.

3.2 Resources Brought Forward for Analysis

The following resources/issues were determined to warrant detailed analysis in this EA by the BLM interdisciplinary team. The description of the Affected Environment for each resource is the same for all alternatives.

3.2.1 Soils

Affected Environment

Soils within the Bill Williams Complex and Bishop allotment are typical of the Sonoran Basin and Range Major Land Resource Area (MLRA). Soils found within the Sonoran Basin and Range mostly have a hyperthermic temperature regime with thermic soils found at the highest elevations. The soil moisture regime is aridic and the moisture subclasses include aridic, typic, and ustic (NRCS, 2022) The

Crossman Peak, Planet, Primrose, and Alamo Crossing allotments include soil types that are also similar to the Mojave Basin and Range as those grazing allotments are relatively located in the transition zone between the two MLRAs. Soils ultimately vary with elevation and geographic location.

Soils are a naturally occurring mixture of mineral and organic ingredients with a definite form, structure, and composition. The exact composition of soil changes from one location to another. Soils are characterized by one or both of the following: 1) horizons, or layers that are distinguishable from the initial material as a result of additions, losses, transfers, and transformations of energy and matter or 2) the ability to support rooted plants in a natural environment (websoilsurvey.sc.egov.usda.gov). Characterizing soils in the landscape is one component to begin differentiating ecological sites.

According to the Interagency Ecological Site Handbook for Rangelands an ecological site is defined as the conceptual division of the landscape that is defined as a distinctive kind of land based on recurring soil, landform, geological, and climate characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its ability to respond similarly to management actions and natural disturbances (Karl, 2013). See appendix C for ecological site maps for each grazing allotment. The Natural Resource Conservation Service describes ecological sites through detailed ecological site descriptions (ESDs). ESDs contain descriptions of the historic climax plant community, which is defined in the Interpreting Indicators of Rangeland Health Technical Reference 1734-6 as "the plant community that was best adapted to the unique combination of factors associated with the ecological site. It was in a natural dynamic equilibrium with the historic biotic, abiotic, climatic factors on its ecological site in North America at the time of European immigration and settlement" (Pellant et al. 2005). Historic plant communities or native communities as expected per their ecological site stabilize soils to help support and contribute towards natural processes such as water infiltration and other hydrologic and biotic interactions to help limit soil erosion and loss.

Soils affect the kind and amount of vegetation on a site, which in turn affects the kind and amount of vegetation available to wildlife and livestock for food and cover for wildlife. Appropriate vegetative cover supports soil health. A critical component of rangeland management is the maintenance of adequate vegetative cover to protect the soil profile against erosion (Holechek, 2011).

The Rangeland Health Assessments for the Bill Williams Complex and Bishop allotment demonstrated that soils were stable. Soil indicators and soil stability tests presented little to no indications of excessive erosion or compaction. A complete description and summary of upland health data is available in the Rangeland Health Assessment and Evaluation Report (RHA/ER) (see Appendix H) revised and completed in April 2022. The Determination Document (Appendix G), also completed in April 2022, provides a summary and the final determination for meeting Standard 1: Upland Sites. Meeting this standard is defined as upland soils exhibiting infiltration, permeability, and erosions rates that are appropriate to soil type, climate, and landform (ecological site). See appendix K for a complete description of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration. Though plant communities play a vital role in protecting soils from erosion, it was found that soil stability is primarily influenced by various rock fragment sizes and surface crusting formed by raindrop impact where soil was found more exposed.

Environmental Consequences
Soil disturbance from grazing activities are dependent on frequency and intensity in a given area. Soils that are continuously trekked on and denuded of cover (i.e., gravel/rock, litter, vegetation) cause poor structure and lack the ability to withstand natural disturbances such as erosion caused by wind and water in amounts that exceeds normal rates. Compaction of the soil can resist water permeability, as well as limit the ability for plant community structure development.

Oudenhoven et al. (2015) in *Effects of different management regimes on soil erosion and surface runoff in semi-arid to sub-humid rangelands* concluded that "…both soil loss and surface runoff are high in management regimes with high livestock grazing intensity. Soil loss and surface runoff reduced in management regimes that aim to reverse land degradation of intensive grazing (i.e., abandoned and restoration rangelands)." The results of this study indicate that ungrazed rangelands typically contain more mature vegetation, higher biodiversity, improved ecological function, and less soil loss than rangelands subject to high livestock grazing intensity.

Unauthorized livestock use has been a known occurrence within the Crossman Peak, Planet, Primrose, and Alamo Crossing allotments. This is known based upon field observations indicating varying amounts of livestock use in limited areas of the allotments. Impacts from trespass livestock on soil resources are light to moderate and in isolated areas. For example, in Crossman Peak, a single track has been observed in a wash and reports of single cow trespass incidents from the permittees have been reported. In Planet, livestock from allotments bordering the north boundary of Planet have been observed near those accessible points of entry, which have since been fixed, and the extent of their tracks extend no more than 5 miles in a wash that extents from those bordering allotments. In Primrose, scat and single tracks have been observed. In Alamo Crossing, a single cattle scat was observed in a monitoring plot that was established. Besides the indication of their presence, monitoring did not capture impacts by unauthorized livestock.

The Bill Williams Complex grazing allotments are currently authorized for ephemeral grazing only, as managed under the ephemeral rule. Ephemeral grazing is generally applied for and approved 2-3 years out of 10 under the natural climate regime of the arid southwest. Livestock impacts to soils are typically limited to these brief periods of use and is not expected to have long-term impacts.

Proposed Action
Impacts to soils under the Proposed Action on all five of the allotments would be similar as they have similar management histories and would have similar management. The Bishop allotment is perennial but due to non-use for several years, management has been essentially the same as the other allotments.

Under the Proposed Action, impacts to soils would be reduced during times of authorized ephemeral use in comparison to impacts that might be caused under the No Action Alternative. The new terms and conditions would limit the use of available annual forage by delaying the turnout of livestock and reducing the duration of livestock grazing. Impacts such as compaction and soil cover loss caused by livestock grazing would be minimal and short-term. Recently, drought has limited the production of ephemeral forage on these allotments, and it is expected that production would remain limited even under average precipitation. Long-term impacts to soils from ephemeral use is expected to be minimal.

No Action Alternative

Crossman Peak, Planet, Primrose, and Alamo Crossing

Under the No Action Alternative, these allotments would have similar and slightly higher impacts on soil resources than the Proposed Action. Long-term impacts from ephemeral use would remain similar since it is not expected to cause significant soil degradation if livestock are present 2-3 years out of 10. Livestock use of annual forage would continue to be authorized under the same ephemeral terms and conditions. It would be expected for soil impacts to be higher in comparison to the Proposed Action Alternative because the new terms and conditions would not be included under the No Action Alternative.

Bishop

Under the No Action Alternative, the Bishop allotment would not be converted to ephemeral grazing only. Current conditions of soils in Bishop are found to be stable in the majority of the areas where monitoring was conducted, however, livestock has not been turned out consistently in about 20 years and none at all in the last 10 years, respectively. Year-round grazing is currently a permissible use, but non-use has been applied for and approved for several years due to limited perennial forage. If conditions warranted, livestock grazing would be more active and likely contribute towards soil impacts of compaction and potential for erosion. Functioning soil, hydrological, and biological interactions contribute towards healthy processes to form structure development, stability, and resistance to natural disturbance. In the Bishop allotment, soils are mainly protected by rock/gravel cover (desert pavement) rather than vegetation. If soil cover is lost, soils become degraded and in turn limit functionality for other processes. Throughout the allotment, observations of wild burro tracks can be seen throughout and expose the soil (further discussion on cumulative impacts are discussed in chapter 4). Livestock activities would be expected to cause similar impacts on soil cover.

No Grazing Alternative

Under the No Grazing Alternative, grazing permits would not be issued for up to 10 years on any of the allotments. Livestock grazing would not be authorized and therefore not contribute towards any soil disturbance. The current condition of soil health would remain the same with the exception of soil disturbance caused by continued activities outside of livestock grazing (discussed in chapter 4) and impacts of weather events such as monsoon rains or wind which move soil.

Reduced Grazing Alternative 1

Planet and Primrose

Effects to soil condition would be the same as the No Grazing Alternative.

Crossman Peak, Alamo Crossing, and Bishop

Effects to soil conditions would be the same as the Proposed Action.

Reduced Grazing Alternative 2

Crossman Peak, Planet, Primrose, and Alamo Crossing

Effects to soil condition would be the same as the No Grazing Alternative.

Bishop

Effects to soil conditions would be the same as the Proposed Action.

3.2.2 Vegetation

Affected Environment

As discussed above, an ecological site is defined as a distinctive kind of land that has the capability to produce distinctive kinds and amounts of vegetation and the ability to respond to similar management actions and natural disturbances.

Ecological sites are similar across the Bill Williams Complex allotments (refer to maps in Appendix C). The Bishop allotment encompasses fewer ecological sites in comparison to the other allotments which is expected given its geographic location being different than the other allotments (further south, lower elevation, and entirely in a 3-7" precipitation zone).

Vegetation in the Bill William Complex is a mix of Sonoran-Mojave Desert landscapes from Joshua trees that are distinctive of the Mojave Desert and Saguaro (*Carnegiea gigantea*) and ocotillo (*Fouquieria splendens*) cacti which is distinctive of the Sonoran Desert. Typical tree landscapes include palo verde species (*Parkinsonia microphylla* and *Parkinsonia florida*), Iron wood (*Olneya tesota*), smoke tree (*Psorothamnus spinosa*), desert-willow (*Chilopsis linearis*), and mesquite species (*Prosopis* sp.), Fremont cottonwood (*Populus fremontii*), and *Salix* ssp. of willows closer to and along the Bill Williams River. Typical and dominate shrubs include creosote (*Larrea tridentata*), brittlebush (*Encelia farinosa*), white bursage (*Ambrosia dumosa*), burrobush (*Hymenoclea salsola*), and ratany species (*Krameria grayi* and *Krameria erecta*). Dominant grasses include bush muhly (*Muhlenbergia porteri*) and big galleta (*Pleuraphis rigida*). Cacti vegetation includes a variety of cholla, prickly pear, hedgehog, and barrel species. Annual forbs and grasses are predominantly desert plantain (*Plantago ovata*), hairypod pepperweed (*Lepidium lasiocarpum*) sixweeks threeawn (*Aristida adscensionis*), sixweeks fescue (*Vulpia octoflora*), desert globemallow (*Sphaeralcea ambigua*), fiddleneck species (*Amsinckia* ssp.), and Cryptantha species.

The Bishop allotment exhibits many of the same dominant species with some variability with the exception of riparian vegetation. However, plant communities are almost entirely found within ephemeral washes or drainages. Of the few ecological sites that make up the Bishop allotment, about 60 percent is comprised of the desert pavement ecological site. Desert pavement sites produce very little to no perennial vegetation. According to the ESD (available at edit.jornada.nmsu.edu) for desert pavement 2-4" p.z (R040XD002CA), "Desert pavement has near surface soil features that reduce the rate of infiltration and reduces germination and establishment of vegetation. Creosote bush is the dominant shrub on desert pavement, and it tends to establish in small breaks in the flat pavement surface where runoff accumulates, or rock fragment cover is lower. Annuals may be present in the breaks, or in pockets of eolian sands and silt deposits that overlie the desert pavement. Small drainages dominated by creosote bush and brittlebush (*Encelia farinosa*) dissect the desert pavement surfaces." Palatable forage in these areas are not only limited to mainly annual forbs and grasses but also limited in the capacity to produce dense populations.

Common throughout the Bill Williams Complex and the Bishop allotments are invasive species such as mustards and annual grasses that would likely be present and dominate native annuals during wet seasons. Saharan mustard (*Brassica tournefortii*) is a common mustard found in many sandy soils throughout lower elevation areas. Less common is London rocket (*sisymbrium irio*) but can be found in wetter-damped areas or under thickets that provide a cooler microclimate. Red brome (*Bromus madritensis* ssp. *rubens*) is commonly present at higher elevations throughout the complex and less so in

the Bishop allotment. Downy brome "cheatgrass" (*Bromus tectorum*) may also be present. An invasive annual grass that is considered palatable for livestock is both the common and Arabian mediterraneangrass (*Schismus arabicus* and *Schismus barbatus*). This annual grass is found across landscapes such as shrublands, disturbed places, and dry riverbeds/ephemeral washes, and would remain intact long into the following season if not consumed or removed by wind.

Perennial vegetation communities remain dormant until conditions are reached to produce new growth and be capable of reproductive stages. Under normal conditions, perennial vegetation should produce new leaves, flower, drop seed, and even reproduce asexually. This becomes limited when precipitation levels are below average. According to Holechek et al. (2011) precipitation is the most important single factor determining the type and productivity of vegetation in an area, and timing of precipitation can be more important than in the total amount that occurs annually. This would influence whether precipitation would be useful for good growth or not if precipitation timing does not match temperature conditions for growth. The Bill William Complex and Bishop allotments have been experiencing drought conditions and appear to be worsening. Holechek et al. (2011) explains that two or more consecutive years of drought have far more impact on vegetation than one year of drought followed by normal or above-normal precipitation. For annual plants to sprout and be sustained, winter rains are necessary to carry over into the spring growing season. If annuals plants are suppressed or stunted during early stages of their growth cycle, it places a capacity to replenish the annual seed bank.

Despite the Bishop allotment being authorized for perennial use, non-use has been approved for about the last 12 years due to limited perennial forage. The Bill Williams Complex allotments are currently designated ephemeral due to their naturally limited ability to produce adequate perennial forage for livestock. It is important to understand that though production from both perennial and annual species can sparsely grow or sprout seasonally under normal conditions, it is only when there is sufficient precipitation that it would have the potential to produce enough forage for ephemeral authorization.

The production and growth potential of these and other annual plants are assessed prior to ephemeral authorizations according to the guidance set forth in BLM Instruction Memorandum No. AZ-94-018 Ephemeral Grazing Authorizations (see Appendix I), the RMP, and the Candidate Conservation Agreement for the Sonoran Desert tortoise in Arizona (see Appendix J). This guidance takes wildlife into consideration to limit potential impacts livestock grazing may have on habitat and forage requirements of various wildlife, including Sonoran Desert tortoise and bighorn sheep.

Given their ephemeral nature, annual plant species are not measured as part of composition on long-term trend sites. Properly managed ephemeral grazing, which features stocking rates set through the BLM's best management practices and exclude the use of perennial species, has been shown to not significantly impact the diversity and reproductive ability of annual forage species (Enright and Miller 2007). Indian wheat (*Plantago ovata*) and pepper weed (*Lepidium lasiocarpum*) comprise the majority (>80 percent) of annual plant species in Sonoran Desert ecosystems (Wasser and Price 1981) which are a primary forage species for ephemeral grazing in these areas, particularly on the Bishop allotment. Because the Bill William Complex are in a Mojave-Sonoran transitional zone, primary forage species would also include annual grasses.

Standard three of the Arizona Standards for Rangeland Health is *Desired Resource Conditions*. Meeting this standard is defined as productive and diverse upland and riparian-wetland plant communities of

native species that exist and are maintained as indicated by factors such as composition, structure, and distribution. The RHA/ER determined that this standard was not met across the Bill Williams Complex and the Bishop allotments. Criteria for meeting standard three includes defining a detailed site-specific plant community, which when obtained, assure rangeland health, State water quality standards, and habitat for endangered, threatened, and sensitive species. Including, if present, invasive species do not cause overall degradation to both perennial and annual species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health.

For plant communities across the LHFO and the YFO, desired plant community goals are native communities that are structurally/functionally stable (expected community groups are present, relative dominance is present, and number of species per groups are as expected) and capable of reproduction.

Data obtained during monitoring and presented in the RHA/ER indicate that plant communities are water stressed and desired grass communities are receding. Signs of disturbance by overpopulations of wild burros along the Bill Williams River and in the ephemeral washes in Bishop and Alamo Crossing show hedging and crushing of plant communities. Ecological site descriptions for ecological sites monitored describe a certain expectancy for perennial trees, shrubs, and grass, including a description for dominant types. Data from monitoring plots showed perennial grasses ranging from zero to relatively low percent composition. Observations outside of the monitoring plots were also made to expand the search for grass communities and none were observed in many areas.

The Determination Document identified the following causal factors for not meeting standard three:

- Crossman Peak: Invasive species, prolonged drought events, and possible historic grazing.
- Planet: Prolonged drought events, and possible historic grazing.
- Primrose: Prolonged drought events, and possible historic grazing.
- Alamo Crossing: Prolonged drought events, possible historic grazing, and wild burros.
- Bishop: Prolonged drought events, possible historic grazing, and wild burros.

The Determination Document did not identify current livestock grazing to be a casual factor due to non-use for several years in all of the allotments.

