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Forest Service

Partridge Creek Allotment Authorization Project Final Environmental Assessment

Williams Ranger District, Kaibab National Forest, Coconino County, Arizona
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**Partridge Creek Allotment Authorization Project
Final Environmental Assessment
Williams Ranger District, Kaibab National Forest
Coconino County, Arizona**

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Note about document: For consistency of this document, “Partridge Creek Allotment”, “allotment” and “project area” all have the same meaning.

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¹ This environmental analysis is conducted according to the Council on Environmental Quality’s 1978 regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR §§1500-1508, as amended). The CEQ issued revised regulations for implementing the procedural provisions of the National Environmental Policy Act, effective September 14, 2020. The revised regulations provide the responsible official the option of conducting an environmental analysis under the 1978 regulations if the process was initiated prior to September 14, 2020 (40 CFR §1506.13, 85 FR 137, p. 43373, July 16, 2020). This project was listed as “in progress” on the Schedule of Proposed Actions on 10/16/2019, and was therefore initiated before the effective date of the revised CEQ regulations. Any references to the regulations at 40 CFR 1500-1508 in this document refer to the 1978 regulations.

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Background Information and Project Location

Partridge Creek Allotment is located six miles north of the town of Ash Fork, on the Williams Ranger District of the Kaibab National Forest (NF) (see figure 1 below). The allotment is bordered by state and private lands to the north, west and south, and by the Double A Wild Burro Territory and the Double A Allotment to the east. Partridge Creek Allotment is approximately 24,985 acres in size with approximately 24,622 acres managed by the Kaibab NF and approximately 363 acres managed by private landowners (table 1). The major vegetation types found on the allotment are pinyon/juniper woodland (approximately 22,255 acres) and Colorado Plateau/Great Basin grassland (approximately 2,367 acres).

Table 1: Pastures Within the Partridge Creek Allotment Boundary

Pastures	Acres*
Big Aso	4,214
Big Aso Trap	16
Big Bill Trap	95
Bull Trap	900
Heifer**	3
House Traps	258
Indian	4,121
Little Aso	6,770
Murray Trap	158
South	6,530
West Trap	1,557
Total	24,622

*Acreage reflects National Forest System acres only; all acres are approximate.

**Heifer Pasture totals 714 acres, 711 of which fall outside of the Kaibab NF boundary and are not applicable to this analysis.

Livestock grazing has occurred intermittently on Partridge Creek Allotment since the late 1800s and was historically grazed during the spring and summer months. A 1995 grazing analysis resulted in the season of use changing from spring/summer to winter/spring. Since 1995 the maximum permitted head of livestock has been 225 cow/calf, with 95 head deferred until monitoring indicates conditions have improved, from November 1 through April 30, for a total of 1,904 animal unit months (AUMs). The 1995 Allotment Management Plan (AMP) describes the current grazing strategy as allowing the annual authorized number of livestock to split into 3-5 herds and simultaneously graze the main pastures (Indian, Big Aso, Little Aso, and South Pastures) during the non-growth period (November 1 through March 15). Pasture(s) grazed during the growth period (March 15-April 30) were to be deferred from grazing for at least two, and if possible three years. This strategy was and still is impractical and difficult to implement due to the suggested number of years a pasture(s) would be removed from livestock use for part of the grazing season, limiting the flexibility for livestock management on the allotment.

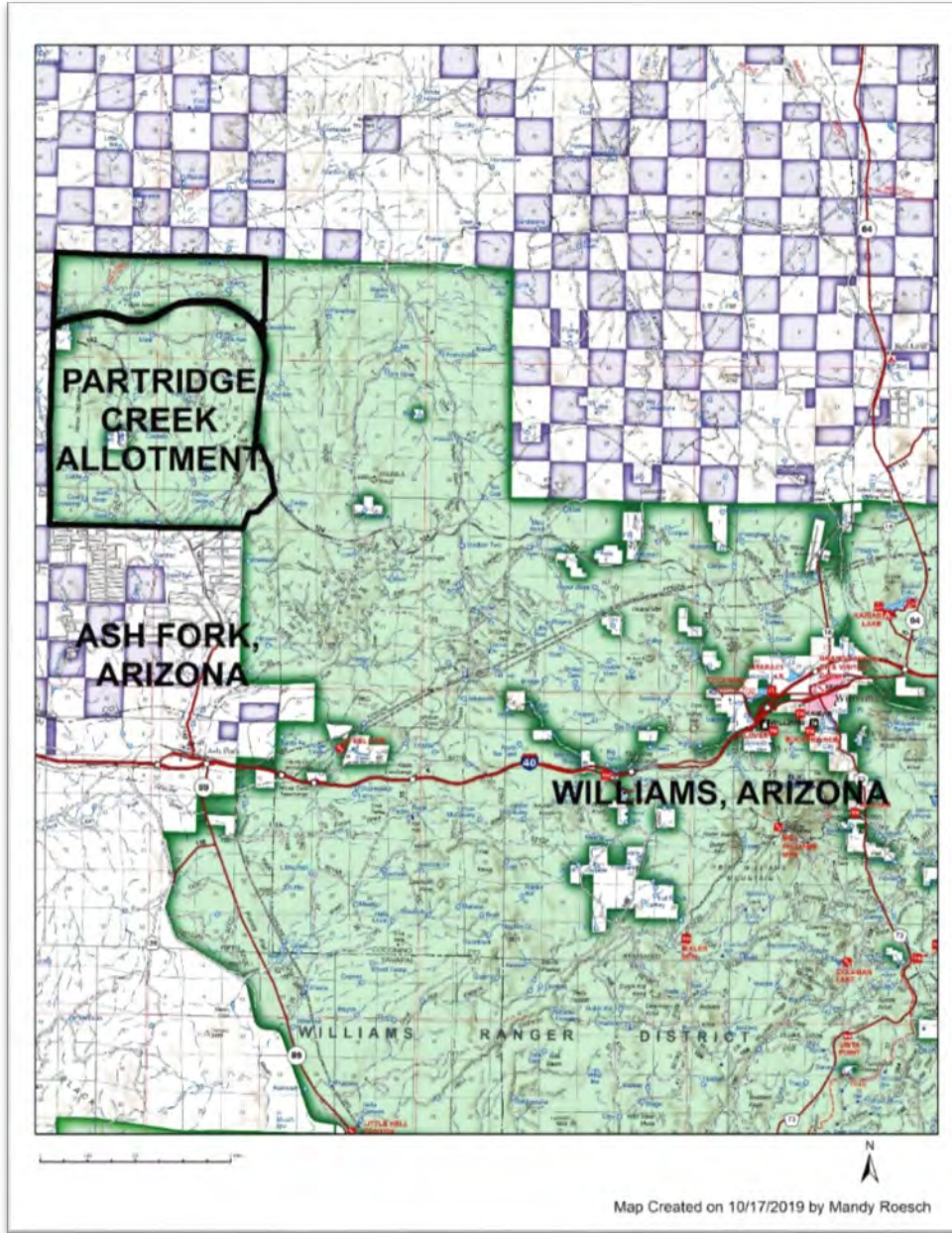


Figure 1: Vicinity Map for Partridge Creek Allotment

Existing Conditions

Current Climate Conditions

Climate on the Partridge Creek Allotment is characterized by a bimodal precipitation pattern with about 60 percent of precipitation occurring as frontal systems in the winter from December to March and about 40 percent occurring as monsoons in the summer from July to September. The summer period (July-September) is characterized by localized high intensity, short duration thunderstorms. The winter period (December-March) is characterized by frontal activity resulting in widespread gentle rains in the lower elevations and, at times, snow in the higher elevations.

Climate conditions are a major contributing factor affecting range condition and trend in the southwestern United States. Large year-to-year differences in rainfall and forage production are characteristic of southwestern ranges (Martin 1974). Climate model projections for the southwest United States predict average temperatures would continue to rise as would the potential for an increase in the frequency of extreme heat events (Crimmins et al. 2007).

The Ash Fork weather station was used to approximate the climate of the allotment. Data from this station was derived from <https://www.noaa.gov/>.

Actual Use

Actual use on the Partridge Creek Allotment is shown for the past five years, see figure 2 and table 2. Actual use over the past five years has been variable from year-to-year and has averaged 782 animal unit months² (AUMs) (67% of permitted numbers) and ranged from 0 to 1,905 AUMs during the 2013 to 2018 grazing seasons. Annual variations in livestock numbers were the result of different factors including, but not limited to, climatic conditions and operational/economic requirements of the permittee. For example, during periods of drought when monitoring revealed decreased forage production, authorized livestock numbers were decreased either at the beginning of or during the grazing season so that utilization would be limited to conservative levels. Also, in some years actual livestock numbers were below permitted numbers because the permittee did not have the full number of livestock available. This commonly occurs following drought periods when the permittee has reduced livestock numbers for resource protection during the drought and when the drought conditions no longer exist, it usually takes the permittee several years to build the herd back up to permitted livestock numbers.