Environmental Consequences

As previously stated, unauthorized livestock use has been a known occurrence within the Crossman Peak, Planet, Primrose, and Alamo Crossing allotments. However, monitoring did not capture impacts on vegetation by unauthorized livestock. Issues pertaining to unauthorized livestock are currently ongoing (fixing fences and installing gates and cattleguards, which can be done through other mechanisms) to prevent livestock from entering Crossman Peak, Planet, Primrose, and the Alamo Crossing allotments.

Proposed Action

Impacts to vegetation under the Proposed Action on all five of the allotments would be similar as they have similar management histories and would have similar impacts on vegetation resources.

Under the Proposed Action, livestock would have access to annual forage species during ephemeral use. The new terms and conditions would restrict the time and amount of annual species consumed by livestock. Livestock would only be authorized when annual forage has developed seed stalks to allow

part of the population to drop enough seed for future reproduction. Livestock would also be authorized to consume no more than 50 percent of that year's annual species production. Limiting the use of ephemeral forage species on the Crossman Peak, Planet, Primrose, Alamo Crossing, and Bishop allotments would reduce the intensity of livestock grazing on these species and allocate the remaining 50 percent for wildlife use and nutrient cycling. The reduction in time additional livestock spend on the allotment would also reduce the amount of trampling and incidental use of perennial species as compared to the No Action Alternative. If a measurable amount of perennial use is detected it would be a cause to reduce or end the ephemeral season of use. To an unmeasurable degree, livestock would possibly contribute towards the distribution of native annual seeds, but to the same effect any invasive species present would likely be at a stage where it is also setting seed and thus could be spread through livestock.

Historical monitoring for these areas is non-existent, so the effects on resource conditions from ephemeral use is unknown. However, it is not expected that ephemeral grazing, when criteria is met for authorization and appropriate stocking rates are applied, would be the causal factor for the non-achievement of desired plant community objectives (perennial communities). Annual forage species would be expected to replenish and regrow the following seasons. Livestock use from this capacity is expected to maintain a neutral effect on the desired resource conditions.

No Action Alternative

Crossman Peak, Planet, Primrose, Alamo Crossing

Under the No Action Alternative, livestock would have access to annual forage species during ephemeral use, however, no new terms and conditions would be added to provide additional protection towards annual species as described under the Proposed Action. Livestock would be authorized to utilize 100 percent of the available forage and be allowed to turnout early in the season. Though 100 percent of the available forage may not be used, under this alternative the permittee would not be required to reserve at least 50 percent of the annual species to produce seed nor contribute towards nutrient cycling. As discussed under the Proposed Action, it is not expected that ephemeral use would contribute towards degrading desired resources, but there would be a higher potential that it could contribute towards degradation in the long-term. Incidental use of perennial plant communities could occur when exposed to livestock activities beginning from early season of use. The likelihood of trampling perennial vegetation is also potentially higher under this alternative than the Proposed Action.

Under this alternative, livestock could possibly contribute towards the control of invasive species before they have the opportunity to set seed, but to the same effect livestock would consume native annuals before they have completed their life cycle.

Bishop

Under the No Action Alternative, the Bishop allotment would continue as a perennial grazing allotment. Use on vegetation resources would be a permissible use year-round. As discussed in the Determination Document, the Bishop allotment can potentially only support livestock on an ephemeral basis, at best. Annual forage species are limited even with adequate precipitation as a whole due to a large portion of the allotment (60%) being desert pavement. The interlocking structure of the gravel/rock surface prevents proliferation of annual species.

Because the grazing permittee has annually applied for non-use or not applied for approximately the last 12 years, it was determined that current grazing is not a causal factor for not meeting standard 3 of Arizona's standards for rangeland health, but if livestock had been turnout in these past years and if livestock were to be turnout out year-round, conditions would not be expected to improve. Livestock would add onto current biotic and abiotic pressures and conditions (plant structure/functionality, density's, distribution, and species richness) would more than likely worsen.

No Grazing Alternative
Impacts on vegetation from the No Grazing Alternative on all five of the allotments would be similar as they have similar management histories and would have similar management.

Livestock grazing would not be authorized and therefore not contribute towards any effects on resource conditions. The current condition of vegetation resources and their ability to function in their ecosystem would remain the same with the exception of continued disturbances caused by activities outside of livestock grazing (discussed in chapter 4) or any unauthorized grazing.

Reduced Grazing Alternative 1
Planet and Primrose
Effects on vegetation condition would be the same as the No Grazing Alternative.

Crossman Peak, Alamo Crossing, and Bishop
Effects on vegetation condition would be the same as the Proposed Action.

Reduced Grazing Alternative 2
Crossman Peak, Planet, Primrose, and Alamo Crossing
Effects on vegetation condition would be the same as the No Grazing Alternative.

Bishop
Effects on vegetation condition would be the same as the Proposed Action.

3.2.3 Riparian System

Affected Environment
The BWR begins from the bottom of Alamo Dam and drains into Lake Havasu just above Parker Dam. Parts of the river are managed by different entities. The U.S. Army Corps of Engineers manages the surrounding land of Alamo Lake, the dam, and a small portion of the river just below the Dam. From there, the river is managed by private lands, state, U.S. Fish and Wildlife Service, and U.S. Bureau of Land Management. As a whole, the BLM manages the largest portion of the river. Only the Planet, Primrose, and Alamo Crossing contain part of the river that could be utilized by livestock. Both Crossman Peak and the Bishop grazing allotments do not contain a riparian system.

The BWR is a low-gradient river system with a slope of less than 2%. Sinuosity varies depending on the geomorphic characteristics adjacent to the river; sections confined by a gorge are more dependent on the geological formations to displace energy from high flow events compared to unconfined sections that depend on riparian vegetation. The unconfined sections display braided channels with vegetated islands. Throughout the system, beaver ponds are present and create impoundments that result in deep ponds and wetland surroundings. The river is intermittent along Planet Ranch, a private section of the river that was

once farmed. Throughout the river, riparian vegetation is present to dissipate energy flow. However, in more open areas vegetation can be found to be either lacking or highly utilized by wild burros. the downing of cottonwoods by beavers has also been observed. In some areas, stumps left by beaver chewed trees are continuous with a lack of maturing recruitment.

Riparian vegetation along the BWR consists of obligate and or facultative species; some of which classified as high stabilizing plants that include a variety of native rushes (*Juncus* spp.), sedges (*Cyperus* spp.), and the dominantly present southern cattail (*Typha domingensis*). Native trees also with high stabilizing roots systems include Fremont cottonwood (*Populus fremontii*) and willow species (*Salix* spp.). Mesquite trees (*Prosopis spp*.), catclaw acacia (*Senegalia greggii*), and occasionally whitethorn acacia (*Vachellia constricta*) can be found near the uplands, which are a low stability class. Native forbs include marsh fleabane (*Pluchea odorata*), rough cocklebur (*Xanthium strumarium*), thorn apple (*Datura wrightii*), salt heliotrope (*Heliotropium curassavicum*), curlytop knotweed (*Persicaria lapathifolia*), water-speedwell (*Veronica anagallis-aquatica*), and catchfly prairie (*Eustoma exaltatum*). Riparian/upland shrubs include whorled burrobush (*Hymenoclea monogyra*), arrowweed (*Pluchea sericea*), Mojave sea-blite (*Suaeda nigra*), and mule fat (*Baccharis salicifolia*). Native grasses include desert saltgrass (*Distichlis spicata*) and sprangletop (*Diplachne fusca*).

Presence of invasive species are mainly observed where riparian disturbance has occurred but are not confined to such locations. The following invasive species occur in the BWR: yellow sweet clover (*Melilotus* spp.), prickly lettice (*Lactuca serriola*), black medic (*Medicago lupulina*), false fleabane (*Pulicaria paludosa*), toothed dock (*Rumex dentatus*) and tree tobacco (*Nicotiana glauca*). Salt cedar (*Tamarix chinensis,* and *T. ramosissima*) is also found present among native communities and predominant in disturbed areas. Invasive graminoids along the river include barnyard grass (*Echinochloa crus-gali*) and annual rabbit's foot grass (*Polypogon monspelinensis*). Giant reed (*Arundo donax*) and common reed (*Phragmites australis*) are less observed.

The Three Rivers Riparian Area of Critical Environmental Concern (ACEC) is designated mainly within the Primrose allotment. The designated boundary of this ACEC encompasses State and private land ownership. The ACEC boundary also extends 1.5 miles in some areas from the river. The Three Rivers Riparian Area ACEC is designated to protect riparian resources, scenic values, and threatened and endangered species habitat, specifically bald eagle aeries. The riparian habitat in this ACEC is valuable for year-round water, diversity of vegetation and crucial habitat for bird, fish, and wildlife, and insect populations. The riparian habitat provides both wintering and breeding habitat for the southwestern willow flycatcher, bald eagle, and peregrine falcons. The native cottonwood and willow trees provide scenic qualities with the flowing river, surrounding mountains, and cliff features to offer solitude and water-based recreation opportunities (LHFO RMP, 2007).

Standard two of the Arizona Standards for Rangeland Health is *Riparian-Wetland Sites*. Meeting this standard is defined as – stream channel morphology and functions are appropriate for proper functioning condition (PFC) for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows. Conditions are indicated by measuring against the potential for gradient, width/depth ratio, channel roughness and sinuosity of stream channel, bank stabilization, erosion rate, captured sediment, groundwater recharge, and dissipation of energy by vegetation.

PFC Assessments were conducted throughout the river. Five stream stretches were delineated to identify reach breaks (see PFC Monitoring map in Appendix C). Reaches are delineated on observable differences in geomorphology (valley form and channel dimension, pattern, and profile), hydrology (stream-discharge and sediment-load properties), soils, and vegetation (type and pattern of riparian plant communities) (USFS 1992; Maxwell et al. 1995). Of the five stream stretches, all but one reach were found to be *functional-at-risk*. Reach BWR-2 was determined to be at a downward trend while the rest were unapparent. Reach BWR-1 was found to be at PFC. The narrow gorge of reach BWR-1 protects the riverbanks from further expansion. Though less dependent on vegetation for dissipating energy flow, diversity of riparian vegetation with high root stability ratings was abundant and there was evidence of recruitment and revegetation at sites that had previously been scoured due to a large dam release in 2020.

The 2022 Determination Document identified unnatural water releases, wild burros, and invasive species as causal factors for not meeting PFC. Releases from Alamo Dam do not mimic natural flow conditions which does not allow or foster appropriate establishment of riparian obligates to dissipate energy or filter sediment. The 1000 cfs released in 2020 produced some re-channelization of the river system. This caused a loss of stabilizing vegetation including large native trees and has led to a presence of invasive species. Areas once abundant and dense with native vegetation are now open. Remnants of vegetation once intact can be found scoured throughout. The presence of wild burros are found all along the river, but are found at higher concentrations where areas are easily accessible. Observations at these concentrated areas show trampled banks and consumption of herbaceous plants; particularly stabilizing obligates.

Environmental Consequences

Proposed Action

Crossman Peak and Bishop Allotments

The proposed terms and conditions for both the Crossman Peak and the Bishop allotments would have no effects on riparian systems as none exist within these allotments.

Alamo Crossing Allotment

Reach BWR-1 is at PFC and flows across Alamo Crossing. Under the Proposed Action, it is expected for livestock under ephemeral authorization and the new terms and conditions to cause little to no affect towards riparian functionality. The stretch of riparian found in Alamo Crossing is all within the gorge. This limits access to all available annual plants along the river. If livestock were to access the river, use would be limited and would not be expected to affect functioning conditions as this section of the river is less dependent of riparian communities but rather on the geomorphology of the gorge to properly function. The majority of riparian communities are perennial, use of such species would trigger removal of livestock from the area. The section of the river that flows across Alamo Crossing is also found entirely in wilderness, Rawhide Mountains Wilderness. Though it is not impossible, it is highly unlikely that livestock would be herded towards the river due to limitations such as use of horseback, over 3 miles from nearest access point, and extreme terrain. Annual species would be limited along the river and likely not be economically viable for such efforts. Though the potential for use is there, as stated, impacts from livestock activities would not be expected to cause riparian degradation.

Planet Allotment

Under the Proposed Action, livestock authorized for ephemeral use in the Planet allotment would have access to about 1.4 miles of annual riparian species. Though the river runs for several miles across the boundaries of the allotment, only about 1.4 consecutive miles is managed by the BLM. The river then goes underground across private and then resurfaces as it nears the Bill Williams NWR. As discussed in the affected environment, the 1.4 miles of the river that is part of the BWR-7 assessment, 9.9 miles total, was found to be functional-at-risk.

Livestock impacts to this riparian area would be relatively short-termed, but in an area where riparian processes are found at risk, resource resistance from livestock pressures would already be constrained and potentially further reduce resiliency by such livestock activities. Impacts could be in the form of soil compaction, trampling of banks, erosion and sediment loading, and loss of riparian plant communities. However, the use of the river by livestock is expected to be limited even during ephemeral authorizations. Ephemeral forage species are highly dependent on winter rains that are not uniform across the allotment. Unless ephemeral forage is present near the water source, the river, livestock may not be turned out in that general area. This in itself provides a limited opportunity and need of the river and riparian resources. Nevertheless, impacts from livestock could still occur with these during ephemeral authorization.

Primrose Allotment

Under the Proposed Action, impacts on riparian function would be similar to impacts described for the Planet allotment. Livestock would have access to more riparian miles since the bulk of the river managed by the BLM is found within the Primrose allotment. Therefore, livestock would be more likely to utilize the river when authorized for ephemeral use, when compared to other the allotments. Like Planet, unless ephemeral forage is present near the water source, the river, livestock may not be turned out in that general area. This also provides a limited opportunity and need of the river and riparian resources. Though authorization would be limited to ephemeral use and likely occur a few years, if at all, out of the 10-year permit, livestock have the potential to further degrade riparian conditions that are currently functional-at-risk. This includes all sections of the ACEC that are found functional-at-risk.

No Action Alternative

Crossman Peak and Bishop Allotments

The current terms and conditions for both Crossman Peak and the Bishop allotments would have no effect on riparian systems as none exist within these allotments.

Planet, Primrose, and Alamo Crossing Allotments

Impacts under the No Action Alternative would be similar to the Proposed Action for each allotment. Livestock under this alternative would be given authorization for use of ephemeral forage species prior to development of seed stalks and would be allowed to utilize more than 50% of the available annual forage production. As a result, the presence of livestock would be longer. Though riparian processes are less dependent of annual species than perennial plants, the presence of livestock in riparian sites can cause negative impacts on riparian resources as a whole and would increase during longer periods of use.

No Grazing Alternative

Crossman Peak and Bishop Allotments

The current terms and conditions for both Crossman Peak and the Bishop allotments would have no effect on riparian systems as none exist within these allotments.

Planet, Primrose, Alamo Crossing Allotments

Under the No Grazing Alternative, there would be no effects on riparian systems from livestock.

Reduced Grazing Alternative 1

Crossman Peak and Bishop Allotments

The current terms and conditions for both Crossman Peak and the Bishop allotments would have no effect on riparian systems as none exist within these allotments.

Planet and Primrose Allotments

Effects would be the same as the No Grazing Alternative

Alamo Crossing Allotment

Effects would be the same as the Proposed Action

Reduced Grazing Alternative 2

Crossman Peak and Bishop Allotments

The current terms and conditions for both Crossman Peak and the Bishop allotments would have no effect on riparian systems as none exist within these allotments.

Planet, Primrose, and Alamo Crossing Allotments

Effects would be the same as the No Grazing Alternative.

3.2.4 Wildlife

Affected Environment

Wildlife depends on annual forage species for nutritional gain and in some cases require them to survive the following years. The infrequent seasons of abundant annual forage species provide the necessary resources for wildlife to produce healthy populations. Sonoran Desert animals are highly dependent upon wet cycles and pulses of productivity for growth and reproduction, much in the same way that Sonoran Desert plants are attune to the return of rains to respond and recover from drought (Noy-Meir, 1974, as cited in Hall et al., 2005).

During ephemeral authorization, the level of grazing use would be authorized with an emphasis of protecting and allowing for sufficient annual vegetation to remain on site to satisfy other resources like wildlife. Instruction Memorandum, AZ-94-018, signed by the BLM Arizona State Office in 1994 also provided the following ephemeral grazing authorization instruction: “On grazing allotments where no resource conflicts have been identified, livestock grazing authorizations can be given for a maximum period of 60 days per authorization. If there are known resource conflicts with livestock grazing (such as habitat for special status species) ephemeral authorizations will be limited to a maximum of 30 days per authorization. Because the Sonoran desert tortoise generally remains in burrows until the end of March, authorizations can be given for 60 days or until March 31. After April 1, authorizations would be limited

to a maximum of 30 days, in categories I and II desert tortoise habitat." This instructs BLM Arizona to closely assess conditions prior to continuing authorization into the season.

Threatened, Endangered, or Candidate Species

Animal Species

There are five avian species, two reptilian species, one mammalian species, one invertebrate species, and two fish species that occur or potentially occur within the LHFO that are listed endangered. Brief summaries of these species are presented below (Table 3.3).

Table 3.3: Endangered, Threatened, Proposed, Candidate, and Conservation Agreement Animal Species found in the LHFO

Common Name	Scientific Name	Status	Location	Occurrence
Birds				
Yellow-billed Cuckoo	*Coccyzus americanus*	T	LHFO	Verified
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E, CH	LHFO	Verified
California Least Tern	*Sterna antillarum browni*	E	LHFO	Possible H
Yuma Ridgway's Rail	*Rallus obsoletus yumanensis*	E	LHFO	Verified
Mexican Spotted Owl	*Strix occidentalis lucida*	T	LHFO	Possible H
Mammals				
Sonoran Pronghorn	*Antilocapra americana sonoriensis*	EXPN	LHFO	Possible H
Reptiles				
Mojave Desert tortoise	*Gopherus agassizii*	T	LHFO (Parker Strip, California only)	Verified H
Northern Mexican Gartersnake	*Thamnophis eques megalops*	T	LHFO	Verified H
Fishes				
Bonytail chub	*Gila elegans*	E, CH	LHFO	Verified
Razorback Sucker	*Xyrauchen texanus*	E, CH	LHFO	Verified
Invertebrates				
Monarch Butterfly	*Danaus plexippus*	C	LHFO	Verified H
USFWS Status: E –Endangered T –Threatened C – Candidate CA – Signed Conservation Agreement EXPN – Experimental Nonessential Population CH – Designated Critical Habitat		H—Usable habitat within the LHFO but not classified as critical habitat by USFWS		

Western-Yellow-billed cuckoo

The Western-Yellow-billed cuckoo (YBC) was listed as a threatened species in 2014 (79 FR, 2014) due to declining populations attributed to habitat loss, degradation, and fragmentation. Declines in populations may be due to habitat loss. YBC are a riparian-obligate species, which means that they require large blocks of riparian woodlands to thrive. Their habitat includes a mixture of mature cottonwood/willow galleries and tamarisk/mesquite thickets where they build their nest 4 to 30 feet above the ground. YBC have been observed in the Bill Williams NWR in the cottonwood/willow galleries along the river. Areas of the BWR under BLM Management lack the mature cottonwood densities for high quality YBC habitat. On May 21, 2021, the final rule designating critical habitat for the YBC was published. The United States Fish and Wildlife Service (USFWS) evaluation of critical habitat determined that the LHFO contains no YBC Critical habitat.

Southwestern willow flycatcher

The southwestern willow flycatcher (SWFL) was listed as a federally endangered species in 1995 (60 FR 10693, 1995) and received additional protection through critical habitat designation in 1997 (62 FR 39129, 1997). A recovery plan for SWFL was developed by the USFWS, other federal and state agencies, and interest groups in 2002 (USFWS, 2002).

A riparian-obligate species, southwestern willow flycatchers prefer dense canopy cover, a large volume of foliage, and surface water during midsummer. Breeding birds occupy habitat along rivers, streams, wetlands, and lakes, where dense growths of willow, seep willow, buttonbush, box elder, tamarisk, or other plants are present, often with a scattered over story of cottonwood and/or willow.

Patches of suitable foraging habitat occur along the BWR and major washes along the shore of Lake Havasu on land managed by BLM. Habitat is largely comprised of tamarisk. Patches average less than 10 acres each. After comparison and review of survey efforts conducted on the higher quality habitat within the Bill William NWR and BLM survey efforts conducted on BLM sections of the BWR; nesting is not considered to be a major component associated with the available BLM managed habitat along the BWR and Lake Havasu Shoreline.

In the 2018 report, SWFL survey efforts of the tributaries of the Lower Colorado River yielded 40 nests in 50 occupied territories were located at Alamo Lake. While surveys of the Bill William NWR yielded no breeding activity. Tamarisk beetles were present at the time and the subsequent Tamarisk die off and an ~200-acre burn in April 2019 modified the Tamarisk dominated habitat located on the northeast end of Alamo Lake.

California Least Tern

The California least tern (*Sterna antillarum browni*) nests in colonies on the Pacific coast of California and Baja, Mexico on relatively open beaches where vegetation is limited by the tidal scouring. It could formerly be found in great abundance from Moss Landing, Monterey County, California to San Jose del Cabo, southern Baja California, Mexico. It was impacted in the 19th and early 20th century by the millinery trade which collected feathers for women's hats, but not to the degree that many east coast birds were. The Migratory Bird Treaty Act of 1916 ended the threat, but the least tern plummeted again some decades later due to growing development and recreational pressures which destroyed habitat, disturbed birds, and increased predation by introduced and native species. The construction of the Pacific Coast Highway brought all these threats to much of California's coast. By the 1940s, terns were

gone from most beaches of Orange and Los Angeles counties and were considered sparse elsewhere. To avoid humans, some tern colonies nest at more inland mudflat and dredge fill sites, which appears to make them more susceptible to predation by foxes, raccoons, cats and dogs.

The California least tern hunts primarily in shallow estuaries and lagoons, or beyond the breakers, even beyond 24 km offshore in areas of upwelling, and where smaller fishes are abundant. They hover until spotting prey, and then plunge into the water without full submersion to extract prey. In the bays and lagoons of southern California and northern Mexico, the favored prey include anchovy, smelt, silversides, shiner surfperch, and small crustaceans. The terns often feed near shore in the open ocean, especially in proximity to lagoons or bay mouths (Baird, 2010). Adults do not require cover, so they commonly roost on the open ground. After young chicks are three days old, they are brooded less frequently by parents and require wind blocks and shade. Notable disruption of colonies can occur from predation by burrowing owls and American kestrels (Collins, 1980).

Occurrence of California Least tern within the LHFO would be limited to transient or migratory travel. Nesting has not been documented within the LHFO. There is no designated critical habitat within the LHFO.

Yuma Ridgway's Rail

The Yuma Ridgway's rail (formerly Yuma clapper rail) was listed as endangered on March 11, 1967 (32 FR 4001) due to a decline in the population linked to loss of habitat. Channelization and marsh development are primary causes of habitat loss.

The Yuma Ridgway's rail nests and forages in areas with wet substrates (mudflats, sandbars) and dense herbaceous (e.g., cattails and bulrushes) or woody vegetation (e.g., tamarisk.). The interface between water, soil, and vegetation seems to be a more important habitat characteristic than the species of plant that covers the site. Yuma Ridgway's rails nest on the ground in areas of dense vegetation near the water's edge, showing a preference for banks that are slightly higher than adjacent marshes (BLM, 2002). Sightings of this species have occurred in the marsh habitat along the Colorado river.

Mexican spotted owl

The Mexican spotted owl was listed as threatened on April 15, 1993. The range of the Mexican spotted owl extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in central and southern Utah, southward through Arizona and New Mexico and into northern Mexico. Although the Mexican spotted owl's entire range covers a broad area of the southwestern United States and Mexico, it does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. On the Colorado Plateau, spotted owls use narrow, steep-walled canyons where ledges and caves provide cover from high temperatures, as well as nest sites and foraging habitat. In essence, complex, rocky terrain has been substituted for old-growth forest (Willey and Ward, 2003).

Mexican Spotted Owl critical habitat was designated for a number of federally managed lands in Arizona and New Mexico; the LHFO does not currently have any designated critical habitat. Mexican spotted owl has not been documented during any surveys within the LHFO. Marginally suitable habitat does exist along the BWR and other drainages. Habitat within the LHFO would be suitable for migration at best.

Mojave Desert tortoise

In 1990, USFWS listed all desert tortoise populations north and west of the Colorado River as Threatened. Under the revised recovery plan (USFWS, 2011), focal areas for recovery within each recovery unit are designated "tortoise conservation areas." These tortoise conservation areas include desert tortoise habitat within critical habitat units, ACECs, desert wildlife management areas, national monuments, NWRs, National Park Service lands, the Red Cliffs Desert Reserve, and other areas managed for desert tortoises. Tortoise conservation areas capture the diversity of the Mojave population of the desert tortoise within each recovery unit and are considered the minimum baseline within which to focus recovery efforts (USFWS, 2011).

Mojave Desert tortoise (MDT) occur only along the Parker Strip portion of the LHFO along the Colorado River in California. The MDT population that occurs in this portion of the LHFO are not a focal point of the USFWS intensive population management segment but do carry protection under the ESA. Impacts to this segment of the MDT population are considered in the decision process for Proposed Actions.

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rainstorms. In Arizona, tortoises are generally considered to be active from approximately March 15 through October 15, although activity has been observed as early as February and as late as November (depending on climatic conditions).

Desert tortoises spend the majority of their lives underground in winter dens, summer burrows, pallets or soil depressions, or openings in rock or caliche. In each of these shelter types, tortoises are protected from the temperature extremes of the Mojave Desert. Dens and burrows are dug into the banks of shallow ephemeral drainages; these are susceptible to surface disturbances that can collapse the entrances, trapping and suffocating the occupants.

Annual plants comprise over 95% of the diet for tortoises. During May, forbs account for 54% of the diet of tortoises. Most of the food plants in their diet contain high levels of potassium, which is toxic, and low levels of protein (nitrogen).

Northern Mexican Gartersnake

The Northern Mexican gartersnake may occur with other native gartersnake species and can be difficult for people without herpetological expertise to identify. With a maximum known length of 44 inches (in) (112 centimeters (cm)), it ranges in background color from olive to olive-brown to olive-gray with three stripes that run the length of the body. The middle dorsal stripe is yellow and darkens toward the tail. The pale yellow to light-tan lateral stripes distinguish the Northern Mexican gartersnake from other sympatric (co-occurring) gartersnake species because a portion of the lateral stripe is found on the fourth scale row, while it is confined to lower scale rows for other species. Throughout its range wide distribution, the Northern Mexican gartersnake occurs at elevations from 130 to 8,497 feet (ft) (40 to 2,590 meters (m)) (Rossman et al. 1996). The Northern Mexican gartersnake is considered a riparian obligate (restricted to riparian areas when not engaged in dispersal behavior) and occurs chiefly in the following general habitat types: (1) Source-area wetlands [e.g., cienegas (mid-elevation wetlands with highly organic, reducing (basic, or alkaline) soils), stock tanks (small earthen impoundment), etc.]; (2) large river riparian woodlands and forests; and (3) streamside gallery forests (as defined by well-

developed broadleaf deciduous riparian forests with limited, if any, herbaceous ground cover or dense grass (USFWS, ECOS).

Northern Mexican gartersnake populations within the LHFO Primarily occur within the Bill Williams and Havasu NWRs and BLM managed lands adjacent to these refuges. Sampling efforts within the BWR below Alamo Lake have yielded extremely low number captures of the Northern Mexican gartersnake (O'Donnell et al., 2020). The low population numbers within the BWR contributed to the elimination of proposed critical habitat along the BWR during the finalization of the critical habitat designation for the species. Habitat of the type that occurs along the BWR on BLM managed lands is unique within the LHFO boundaries; thus potential habitat for the species on BLM managed lands outside of the BWR or BLM lands adjacent to the Havasu NWR are very low.

Sonoran Pronghorn

Sonoran pronghorn is a subspecies of the American pronghorn. The species exhibits conspicuous white areas on the rump, face, and belly, and also white bands on the throat. The hooves have 2 toes and lack the dewclaw common to most ungulates. Males are distinguished from females by the presence of pronged horns exhibited by males and a black cheek patch. The Sonoran pronghorn is the smallest subspecies of pronghorn with an average height of 3 feet and weight between 75 and 130 lbs. It is also generally paler in coloration than the other subspecies (USFWS, 2016).

Sonoran pronghorn inhabit one of the hottest and driest portions of the Sonoran Desert. They forage on a large variety of perennial and annual plant species (Hughes and Smith, 1990; Hervert et al., 1997b; USFWS, 2003). During drought years, Hughes and Smith (1990) reported cacti were the major dietary component (44 percent). Consumption of cacti, especially chain fruit cholla (*Cylindropuntia fulgida*, Pinkava, 1999), provides a source of water during hot, dry conditions (Hervert et al., 1997b). Other important plant species in the diet of the pronghorn include pigweed (*Amaranthus palmeri*), ragweed (*Ambrosia* sp.), locoweed (*Astragalus* sp.), brome (*Bromus* sp.), and snakeweed (*Gutierrezia sarothrae*) (USFWS, 2016). Pronghorn will move in response to spatial limitations in forage availability (Hervert et al. 1997a). At times, water intake from forage is not adequate to meet minimum water requirements (Fox et al., 2000), hence pronghorn need, and readily use, both natural and artificial water sources (Morgart et al., 2005).

Sonoran pronghorn rut from July to September. Does have been observed with newborn fawns from February to May. Parturition corresponds with annual spring forage abundance. Does usually have twins, and fawns suckle for about two months. Does gather with fawns sometimes forming nursery groups (USFWS, 2003). Sonoran Pronghorn may form small herds of more than 20 animals (Wright and deVos, 1986).

Historic records show Sonoran pronghorn ranged as far north as present-day Interstate 10 and as far south as Kino Bay and Hermosillo in Sonora, Mexico. Pronghorn ranged westward to the Imperial Valley, California, and Baja California, Mexico, and eastward to the Baboquivari Mountains and the Santa Cruz River in Arizona. In the1800s, habitat alteration from fencing and livestock, coupled with unregulated hunting and drought lead to massive declines in the distribution and number of Sonoran pronghorn (USFWS, 2016).

Presently, Sonoran pronghorn only occupy approximately 12 % of their historical range. Their current range is limited to approximately 17,224 km2 (6,660mi2), of which 4,057 km2 (1,566 mi2) are in Mexico and 13,167 km2 (5,094 mi2) are within the U.S. Five wild populations of the Sonoran pronghorn are now extant. Two of these populations, Pinacate and Quitovac, occur in northwestern Sonora, Mexico. The Cabeza Prieta, Kofa, and Sauceda populations occur in southwestern Arizona, U.S. (USFWS, 2016).

The USFWS maintains captive breeding pens for Sonoran pronghorn in the Kofa NWR and Cabeza Prieta NWR. The USFWS have released pronghorn from these pens into the Kofa NWR, Cabeza Prieta NWR, Barry M. Goldwater Range, Oregon Pipe NWR, and the Yuma Proving Grounds (YPG). Some pronghorn released on Kofa NWR, and their wild-born offspring, are observed regularly on the East Kofa Range on YPG and along Highway 95 near Stone Cabin. Also, pronghorn released on Barry M. Goldwater Range East (East of Hwy 85) now form the Sauceda population.

Interstate-10 (I-10) forms the southern boundary of the LHFO. Sonoran Pronghorn have been documented on the south side of I-10 with only a few temporary crossings north of I-10. Though the Sonoran Pronghorn may utilize the habitat on BLM lands north of the I-10 it is infrequent and therefore make up an insignificant portion of Sonoran Pronghorn habitat at this time.

Razorback Sucker

The razorback sucker is a fish endemic to the warm-water portions of the Colorado River basin of the southwestern United States. Razorback sucker are found throughout the basin in both lotic and lentic habitats, but are most common in low-velocity habitats such as backwaters, floodplains, flatwater river reaches and reservoirs. Razorback sucker prefer cobble or rocky substrate for spawning, but have been documented to clear sediment away from cobble when conditions are unacceptable and even spawn successfully over clay beds. Depending on the subbasin, juveniles and adults frequently have access to appropriate habitat throughout the system ranging from backwaters and floodplains to deep and slow-moving pools, however nonnative fishes are frequently found in such habitats as well. The species is tolerant of wide-ranging temperatures, high turbidity and salinity, low dissolved oxygen and wide-ranging flow conditions. Razorback sucker typically become sexually mature between three and four years of age, can live for more than 40 years, and spawn multiple times over a lifespan. Razorback suckers consume a large array of food items depending on the environment in which they live.

The historical range of the species includes most of the Colorado River basin, from Wyoming onto the delta in Mexico, including the states of Colorado, Utah, New Mexico, Arizona, Nevada and California, and Mexican states of Baja and Sonora. In the upper Colorado River basin or ‘upper basin’, defined here as upstream of Lees Ferry, Arizona), dam construction reduced peak flows, changed temperature regimes, and disconnected floodplains from the mainstem. Reduced peak flows caused vegetation encroachment and altered flow regimes, allowing a variety of introduced nonnative fishes to flourish. In this altered environment, recruitment of razorback sucker ceased, resulting in populations solely comprised of older adults. Captures of adult fish in the upper basin rapidly declined as adult mortality was not offset by active recruitment, so some remaining individuals were brought into hatcheries in the 1990s and propagation programs were developed. In the lower Colorado River (LCR) or ‘lower basin’, defined here as downstream of Lees Ferry, Arizona), dam construction had similar effects on habitat. While the reservoirs that resulted from dam construction initially supported some of the largest populations of razorback sucker (>70,000 individuals), these populations gradually declined as

nonnative sportfish became abundant in the reservoirs. In response to population declines, razorback sucker were collected in the lower basin in the 1980's to create augmentation programs. The razorback sucker was listed as an endangered species in 1991 (USFWS, 2018.)