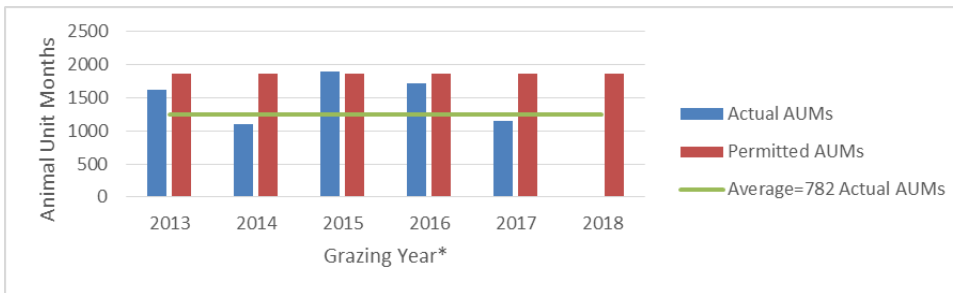


Figure 2: Actual AUMs vs Permitted AUMs from 2013 to 2018 on the Partridge Creek Allotment

Table 2: Actual AUMs vs Permitted AUMs and the Percent of Permitted AUMs on the Partridge Creek Allotment

Grazng Year	Actual Animal Unit Months	Permitted Animal Unit Months	Percent of Permitted Numbers
2013	1629	1862	87
2014	1105	1862	59
2015	1905	1862	102
2016	1727	1862	93

² **Animal Unit Months (AUMs):** The amount of oven-dry forage (forage demand) required by one animal unit for a standardized period of 30 animal-unit-days. The term AUM is commonly used in three ways: (a) stocking rate, as in “X acres per AUM”; (b) forage allocations, as in “X AUMs in Allotment A”; (c) utilization, as in “X AUMs utilized in Unit B”.

Grazng Year	Actual Animal Unit Months	Permitted Animal Unit Months	Percent of Permitted Numbers
2017	20	1862	62
2018	0	1862	0
Average	1,064	1,862	67%

Grazing Capability

Grazing capability of a land area is dependent upon the interrelationship of the soils, topography, plants and animals. Grazing capability is a qualitative expression of the inherent ability of an ecosystem to support grazing use by various classes of livestock on a sustained yield basis.

Grazing capability is expressed as one of four capability classes: Full Capability, Limited Capability, Potential Capability, and No Capability. Definitions of capability can be found in the range specialist report and is available at the Williams Ranger District upon request. (Region 3 Rangeland Analysis and Management Training Guide; Revised 11/2013; 2.8-2.12B).

Estimated Grazing Capacity

Grazing capacity is a function of grazing capability, forage production, topography, allowable use, and the level of management that may be applied. An Excel spreadsheet-based analysis used grazing capability, forage production, topography and an appropriate allowable use to determine the estimated grazing capacity. The following describes these factors and their implications on the calculation of estimated grazing capacity:

1. **Grazing Capability:** Grazing capability classifications have been determined for the Partridge Creek Allotment. The Forest Plan (USDA 2014, as amended) limits the assignment of Full, Limited and Potential Capability to acres with slopes equal to or less than 40%; therefore, acres with slopes greater than 40% have been assigned No Capability. No other acres were identified as Limited Capability by the resource specialists for the Partridge Creek Allotment.
2. **Forage Production:** Forage production was stratified by terrestrial ecosystem unit (TEU). Forage production estimates (Forg) from the Terrestrial Ecosystem Survey (TES) of the Kaibab National Forest (1991) were used for the forage production values of these TEUs. Where multiple forage production values were provided in TES for a single TEU, or in the case of TEU groups, the smallest forage production value was used. Forage Maximum (ForgM) figures were not used because they are estimates based on the total annual yield of native forage plants after elimination of non-forage species.
3. **Topography:** Adjustments in the grazeable land area were made to account for slope. The following factors were used for topography adjustments on the allotment:
 - Class 1 - 0 to 10% Slope; No reduction in estimated grazing capacity
 - Class 2 - 11 to 30% Slope; 30% reduction in estimated grazing capacity
 - Class 3 - 31 to 40% Slope; 60% reduction in estimated grazing capacity
 - Class 4 - >40% Slope; 100% reduction in estimated grazing capacity
4. **Allowable Use:** Allowable use was established at up to 40%. This value represents the upper limit of conservative use (30-40% forage utilization) and represents the combined

utilization level of both livestock and wildlife. Allowable use and therefore, grazing capacity, were assigned only to the following:

- a. Acres classified as Full Capability and less than 40% slope.
 - b. Acres classified as Potential Capability and less than 40% slope.
5. All pastures were used to determine the estimated grazing capacity. Management pastures (used for gathering, holding, shipping, etc.) less than 200 acres in size and water lots were included in the calculations. These areas are used for an average of 5 days per grazing year.
 6. Estimated grazing capacity is expressed in AUMs. AUM is defined as the amount of forage required by an animal unit (mature cow with or without a nursing calf) for one month; approximately 800 pounds of forage per AUM (Manske 1998).

Carrying capacity estimates are conservative as they are based on the average forage production of perennial grasses only. Annual plant species and browse species can make up a large part of cattle diets in a given year. Using the average forage production data based only on perennial grass species, underestimates the total forage available for livestock use. This results in a conservative estimate of the livestock carrying capacity for the allotment.

Range Condition

Range condition was assessed at permanent monitoring locations using the Pace-Frequency and 1/10-acre ocular macroplot cover methods. Data was collected on 15 permanent monitoring plots and 5 additional plots.

Data from the 15 long term monitoring plots and 5 newly established plots were used in this analysis. Long term monitoring plots are located in key areas, the criteria for which include slopes less than 40%. The Partridge Creek Allotment permanent monitoring plots are located on 6 of 19 TEUs. These 6 TEUs represent approximately 13,200 acres (54%) of the Partridge Creek Allotment.

The following represents a summary of the existing range conditions on the Partridge Creek Allotment based on data collected in 2015. Since monitoring plots were established prior to the publication of TES, not all TEUs are represented by long term monitoring. While we cannot extrapolate existing condition data to TEUs that do not have monitoring plots, we can determine, based on professional judgement, that conditions observed at long term monitoring plots and inventory plots are characteristic for all TEUs of the Partridge Creek Allotment.

Summary of Range Condition

Tables 3 and 4 compare the most recent long-term monitoring data with the desired conditions for various range condition attributes found in the TEU. The comparison between existing conditions and desired conditions are organized by the TEU that occur within areas of the Partridge Creek Allotment.

Data were analyzed using a 95% confidence interval to determine if observed ground cover values were notably different from TEU values. If TEU values fell within the confidence limit for the observed values then it was determined that there is no notable difference between TEU and observed values (Ruyle 1997). While data were analyzed using both 80% and 95% confidence

intervals, for this analysis, only confidence limits from the 95% confidence interval are used as this would show a more conservative analysis of the data.

Table 3: Existing Conditions (observed) vs Desired conditions (TEUI) for Number of Species and Percent Canopy Cover by Functional Group

TEU	Acres	Observed						TEUI					
		# Perennial Grass Species	% Canopy Cover Perennial Grass	# Shrub Species	% Canopy Cover Shrub Species	# Tree Species	% Canopy Cover Tree Species	# Perennial Grass Species	% Canopy Cover Perennial Grass	# Shrub Species	% Canopy Cover Shrub Species	# Tree Species	% Canopy Cover Tree Species
7	1601	7	77	6	2	1	4	9	36	8	3	3	T*
162	2075	3	75	5	4	2	16	11	15	8	0.1	4	40
166	2360	2	70	3	T*	2	30	11	15	8	0.1	4	30
495	2676	6	84	2	T*	1	18	11	15	8	0.1	4	40
592	2958	2	83	5	3	1	17	10	16	9	2	3	25

Table 4: Existing Conditions (observed) vs Desired Conditions (TEUI) for Ground Cover

TEU	Acres	Observed				TEUI			
		%Vegetation Ground (basal)Cover	%Plant Cover (basal)	%Rock	%Bare Soil	%Vegetation Ground (basal)Cover	%Plant Cover (basal)	%Rock	%Bare Soil
7	1601	39	35	4	42	30	25	10	60
162	2075	47	18	3	28	10	5	10	80
166	2300	41	5	14	43	10	7	50	40
495	2676	25	13	15	13	25	10	45	30
496	736	33	25	3	21	20	10	55	25
592	2958	40	31	1	33	15	8	48	37

Forest Plan Consistency

This Environmental Assessment (EA) is based on background information about the allotment including current and past rangeland inventory and monitoring data. The desired conditions for resources on the allotment were derived from the Kaibab National Forest (NF) Land and Resource Management Plan (Forest Plan) (USDA 2014). The Forest Plan and related documents can be found at:

<https://www.fs.usda.gov/detail/kaibab/landmanagement/planning/?cid=stelprdb5106605>.