Stocking and reintroduction programs have allowed the species to persist despite a chronic lack of wild recruitment to the adult life stage in most populations. Stocking programs have succeeded in reintroducing adults that survive current ecological conditions and fulfill their ecological role. Stocked razorback sucker successfully reproduces in portions of both basins and have expanded such that populations are now present in much of previously occupied habitat, with the exception of the Gila River system.

Bonytail Chub

A bonytail chub can grow to 62 cm (2.03 ft) long. Like many other desert fishes, its coloring tends to be darker above and lighter below, serving as a camouflage. Breeding males have red fin bases. They have a streamlined body and a terminal mouth. Bonytail chubs have bodies that sometimes arch into a smooth predorsal hump (in adults). While their skull is quite concave, their caudal peduncle (tail side) is thin, and almost looks like a pencil (hence, "bony tail"). The coloration of bonytail chubs is usually dark dorsally and lighter ventrally, however, in very clear waters, they look almost black all over. During breeding season, males and females have distinct coloration as well. Mature males have bright red-orange lateral bands between their paired fins; while females have a more subdued coloration that is described with the males.

The bonytail chub was once found in the Colorado River basin in many U.S. states, including Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. It also occurred in the part of the basin in Mexico, but it has been extirpated from this country. This fish species experienced the most abrupt decline of any of the long-lived fishes native to the main stems of the Colorado River system. No remaining wild population is self-sustaining, and it is functionally extinct. Its survival currently relies on release of hatchery-produced fish; several hatcheries maintain this species. Bonytail chubs were one of the first fish species to reflect the changes that occurred in the Colorado River basin after the construction of Hoover Dam; the fish was extirpated from the lower basin between 1926 and 1950. They may still be found in the Green River of Utah and perhaps in the larger Colorado River water bodies. Gila elegans was added to the US list of endangered species on April 23, 1980 and was first recognized as Endangered in 1986 by International Union for Conservation of Nature (IUCN). In 2013, its IUCN status was upgraded to Critically Endangered.

Bonytail chub prefer backwaters with rocky or muddy bottoms and flowing pools, although they have been reported in swiftly moving water. They are mostly restricted to rocky canyons today but were historically abundant in the wide downstream sections of rivers. The installation of dams on the lower Colorado river eliminated much of the back water habitat essential to the reproduction and survival of the Bonytail chub.

Young bonytail chubs typically eat aquatic plants, while adults feed mostly on small fish, algae, plant debris, and terrestrial insects. Bonytail Chub are highly susceptible to predation by nonnative game fish species. Bonytail chubs have the potential to be long-lived and may reach an age of up to 50 years.

Bonytail chub are documented to occur within the LHFO in very low numbers. Restocking efforts have revealed a lack of wild reproduction. Bonytail Chub population numbers remain low consisting of only hatchery raised and released individuals.

Monarch Butterfly
Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic (USFWS, ECOS).

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals (cardenolides) as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter reproductive diapause (suspended reproduction) and live six to nine months (USFWS, ECOS).

In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again (USFWS, ECOS).

The Monarch is a candidate species and not yet listed or proposed for listing. BLM considers the Monarch a sensitive species for management. The Monarch is further discussed in the sensitive species section.

Plant Species
There are three plant species that are listed as threatened or endangered that may occur but have not been documented in the LHFO. Two of these have the potential to occur in the California portion of the LHFO. The LHFO may also contain one plant species that is listed under the California ESA but not under the Federal ESA. Brief summaries of these species are presented below, in Table 3.4.

Table 3.4: Endangered, Threatened, Proposed, and Candidate, Plant Species found in the LHFO

Common Name	Scientific Name	Status	Location
Algodones Dunes Sunflower	*Helianthus niveus* ssp. *tephrodes*	CSE	LHFO
Munz's Onion	*Allium munzii*	LE	LHFO CA
Peirson's Milkvetch	*Astragalus magdalenae var. peirsonii*	LT	LHFO CA
Federal Status: LE – Listed Endangered; LT – Listed Threatened; CA – California Only			

Algodones Dunes Sunflower

Algodones dunes sunflower prefers stabilized and partially stabilized desert sand dunes, with psammophytic scrub (CDFG, 2012; CNPS, 2011). However, Thomas Olsen Associates Inc. (2001) observed this species growing in areas with more active sand movement (e.g., on the lower portion of dune slip faces) compared to other Algodones dunes plant species. While the sunflower appears suited to growing through accumulated sand, it seems less able to with stand exposure of its roots (sand deflation). Algodones dunes sunflower has been observed in concentrations with other plants along protected swales, as well as in areas with no other vegetation in actively shifting sand (Thomas Olsen Associates Inc., 2001).

Algodones Dunes sunflower is listed under the California ESA but is not federally protected. It has the potential to occur within the LHFO but its presence has not been documented. It is least likely to occur in the project areas due to a lack of dune settings.

Munz's Onion

Munz's onion is a California threatened plant species. The plant is protected by the California ESA. It is also listed as endangered under the Federal ESA. Munz's onion is a bulb-forming perennial herb that grows in wet clay soils within grassland and sage scrub habitats.

Munz's Onion may occur within the California portion of the LHFO but its occurrence has not been documented nor is it likely to occur in the project areas.

Peirson's Milkvetch

Like the Munz's onion, the Peirson's milkvetch (*Astragalus magdalenae* var. *peirsonii*) is also listed as a California endangered plant species and protected under the California ESA and the Federal ESA. Peirson's milkvetch is a member of the Fabaceae family and is an erect to spreading, herbaceous, short-lived perennial. It is restricted to specific habitat areas within approximately 53,000 acres in a narrow band running 40 miles northwest to southeast along the western portion of the Algodones Dunes.

Peirson's milkvetch may occur within the California portion of the LHFO but its occurrence has not been documented nor is it likely to occur in the project areas due to an absence of dune settings.

Wildlife, Including Big Game Species, Sensitive Species, and Migratory Birds

Big Game Species

Desert Bighorn Sheep (Ovis canadensis nelsoni)

Desert bighorn sheep habitat has been identified from habitat analysis that evaluates a combination of slope, topography, aspect, vegetation, proximity to escape cover, and water availability. To escape predators, bighorn sheep prefer rough, rocky terrain with slopes greater than 20%, as is found extensively throughout the project area.

Desert bighorn sheep likely obtain some of the moisture they need from succulent vegetation. During the hot summer months, bighorn sheep stay in shaded areas near water as much as possible and are seldom found more than three miles from dependable water sources. When rain or snowfall occurs, bighorn sheep expand their use of suitable habitat and range out from permanent waters. They also commonly drink from ephemeral pools of water found in rock pockets.

Desert bighorn sheep are present throughout the LHFO and project areas.

Mule Deer (Odocoileus hemionus)
Mule deer can be found throughout most of the LHFO and project areas. Typical mule deer habitat is rough, steep canyons sparsely vegetated with brushy pockets that carve their way down through open grasslands. Mule deer often bed in mesquite bosque or other shrubby areas.

Arizona Game and Fish Department (AGFD) has categorized habitat characteristics for mule deer within the state. Habitat categories are based on several factors such as topography, forage and cover, availability of water, and limiting factors such as prohibitive fencing. These habitat categories are: Limited, Yearlong, Summer, Summer Crucial, and Winter Crucial. AGFD considers the mule deer population across the LHFO to be stable and increasing.

BLM Sensitive Species
This category of species includes those that are on the Arizona BLM Sensitive Species list. Sensitive species are usually rare within at least a portion of their range. Many are protected under certain State and/or Federal laws. Species designated as sensitive by the BLM must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or

2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

All federally-designated candidate species, proposed species, and delisted species in the 5 years following delisting are included as BLM sensitive species. Based on the presence of suitable habitat and/or historical records of occurrence, the BLM sensitive species that may occur in the project area are listed in Table 3.5.

Table 3.5: BLM Sensitive Species potentially within the LHFO

Species	Scientific Name	Occurrence
Birds		
Peregrine falcon	*Falco peregrinus anatum*	Verified
Bald eagle	*Haliaeetus leucocephalus*	Verified (winter)
California Black Rail	*Laterallus jamaicensis coturniculus*	Verified
Ferruginous hawk	*Buteo regalis*	Verified
Gilded Flicker	*Colaptes chrysoides*	Verified
Golden eagle	*Aquila chrysaetos*	Verified
Le Conte's Thrasher	*Toxostoma lecontei*	Verified
Northern goshawk	*Accipiter gentilis*	Verified
Pinyon jay	*Gymnorhinus cyanocephalus*	Verified
Western burrowing owl	*Athene cunicularia hypugea*	Verified
Amphibians		

Species	Scientific Name	Occurrence
Arizona Toad	*Anaxyrus microscaphus*	Verified
Lowland Leopard Frog	*Lithobates yavapaiensis*	Verified
Northern leopard frog	*Lithobates pipiens*	Verified
Fish		
Desert sucker	*Catostomus clarki*	Verified
Longfin Dace	*Agosia chrysogaster*	Verified
Sonora sucker	*Catostomus insignis*	Verified
Speckled dace	*Rhinichthys osculus*	Verified
Mammals		
Allen's big-eared bat	*Idionycteris phyllotis*	Verified
Arizona Myotis	*Myotis occultus*	Verified
California leaf-nosed bat	*Macrotus Californicus*	Verified
Cave Myotis	*Myotis velifer*	Verified
Greater western mastiff bat	*Eumops perotis californicus*	Verified
Spotted bat	*Euderma maculatum*	Verified
Townsend's big-eared bat	*Corynorhinus townsendii*	Verified
Invertebrates		
Desert Springsnail	*Pyrgulopsis deserta*	Habitat
Kingman Springsnail	*Pyrgulopsis conica*	Habitat
Monarch Butterfly	*Danaus plexippus plexippus*	Verified
Reptiles		
Mojave Fringe-toed Lizard	*Uma scoparia*	Verified
Sonoran Desert Tortoise	*Gopherus morafkai*	Verified
Sonora Mud Turtle	*Kinosternon sonoriense sonoriense*	Verified

Peregrine falcon

Habitat and Range Requirements:

Peregrine falcons utilize areas that range in elevation from 400 to 9,000 feet and breed wherever sufficient prey is available near cliffs. Preferred habitat for peregrine falcons consists of steep, sheer cliffs that overlook woodlands, riparian areas, and other habitats that support a high density of prey species. Nest sites are usually associated with water. In Arizona, peregrine falcons now occur in areas that had previously been considered marginal habitat, suggesting that populations in optimal habitats are approaching saturation (AGFD, 2002).

Nesting sites, also called eyries, usually consist of a shallow depression scraped into a ledge on the side of a cliff. Peregrine falcons are aerial predators that usually kill their prey in the air. Birds comprise the most common prey item, but bats are also taken (AGFD, 2002).

Project Area Occurrence:
Potential nesting habitat is found throughout the project area, especially in the Planet, Primrose, and Alamo Crossing allotments within the LHFO. Peregrine falcon nest have not been documented but may occur in the project area during the winter months.

Bald eagle
Habitat and Range Requirements:
Bald eagles are birds of aquatic ecosystems, frequenting estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. Fish is a major component of its diet, but waterfowl, gulls, small mammals, and carrion are also eaten. Carrion and easily scavenged prey items provide important sources of winter food in terrestrial habitats that are away from open water.

Bald eagles inhabit primarily riparian habitats in cottonwood groves along streams and rivers, and in coniferous forests. The species may also use prairies if adequate food is available. Bald eagles usually nest in large trees near water but are known to nest on cliffs and (rarely) on the ground. Another important habitat factor is the presence of large trees, snags, or ledges for foraging perches.

In Arizona, bald eagles choose both cliffs and trees for nesting. Cliffs are typically tall, and exposure varies. Territories usually have more than a single nest location and often both cliff and tree nests are present. Mature to over-mature cottonwood trees are the most often chosen nest trees. The trees must be sturdy and open to support a nest that is often 5 feet wide and 3 feet deep.

In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and offer good perch trees and night roosts. Eagles seek wintering (non-nesting) areas offering an abundant and readily available food supply with suitable night roosts. Night roosts typically offer isolation and thermal protection from winds. In northern Arizona, where water is scarce, bald eagles are often found nesting away from water sources.

Project Area Occurrence:
No nesting locations are known to occur within the project area and suitable habitat for nesting is extremely limited. Bald eagles do occur sporadically in the project area during winter months, likely feeding on carrion.

California Black Rail
Habitat and Range Requirements:
California black rails inhabit tidal marshes and freshwater marshes in the Western United States and Mexico (Eddleman et al., 1994; Hinojosa-Huerta et al., 2001). They use sites with shallower water than other North American rails (Eddleman et al., 1988). California black rails inhabit the drier portions of wetlands (Flores and Eddleman 1991). Inland sites, such as those along the LCR, are characterized by shallow, stable water levels; gently sloping shorelines; and vegetation dominated by fine-stemmed bulrush (*Scirpus* spp.) or grasses (Repking and Ohmart, 1977). Todd (1977) states that black rails use dense stands of three-square bulrush along the LCR. Three-square bulrush is restricted to shallow water or moist soil (Conway et al., 2002). Flores (1991) describes microhabitats of black rails as having high stem densities and canopy coverage and being close to cover type edges.

California black rails may form pairs as early as late February, if the initiation of calling is an indication (Flores, 1991). The nest is a well-defined bowl, with a canopy of dead or living vegetation woven over

the top and a ramp of dead vegetation leading from the substrate to an entrance on the side of the nest (Harlow, 1913; Flores and Eddleman, 1991). In one Arizona study, four out of five nests found were primarily made of southern cattail (*Typha domingensis*); the other was made of spikerush (*Eleocharis* spp.). These nests were elevated above the mud substrate in clumps of vegetation: three in California or giant bulrush (*Scirpus californicus*), one in southern cattail, and one in three-square bulrush (*Scirpus americanus*) (Flores and Eddleman, 1993).

Small aquatic and terrestrial invertebrates of less than 1 cm and seeds are the main food items (Eddleman et al., 1994). Black rails in Arizona were found to consume predaceous diving beetles, ground beetles, other beetles, earwigs, and the seeds of Olney bulrush (*Scirpus olneyi*), California bulrush (*Schoenoplectus californicus*), and southern cattail during their breeding season.

Project Area Occurrence:
No nesting habitat occurs within the Crossman peak, Planet, Primrose, Alamo Crossing, and/or Bishop allotment.

Ferruginous Hawk
Habitat and Range Requirements:
Ferruginous hawks are large hawks that inhabit the grasslands, deserts, and open areas of western North America. They are the largest North American hawk and are often mistaken for eagles due to their size. Ferruginous means "rusty color" and refers to the bird's rust-colored wings and legs. During the breeding season, they prefer grasslands, sagebrush, and other arid shrub country. Nesting occurs in trees or utility poles surrounded by open areas. Mammals generally comprise 80 to 90 percent of the prey items or biomass in the diet with birds being the next most common mass component.

Project Area Occurrence:
Ferruginous hawks are known to use open areas within the project area, especially during the winter when they are common. Nesting habitat is available, and nesting is possible but has not been documented within the Crossman Peak, Planet, Primrose, Alamo Crossing, and/or Bishop allotment.

Gilded Flicker
Habitat and Range Requirements:
Gilded flickers are considered year-round residents of the LCR (BOR, 2016). In late winter or early spring, breeding adults form pair bonds and begin nest excavation (Sabin and Chavez, 2014) preferably in saguaro cacti (*Carnegiea gigantea*) (Moore et al., 2020). Occasionally, they reuse old cavities rather than excavate new ones (Sabin, 2018). Egg laying peaks from mid-April to mid-May (Corman 2005; Rosenberg et al., 1991), with an average of four eggs laid per clutch. Both parents incubate during the 11–12 day incubation period (NatureServe, 2019) and tend to the hatched young. Fledging occurs in 21–27 days (Moore et al., 2020; BOR, 2016), and juvenile flickers may remain with their parents as part of "family groups," foraging together at least through July (Sabin and Chavez, 2014). There is little information about juvenile movements post-fledging or overwintering behavior and habitat use, as juveniles are difficult to detect (Best et al., 2015). Gilded flicker feed mainly on insects during the spring and summer months (mostly ants, followed by beetles, grasshoppers, caterpillars, and other larvae). In addition, they supplement their diet with seeds, berries, and other fruits (Bent, 1939), regularly visiting shrubs and herbs to feed (Best et al., 2017; Sabin, 2012).

Typical gilded flicker breeding habitat consists of Sonoran Desert with saguaro cacti in which flickers construct nest cavities. Flickers forage for ground insects, mainly ants, and other insects in shrubs in desert habitats but also visit nearby riparian areas to forage. Riparian habitats with cottonwoods (*Populus fremontii*) and willows (*Salix* sp.) have been documented to supported gilded flickers in the past.

Gilded flickers have also been known to feed on insects in flowers, foraging on ocotillo, palo verde (*Parkinsonia florida*), ironwood (*Olneya*) trees, and on saguaro cacti (Best et al., 2017; Sabin and Chavez, 2014). Kerpez and Smith (1990) found that flicker nesting density was positively correlated with ironwood volume. During winter, when insects are less abundant and ant colony populations are smaller (Hölldobler and Wilson, 1990), gilded flickers also feed on seeds and berries (Terres, 1980). For example, they have been observed feeding on mistletoe berries in mesquite (Sabin 2012). Gilded flickers have a very large home range, even during the nesting season, in which they probably forage (Best et al., 2017; Sabin, 2018). Nesting and foraging habitat used by gilded flicker near Quartzite, Arizona, included lowlands and arroyos with many saguaro cacti and patches of trees and shrubs as well as rocky outcrops with sparser vegetation and few cacti (Best et al., 2017).

Optimal foraging habitat may include open areas with friable soil suitable for ant colony establishment and maintenance, the presence of flowering shrubs that support insect populations, as well as areas that provide berries and seeds, and may vary throughout the year. Riparian habitats may be used for foraging and roosting (Rosenberg et al., 1991), especially after the young fledge (Sabin and Chavez, 2014). The Great Basin Bird Observatory (2011) observed a family group foraging in riparian habitat at the Bill Williams River NWR and an individual gilded flicker nesting in a saguaro and also foraging in riparian habitat (GBBO, 2012). Although there is little information available, the proximity of riparian habitat to saguaro cacti nest sites may be important to successful nesting and/or juvenile or overwintering survival.

Project Area Occurrence:
Gilded Flicker are year-round residents of the project area. Nesting habitat is available, and nesting occurs within the Crossman peak, Planet, Primrose, Alamo Crossing, and/or Bishop allotment.

Golden eagle
Habitat and Range Requirements:
Golden eagles are typically found in open country, prairies, arctic and alpine tundra, open wooded country and barren areas, especially in hilly or mountainous regions. Black-tailed jackrabbits and rock squirrels are the main prey species taken (Eakle and Grubb, 1986). Carrion also provides an important food source, especially during the winter months. Nesting occurs on rock ledges, cliffs, or in large trees. Several alternate nests may be used by one pair and the same nests may be used in consecutive years or the pair may shift to an alternate nest site in different years. In Arizona they occur in mountainous areas and vacate desert areas after breeding. Nests were observed at elevations between 4,000 and 10,000 feet. Nests are commonly found on cliff ledges; however, ponderosa pine, junipers, and rock outcrops are also used as nest sites.

Project Area Occurrence:
Golden eagles are known to use open areas within the project areas, especially during the winter when they are common. Nesting habitat is available, and nesting is possible but has not been documented within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments. Golden eagles

forage over large home ranges and utilize the potentially project area for hunting and scavenging throughout the year.

Le Conte's thrasher

Habitat and Range Requirements:

LeConte's Thrashers live in low, sandy, open deserts that are home to few other bird species. Over most of their range, saltbush, shadscale, cholla cactus, creosote, yucca, mesquite, and ocotillo are common plants, but they are usually sparsely distributed in these mostly flat or rolling landscapes. LeConte's Thrashers generally do not inhabit steep-sided canyons, preferring small arroyos, open flats, or dunes. Rainfall and flowing streams are rare in these deserts, and air temperatures are among the highest recorded on earth.

LeConte's Thrashers eat insects and other arthropods, from which they also get most of the water in their diet. They forage in areas of leaf litter by striking away the material with strong swipes of the large bill. They also use the bill to excavate pits in the ground, up to 5 inches deep, and can flip over rocks and debris of considerable size and weight, using their strong legs and tail for leverage and balance. LeConte's Thrashers also chase prey on foot, including small vertebrates and insects, and they pick or glean insect prey off low vegetation as well. They eat grasshoppers, darkling beetles, weevils, caterpillars, ants, scorpions, spiders, lizards, snakes, and bird eggs. They also consume seeds of mesquite, stork's bill, and other desert plants.

Breeding season begins in December, a mercifully cool time of year in the deserts. Males perch prominently on shrubs and trees to sing, marking territory and advertising for mates (Cornell Lab of Ornithology, 2019).

Project Area Occurrence:

Le Conte's Thrasher are year-round residents of the project areas. Nesting habitat is available, and nesting occurs within the Crossman peak, Planet, Primrose, Alamo Crossing, and/or Bishop allotment.

Northern goshawk

Habitat and Range Requirements:

In Arizona, northern goshawks are found in coniferous forests in the northern, north-central, and eastern parts of the state at elevations ranging between 4,750 to 9,120 feet. Goshawks are also found in pine-oak habitats in isolated mountain ranges in southeastern Arizona. Goshawks in montane areas may winter on or near their home ranges or descend to lower elevations in woodlands, riparian areas, or scrublands (Reynolds et al., 1992). Northern goshawks generally nest in stands of mature trees with a home range of up to 6,000 acres which includes a nest area of 30 acres, a post-fledgling family area of 420 acres, and a foraging area of 5,400 acres (Reynolds et al., 1992). Within northern Arizona, goshawks most frequently occupy ponderosa pine forests. Their nest sites are typically located on northerly slopes with canopy cover of 50% or greater (Reynolds et al., 1992). Goshawks are opportunistic hunters that prey on a variety of birds and small mammals. Their main prey habitat attributes include snags, downed logs, woody debris, large trees, openings, and herbaceous and woody understories. Because goshawks are visually limited in habitats with dense understories, an open understory enhances detection and capture of prey (Reynolds et al., 1992).

Project Area Occurrence:
No ponderosa pine nesting habitat occurs within the LHFO and project areas. Northern Goshawk occurrence within the LHFO is rare and likely transient in nature.

Pinyon jay
Habitat and Range Requirements:
The pinyon jay is a medium-sized corvid that inhabits much of the intermountain west and is particularly associated with pinyon-juniper ecosystems. Pinyon jays are highly social birds that nest communally and form large flocks that may number into the hundreds. Pinyon jays harvest seeds of pinyon pine, and to a lesser extent ponderosa and limber pine, during the fall and cache these seeds for use in late winter and early spring when other food sources are scarce (Balda and Bateman, 1971). Caches are often located in areas that receive little snow, such as under pine and juniper tree crowns or on south slopes where snow melts early, allowing the caches to be accessible during late winter and early spring (Wiggins, 2005). Spatial memory is highly developed in pinyon jays and cache relocation is efficient and reliable (Stotz and Balda, 1995). Seeds that are not relocated and consumed often germinate and contribute to pinyon pine regeneration.

Pinyon jay habitat preferences include mosaics of large tracts of pinyon-juniper woodlands especially those areas that contain large, mature, seed-producing pinyon pines, and relatively open structure with mixed shrubs (especially sagebrush) and grasses (Gabaldon 1979, Latta et al., 1999). One nesting colony of pinyon jays typically requires an area of about 230 acres for nesting and about 5,120 acres for total home range (Balda and Bateman, 1971).

Project Area Occurrence:
Pinyon-juniper woodlands habitat does not occur within the LHFO and project areas. Pinyon jay occurrence within the LHFO is rare and transient in nature.

Western burrowing owl
Habitat and Range Requirements:
Burrowing owls occupy a wide variety of open habitats including grasslands, deserts, or open shrublands. Burrowing owls do not dig their own burrows and must rely on existing burrows dug by prairie dogs, ground squirrels, badgers, skunks, coyotes, and foxes but also use manmade and other natural openings. Nest-site fidelity is high, and burrows are often reused for several years if not destroyed (Haug et al., 1993). Moderate grazing can have a beneficial impact on burrowing owl habitat by keeping grasses and forbs low (MacCracken et al, 1985) but the control of burrowing rodent colonies in grazed areas is believed to be a significant factor in the burrowing owl's decline (Desmond and Savidge, 1996). Burrowing owls can be generally tolerant of some human presence, often nesting in close proximity to urban or suburban areas in agricultural fields, vacant lots, golf courses, or areas cleared for construction (AGFD, 2009).

Project Area Occurrence:
Burrowing owl habitat is present within the project area and nesting areas have been documented. Nesting habitat is available, and nesting occurs within the Crossman peak, Planet, Primrose, Alamo Crossing, and/or Bishop allotment.

Arizona Toad

Habitat and Range Occurrence:

The Arizona Toad (*Anaxyrus microscaphus*) has geographically variable coloration but is often gray and beige dorsally with hues ranging from rust, brown. pink, to dull yellow (Behler and King, 1979; Stebbins, 2003; Elliott et al., 2009). The range of the Arizona Toad is rather fragmented. It occurs mainly in Arizona, but also ranges in southeastern Nevada and southwestern Utah (Sullivan, 1993). There is limited distribution in the southeastern portion of California along the Colorado River. Though it has likely been extirpated from the California side of the river (Sullivan, 1993). Distribution in New Mexico extends from the Arizona border into the southwestern quarter of the state (Behler and King, 1979; Stebbins, 2003; Elliott et al., 2009).

Habitat associations in Arizona typically include riparian areas from lowlands, such as the Fort Mohave area, to the high upland pine-oak woodlands of the Arizona Colorado Plateau (Stebbins, 2003). It can be found in the loose gravelly areas of streams in the more arid portions of its range. In the less arid portions of its range, it is often seen on sandy banks of quieter waters (Behler and King, 1979). It is found in both seasonal and permanent streams in the arid lowlands and is associated with the rocky mountain streams in oak-pine forests (Elliott et al., 2009). Breeding habitat includes areas along the edges of streams, side-pools, and backwashes where flows are slow. In arid environments, cottonwoods, willows, and seep willows are commonly associated with breeding habitats (Schwaner and Sullivan, 2005). Arizona Toads are typically active at night, emerging from sandy burrows at dusk.

Hybridization with the Woodhouse's Toad (*Anaxyrus woodhousii*) has compromised the genetic integrity of Arizona Toad populations, to a point where uncontaminated A. *microscaphus* populations no longer occur in some areas (Sullivan, 1986; Schwaner and Sullivan, 2005). Woodhouse's Toad prefers aquatic areas with still or standing water, such as on golf courses and other areas of human disturbance (Stebbins, 2003). Habitat alternation has led to further decline of the Arizona Toad while encouraging encroachment of the Woodhouse’s Toad, facilitating hybridization (Sullivan and Lamb, 1988; Stebbins, 2003).

Project Area Occurrence:

Arizona toad have not been documented throughout the total project area but are most likely to occur within the available habitat along the BWR within the Planet, Primrose, and Alamo Crossing allotments.

Lowland leopard frog

Habitat and Range Requirements:

Lowland leopard frogs occur in ponds and stream pools along water systems in desert grasslands to pinyon juniper (Platz and Frost, 1984). The species occurs at elevations ranging from sea level to 1817 meters (Sredl et al., 1997b). They are habitat generalists and breed in rivers, permanent streams, permanent pools in intermittent streams, beaver ponds, wetlands, springs, earthen cattle tanks, livestock drinkers, irrigation sloughs, wells, mine adits, and abandoned swimming pools (Platz and Frost 1984; Scott and Jennings in AGFD 2001; Sredl and Saylor 1998 in AGFD 2001). Benedict (2002) detected this species occupying open water channels, higher elevation bedrock seeps, and an open cattle pond/spring in the Bill Williams Basin. Lowland leopard frogs occupied habitat in Arizona, consisting of 82% natural lotic habitats and 18% lentic habitats (primarily stock tanks) (Sredl et al., 1997a). In lotic habitats, the species is concentrated at springs, near debris piles, at heads of pools, and near deep pools associated with root masses (Jennings 1987 in AGFD 2001). Sartorius and Rosen (2000) document this

species using filamentous algae (Cladophora) mats for concealment. Habitat heterogeneity in the aquatic and terrestrial environment appears to be an important factor for lowland leopard frogs (AGFD, 2001). Shallow water and emergent and perimeter vegetation likely provide basking habitat. Deep water, root masses, undercut banks, and debris piles provide refuge from predators and potential hibernacula (Jennings 1987 in AGFD 2001; Platz, 1988; Jennings and Hayes, 1994a). Seim and Sredl (1994) found that juveniles were more frequently associated with small pools and marshy areas, while adults were more frequently associated with large pools. Large pools are necessary for adult survival and reproductive efforts. Small pools and marshy habitats probably enhance juvenile survival (Seim and Sredl 1994). In semipermanent aquatic systems, this species may survive the loss of water by retreating into deep mud cracks, mammal burrows, or rock fissures (Howland et al., 1997). Recent data from the population along the Bill Williams River found that frogs favored shallow braided channels with small amounts of emergent vegetation (Cotten and Leavitt, 2014).

Lowland leopard frogs had become very rare along the LCR by the early 1960s and were considered extirpated by 1974 (Vitt and Ohmart, 1978; Clarkson and Rorabaugh, 1989; AGFD 2001). This species was not found in Imperial Valley, California; the LCR, Arizona-California; or the lower Gila River, Arizona, from 1983 to 1987 (Clarkson and Rorabaugh, 1989). They are believed to be currently extirpated from the lower Gila and Colorado Rivers in Arizona and adjacent California (Sredl et al., 1997b). Lowland leopard frogs have been recently reported from approximately 7 miles (11.2 km) upstream of the confluence of the Colorado and Bill Williams Rivers, within the Bill Williams River NWR (Jennings and Hayes 1994b; Clarkson and Rorabaugh, 1989; AGFD 1998 in SAIC/Jones & Stokes 2003). Since then, two individual lowland leopard frogs have been found within the Bill Williams NWR, and a robust population has been discovered along the BWR just east of Planet Ranch (Cotten and Leavitt, 2014).

Project Area Occurrence:
Lowland leopard frogs have not been documented throughout the total project area but are most likely to occur within the available habitat along the BWR within the Planet, Primrose, and Alamo Crossing allotments.

Northern leopard frog
Habitat and Range Requirements:
Northern leopard frogs are found in a variety of habitats including grassland, brush land, woodland, and forest ranging high into mountains, usually in permanent waters with rooted aquatic vegetation; also frequents ponds, canals, marshes, springs, and streams. They may forage far from water where they may absorb dew to keep moist.

Northern leopard frogs breed from mid-March to early June. A single female may lay 3,000 to 5,000 eggs in one round mass that measures 3-6 inches (7.5-15 cm) across. Tadpoles hatch in about a week and metamorphose in about three months. Aquatic larvae have been found to over winter in some areas (AGFD, 2002a).

Project Area Occurrence:
Northern leopard frogs have not been documented throughout the total project area but are most likely to occur within the available habitat along the Bill Williams River within the Planet, Primrose, and Alamo Crossing allotments.

Desert sucker
Habitat and Range Requirements:
Desert suckers are most common in small to moderately large streams at elevations from about 480 to 8,840 feet (AGFD, 2002b).

Project Area Occurrence:
Desert suckers do not occur within the BWR.

Flannelmouth sucker
Habitat and Range Requirements:
The flannelmouth sucker is characteristic of large, strongly flowing rivers, and does poorly in reservoirs. The species occurs at elevations that range from 1,540-3,160 feet.

Project Area Occurrence:
Flannelmouth suckers do not occur within the BWR.

Speckled dace
Habitat and Range Requirements:
The speckled dace is one of the most widespread and common native fish in the western United States as it occurs in all major drainages and also in most internal basins that are known to support fish (Minckley and Marsh, 2009). Speckled dace are most common in shallow water (<2 feet deep), where they often congregate in pools below riffles and eddies. Within Arizona, speckled dace occur at elevations that range from about 1,550 to 8,920 feet (AGFD, 2002c). The species occurs throughout the Virgin River where it is typically the most common native fish species (Kegeries and Albrecht, 2012). Speckled dace have a proclivity to invade tiny headwater streams, as well as to disperse throughout and thrive in desert rivers, which has resulted in their occurring in most springs and streams (Minckley and Marsh 2009). Speckled dace are generally common throughout their range. There are few threats to the species other than that they do poorly in the presence of non-native predatory fish.

Project Area Occurrence:
Speckled dace have been documented in the BWR in the past. No known populations have been recently captured.