The Forest Plan provides guidance for the management of multiple-use activities that occur within the Kaibab NF. Objectives, standards and guidelines related to the desired conditions for affected resources have been used to develop and analyze the proposed action and alternatives. Grazing is one of the many uses allowed on the Forest. Forest Service policy is to contribute to the economic and social wellbeing of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood while managing rangeland vegetation to protect...resources, provide for ecological diversity, improve or maintain environmental quality and meet public needs for interrelated resource uses (Forest Service Manual (FSM) 2202.1)). The proposed action is consistent with the Forest Plan livestock grazing desired conditions and guidelines as well as the above information direction from the FSM 2202.1. Resource specific desired conditions are discussed in further detail in the specialist reports, located in the project record and are available upon request.

Purpose and Need

The purpose of this project is to determine whether to continue to authorize livestock grazing on Partridge Creek Allotment. Additionally, this project would assist in the determination of how to implement grazing while ensuring livestock management activities are consistent with other resource desired conditions on National Forest System (NFS) lands as stated in the Forest Plan (USDA 2014). There is a need to adjust the permitted season of use and grazing strategy to allow for increased flexibility for livestock management on the allotment. There is also a need to construct additional water facilities to increase flexibility in addressing future drought concerns. This project would allow the Forest Service and the livestock producer to use adaptive management for changing resource conditions or management objectives while being in compliance with Forest Service Policy (Forest Service Handbook (FSH) 2209.13 Chapter 90).

Proposed Action and Alternatives

Introduction

Mitigation measures associated with all action alternatives are required and can be found in *Appendix A: Mitigation Measures by Resource* of this document. The no action alternative and the proposed action alternative were considered in detail during this analysis. The current management alternative does not meet the purpose of and need for this project and therefore, was not analyzed in further detail. An alternative was proposed during scoping to reduce utilization to 15-20% or less. This alternative was not analyzed in further detail. Another alternative proposed during scoping was to reduce Animal Unit Months (AUMs). This alternative was not analyzed further. The current management, the reduction in utilization alternatives, the reduction in AUMs, and an explanation of other alternatives are discussed in more detail in the *Alternatives Eliminated from Detailed Analysis* section of this document.

Future Review of the Decision

In accordance with Forest Service Handbook direction, an interdisciplinary review of the decision would occur within 10 years. If this review indicates that management is meeting standards and achieving desired conditions, the existing management activities would be allowed to continue. If monitoring demonstrates that objectives are not being met or new information indicates effects not previously considered, a new proposed action would be developed and appropriate NEPA analysis and disclosure would occur.

No Action (No Grazing)

No action, or no permitted livestock grazing, is included as an alternative in this analysis to provide an environmental baseline against which the effects of the other alternatives may be compared (FSH 2209.13, Ch. 90). Under this alternative, grazing operations would not be authorized and use of the allotments by domestic livestock would be discontinued. Permittees would be given one year from the date of the decision to remove livestock from the allotments.

Selection of this alternative would not mean that livestock grazing could not be authorized on this allotment sometime in the future. Existing structural improvements would remain in place but would not be maintained. Improvements contributing to resource protection or enhancement, such as water developments important for wildlife, would be maintained, where feasible, using other program funds. When feasible, periodic inspection of structural improvements would be used to

determine whether maintenance or removal is needed. Where necessary, maintenance of allotment boundary fences would be reassigned to adjacent permittees.

Proposed Action

The Williams Ranger District of the Kaibab NF proposes to continue to authorize livestock grazing on the Partridge Creek Allotment under updated parameters identified in Table 5 below as well as construction of improvements throughout the allotment.

The permit holder would assume financial responsibility for construction and maintenance of proposed improvements.

Table 5: Proposed Specifications for Livestock Authorization on Partridge Creek Allotment in Relation to Current Management

Proposed Action	Details	Change from Current Management	Number of Acres Impacted by Construction of New Structural Improvements
Permitted Animal Unit Months (AUMs)	Up to 1,904	None	N/A
Season of Use	October 15-May 31	Extension of 48 days	N/A
Permitted Number of Head*	252 cattle for full season of use	Reduction of 68 cattle**	N/A
Grazing System	Continuous, deferred rotation, rest rotation or a combination of any of these	More options for grazing systems	N/A
Forage Utilization Guideline	Conservative level of utilization (30-40%)	None	N/A
Seasonal Utilization Guideline	Conservative level of seasonal utilization (30-40%)	None	N/A
Expansion of Holding Facility	Approximately 1 mile of new fence construction expanding the existing holding facility by approximately 100 acres	New construction	Approximately 2 Acres
New Pipeline Construction	Approximately 2 miles of buried OR surface pipeline	New construction	Approximately 8 Acres
New Troughs	3 new troughs located in South Pasture	New construction	Approximately 1.5 Acres

Proposed Action	Details	Change from Current Management	Number of Acres Impacted by Construction of New Structural Improvements
New Earthen Stock Ponds	1 in Little Aso Pasture; 1 in Big Aso Pasture	New construction	Approximately 6 Acres
New Trick Tank	1 new trick tank in South Pasture	New construction	Approximately 3 Acres

**This number can be adjusted based on actual season of use and current conditions but would not exceed permitted AUMs.*

***Compared to total of 320 currently permitted. Inaccuracy in preliminary EA has been corrected.*

Range Improvements

Existing Structural Improvements

Maintenance of existing range improvements on the Partridge Creek Allotment would be assigned to the grazing permit holder. These improvements would be kept to current Forest Service guidelines for range improvements. Existing improvements would not need to be modified until reconstruction is warranted. If reconstruction is needed, the permittee would contact the Kaibab NF Range Management Staff.

Proposed Structural Improvements

Structural range improvements would be constructed in order to facilitate grazing animal distribution throughout the allotment. These improvements would allow the grazing permittee increased management flexibility during times of drought. These structural range improvements would assist in achieving desired conditions and management objectives set forth in this analysis.

Specifications on the proposed structural improvements would be determined prior to the construction of the improvements. All improvements would be constructed to current Forest Service guidelines for range improvements. The proposed improvements would not exceed the footprints identified in Table 5 of the proposed action.

The proposed structural improvements are as follows:

- Expansion of Big Bill Trap holding facility
 - Approximately one mile of new fence construction expanding the existing holding facility by approximately 100 acres.
- New pipeline
 - Approximately 2 miles of buried or surface pipeline
 - New pipeline would be in the South pasture
- Three new troughs
 - New troughs would be in South pasture
- Two new earthen stack tanks
 - One in Little Aso pasture
 - One in Big Aso pasture
- One new trick tank
 - New trick tank would be in the South pasture

Figure 3 shows the approximate locations of these structures. All structure locations would be finalized prior to construction; however, they would be in the vicinity of the proposed locations. All heritage surveys would be completed prior to construction. The permittee would contact the Kaibab NF Range Management Specialist prior to construction to ensure surveys are completed.

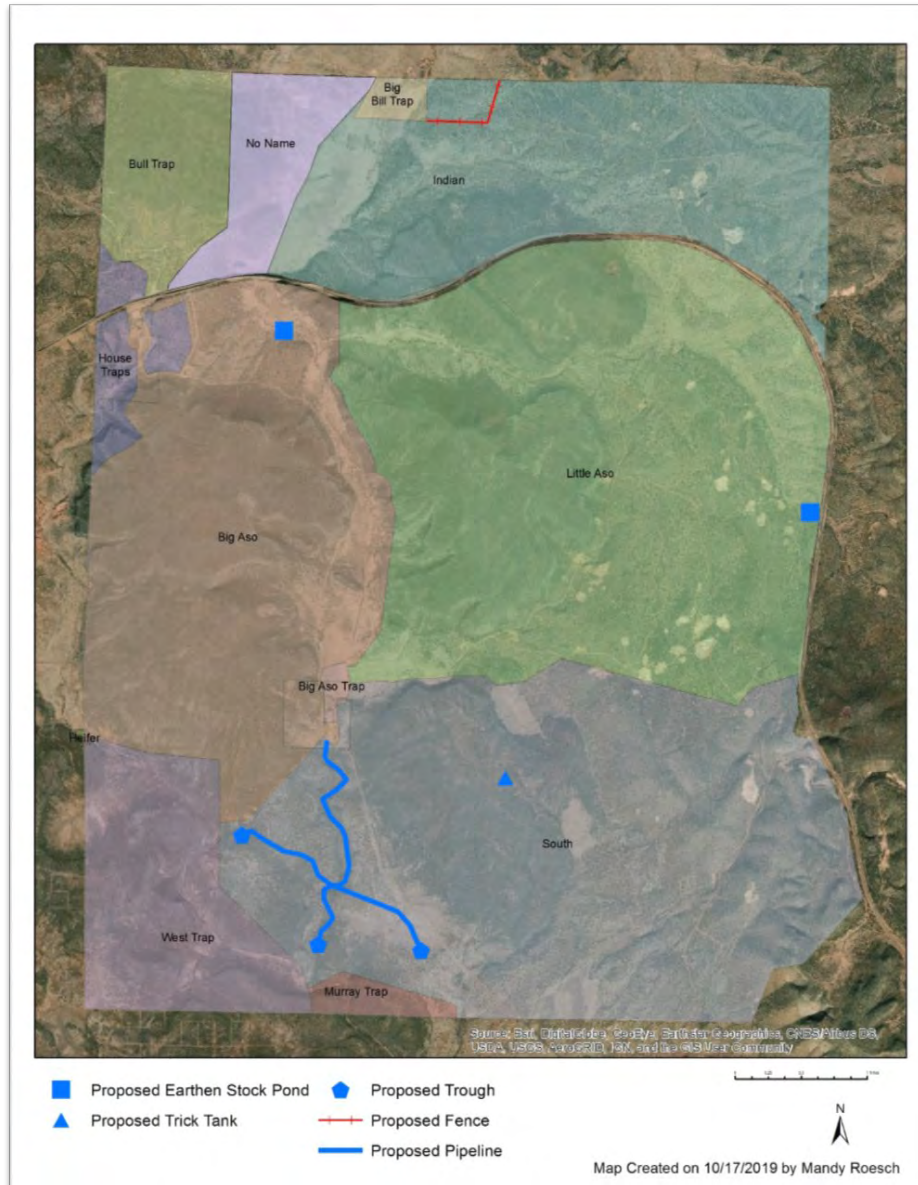


Figure 3: Map Illustrating Approximate Locations of Proposed Structural Improvements on the Partridge Creek Allotment