Allen's big-eared bat
Habitat and Range Requirements:
Allen's big-eared bat usually inhabits forested areas of the mountainous southwest and is relatively common in pine-oak forested canyons and coniferous forests; however, it also may occur in non-forested, arid habitats. At most sites where this species occurs, cliffs, outcroppings, boulder piles, or lava flows are found nearby. Day roosts may include rock shelters, caves, trees and mines. Seasonal movements and winter whereabouts and activities are unknown (Best et al., 2011). Their elevational distribution ranges from 1,320 to 9,800 feet, and their main food source is small moths gleaned from surfaces or in flight (AGFD, 2001b). These bats are known to use stock ponds as water and food sources but are theorized as too large-bodied to drink from water catchments (Herder, 1996).

Project Area Occurrence:
Allen's big-eared bat habitat is uncommon within the LHFO. Foraging and roosting habitat used during migration is available within the Planet, Primrose, and Alamo Crossing allotments.

Arizona Myotis
Habitat and Range Requirements:
In Arizona summer, this species is usually found in ponderosa pine and oak-pine woodland near water. However, it is also found along permanent water or in riparian forest in some desert areas such as along the lower Colorado and Verde rivers. The Arizona myotis generally hunts low over water for flying insects, probably including mosquitoes and midges. In the southwest it has been observed foraging under large cottonwoods and in an orchard at low elevations. The Arizona myotis seems to prefer human structures for maternity roosts. It may use mines or possibly caves for hibernation. Available water seems to be a consistent feature near all occurrences (AGFD, 2003).

Project Area Occurrence:
Arizona myotis habitat is uncommon within the LHFO. Foraging and roosting habitat used during migration is available within the Planet, Primrose, and Alamo Crossing allotments.

California leaf-nosed bat
Habitat and Range Requirements:
California leaf-nosed bats are primarily found in Sonoran and Mojave Desert scrub, and occasionally in Chihuahuan and Great Basin desert scrub. They are year-round occupants of some roosts, with summer and winter ranges essentially the same and may be found at elevations up to 5,160 feet, but most records are from below 2,500 feet.

California leaf-nosed bats remain active year-round and are not known to hibernate or migrate. Sustained exposure to low temperatures, which could be lethal, is largely avoided in the desert conditions in which they live and by selection of warm roost sites. They primarily roost in mines, caves, and rock shelters. Day roosts in mines are usually within about 80 feet of the entrance. They prefer roost sites with large areas of ceiling and flying space. In colder parts of their range, during winter, they are found in mines where temperatures are well above external ambient temperatures.

California leaf-nosed bats feed on large, flying insects such as grasshoppers, moths and flying beetles. Hoffmeister (1986) reports that they may also feed on fruits, including those of cacti.

Project Area Occurrence:
The LHFO contains sites suitable for roosting or hibernating and desert scrub habitat occurs. California leaf-nosed bat habitat is common within the LHFO. Foraging and roosting habitat used is available within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Cave Myotis

Habitat and Range Requirements:

Cave myotis (*Myotis velifer*) can be found in desert scrub of creosote, brittlebush, palo verde and cacti. They roost in caves, tunnels, mineshafts, under bridges, and sometimes in buildings within a few miles of water. There are a number of records of one or a few individuals roosting in cliff and barn swallow nests. In summer, cave myotis are apparently tolerant of high temperatures and low humidity's. One group was found in an attic in Gila County where July temperatures were 37° C and relative humidity was 23%. May be found in association and even clustering with *Tadarida brasiliensis* and *Myotis yumanensis*. In Arizona they enter hibernacula late September or early October, females evidently hibernate several weeks before males (Fitch). Winter roosts in Arizona are wet mine tunnels above 6000 feet. Preferred temperatures reported as 8°-11° C. In other areas have been found to prefer hibernation roosts with high relative humidity's, usually above 55% in February and frequently in roosts over water with humidity's near 100%. In Kansas and Texas they appear to be year round residents hibernating in caves, however movements have been recorded between Oklahoma and Kansas and the distribution of the species apparently changes seasonally within Texas (AGFD, 2002d).

Cave myotises are opportunistic insectivores that feed on a wide variety of insects, depending on what is most available on a given night. Small moths make up the largest portion of the diet, although small beetles, weevils, and ant lions are also taken. Because of their larger size and stronger flight, the cave myotis may be able to forage farther abroad than other species of Myotis.

Data on their reproductive habits are sparse. As with many other vespertilionids, M. *velifer* typically mates in the fall; ovulation and fertilization are delayed until the spring. In Texas, females have been found with embryos as early as mid-April, and on the Edwards Plateau lactating females are frequently captured in May (Natural Science Research Laboratory, 2022)

Project Area Occurrence:

The LHFO contains sites suitable for roosting or hibernating and desert scrub habitat occurs. Cave Myotis habitat is common within the LHFO. Foraging and roosting habitat used is available within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Greater western mastiff bat

Habitat and Range Requirements:

This species is found in desert scrub near cliffs, preferring rugged rocky canyons with abundant crevices. They prefer crowding into tight crevices a foot or more deep and two inches or more wide. Colonies prefer crevices even deeper, to ten or more feet. These bats prefer to wedge themselves in the backs of cracks or crevices where they narrow down considerably. Entrances to roosting crevices are usually horizontal but facing downward which facilitates entry and exit (AGFD, 2002e). They are known to forage at least 15 miles from the nearest likely roosting sites.

Project Area Occurrence:

The LHFO contains sites suitable for roosting or hibernating. Greater western mastiff bat habitat occurs within the LHFO. Foraging and roosting habitat used is available within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Townsend's big-eared bat

Habitat and Range Requirements:

In Arizona, summer day roosts are found in caves and mines from desert scrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. In winter, they hibernate in cold caves, lava tubes and mines mostly in uplands and mountains from the vicinity of the Grand Canyon to the southeastern part of the state (AGFD 2003a). These bats prefer to hang from open ceilings in caves or mines and do not use crevices.

Project Area Occurrence:

Townsend's big-eared habitat occurs within the LHFO. Foraging and roosting habitat used is available within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Spotted bat

Habitat and Range Requirements:

Spotted bats are found from low deserts in southwestern Arizona to high deserts and riparian habitats in northwestern Arizona and Utah to conifer forests in northern Arizona and other western states. They are found in desert scrub, riparian, pinyon-juniper, and montane coniferous forests at elevations up to 8,670 feet. They roost in small cracks found in cliffs and stony outcrops. They forage on large flying insects, primarily moths (AGFD, 2003b).

Project Area Occurrence:

The LHFO contains a high percentage of desert scrub that have numerous high cliffs and rocky outcrops surrounding the areas, pinyon-juniper and pine-oak forests are rare within the LHFO. Spotted bat habitat occurs within the LHFO. Foraging and roosting habitat is available within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Springsnails Species

Habitat and Range Requirements:

Pyrgulopsis is a North American genus of snails that consists of about 65 described species; the genus is diagnosed by their small size (approximately 0.04 to 0.08 inches in length) and an ovate to ovate-conic shell (Hershler, 1994). Most species in the genus, including the desert springsnail, appear to have very restricted geographic distributions. The known distribution of the desert springsnail is restricted to the Virgin River drainage from near St. George, Utah, to below the Virgin River Gorge near Littlefield, Arizona. The distribution appears to consist of isolated populations that inhabit springs that flow into the Virgin River (Hershler, 1994; AGFD, 2004). Nothing is known about the biology, food habits, or population dynamics of the desert springsnail (AGFD, 2004). The Kingman Springsnail is only known to occur in three springs (Dripping, Cool and Burns) in Sacramento valley in the Black Mountains near Kingman, Mohave County, Arizona (Hershler and Landye, 1988; Hershler, 1994).

Project Area Occurrence:

Desert springsnails have not been documented within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments. The Kingman Springsnail is only known to occur in three springs (Dripping, Cool and Burns) in Sacramento valley in the Black Mountains near Kingman, Mohave County, Arizona, which are outside of the LHFO administration.

Monarch Butterfly

Habitat and Range Requirements:

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic (USFWS, ECOS).

During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals (cardenolides) as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter reproductive diapause (suspended reproduction) and live six to nine months (USFWS, ECOS).

In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again (USFWS, ECOS).

Project Area Occurrence:

The Monarch is known to occur in LHFO and within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Mojave Fringe-toed Lizard

Habitat and Range Requirements:

The Mojave fringe-toed lizard (*Uma scoparia*) is in the family Phrynosomatidae, the family of the North American spiny lizards. Fringe-toed lizards are medium-sized lizards and seem to be completely restricted to a sand-dwelling existence (Norris, 1958). The concealing coloration of fringe-toed lizards is striking, being one of the best examples of this phenomenon among North American vertebrates. Adults of the species have a yellow-green wash on the belly and pink on the sides during breeding periods, but during other times of year, the Mojave fringe-toed lizard's color mimics the sand dunes on which they dwell (Norris, 1958). The Mojave fringe-toed lizard is omnivorous throughout its life. They primarily feed on insects, but also eat seeds and flowers (Stebbins, 1944). Annual plant species provide important forage during the springtime, though the reliance on vegetative plant species may diminish during the summer with increased arthropod availability (Stebbins, 1944). The Mojave fringe-toed lizard derives most of its water from arthropod and plant food (USFWS, ECOS).

Project Area Occurrence:
Mojave Fringe toed lizards occur within a restricted area of dune habitat outside of the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Sonoran Desert Tortoise (aka Morafka's desert tortoise)
Habitat and Range Requirements:
Morafka's desert tortoise (*Gopherus morafkai*; also called Sonoran desert tortoise) is a medium-sized tortoise that occupies desert scrub habitats on rocky hillsides and bajadas in the Sonoran Desert in Arizona, United States and Sonora, Mexico. Like other *Gopherus* species, the species is an adept burrower, but it primarily retreats to rock shelter cover sites, and secondarily to caves and self-excavated burrows. The species spends more than 95% of its time in cover sites to avoid harsh desert conditions. Shrubs, especially creosote bushes, are important habitat for Morafka's desert tortoises, and are used as shade resources to avoid the hot desert sun. Morafka's desert tortoises remain in their cover sites during the winter, generally between early November through mid-March. They are active on the surface between mid-March through October, during which time they forage, breed, and maintain social structures. Morafka's desert tortoise forage primarily on annual wildflowers, and secondarily on grasses and cacti. Female Morafka's desert tortoises typically nest in April and lay one clutch of eggs. Morafka's desert tortoises are generally less active in June, when forage plants have dried up and daytime temperatures soar. They are activated during monsoonal storms between early July through September, when they can drink and replenish their urinary bladders with fresh water that they use for metabolic processes for the remainder of the year. The breeding season for Morafka's desert tortoises peaks in August and September, when blood testosterone levels are highest in males. Morafka's desert tortoises are very social, and both males and females maintain dominance hierarchies (Desert Tortoise Council, n.d.)

In February 2022, the USFWS determined that the Sonoran desert tortoise populations were stable and did not warrant listing under the Endangered Species Act (USFWS, 2022). Less is known about their populations in Mexico. Because of their slow growth, late maturity, and low fecundity, Morafka's desert tortoises are susceptible to population decline during periods of increased mortality, as well as through loss of habitat. In Arizona, their threats are primarily fragmentation of habitat due to the development of roads and urbanized areas. Collection by humans for food may be a serious threat for populations in Mexico.

Project Area Occurrence:
Sonoran Desert Tortoise occur throughout the LHFO and likely occur within the Crossman peak, Planet, Primrose, Alamo Crossing, and Bishop allotments.

Sonora Mud Turtle
Habitat and Range Requirements:
The Sonora Mud Turtle is a moderate-sized (< 217 mm carapace length) aquatic turtle characterized by an olive-brown to dark brown carapace with three distinct longitudinal keels and a plastron that is hinged front and back and is yellow to streaked brown with dark seems. The digits on the feet are all webbed, and adult males have patches of roughened scales or claspers on the inner surfaces of the thighs and shanks. The eighth and ninth marginal scute's are about the same height, but the tenth marginal scute is elevated. The head and neck are olive-gray with distinct stripes and reticulations; it is the only mud turtle in Arizona with such markings.

The Sonora Mud Turtle is an inhabitant of rivers, streams, cienegas, cattle tanks, and other impoundments that, occur in Sonoran and Chihuahuan desert scrub, semi-desert and Plains grassland, oak woodland, and pine-oak woodland. It is widespread in the 100-mile Circle, occurring most anywhere permanent water is found, but is absent from arid examples of Sonoran Desert scrub to the west and north of Tucson, and from the higher portions of mountain ranges within the Circle. This species is typically associated with permanent waters, but during drought or the arid summer, it may be restricted to perennial pools in otherwise dry stream reaches, and it can aestivate out of water for several months. Aestivation sites are amidst vegetation or organic debris, In soil, or inside rock crevices. On rare occasions, usually during the summer rainy season. Sonora Mud Turtles, particularly males, may be found active in the uplands, presumably moving between aquatic sites.

At warmer, desert sites, Sonora Mud Turtles are active year-round, although activity is reduced December-February. At higher elevations, turtles are inactive during the winter months and as noted above, they may aestivate in terrestrial retreats during drought. This species is primarily diurnal in the cooler months, with increasing crepuscular and nocturnal activity as temperatures increase. Clutches of 1-11 eggs are laid from May to September; usually one or two clutches (maximum of four) are produced each year. Hatchlings, which measure 22-26 mm carapace length, begin to emerge in August with emergence continuing into December. Some hatchlings may overwinter in the nest. The diet of the Sonora Mud Turtle includes aquatic insects and snails, crayfish, other invertebrates, as well as fish, frogs, tadpoles, birds, lizards, and snakes. Some plants are consumed as well.

The Sonora Mud Turtle is listed as near threatened on the IUCN's Red List. The species is vulnerable to predation by non-native species such as American Bullfrogs, Largemouth Bass, and crayfishes, and in many areas its aquatic habitats have disappeared due to water diversions and groundwater pumping (Rorabaugh, n.d.).

Project Area Occurrence:
Suitable habitat for the Sonoran Mud Turtle is limited within the LHFO. Though they have not been documented within the BWR, it is the most likely suitable area habitat would occur within the Planet, Primrose, and Alamo Crossing allotments.

Migratory Birds
The Migratory Bird Treaty Act of 1918 protects against the take of migratory birds, their nests, and eggs, except as permitted. An MOU between the BLM and USFWS states that the BLM shall: “At the project level, evaluate the effects of the BLM’s actions on migratory birds during the NEPA process, if any, and identify where take reasonably attributable to agency actions may have a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. In such situations, BLM will implement approaches lessening such take.” (BLM and USFWS, 2010).

The USFWS is mandated to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. The USFWS *Birds of Conservation Concern 2008* (USFWS, 2008) is the most recent effort to carry out this mandate. Bird species considered for the Birds of Conservation Concern include nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska, ESA candidate,

proposed, and recently delisted species. Birds of Conservation Concern found on the LHFO are summarized in Appendix E.

Environmental Consequences

Proposed Action

Under the Proposed Action, the direct effects of livestock to threatened and endangered plant, bird, fish, mammal, reptile, and invertebrate species would be reduced. Indirectly, livestock would have minimal potential effects on big game species and BLM sensitive species through potential habitat fragmentation by means of infringement. Habitat in the case for some species is limited and species have either not been documented and/or their presence is transient in nature. None of the listed threatened or endangered plant species occur in any of the project areas. For those species that are present or likely to be, livestock has the potential to trample upland and riparian vegetation, small game burrows, and banks near riparian areas that make up the habitat of those species. Any impacts would be minimized through the new terms and conditions, which would limit livestock presence during their ephemeral authorization and limit the use of annual ephemeral forage. Limiting the use of ephemeral crops by percent allocates the remaining 50 percent for wildlife. This is expected to provide for their forage needs.

No Action

Under the No Action alternative, the direct and indirect effects would be similar to the Proposed Action. The main difference is that Bishop would remain perennial and therefore livestock would have the potential to effect wildlife and their habitat on a year-round basis if non-use is not applied for as it has been for several years. The potential to degrade habitat quality would be greater if use occurs. In the case of the ephemeral grazing allotments (Crossman Peak, Planet, Primrose, and Alamo Crossing), there would be no new terms and conditions as described under the Proposed Action. Livestock would have a greater potential to cause effects than under the Proposed Action.

No Grazing Alternative

Under the No Grazing alternative, grazing permits would not be issued for a period of 10 years. Because the potential for ephemeral use is naturally limited to 2-3 years, at best, out of 10 and the season of use is typically 3-5 months, there would be minor to negligible benefits in that livestock would not be present to cause any habitat fragmentation nor pose as competition for other natural grazers on a temporary basis. Nevertheless, livestock would not cause any indirect effects towards all wildlife that is or may be present.

Reduced Grazing Alternative 1

<u>Planet and Primrose</u>

Effects on wildlife resources would be the same as the No Grazing Alternative.

<u>Crossman Peak, Alamo Crossing, and Bishop</u>

Effects on wildlife resources would be the same as the Proposed Action.

Reduced Grazing Alternative 2

<u>Crossman Peak, Planet, Primrose, and Alamo Crossing</u>

Effects on wildlife resources would be the same as the No Grazing Alternative.