Adaptive Management

Adaptive management uses documented results of management actions (monitoring) to continually modify management in order to achieve specific objectives including but not limited to, maintaining or moving towards desired conditions as stated in the Forest Plan (USDA 2014). Adaptive management would be tied strongly to the Drought Management Strategy, which is described in the following section. Management results would be assessed with site-specific, short-term inspections, and could be evaluated with long-term monitoring identified in the Forest

Plan. The short-term inspections would focus on annual evaluation of rangeland vegetation, such as forage production or utilization, adequate function of allotment improvements, such as water developments and fencing, and annual assessment of weather-related variables that would inform drought conditions, like the Standardized Precipitation Index (SPI). The long-term monitoring would be tied to the Forest Plan measurements of the relative composition and cover of grasslands (USDA 2014, p. 136). Forest Plan monitoring would be conducted across a larger landscape with random site selection, which may only assess a subset of allotments and may or may not include the Partridge Creek Allotment.

Adaptive management provides the flexibility to adjust livestock numbers and timing of grazing so that use is consistent with current productivity and is meeting management objectives. Under the adaptive management strategy, the specific number of livestock authorized, specific dates for grazing, class of animal and modifications in allotment use may be administratively modified as determined to be necessary and appropriate based on programmatic monitoring. Administrative changes would be documented and implemented in the Annual Operating Instructions (AOIs), which are made part of the term grazing permit. Adaptive management also includes monitoring and analysis to determine whether identified structural improvements are necessary or need to be modified.

In the case that changing circumstances require structural improvements or management actions not be disclosed or analyzed herein, further interdisciplinary review would occur. The review would consider the changed circumstances and site-specific environmental effects of the improvements in the context of the overall project. Based on the results of the interdisciplinary review, the Responsible Official would determine whether correction, supplementation or revision of the EA is necessary in accordance with FSH direction at FSH 1909.15(18) and FSH 2209.13(96.1), or whether further analysis under NEPA is required.

Drought Management Strategy

Drought is an inevitable occurrence in the southwestern United States. Land managers and grazing permittees must plan for drought as a normal part of management and business. The SPI is a unit of measure that compares recent precipitation values for a period of interest with long-term historical values to assess moisture conditions in a given area. In the Southwestern Region, any time the SPI reaches a value of minus 1.00 or less for the preceding 12-month period, grazing allotments should be evaluated for existing drought conditions.

The Forest considers a diversity of factors when devising management actions on the National Forests in the Southwestern Region in response to drought. Such factors include species diversity, past grazing use, timing of grazing, intensity of management, and conditions of improvements to support grazing activities. These factors along with precipitation data provide flexibility to the line officer to make decisions based on recommendations from district specialists. Rangeland management specialists use direction provided in the Region 3 Supplement to FSH 2209.13, the Grazing Permit Administration Handbook, and 12-Month SPI to assess soil and vegetation conditions. Using the SPI as a baseline and combining it with site-specific information from allotment inspections and monitoring data, range specialists can make a determination for necessary management actions and review adaptive management alternatives to determine the best course of action.

Region 3 and Kaibab NF drought management policies identify numerous adaptive management actions for mitigating grazing effects during drought. The Williams Ranger District would conduct annual monitoring of the allotment to collect forage production and forage utilization

data. Annual monitoring would help inform the management actions that could be used on the Partridge Creek Allotment during periods of drought. The following are examples of management actions that could be used with appropriate monitoring:

1. Reduce authorized AUMs (livestock numbers). Reductions may be necessary prior to the permitted season of use and/or during the permitted season of use
2. Shorten season of use. Depending on the severity of the drought and authorized AUMs, a reduced grazing season may be necessary
3. Shorten pasture use periods
4. Lack of livestock water, or poor distribution of livestock water, may result in reduced pasture/allotment use periods
5. Pastures would only be grazed once during the same grazing season and this may ultimately result in an early exit from the Partridge Creek Allotment
6. Pastures may need complete rest from livestock use. Pasture resting periods would depend on the severity of the drought. Livestock use of planned rested pastures due to drought would not be authorized
7. Reduce forage utilization and/or seasonal utilization levels. Depending on the severity of the drought and the authorized AUMs, reduced forage utilization and/or seasonal utilization levels would likely result in shortened pasture use periods and may ultimately result in an early exit from the Partridge Creek Allotment

Alternatives Eliminated from Detailed Analysis

Continue Current Management

Under this alternative, there would be no change in allotment management. As permits expire, new permits would be issued for the classes and numbers of livestock currently permitted. Annual authorization use would continue to be permitted through annual operating instructions (AOIs). None of the proposed improvements would be implemented, but existing improvements would be maintained. This alternative was not analyzed in detail because it does not meet the purpose and need for the project to manage resources in a manner that achieves Forest Plan (USDA 2014) objectives and desired conditions, nor does it formally incorporate adaptive management to allow for sufficient management flexibility.

Reduce Utilization to 15-20 % (or less)

An alternative to decrease utilization, which was recommended in public comments, has not been analyzed in detail. Under this alternative, there would be a reduction in utilization from the current conservative levels of 30-40% to 15-20%. An alternative with a guideline of 15-20% utilization levels for solely livestock was not analyzed because it would not be feasible to implement as it does not provide for an economically viable operation for the permit holder. Grazing at conservative use levels (30-40%) is consistent with the Kaibab Forest Plan. Additionally, utilization is not a tool that is used to manage grazing animal numbers; it is a monitoring tool which is used to determine whether grazing that has occurred is consistent with desired conditions of each pasture within the allotment. This method helps to inform the number of AUMs the land can carry at one time, which may be adjusted through adaptive management.

Reduce the Number of AUMs

An alternative to decrease AUMs which was recommended in public comments, has not been analyzed in further detail. The proposed action already limits the AUMs on the allotment to 1,904. The current estimated carrying capacity for this allotment for the operation months of October 1 through May 31 is 3,983 AUMs. This estimate includes the elk populations in the area. Due to this, there is no need to reduce the number of AUMs for the allotment as the Kaibab NF is already limiting what the permittee is able to have to 2,079 AUMs below the estimated carrying capacity.

Environmental Effects

Introduction

This section summarizes the condition of the various resource environments in the project area and the potential effects to those environments due to the implementation of the alternatives analyzed. Conclusions in this analysis are based on professional judgement, best available science, monitoring, modeling, and data collected.

One of the scoping comments as well as a comment received during the comment period had literature cited. The Interdisciplinary Team has reviewed this literature. Responses can be found in the project record and are available upon request. All specialist reports and their associated literature cited are incorporated by reference and are available at the Williams Ranger District office upon request.

Climate Change

In response to comments received in both the scoping and comment period, climate change is addressed further. The Kaibab NF specialists have analyzed effects in a 10-year period. Long-term monitoring of the allotment has been addressed in the range specialist report. Short-term climate variation during the 10-year planning window would be addressed through the adaptive management and drought management strategies in the proposed action. As needed, pertinent aspects of climate change, which could affect socioeconomic or ecological conditions associated with the proposed action, may also be addressed in the rationale for the decision. The Kaibab NF is addressing climate change in this EA by allowing for flexibility using adaptive management and establishing a drought management strategy for the allotment.

The Kaibab NF addressed climate change on a programmatic level in the Forest Plan (USDA 2014). The Forest Plan states that climate change is addressed as an integrated part of the Forest Plan rather than as a standalone set of desired conditions... integration of climate-relevant desired conditions through the Forest Plan helps to ensure these concepts are considered during project-level planning. Climate change monitoring is to ensure that increased extreme weather-related forest disturbances (i.e. floods, drought, wind-throw, etc.) are considered through monitoring and that the landscape is managed appropriately. By including adaptive management and a drought management plan in the proposed action, the Kaibab NF is ensuring that management of the landscape has the flexibility to adapt to climate change. Managing ecosystems under uncertainty necessitates flexible and adaptive approaches that are reversible, are implemented in incremental steps, allow for new information and learning, and can be modified with changing circumstances (Millar et al. 2007).

Results from relevant monitoring and the climate change approach required by the Forest Plan would be used to inform adaptive management (USDA 2014, pages 123-154 and 205-215). Prior

to adaptive management being implemented, the permittee would be notified, and District specialists would be consulted when there are changes to management. With implementation of the drought management and adaptive management strategy, resource impacts would not increase during dry years, and would be similar to impacts already described and disclosed in this analysis.

Range Suitability

The 1982 Planning Rule requires that the suitability of rangelands on NFS lands and their capability for producing forage for grazing animals be determined in forest planning. The Forest Plan (USDA 2014), which was revised under the terms of the 1982 Planning Rule, identified and determined whether land was suitable for grazing. Figure 4 in *Appendix D: Grazing Suitability* shows where on the Kaibab NF land is suitable for grazing. The Partridge Creek Allotment is within the rangelands suitable for grazing as determined by our Forest Plan.

A suitable determination indicates that grazing is compatible with the desired conditions for the relevant portion of the plan area. It is guidance for project and activity decision making and is not a commitment or a final decision. It does not mean that grazing will or will not occur in a particular area. The final decision to authorize livestock grazing and the determination for how lands are managed, including those that have been identified as not capable of producing forage, is made at the project/allotment level. The decisions are made following consideration of site-specific environmental analysis and review analysis consistent with the National Environmental Policy Act (NEPA), which is the purpose of this EA. As part of the Forest Plan analysis, condition and trend of the Kaibab NF's allotments was assessed to ensure availability of forage for all species.

Past, Present and Reasonably Foreseeable Actions

Cumulative effects result when effects from past, present, and reasonably foreseeable future actions add to the direct and indirect effects considered in this EA. Some resource areas analyzed potential cumulative effects on private lands where their geographic boundary for environmental effects included private lands such as Noxious Weeds, Watersheds, and Wildlife. The Forest Service does not have the authority to collect data on private lands; however, using best available science we are able to model or make assumptions about the potential conditions on private lands.

The temporal bound for cumulative effects on all resources is ten years which is the term of the proposed grazing permit.

There has been no unauthorized grazing use in the Partridge Creek Allotment, and thus, there are no cumulative impacts to be considered with unauthorized grazing. Watershed-scale cumulative impacts, which include grazing on adjacent state and private lands, are addressed in the *Soils and Watershed* subsection of the *Environmental Effects* section of this EA as well as in the *Soils and Watershed Specialist Report* (Kiesow, 2020; page 15).

For cumulative effects, the resource specialist considered these types of actions:

- Fuels Reduction (Prescribed Fire)
- South Zone Grassland Restoration Project (Vegetation Treatments)
- Treatment of Invasive Species
- Recreation
- Travel Management (Off Highway Vehicle Use)
- Wildlife Use
- Incidental Use by Wild Burros

Botany and Noxious Weeds

Field surveys and geographic and habitat analysis were conducted to assess the potential for federally listed Threatened and Endangered plant species (listed species), Forest Service Sensitive plant species, and restricted and narrow endemic plant species (“rare plants”) to occur in the Partridge Creek Allotment. Similar methods were used to assess the presence of noxious weed species and their capacity to establish and spread in this area.

Using United States Fish and Wildlife Service (USFWS) data and associated habitat analysis, it was found that no federally listed plant species had known habitat in the project area, and that it was highly unlikely for any listed plant species to occur in the project area. Two Forest Service Sensitive species, Mt. Dellenbaugh sandwort (*Eremogone aberrans*) and Arizona phlox (*Phlox amabilis*), and one restricted-range species variety, Mat penstemon (*Penstemon caespitosus var. desertipicti*), were located in the allotment during field surveys in October 2019. It was determined that seven other rare plant species had the potential to occur in the project area based on habitat requirements and known geographic range.

These populations could experience adverse effects from activities associated with the proposed action such as grazing and trampling by cattle, ground disturbance by vehicles and equipment during construction of range improvements, and erosion and habitat degradation. Areas around constructed water sources would experience a higher and more permanent degree of effect from grazing and trampling of livestock; these higher impacts would affect about 259 acres of the allotment. The remaining area would experience minimal effects from disturbance. Botany surveys focused on these areas would occur ahead of new construction to identify the most vulnerable rare plant populations.

One noxious weed species, cheatgrass (*Bromus tectorum*), is known to occur in the project area and the potential exists for other noxious weed species present on the Williams Ranger District and other nearby lands to occur there. Through activities associated with the proposed action such as, grazing and trampling by cattle, ground disturbance by vehicles and equipment during construction of range improvements, and erosion and habitat degradation associated with these activities, it is possible that existing populations may expand and that new populations may establish.

Survey and monitoring activities would be conducted by the South Zone Range and Botany personnel including periodic rangeland health monitoring, weeds surveys and rare plant population monitoring. The information gathered would allow adaptive management responses, such as changes to grazing systems, changes in period of use, or exclusion fencing of plant populations, which would serve to mitigate potential undesired effects on weeds and rare plants.

According to the professional judgement of local staff, the observed status of known rare plant populations on the allotment in October 2019 was consistent with those monitored elsewhere on the Williams and Tusayan Ranger Districts, in which these species are widespread and successfully setting seed based on 2018-2019 data. With mitigation measures and best management practices (BMPs) in place, effects from the proposed action and cumulative actions are not expected to result in downward trends in viability of any plant species or the habitat within its geographic range on the Kaibab NF; nor are these species expected to trend toward listing as endangered species. Using mitigation measures and BMPs, the proposed action and cumulative actions are not likely to encourage establishment or spread of noxious weeds in the project area.

The no action alternative would likely have no effect or a beneficial effect on rare plant populations and their habitat in the project area by removing the pressure of grazing and trampling by livestock. Eliminating routine heavy disturbance by livestock around current stock tanks and pens (and additional construction-related disturbance) would allow reestablishment of desired vegetation and may make the allotment more resilient to invasion by weeds.

The proposed action is consistent with the Forest Plan's management approaches (USDA 2014, pages 52-54) for Forest Service Sensitive, restricted and narrow endemic, and nonnative invasive species. The Kaibab NF works with the USFWS and other partners to develop conservation measures to prevent listing of new species and to aid in the recovery and delisting of federally listed species. To effectively manage invasive species populations, the Kaibab NF coordinates with other agencies, grazing permittees, and adjacent landowners in efforts to educate the public and conduct weed survey, prevention and control activities.

Heritage Resources

Analyses were conducted to determine potential effects to heritage resources as a result of the proposal to authorize livestock grazing on the Partridge Creek Allotment under newly developed parameters. Previous archeological surveys have inventoried 4,309 out of 24,622 acres (approximately 17.5%) of the Partridge Creek Allotment. Once the exact locations of the proposed fence, pipeline, trick tanks and multiple troughs are identified, Kaibab NF archeologists would need to complete a field survey for any unrecorded archeological sites and consult with the Arizona State Historic Preservation Office (AZSHPO) to ensure that there would be no adverse effects to any new sites found within the newly disturbed areas.

In the inventoried area, 331 archeological sites were documented within the Partridge Creek Allotment. Of the 331 sites within the allotment, site types include prehistoric artifact scatters, prehistoric habitational sites, prehistoric field houses/agricultural features, historic refuse areas, rock art, rock shelters and historic house foundations. No archeological sites have evidence of adverse effects as a result of past and ongoing livestock grazing. If any adverse effects to sites are observed, Kaibab NF archeologists would work with the range staff to develop and implement sufficient mitigation measures pursuant to Appendix H of the Standard Consultation Protocol for Rangeland Management to mitigate any adverse effects to sites. The proposed action is consistent with the Forest Plan's management approach (USDA 2014, page 60) for cultural resources because the Kaibab NF continues to work to identify, evaluate, and protect cultural resources.

Sites on National Forest System lands in Region 3 “have been subjected to grazing for hundreds of years, at levels much higher than current grazing practices;” therefore, many of the impacts to heritage resources from grazing have already occurred. The establishment of allotments and grazing management substantially decreased threats to heritage resources with large reductions in livestock numbers, regulations on time of year and the amount of time livestock can graze in particular areas. Adaptive management strategies and practices have greatly reduced the threat of adverse effects to sites from activities associated with grazing (USDA 2009).

With regards to the Partridge Creek Allotment, archeologists have not found any adverse effects during their past monitoring of grazing activities, and that the effects of any new improvements would be consulted upon with the AZSHPO to minimize effects to archeological sites, there would be no measurable direct or indirect effects on any heritage resources as a result of the proposed action activities. The Kaibab NF is currently consulting with the AZSHPO under the Programmatic Agreement under a no adverse effect finding to any historic properties (Weintraub 2019).

The no action alternative would have no measurable direct or indirect effects on any heritage resources.

In complying with Section 106 of the National Historic Preservation Act of 1966 as amended, Kaibab NF archeologists ensure that all Forest projects result in no adverse effects to heritage resources. Because of this, there would be no cumulative effects to heritage resources from any past, present or foreseeable future actions within/or from the area surrounding the Partridge Creek Allotment.