Bishop
Effects on wildlife resources would be the same as the Proposed Action.

3.2.5 Cultural Resources

Affected Environment

To evaluate for cultural resource values, a Class I records search was conducted using BLM site records, maps, and geographical information system (GIS) inventory to determine previously surveyed acres and sites recorded within the Bill Williams Complex and Bishop allotments. The review found there to be more than 150 known eligible sites to be listed in the National Register of Historic Places (NRHP). Previous cultural surveys cover less than 10% of the entire Bill Williams Complex and less than 10% of the Bishop allotment.

Although limited cultural resource surveys have been completed within the allotments, it is likely to contain more areas of moderate and/or high sensitivity for cultural resources. The allotments contain no national historic landmarks or properties listed on the NRHP. However, both the Planet and Primrose allotments contain a historic archaeological district site that has been determined eligible for inclusion on the NRHP. The Swansea Historic District ACEC encompasses the historic Swansea Townsite, which contains ruins of numerous structures and mining features, including shafts, adits, roads, railroad, and the Swansea pump station (LHFO, RMP, 2007).

Within the Crossman Peak allotment, there is the Crossman Peak Scenic ACEC. The ACEC has been identified as a significant place of traditional cultural importance and is included in oral traditions concerning creation of the Colorado River. In accordance with the LHFO RMP (2007), the ACEC will protect the natural scenic backdrop along with additional acreage to protect the cultural and other resource concerns. Public land in this general area contains sacred mountain and sites eligible for inclusion on the NRHP including petroglyph sites.

Environmental Consequences

In general, impacts to known and unknown cultural resources may occur as a result of livestock grazing activities. Livestock congregating and trailing at or across cultural resource sites can damage artifacts and the contexts in which they occur. It also can alter a site's features and the spatial relationships of artifacts, leading to a loss of data potential. Cattle shading and rubbing can damage standing historic structures and petroglyph and pictograph panels. Trampling at livestock watering locations, cattle trailing, and poorly managed grazing, can all lead to a reduction or loss of protective vegetation cover and create indirect impacts to cultural/archaeological resources by accelerating natural erosion and exposing artifacts to potentially being illegally collected and vandalism. Erosion and surface runoff can result in a complete loss of historical integrity, thereby destroying archaeological sites. These types of impacts generally would be localized at particular sites and would be irreversible. Proper distribution of livestock can limit concentrations on or near archaeological sites, however, even under the most effective grazing plan there can be some loss of cultural materials, elements, and features. Since these allotments haven't been grazed for many years, these impacts and the potential for impacts to cultural resources from grazing would be low.

Proposed Action

Under the Proposed Action, livestock grazing could directly and indirectly damage archaeological sites during ephemeral authorization, but the potential for historic properties to be adversely affected is

minimal, as this alternative would not result in an increased period and/or intensity of livestock use to known/recorded or unknown/unrecorded and sensitive cultural resources. The new terms and conditions included in the Proposed Action would further reduce the potential of damage in comparison to the No Action Alternative, as livestock would be authorized under a shorter period of use.

No Action
Under No Action Alternative, the existing permits would be renewed with the same terms and conditions as the current permits. Impacts would be similar to the Proposed Action except that the potential for damaging archeological sites would be increased in comparison with no added terms and conditions. Overall livestock impacts to historic properties would be minimal.

No Grazing Alternative
The No Grazing Alternative would result in minor benefits to known/recorded and unknown/unrecorded cultural resources within the allotments. Without cattle on the ground during ephemeral use, grazing-related impacts would not be present. All sites in the allotments would still be subjected to natural processes and ongoing impacts from other multiple uses. These types of impacts have been occurring since the sites were first formed and are generally minor in their overall effects. Artifact collecting and other human-caused disturbances could continue even without livestock grazing.

Reduced Grazing Alternative 1
Planet and Primrose
Effects on cultural resources would be the same as the No Grazing Alternative.

Crossman Peak, Alamo Crossing, and Bishop
Effects on cultural resources would be the same as the Proposed Action.

Reduced Grazing Alternative 2
Crossman Peak, Planet, Primrose, and Alamo Crossing
Effects on cultural resources would be the same as the No Grazing Alternative.

Bishop
Effects on cultural resources would be the same as the Proposed Action

CHAPTER 4 CUMULATIVE EFFECTS ANALYSIS

4.1 Introduction

Per the Council on Environmental Quality (CEQ) regulations found at 40 CFR 1508.1(g), 'effects' and 'impacts' are synonymous in this EA. Effects are changes to the human environment from the Proposed Action or alternatives that could include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.

The CEQ defines cumulative impacts as follows:

> '…are effects on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time'(40 CFR §1508.1(g)(3)).”

4.2 Past Actions, Present Actions, and Reasonably Foreseeable Future Actions

Table 3.1 provides a list of past, present, and reasonably foreseeable future actions (RFFAs) incorporated into the cumulative effects analysis, the geographic scope of those actions, and the potentially affected resources that were evaluated in detail in Chapter 3.

Table 3.1: Past, Present, and RFFAs Incorporated into the Analysis

Action	Geographic Scope	Past	Present	RFFA	Affected Resources
Wild Burro Herd Management	Havasu Herd Area and Alamo Herd Area	Yes	Yes	Yes	Upland Vegetation, Soils, Wildlife, Riparian Systems, and Cultural.
Livestock Grazing	Crossman Peak, Planet, Primrose, Alamo Crossing, and Bishop allotments	Yes	No	Yes	Upland Vegetation, Soils, Wildlife, Riparian Systems, and Cultural.
Recreation: Off-Highway Vehicle (OHV) use	Crossman Peak, Planet, Primrose, Alamo Crossing, and Bishop allotments	Yes	Yes	Yes	Upland Vegetation, Soils, Wildlife, Riparian Systems, and Cultural.
Alamo Dam	Below Alamo Lake since 1968	Yes	Yes	Yes	Riparian Systems and wildlife
Mineral Exploration	Havasu Gold Seekers in the Crossman Peak allotment	Yes	Yes	Yes	Soils and Vegetation

Since the effects of the alternatives are expected to last ten years, this timeframe is considered most appropriate for consideration of the incremental effect of the alternatives combined with the RFFAs. Many of the past and present actions discussed above are expected to persist through this timeframe, though the relative intensity of these actions could vary depending on a variety of economic and environmental factors which are too speculative to consider in this analysis.

4.3 Cumulative Impacts Analysis

Based on the activities listed in Table 3.1 and the potential effects of the Proposed Action and alternatives described in detail in Chapter 2, the cumulative effects to the identified resources are summarized below.

4.3.1 Soils

Soil resources have historically been, continue to be, and are expected to be disturbed by activities like wild burros, OHV use, and mineral exploration activities. Such activities contribute towards degradation of soil structure and its ability to resist erosion. Wild burros are known to create trails that expose soil and cause compaction. OHV use provides the ability for recreationalist to explore public lands, but noticeably new trails can cause proliferation or expand established trails. The creation of new roads further increases soil degradation beyond designated routes and soil erosion potential. Mineral exploration activities often result in moving topsoil and compaction caused by equipment, however, the contribution of impacts from mineral exploration are currently minimal in the allotments. Only one Notice of Intent to explore mineral resources is found in the Crossman Peak allotment. Notices of Intent are for explorational uses only and do not expand beyond five acres of surface disturbance.

Under alternatives issuing grazing permits, should livestock be turned out, impacts to soil would be similar to impacts caused by the present wild burros but on a temporary basis unlike burros that are present throughout the allotments on a year-round basis. Livestock would not be as widely distributed across the allotments as burros but would likely be concentrated near water sources. The proposed changes to the grazing permits would result in fewer impacts to soils when compared to impacts as previously authorized (except under the No Action Alternative which would not include changes). As a whole, effects to soil resources from the Proposed Action, No Action Alternative, the Reduced Grazing Alternatives 1 and 2 are not expected to contribute significantly towards soil degradation should livestock be turned out within the next 10 years under the proposed permits.

Under alternatives not issuing grazing permits, livestock would not contribute to any soil impacts cumulatively and presently caused by other present and RFFAs.

4.3.2 Vegetation

Both native and invasive species have been influenced by several past and present activities. Similar to soil impacts, wild burros, OHV use, and mineral exploration activities all contribute towards habitat loss, trampling and the ability for native plants to naturally recover. Healthy native communities have the resiliency to withstand disturbances but is limited. Repeated activities such as the use of trails created by burros and OHVs including mineral exploration that have the potential to entirely remove vegetation not only reduce habitat but create the ability for invasive species to proliferate. Past livestock grazing management and the present burro use of vegetation are known to degrade desired communities when overgrazing of those resources occur.

Under alternatives issuing grazing permits, should livestock be turned out, impacts to desired vegetation resources would not be as they historically were. Livestock would have impacts but not to the extent that current burros are having due to the limited nature of use under any of the permits (timeframe and use limits). Cumulatively, livestock authorized under ephemeral use is not expected to have significant contributions towards current vegetative community states caused or contributed by past and present activities. Cumulative impacts on vegetation resources found in Crossman Peak would be less as impacts from burros are less common in that grazing allotment.

Under alternatives not issuing grazing permits, livestock would not contribute to any vegetation impacts that cumulatively are caused by other present and RFFAs.

4.3.3 Riparian Systems

Since the construction of Alamo Dam, the natural regiment of the BWR System has been altered. The potential of the river therefore has changed. Dam releases do not mimic the natural flow events that once existed and since then riparian areas have changed to conform to those releases. At the same time, drought has contributed towards impacts across the grazing allotments. Though the dam has changed the regime, the constant flow is potentially assisting to dampen impacts caused by drought. Nevertheless, high release events have ripped through riparian communities in the past and thus caused a departure from its current potential. Ultimately, in addition to the functional status of the river by the dam, drought, and the overpopulation of wild burros have impacted riparian banks by trampling soil and vegetation and over utilizing riparian obligate species. Livestock grazing in these areas would be an added pressure to these riparian areas.

Under alternatives issuing grazing permits, as described in chapter 2, livestock would have the potential to further degrade conditions because current conditions are found to be functional-at-risk. Alone, livestock are not expected to cause significant impacts on riparian resources on an ephemeral basis. However, in this current system, impacts caused by past, present, RFFAs have the potential to continue suppressing riparian system functions. The potential for riparian impacts are likely greater than soil and upland vegetation impacts cumulatively.

Under alternatives not issuing grazing permits, livestock would not contribute to any riparian impacts currently caused by Alamo Dam releases, drought, and the overpopulation of wild burros. However, these impacts would still be expected to continue.

4.3.4 Wildlife

Wildlife and their habitat within the project areas (grazing allotments) may experience some level of ongoing impacts from OHV use, other recreation, Alamo Dam, wild burros, and potentially some historic livestock grazing that may have contributed towards current rangeland health conditions. These past, present and future land uses can impact various aspects of wildlife and their habitat including movement patterns from habitat fragmentation, degradation of habitat conditions, direct loss of habitat acres through disturbances such as reduced reproductive success, increased predation, drought, and in general low-quality habitat resulting from nearby development of private lands.

Past livestock grazing management (pre-ephemeral designation 30 to 40 years ago) may have resulted and carried over in the loss of understory plants, which has potentially altered habitats. Whether caused by historic livestock management or not, the over population of wild burros is likely maintaining the current conditions (not meeting). The BWR has been altered significantly since the construction of Alamo Dam; altering functionality and habitat composition along the river. OHV use allows for deeper exploration into these grazing allotments and the increase of this activity increases fragmentation of habitat through the creation of new roads, trampling vegetation, burrow destruction, and the potential for spread of invasive species. Other recreational activities may also impact wildlife by collecting wood of sensitive tree species and the creation of trash. Illegal dumping is also a contributor affecting wildlife both directly and indirectly.

Under alternatives issuing grazing permits, should livestock be turned out on an ephemeral basis, livestock would temporarily contribute towards cumulative impacts, but they are expected to be minimal in comparison to current uses/conditions. In riparian areas along the Planet and Primrose grazing

allotments, impacts from livestock (should they be turned out in those areas for annual ephemeral forage) are expected to be higher due to their current functional-at-risk status. With current cumulative impacts occurring along the river, the presence of livestock has a greater potential to further contribute and alter the quality of small game and fish habitat.

Under alternatives not issuing grazing permits, livestock would not contribute towards any cumulative wildlife impacts. Wildlife resources would still be subjected to ongoing impacts from other multiple uses as described above.

4.3.5 Cultural Resources

Cultural resources have been affected not only by natural processes but by historic livestock grazing, range improvement projects (as shown on maps in Appendix C and listed in Appendix D) supporting grazing management, wild burros, recreation, artifact collecting, and other human-caused disturbances. Range improvements, vegetative treatments (if they should occur), mineral exploration, rights-of-way projects and other authorized uses conducted on federal lands require that cultural resource surveys be completed to determine the presence of cultural resources prior to ground disturbing activities. As directed by Section 106 of the NHPA, National register-eligible sites are generally avoided, or mitigated if avoidance is not possible for projects with a federal nexus. Avoidance through project redesign is the preferred method of mitigation; however, when avoidance is not feasible, data recovery or other forms of mitigation are implemented prior to ground-disturbing activities.

While the past, present, and RFFAs may result in some effect on cultural resources, they are unlikely to continue to do damage beyond what has, is, and may continue to occur. Additionally, livestock grazing as proposed from the Proposed Action, No Action Alternative, the Reduced Grazing Alternatives 1 and 2 are not anticipated to result in substantive cumulative effects to cultural. If any cumulative impacts do occur (e.g. avoidance or mitigation is not possible), they would be similar for all the alternatives. The additional effects of livestock on an ephemeral basis are not anticipated to result in substantive cumulative effects to cultural resources.

Under alternatives not issuing grazing permits, livestock would not contribute to any cumulative cultural impacts. Cultural Resources would still be subjected to natural processes and ongoing impacts from other multiple uses.

CHAPTER 5 CONSULTATION AND COORDINATION

On April 10, 2022, a scoping letter was mailed to the interested public to seek input in identifying potential issues and concerns, impacts, potential alternatives, and other applicable knowledge for possible inclusion in the Environmental Assessment document for the Crossman Peak, Planet, Primrose, Alamo Crossing, and Bishop grazing permit renewals.

Table 5: Persons, Groups, or Agencies Consulted

AGENCY/GROUP	PERSON(S) CONTACTED
Ak-chin Indian Community	Mr. Robert Miguel
Arizona Backcountry Explorers	Mr. Kevin Allard
Arizona Cattle Growers Association	
Arizona Game and Fish Department-Kingman	Ms. Karen Klima
Arizona Game and Fish Department-Yuma	
Arizona Resource Advisory Council	Ms. Dolores A. Garcia

AGENCY/GROUP	PERSON(S) CONTACTED
Bureau of Reclamation-Lower Colorado Region	
Center for Biological Diversity	Mr. Christopher Bugbee
Chemehuevi Indian Tribe	Mr. Charles F. Wood
Cloud Foundation	
Cocopah Indian Tribe	Ms. Sherry Cordova
	Mr. Justin Brundin
Colorado River Indian Tribes	Mr. Dennis Patch
	Mr. Bryan Etsitty
Desert Tortoise Council	
Fort McDowell Yavapai Nation	Mrs. Bernadine Burnette
Fort Mojave Indian Tribe	Mr. Timothy Williams
	Ms. Linda Otero
Fort Yuma-Quechan Tribe	Mr. Jordan Joaquin
	Mrs. H. Jill McCormick
Gila River Indian Community	Mr. Stephen Roe Lewis
	Tribal Historic Preservation Office
Hopi Tribe	Timothy L. Nuvangyaoma
	Stewart Koyiyumptewa
Hualapai Indian Tribe	Dr. Damon R. Clarke
	Mr. Peter Bungart
Moapa Band of Paiute Indians	Ms. Vickie Simmons
	Ms. Lori Kay
Navajo Nation	Mr. Jonathan Nez
	Dr. Rudy R. Shebala
Pueblo of Zuni	Mr. Val R. Panteah
	Mr. Kurt Dongoske
Rangeland Conservancy LLC	Mr. William Reed
Salt River Pima-Maricopa Indian Community	Mr. Martin Harvier
Sierra Club	Mr. Don Steuter
Terrence Price of Crossman Peak allotment	Mr. Terrence Price
Tohono O'Odham Nation	Mr. Ned Norris Jr.
Tom and Sharon Marriott of Bishop allotment	Mr. Tom and Mrs. Sharon Marriott
Tres Bees LLC of Alamo Crossing allotment	Mr. Mark Rosengrants
U.S. Fish and Wildlife Service Bill Williams Refuge	
U.S. Fish and Wildlife Service Southwest Region	Ms. Amy Leuders
Western Watersheds Project	
Yavapai-Apache Nation	Mr. Jon Huey
	Mr. Chris Coder
Yavapai-Prescott Indian Tribe	Mr. Robert Ogo
	Ms. Linda Ogo
None Provided	Mr. Jeff Burgess
None Provided	Mr. Richard Spotts
None Provided	Mr. Jake Anderson
None Provided	Mr. Tom Dollarhide

CHAPTER 6 LIST OF PREPARERS

Table 6: BLM Resource Specialists

NAME	TITLE
Eric Duarte, Project Lead	Rangeland Management Specialist
Douglas Whitbeck	State Lead, Rangeland Management
Adam Cochran	Assistant Field Manager

NAME	TITLE
Angelica Rose	Planning and Environmental Coordinator
Cristina Sanders	Fisheries Biologist
Ford Mauney	Wildlife Biologist
Jessica Han	Archaeologist
Augustine Potor	Archaeologist
Aaron Jacobson	Geologist
Tanner Browne	Geographical Information System Specialist

APPENDICES

Appendix A – Acronyms
Appendix B – Citations and References
Appendix C – Maps
Appendix D – List of Range Improvement Projects
Appendix E – Birds of Conservation Concern
Appendix F – Special Ephemeral Rule
Appendix G – Determination Document
Appendix H – Rangeland Health Assessment and Evaluation Report
Appendix I – Instruction Memorandum No. AZ-94-018
Appendix J – Candidate Conservation Agreement
Appendix K – AZ Standards for Rangeland Health and Grazing Administration
Appendix L – Response to Public Comments Received

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ARIZONA STATE OFFICE

In Reply Refer to:
4120 (932)

January 21, 1994

Instruction Memorandum No. AZ-94- 018
Expires: 09/30/95

To: District Managers

From: State Director

Subject: Ephemeral Grazing Authorizations

Ephemeral vegetation follows a history of high and low production years. Some annual plants can dominate a range site for a period of time, while sparse perennial vegetation dominates the remainder of the year. We must manage the complex mosaic of desert vegetation so that the common species are not managed at the expense of the rare and the annuals are not managed at the expense of perennials. In these ecosystems we should be responsive to take advantage of the times of plenty, while ensuring no resource damage is done.