Range

Existing and desired conditions for percent ground cover, number of perennial grass species and perennial grass canopy cover for Partridge Creek Allotment are discussed in the rangeland specialist report, and shown in Tables 3 and 4. Of the 19 terrestrial ecosystem units (TEUs) on the allotment, existing and desired conditions were determined using monitoring data collected in six TEUs for ground cover and five TEUs for number of perennial grass species and perennial grass canopy cover, and comparing these data to values in the TES. Currently, all six TEUs meet desired conditions for vegetative ground cover; one TEU meets desired conditions for number of perennial grass species; and five TEUs meet desired conditions for perennial grass canopy cover.

For TEUs that are currently meeting desired conditions, the long-term goal is to maintain or improve this condition. For TEUs that are not currently meeting desired conditions, the long-term goal is to move towards desired conditions. If implementation of the selected alternative is not meeting or moving towards these desired conditions, adaptive management would be used to adjust grazing management in order to achieve these desired conditions.

The proposed action alternative would have effects to vegetation height, canopy cover, diversity, density, production and quality. With the use of mitigation measures and adaptive management, and with favorable climatic conditions, these effects would be localized and temporary. New structural range improvements would increase water availability for livestock and wildlife. Increased water availability would allow for improved livestock management and improved dispersal of livestock and wildlife throughout the allotment; reducing effects to upland vegetation. The use of adaptive management would allow for changes in livestock management in response to climatic changes, changes with other resource management and changes in ranch management.

The degree of effect to the rangeland resources would be minimal due to the use of BMPs, adaptive management, following utilization and seasonal utilization guidelines, and increasing water availability on the allotment.

The degree to which the cumulative actions combined with livestock grazing would affect upland vegetation is minimal to moderate. The use of BMPs for all projects mitigates negative effects to upland vegetation resulting in minimal impacts. Under favorable climatic conditions upland vegetation is expected to recover within one to two growing seasons once projects are completed, resulting in minimal impacts to upland vegetation. Some projects (restoration, weed treatments) may initially result in an impact to upland vegetation, but the long-term impact would be beneficial to this resource.

The no action alternative would result in no effects to vegetation height and canopy cover, but would have a negative effect to vegetation diversity, density, production and quality. Existing range improvements would not be maintained.

The proposed action alternative meets the Forest Plan direction, “There are opportunities to engage in ranching activities and graze livestock on NFS lands. These activities contribute to the stability and social, economic, and cultural aspects of rural communities” (USDA 2014). This action complies with all regulations and policies for rangeland resources (Roesch 2019).

Soils and Watershed

Soil and watershed resources were analyzed to determine effects of a no action alternative and a proposed action alternative for the Partridge Creek Allotment Livestock Authorization Project. Soil condition was analyzed based on key indicators that would be affected by project activities. These indicators relate directly to soil condition and include soil disturbance, soil compaction and soil nutrient cycling/ground cover. The Watershed Condition Framework (WCF) was used to evaluate watershed scale existing conditions in this report. Six of the twelve watershed indicators (as outlined in the WCF) have the potential to be affected by project activities and were assessed within this report. Those six indicators include; water quality, water quantity, riparian/wetland vegetation, soil condition, rangeland vegetation and terrestrial invasive species. No riparian or wetland vegetation is documented within the Partridge Creek Allotment, and thus, there are no impacts to be considered for riparian or wetland resources.

Satisfactory soil conditions exist across the majority of the allotment. Impaired and unsatisfactory soil conditions generally occur on 1) steep slopes, 2) areas with high pinyon/juniper canopy cover, 3) areas with shallow soil and 4) areas close to stock tanks. The majority of Murray Trap pasture consists of impaired and unsatisfactory soil conditions.

Table 6: Partridge Creek Allotment Soil Condition

<i>Soil Condition</i>	<i>Acres* (USFS Acres)</i>	<i>Percent of Allotment (USFS)</i>
<i>Satisfactory</i>	<i>19,425</i>	<i>79</i>
<i>Impaired</i>	<i>3,391</i>	<i>14</i>
<i>Unsatisfactory</i>	<i>1,851</i>	<i>7</i>

**Acres are produced from geospatial information and account only for USFS lands. Geospatial information and accuracy may vary; acres are approximate.*

The Partridge Creek Allotment project area intersects five subwatersheds (Hydrologic Unit Code (HUC) level 12 watersheds). One of the subwatersheds, Eightmile Creek, encompasses 84 acres of the allotment and will not be included in this assessment due to the small number of acres that exist on Forest Service lands. The primary factors affecting watershed conditions across the project area include; occurrences of quarries and cinder pits, lack of road maintenance, road placement near drainages and unsatisfactory soil conditions.

Table 7: Watershed Summary for the Partridge Creek Allotment

Watershed Name	Hydrologic Unit Code (HUC 12)	Condition Rating	Condition Summary	Acres	Acres within Project Area
Big Aso Tank	150602010405	Functioning at Risk	Low road maintenance; cinder	28,741	10,750

Watershed Name	Hydrologic Unit Code (HUC 12)	Condition Rating	Condition Summary	Acres	Acres within Project Area
			pits and quarries present.		
Bunker Tank	150602010404	Functioning at Risk	Unsatisfactory soils in watershed; high road density; low road maintenance; many roads near water courses.	8,596	4,987
Flagstone Tank-Partridge Creek	150602010406	Functioning Properly	Low road maintenance; many roads near water courses.	19,742	4,463
Garden Tank-Partridge Creek	150602010407	Functioning at Risk	Unsatisfactory soils in watershed; low road maintenance; cinder pits and quarries.	22,794	4,728

Natural perennial waters do not exist within the Partridge Creek Allotment therefore no water quality information exists. No natural riparian areas, springs or wetlands are documented within the Partridge Creek Allotment area. Wetland vegetation may occur in isolated areas near stock tanks, in drainages, or low-lying areas where water accumulates and slowly infiltrates. Stream channels in this area exhibit only ephemeral flow characteristics. Streamflow only occurs for brief periods of time as a result of spring snowmelt and monsoon precipitation. Streamflow and runoff volumes within the project area are not monitored. There are no streamflow data for ephemeral channels within the project area. Typically, ephemeral drainages in the project areas exhibit bimodal seasonal flow patterns – typically during spring snowmelt and following localized, high intensity summer monsoon precipitation. Effects to watershed indicators relating to these resources will be assessed qualitatively.

The proposed action alternative would affect soil condition through soil disturbance, soil erosion, soil compaction, and reduced nutrient cycling/ground cover across the project area where livestock concentrations occur. These effects would be minor across the majority of the allotment area from livestock grazing. There would be short term minor effects to soil condition from construction of the proposed water improvements and fence line. There would be long term localized effects to soil condition around proposed and existing stock tanks, troughs and trick tanks.

Managed livestock grazing would increase sediment delivery to stream courses and water bodies and increase nutrient concentrations in surface waters (stock tanks). These effects would be minor in regard to water quality due the high amount of ephemeral drainages, low gradient and lack of perennial water. Proposed range improvements would not alter the physical, chemical or biological components of water quality. The construction of stock tanks in drainages would directly affect natural flow regimes by retaining water and sediment at those locations. The amount of water that would be retained is negligible at the sub-watershed scale.

The geographic setting for the cumulative effects analysis for soils and watersheds includes all of the 6th-level (HUC12) hydrologic unit watersheds that intersect the Partridge Creek Allotment. The degree to which the cumulative effects would impact soils and watersheds in conjunction with the proposed action is minor at the subwatershed scale (Kiesow 2020, page 15).

With the no action alternative, soil condition would improve over time in areas where high use from livestock (i.e. areas near stock tanks and livestock trails) currently occur, but no longer would under the no action alternative. Impaired and unsatisfactory soil conditions that occur on steeper slopes, in areas with high pinyon/juniper canopy cover and areas with shallow soil would continue to exist.

Watershed condition would remain unchanged as a result of the no action alternative as the primary factors affecting watershed condition (i.e. occurrences of quarries and cinder pits, lack of road maintenance, road placement near drainages and unsatisfactory soil conditions) would continue to occur across the project area.

The proposed action alternative would comply with Forest Service direction, Kaibab NF Forest Plan standards and guidelines and all state and federal regulations affecting soil and watershed resources as described in the “Relevant Laws, Regulations and Policy” document on the project website where ongoing efforts used to control adverse effects of livestock grazing are implemented. These include forage utilization guidelines, controlling livestock distributions, monitoring of rangeland conditions and BMPs. Where these methods are utilized properly, adverse effects to soil and water resources are minimized and/or are mitigated.

Wildlife

Using the Partridge Creek Allotment boundary, the potential for Endangered, Threatened, Candidate, and Conservation Agreement species, and Critical Habitat was determined considering habitat, elevation, and geographic distribution of each species as well as the USFWS Information for Planning and Conservation (IPAC) online system. California condors were determined to be potentially in the project area by IPAC on November 18, 2019; the proposed action would not jeopardize the continued existence of the species. The Yellow-billed Cuckoo and Northern Mexican garter snake were also identified by IPAC as potential species, but no habitat exists in the project area for either species. Forest Service Sensitive species were also considered with the Bald Eagle, American peregrine falcon, Spotted Bat, Allen’s lappet-browed bat and Pale Townsend’s big eared bat, determined to be species which could occur in the project area and have potential to be affected by the proposed action.

Livestock grazing has a wide range of direct and indirect effects on ecosystem structure and function on wildlife and its associated habitat (e.g., see literature reviews in Kauffman and Krueger 1984, Fleischner 1994, Severson and Urness 1994, Saab et al. 1995, Belsky and Blumenthal 1996, Milchunas 2006). The primary effects of livestock grazing on wildlife habitat are the direct and indirect effects associated with repeated reductions in understory vegetation (cover/density/biomass/frequency) due to grazing and trampling by livestock. This results in reduced food resources available for a wide variety of invertebrate and vertebrate species that eat plant parts (leaves, flowers, fruits, seeds) and reduced cover for a wide variety of invertebrate and small vertebrate species (e.g., lizards, snakes, ground-nesting birds, small mammals). Cover provided by both live herbaceous vegetation as well as the herbaceous litter layer is reduced by livestock grazing. Reduced cover can negatively affect microhabitat conditions for some of these species and potentially results in increased predation risk. Livestock grazing has been known to alter the behavior of native ungulates through social displacement.

Livestock grazing also alters the composition of plant communities. Plant species vary in their palatability to livestock. Plant species that are less palatable to livestock tend to increase over time as a result of herbivory on plant species that are more palatable, which tend to decrease over time.

Livestock grazing also has had many indirect effects on ecosystem structure and function and thus wildlife habitat as a result of effects on fire regime and tree establishment patterns. Fire frequency in southwestern ponderosa pine forests decreased substantially about the time that large numbers of livestock began grazing, most likely due to the annual removal of herbaceous fine fuels by grazing livestock (Swetnam et al. 1999). In addition, reductions in herbaceous vegetation cover by grazing livestock resulted in reduced plant competition for pine seedlings and created more areas of mineral soil favorable to establishment of pine seedlings (Rummell 1951, Milchunas 2006). Thus, livestock grazing, in conjunction with active fire suppression, has likely resulted in losses of grassland areas and widespread transformation of savannas and woodlands into denser woodlands and forests (Johnsen 1962, Swetnam et al. 1999, Saab et al. 1995).

Although livestock grazing affects wildlife habitat, the existing current environmental baseline within the Partridge Creek Allotment is a landscape that has been continuously grazed by livestock for approximately 130 years. Numbers of livestock grazed today on the Partridge Creek Allotment and throughout the western U.S. are a fraction of numbers grazed during the late 1800s and early 1900s (Milchunas 2006). Many of the greatest ecological impacts of livestock grazing (e.g., severe erosion and loss of palatable forage species) likely occurred by the early 1900s (Milchunas 2006), since then rangeland management in the National Forest system has adjusted its practices to mitigate the effects and reduce the overall level of impact associated with livestock grazing. Effects to wildlife habitat across the project boundary would be marginal due to utilization levels remaining conservative at 30-40%.

The project area does not overlap with any zones for the Mexican Gray Wolf Experimental Population area, and thus, there are no impacts to be considered for the Mexican Gray Wolf. In addition, no bighorn sheep or their habitat are present in the project area, and thus, there are no impacts to be considered for bighorn sheep.

Under the no action alternative, herbaceous and shrubby vegetation would likely increase, resulting in increased habitat quality for the above-mentioned species. (Largent 2019).

It is determined that the proposed action would not adversely affect the above-mentioned species and would not result in a trend toward Federal listing or loss of viability for any Forest Service Sensitive, rare, or narrow endemic wildlife species. Nor would implementation of the proposed action result in measurable negative effects to migratory bird populations. Further, any negative effects to these species as a result of implementation of the proposed action, direct or indirect, are largely the result of reduction in biomass caused by grazing. It is the specialist's professional judgement that these effects are negligible to these species and their habitat due to conservative utilization levels of 30%-40% and is analyzed in further detail in the Wildlife Specialist Report (Largent 2019).

While past, present and reasonably foreseeable future actions might have some cumulative effects to species analyzed in the Specialists Report, those effects would not result in jeopardizing the continued existence, trend towards listing or loss of viability of any of these species.

The proposed action is consistent with the Forest Plans management approach (USDA 2014, page 50) for wildlife because the Kaibab NF strives to create and maintain natural communities and

habitats in the amounts, arrangements, and conditions capable of supporting viable populations of existing native and desired nonnative plant, aquatic, and wildlife species within the planning area while contributing broader landscape-scale initiatives where appropriate. The Williams Ranger District would continue to meet desired conditions for wildlife as stated in the Forest Plan (USDA 2014).

Public Involvement

Planning for the Partridge Creek Allotment Authorization Project began in October of 2019. The project first published on the Forest Service Schedule of Proposed Actions (SOPA) on October 1, 2019. In October of 2019, a District interdisciplinary team met to develop the proposed action and identify preliminary issues, concerns and measures to carry forward into the analysis. The proposed action was released for a 14-day public scoping period with a letter dated November 1, 2019. A legal notice was published in the *Arizona Daily Sun* on January 10, 2020, which initiated the 30-day legal comment period for the draft EA.

The Kaibab NF received three comment letters during the scoping period. Public comments were received about proposed allotment use compared with actual past use, drought associated with climate change, pasture rest and financial responsibility for proposed allotment improvements, which are addressed in the *Proposed Action* section of this EA. Public comments were received regarding watershed-scale cumulative effects, cumulative impacts of unauthorized grazing use and impacts of the proposed action on riparian areas and federally-listed threatened or endangered species, which are evaluated in the *Environmental Effects* section of this EA, as well as the individual resource specialist reports which are referenced. Additional information regarding public comments and agency responses to those comments can be found in the document *Response to Comments*, which is available on the project website (<https://www.fs.usda.gov/project/?project=56955>).

During the legal comment period, the Kaibab NF received one comment. The comment did not constitute significant change to the EA, however, the comment brought forward need for clarification in various areas of the EA. All clarifications were minor in nature and were added in response to comments received. Additional information regarding public comments and agency responses to those comments can be found in *Appendix B: Response to Comments-Comment Period*.

The Tribal Relations Liaison for the Kaibab NF stated in an email dated December 4, 2019, the project listing on the SOPA was the primary method used to initiate tribal consultation. No further need for tribal consultation on this project has been identified.

Agencies and Persons Consulted

Informal or formal consultation with the USFWS was not required for this project because the effects determination for the California condor is not likely to jeopardize the continued existence of the species. The experimental population³ of California condors is located within the project

³ Experimental populations are those populations of threatened and endangered species so declared by the Secretary of the Interior, which are wholly separate geographically from naturally occurring populations of the same species. Experimental populations are exempt from the full protective measures of the Endangered Species Act of 1973, as amended, in order to encourage reintroductions of listed species and experimental approaches to accelerate recovery (FSM 2671.43).

area. For the purposes of consultation requirements, nonessential experimental populations receive the same treatment as species proposed for listing. Consequently, the Forest Service must “confer” with (Secretary of the Interior or Commerce) USFWS in accordance with requirements for proposed species (FSM 2671.45b).

Arizona Game and Fish Department was consulted on October 6, 2019 to determine an estimated number of elk present in Game Unit 10.

As stated above, the Kaibab NF conducted tribal consultation and found that there was no further need to consult on this project.

Interdisciplinary Team

Name	Position/ Role
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Victoria Payne	Co-Team Lead; NEPA Planner; Writer/Editor
Neil Weintraub	Archaeology
Travis Largent	Wildlife Biologist
Micah Kiesow	Soil Science and Watershed Specialist
Jesse Duff-Woodruff	Botany and Noxious Weeds Specialist
Mike Lyndon	Tribal Relations Liaison
Mark Christiano	GIS
Sue Farley	NEPA Coordinator
Clair Loucks	Acting NEPA Planner; Writer/Editor
Marcos Roybal	Environmental Coordinator
Iric Burden	Rangeland Management

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Appendix A: Mitigation Measures by Resource

The following mitigation measures/best management practices (BMPs) would be required with implementation of the proposed action.

Botany and Noxious Weeds

- Rare plants and noxious weeds would be surveyed for prior to proposed improvements being installed.