Applicants for ephemeral grazing commonly operate on short time frames. The vegetation starts growth and completes phenological stages rapidly. The operators desire to harvest the vegetation when it is green, growing and succulent. Often applicants seek approval before they have the livestock. All offices should strive to be responsive to these applications, however, our actions cannot jeopardize the basic resources entrusted to our management.

Each District has administered ephemeral use authorizations somewhat differently. Documentation leading to our authorizations has been inadequate or inconsistent. There are no consistent criteria to determine if, when, or how livestock use of ephemerals can be made. Our objective is to ensure adequate annual vegetation exists for resource needs at the beginning and end of authorization periods while providing forage for livestock use.

This directive provides guidance for the authorization of livestock grazing on grazing allotments designated as ephemeral or for the authorization of ephemeral grazing use above the grazing preference on allotments managed as perennial (perennial/ephemeral). It will take into consideration other constraints such as those in land use plans or Fish and Wildlife Service biological opinions, or where coordination is needed with Arizona State Trust lands pertaining to livestock grazing leases or special land permits.

Upon receiving an application from a permittee for ephemeral grazing use the following policy will be used. Prior to authorizing ephemeral use an allotment inspection will be made.

The authorized officer will ensure that the following criteria have been met. This is our interpretation of the special rule.

1. Presence of ephemeral vegetation in draws, washes, and under shrubs.

2. Sufficient surface and subsurface soil moisture for continued plant growth exists.

3. Ephemeral forage has grown to useable levels by the time grazing begins.

4. Enough serviceable waters to provide good grazing distribution on the allotment for the number of livestock to be authorized.

5. All range improvements and livestock facilities needed for proper administration of authorized grazing use are properly maintained.

6. The level of grazing use allows for sufficient annual vegetation to remain on site to satisfy other resource concerns. i.e. watershed, wildlife, wild horses and burros.

Salt and minerals may be provided. However, maintenance feeding of livestock on ephemeral rangeland is prohibited. The authorization of ephemeral grazing use must be based on professional judgement tempered by historical data, including past authorizations, ecological site descriptions, clipping studies and experience. Other things to consider are climate (amount of precipitation received and forecast for additional precipitation), and other specific resource concerns. (e.g.: Desert bighorn sheep or desert tortoise habitats, wilderness and/or sensitive watershed concerns.

On grazing allotments where no resource conflicts have been identified, livestock grazing authorizations can be given for a maximum period of 60 days per authorization. If there are known resource conflicts with livestock grazing (such as habitat for special status species) ephemeral authorizations will be limited to a maximum of 30 days per authorization. Because the Sonoran desert tortoise generally remains in burrows until the end of March, authorizations can be given for 60 days or until March 31. After April 1, authorizations will be limited to a maximum of 30 days, in categories I and II desert tortoise habitat. Initial grazing applications will not be authorized for less than 15 days.

An important part of the ephemeral evaluation and authorization processes is ensuring proper documentation leading up to recommendations for an authorization.

Documentation must be uniform and consistent throughout the state. Attachment 1 is the worksheet to be used to document allotment inspections and rationale for recommendations identified in this instruction memorandum. It is to be completed for each initial application and for each extension that may be requested.

Minimum monitoring is a series of photographs before authorization and at the end of each authorization period. Checklists and labelled photographs are to be kept in the monitoring files.

Lester K. Rosenkrance

Lester K. Rosenkrance

Attachment
Ehpemeral Worksheet (1 p.)

EPHEMERAL INSPECTION AND EVALUATION WORKSHEET

ALLOTMENT NAME AND NUMBER:_____DATE:_____

INITIAL APPLICATION?_____ EXTENTION?_____

CLASS OF LIVESTOCK:_____ PROPOSED USE PERIOD:_____

WATER FACILITIES:_____

_____

OTHER RANGE IMPROVEMENTS:_____

VEGETATION:

PERENNIALS: WHITE BURSAGE____ PALO VERDE____ RANGE RATANY____
GLOBEMALLOW____ BIG GALLETA____ 3-AWN SPECIES____TOBOSA____
MESQUITE____ IRONWOOD____ (OTHER) _____

(GROWTH STAGE) DORMANT_____
GREEN-UP_____

ANNUALS: DESERT INDIAN WHEAT____ FILAREE____ SIX WEEKS GRAMA____
SCHISMUS____ RED BROME____ CHEATGRASS____ ANNUAL FESCUE____
(OTHER)_____

(GROWTH STAGE) CURED _____
GREEN-UP_____
HEIGHT_____

COMPOSITION: GRASSES ONLY____ GRASSES AND FORB MIXTURE____
AREA WIDE____ DRAINAGE CHANNEL ONLY____
PROTECTED AREAS ONLY____ OTHER_____

SOIL MOISTURE:
DEPTH_____
POTENTIAL FOR CONTINUED PLANT GROWTH? YES____ NO____
IF YES, ESTIMATE HOW LONG_____

RESOURCE CONCERNS/OBSERVATIONS: (EG. DESERT TORTOISE, BIGHORN, RECREATION)

_____

_____

_____

CARRYING CAPACITY ESTIMATE:_____

_____

_____

_____

RECOMMENDATIONS:_____

_____

_____

_____

_____

_____

SIGNATURE(S):_____

Attachment 1

APPENDIX L –Response to Public Comments Received

Comments were accepted on the Grazing Permit Renewals for the Bill Williams Complex and Bishop Allotments Environmental Assessment (EA) DOI-BLM-AZ-C030-2021-0041-EA, for a 15-day comment and review period from July 13, 2022 through July 26, 2022; although comments received in a timely manner after this date were also considered. All comments were reviewed, considered, and those identified as substantive comments are described in the table below with the Bureau of Land Management's (BLM) response. Minor changes were made to the Final EA to provide further clarification based on comments received, these changes in response to comments are noted in the responses below.

Table 1: Substantive Comments Received and BLM Response

Comment/Summary of Comment	BLM Response
Name not provided – "This EA does not address the potential climate change impacts from this proposed action with respect to how it may affect, change, or increase livestock distribution and forage usage."	Climate change is a far-reaching and long-term issue that will affect the Bill Williams Complex and Bishop Allotment areas, its resources, visitors, and management beyond the scope of this assessment in its 10-year timeframe. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which temperature will continue to rise and whether global emissions of greenhouse gases can be mitigated before serious ecological thresholds are reached. Climate change science is a rapidly advancing field and new information is being collected and released continually. Because the drivers of climate change are largely outside field office control, the Bureau of Land Management alone does not have the ability to prevent climate change from happening. The full extent of climate change impacts to resources is not known, nor do managers and policy makers yet agree on the most effective response mechanisms for minimizing impacts and adapting to change. Rangeland monitoring is used to track climate conditions and drought impacts, and make adjustments to grazing management through Communication, Cooperation, and Consultation with the operators. Decisions, if needed, can be made when resource concerns are identified during the life of the permit. Ephemeral grazing authorizations are based on available forage which reflects climate conditions at that time. The authorized officer maintains the discretion to deny ephemeral applications if conditions do not warrant ephemeral use.
Center for Biological Diversity (Center) – "In the ever-scarcer event that adequate precipitation does fall onto the areas in question [Bill Williams Complex and Bishop Allotments], and cattle are permitted for short times following these rare events, how can it be justified that	All of the proposed alternatives, except the no action alternative, include a limit of 50% use of available ephemeral forage crops and places limitations on use of these crops until seed development is present.

Comment/Summary of Comment	BLM Response
this is a necessary action considering the trampling damage and the competition for forage that would occur with native fauna already struggling to survive on the physiological brink?"	Refer to these sections in the EA for more detail: 3.2.1-Soils, 3.2.2-Vegetation, 3.2.3-Riparian Systems, 3.2.4-Wildlife, and 3.2.5-Cultural. As well as Appendix F – Special Ephemeral Rule and Instruction Memorandum No. AZ-94-018 which have been added to the final EA as additional appendices.
Center – "Concerning the viability of the only perennial allotment [Bishop] in the group, the RHA states…[Desert pavement ecological site] is not viable for livestock and is representative of much of the Bishop allotment. If much of the Bishop allotment is not viable to support livestock, then whey not retire the allotment? Why is grazing an allotment that is not viable to support livestock even an option anymore, considering the future warming and drought conditions that are underway?"	The BLM recognizes through monitoring and assessment that the Bishop Allotment cannot support livestock on a year-round basis. The EA provides alternatives to reduce livestock grazing or not issue grazing permits for Bishop. Nevertheless, the BLM must consider grazing options as well. Under normal conditions, it would be expected for ephemeral use to occur 2-3 years out of 10, respectively. The BLM acknowledges that climate conditions are changing and that ephemeral use is likely to occur less than 2-3 years, if at all, out of 10. The authorized officer also maintains the discretion to approve or even deny ephemeral applications. However minute ephemeral grazing operations may be, it is a viable use of public lands. Ephemeral use provides grazing opportunities on annual forage crop which can sprout on desert pavement sites and other present ecological sites.
Center – Concerning ephemeral use – Please clarify, what is the moisture/precipitation trigger that would allow grazing to commence? What is the specific surface and subsurface moisture level that would trigger the option to graze, and how/when is this measured? What is meant by a 'usable level' of vegetation? Is there a scientific standard or rational behind this concept of 'usable level'? What is meant by 'proper' livestock distribution? Is there a standard definition to this concept and, if not how can it be monitored? What is meant by 'sufficient annual vegetation' to satisfy wildlife'?	The BLM uses Best Management Practices (BMPs) as defined in Instruction Memorandum (IM) No. AZ-94-018 added to the final EA as an appendix. Livestock grazing is based on the amount of ephemeral forage. See Environmental Consequences for sections 3.2.2-Vegetation and 3.2.4-Wildlife; additional detail has been added to the Final EA.
Western Watersheds Project – "The BLM should have included a Voluntary Grazing Retirement Provision" "In our last comments, we strongly recommended the Bureau consider permanently closing these allotments. We also suggested that if the Bureau moved forward with any alternative that would authorize livestock grazing in any form – perennial or ephemeral, that it include the following language in any and all grazing permits or leases within the project area: 'Permittees or lessees with allotments in the Lake Havasu or Yuma Field Office are	This is outside the scope of this analysis. The process for making allotments unavailable for grazing is through a Resource Management Plan (RMP) amendment or revision which would follow the planning and NEPA regulations, which is outside the scope of the current proposal or analysis. The BLM's receipt of a relinquishment of permitted use does not, in and of itself, result in that forage allocation becoming unavailable for use by livestock. Reassigning a livestock forage allocation that has become available due to a relinquishment to a new or different permittee supports the BLM's multiple-use mission.

Comment/Summary of Comment	BLM Response
allowed to voluntarily retire their grazing permits or leases and be eligible for compensation from a third party conservation group.'"	Voluntary relinquishment of a grazing permit is and has been an option that any permittee may desire to take. This has been iterated to the permittees involved with these permit renewal projects.
Desert Tortoise Council (DTC) – "We are interested in viewing BLM's data that support the statement on page 43 of the EA that 'Morafka's desert tortoise populations appear to be stable in Arizona.'"	Reference has been added to the statement in the final EA.
DTC – "We request that BLM revise the EA to include a science-based management plan for livestock and tortoises with appropriate BMPs, quantifiable requirements and standards, and penalties and corrective actions."	The BLM uses BMP as defined in the Candidate Conservation Agreement; added to the appendices of the final EA. This EA analyzes changes to the grazing permit and the terms and conditions based on data presented in the Rangeland Health Assessment and Evaluation Report, which provides the means for managing/addressing livestock to meet rangeland health standards and to achieve desert tortoise objectives. Title 43 Code of Federal Regulations Subchapter D – Range Management provides and defines those standards, penalties, and corrective actions.
DTC – "We were unable to locate BLM Instruction Memorandum No. AZ-94-018 Ephemeral Grazing Authorizations online."	As stated above, the IM has been added to the final EA appendices. Although the IM is expired and not enforceable, it still provides best management practices for ephemeral grazing that were analyzed in the EA and would be incorporated into the ephemeral grazing practices as described on the permit.
DTC – "Livestock production is a major producer of greenhouse gas (GHG) emissions and a significant contributor to climate change (IPCC 1990, Dijkstra et al. 2011, McGregor et al. 2021). The livestock sector is responsible for 18% of global anthropogenic greenhouse gas emissions, with enteric CH4 of livestock being 25% of the livestock related greenhouse gases (Dijkstra et al. 2011). It appears that authorization of any grazing would result in greenhouse gas emissions. Please explain in the EA how an alternative that would authorize grazing, which would be approved by the federal government and occur on public land, complies with the President's Executive Order 14008 on "Tackling the Climate Crisis at Home and Abroad" (e.g., section 204, etc.)."	The BLM, LHFO acknowledges that livestock is a contributor of greenhouse gas emissions, and that any authorization of grazing would result in some greenhouse gas emissions. However, because it is not definitive if and when ephemeral use would occur or how many head of livestock may be stocked (within the terms and conditions of the permit) it is unpredictable to measure the contributions of greenhouse gas emissions on any of the grazing allotments. Given the history of livestock presence in the allotments in question and the expectation that at best 2-3 years of 10 could be used ephemerally, the contribution of greenhouse gas emissions are expected to be low and by no means solely or cumulatively (years of livestock within a 10 year period) exceed beyond the emissions produced by other activities (i.e., Offroad activities, mining, and wildlife) that have and continue to occur on public lands. In addition, Executive Order 14008 established the National Climate Task Force which includes the Secretary of the Interior. In addition to the many directives, agencies that make up the task force are directed to submit reports on ways to achieve climate goals, however the BLM has yet to receive specific instructions or guidance to consider reducing or entirely eliminate livestock use on public lands to combat climate change.

Comment/Summary of Comment	BLM Response
DTC – "In addition, we were unable to find an analysis (emphasis added) of cumulative impacts to special status species such as the Sonoran desert tortoise in the EA and other resource issues that affect the tortoise's habitat such as soils and vegetation. Rather, we found sentences with conclusions. We request that these conclusions be preceded by data on each resource issue that includes the current status of the resource and how the approved action would affect the status of this resource."	Refer to sections 3.2.1-Soils, 3.2.2-Vegetation, and 3.2.4-Wildlife. These sections discuss soil and vegetation as a whole and discloses potential impacts by the alternatives on these resources. Though the Sonoran desert tortoise is not specially identified in the analysis sections, it is included as part of those species described as 'potentially effected wildlife and their habitat'. Furthermore the sections refer to data indicating resource condition status by referencing the Rangeland Health Assessment and Evaluation Report which discloses all available monitoring data that the BLM LHFO has for the allotments in question. These documents are available for reference on the project webpage at https://eplanning.blm.gov/eplanning-ui/project/2015452/570.