Table 8: Noxious Weeds BMPs

RANGE MANAGEMENT	
Grazing	
RM-1. Consider weed prevention and control practices in the management of grazing allotments.	<p>1.1 – Include weed prevention practices, inspection and reporting direction, and provisions for inspection of livestock concentration areas in allotment management plans and annual operating instructions for active grazing allotments.</p> <p>1.2 – For each grazing allotment containing existing weed infestations, include prevention practices focused on preventing weed spread and cooperative management of weeds in the annual operating instructions. Prevention practices may include, but are not limited to:</p> <ul style="list-style-type: none"> • Maintaining healthy vegetation • Preventing weed seed transportation • Minimize potential ground disturbance - altering season of use or exclusion • Weed control methods • Revegetation • Inspection and Monitoring • Reporting • Education
RM-2. Minimize transport of weed seed into and within allotments.	<p>2.1 – If livestock are potentially a contributing factor to seed spread, schedule units with existing weed infestations to be treated prior to seed set before allowing livestock on those units. Schedule these infested units to be the last in the rotation.</p> <p>2.2 – If livestock were transported from a weed-infested area, corral livestock with weed-free feed, and annually inspect and treat allotment entry units for new weed infestations.</p> <p>2.3 – Designate pastures as unsuitable range to livestock grazing when infested to the degree that livestock grazing will continue to either exacerbate the condition on site or contribute to weed seed spread.</p>
RM-3. Maintain healthy, desirable vegetation that is resistant to weed establishment.	<p>3.1 – Through the allotment management plan or annual operating instructions, manage the timing, intensity (utilization), duration, and frequency of livestock activities associated with harvest of forage and browse</p>

RANGE MANAGEMENT	
Grazing	
	resources to maintain the vigor of desirable plant species and retain live plant cover and litter. 3.2 – Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed. *
RM-4. Minimize ground disturbances.	4.1 – Include weed prevention practices that reduce ground disturbance in allotment management plans and annual operating instructions. Consider for example: changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use. 4.2 – Inspect known areas of concentrated livestock use for weed invasion. Inventory and manage new infestations.
RM-5. Promote weed awareness and prevention efforts among range permittees.	5.1 – Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with permittees’ livestock management practices. 5.2 – To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators.

**Any effort to minimize wildlife grazing on the allotment would be in coordination with the Arizona Game and Fish Department.*

Cultural Resources

- If any adverse effects to sites are observed, Kaibab NF archeologists would work with range staff to develop and implement sufficient mitigation measures pursuant to Appendix H of the Standard Consultation Protocol for Rangeland Management to mitigate any adverse effects to sites.
- Once exact locations of the proposed improvements are identified, archaeological surveys would be conducted.

Soils and Watershed

- The following BMPs would be followed.

Table 9: Soils and Watershed BMPs

BMP #	Mitigation	Purpose
BMP 1	Manage forage utilization by livestock to maintain healthy ecosystems for all resource objectives.	Safeguard water and soil resources under sustained forage production.
BMP 2	Several techniques are used to achieve proper distribution or lessen the impact on areas which are	To manage sustained forage production and forage

BMP #	Mitigation	Purpose
	<p>sensitive, or which would naturally be overused. These techniques include:</p> <ul style="list-style-type: none"> a. Construction of fences, and implementation of seasonal or pasture systems of management. b. Water development in areas that receive little use and closing off water developments when proper use has been achieved. c. Riding and herding to shift livestock locations. d. Using salt or supplement feed as tools to gain proper distribution of livestock. e. Range improvements, prescribed burning, trail construction, or seeding. f. Prevention of intensive livestock grazing, or concentrated livestock use on soils that have low bearing strength and are wet. <p>Developing sufficient watering places is one way to limit the amount of trailing. Livestock distribution needs are determined through evaluations of range conditions and trends, including utilization studies.</p>	<p>utilization by livestock while protecting soil and water resources. Maintaining healthy ecosystems for wildlife and other resources.</p>
BMP 3	<p>Soil condition class is determined by qualified soil scientists using Terrestrial Ecosystem Survey. A range management specialist would use the soil condition class in determining the grazing capacity.</p>	<p>This practice is an administrative and preventative control. Soil condition classes is used to determine grazing capability. Only land with soils in satisfactory condition are considered as "full capability" range. Grazing capability ratings are then used in conjunction with other grazing considerations to determine the actual grazing capacity of an area.</p>
BMP 4	<p>Where soil has been severely disturbed by past overgrazing and the establishment of vegetation is needed to minimize erosion, the appropriate measures shall be taken to establish an adequate cover of grass or other vegetation acceptable to the Forest Service and outlined in the allotment management plan. This measure is applied where it is expected that disturbed soils in parts of the area would require vegetative cover for stabilization and the problems would not be mitigated by other management plan provisions.</p>	<p>To establish a vegetative cover on disturbed sites to prevent accelerated erosion and sedimentation.</p>
BMP 5	<p>Rangeland improvements are intended to enhance forage quality, quantity, and/or availability, and to provide protection to the other resources. Building fences to control the movement of livestock,</p>	<p>To improve, maintain or restore range resources, including soil and water</p>

BMP #	Mitigation	Purpose
	<p>improve watershed condition, and develop watering sites are just a few of the types of rangeland improvements implemented by the permittee or Forest Service as identified in the allotment plan. If a structure is causing soil erosion or water quality degradation, the allotment plan would identify it and state corrective measures. Other measures may include stream channel stabilization efforts such as riprapping, gully plugging, and planting; or mechanical treatments such as pitting, chiseling, or furrowing. Reseeding and/or fertilization may be done alone or in conjunction with any of these measures</p>	<p>through the use of rangeland improvements.</p>
<p>BMP 6</p>	<p>During allotment improvement work (earthen stock ponds, pipelines, fences, etc.) do not operate equipment when ground conditions are such that soil rutting, compaction or puddling can occur.</p>	<p>Mitigate adverse impacts to soil (compaction, puddling, disturbance).</p>

Appendix B: Response to Comments-Comment Period

This appendix contains the substantive comments or questions received on the draft EA for the Partridge Creek Allotment Authorization Projects, and the Forest Service responses to these comments or questions. Comments were considered substantive if they provided information to modify alternatives, evaluate new alternatives, improve or modify the analysis, or make clarifications or corrections. The designated 30-day notice and comment period for the draft EA was initiated with a legal notice published in the *Arizona Daily Sun* on January 10, 2020. During this comment period, the Kaibab NF received one comment letter. This comment letter was from Western Watersheds Project (WWP) and brought forward a need for clarification throughout the EA.

The comment letter was numbered; table 10 provides a crosswalk between the comment letter number and the identity of the commenter. Substantive comments within the letter were then given a tracking number. For example, comment 2-1 describes comment number one within comment letter number two. Similar or identical comments were summarized into a single concern statement. Concern statements are intended to capture the thought, idea, or issue of the comment common to all the associated comments. While this appendix provides the text of the substantive comments, the full comment letter provides additional background and may cite literature for context for the comments. The cited literature has been reviewed concurrently with the consideration of the comments and the response.

Table 10: Crosswalk Between Comment Letter Number(s) and Commenter Identity

Comment Letter Number	Identity of Commenter
1	WWP

Comment Letter 1 (WWP)

Comment 1-1: Wildlife habitat is a precious resource on this allotment and this fact must be adequately considered and the impacts of grazing to wildlife habitat adequately analyzed.

Response: Impacts to the wildlife resource can be found in the *Environmental Effects* section of the EA and in the Wildlife Specialist Report, available upon request.

Comment 1-2: WWP asked the Forest Service to analyze cumulative impacts, including trespass livestock and livestock grazing in the project area.

Response: Trespass livestock is not a known issue on the Partridge Creek allotment. Cumulative effects are considered by resource area in the *Environmental Effects* section of the EA and in the resource specialist reports.

Comment 1-3: Failure to analyze the impacts of livestock grazing on adjacent State Trust Lands that are used by the same permittee. The Forest Service is mistaken that this cumulative impact is “outside the scope” of this project.

Response: The *Past, Present and Reasonably Foreseeable Actions* section of the EA has been updated to include clarification about how adjacent land jurisdictions were addressed in the analysis.

Comment 1-4: Failure to acknowledge any incidents of trespass livestock or unauthorized use over the past 10 years.

Response: See response to comment 1-2.

Comment 1-5: Failure to disclose or discuss the impacts of supplemental feeding because it is “at the discretion of the District Ranger”

Response: The Kaibab NF has better defined the use of supplemental feed for the range management resource by adding Appendix C to the EA. The use of supplemental feed is on an emergency basis only which is within the authority delegated to the District Ranger. The Kaibab NF does not plan or analyze for emergencies.

Comment 1-6: Failure to disclose or discuss the impacts of this project on the environment in light of the compounding effects of climate change.

Response: The introduction to the *Environmental Effects* section of the EA has been updated with clarification on climate change. For this project, the Kaibab NF is being responsive to the potential effects of climate change by including adaptive management and a drought management plan to the proposed action.

Comment 1-7: WWP notes that the “glossary” included on the project website begins with a “definition” of “adaptive management.... This “definition” is really a justification for including adaptive management as part of the project alternatives and explanation of how the Forest Service will use adaptive management... For the definition of animal unit or “AU,” the Forest Service states this to be one mature cow of about 1,000 pounds...the average cow is not 1,300 pounds, which alters the Animal Unit Month calculation and the amount of forage consumed...The Forest Service should correct this erroneous assumption and instead use well-known average livestock weight.

Response: The definition of adaptive management was updated to reflect the definition in the Forest Plan. The glossary was added to the EA as Appendix E. The definition of an AU remains unchanged in the project glossary. This definition is in line with the Society for Range Managements (SRM) definition. In an article by the SRM they state “Animal Unit: Considered to be one mature cow of about 1,000 pounds (450 kg), either dry or with calf up to 6 months of age, or their equivalent, consuming about 26 pounds (12 kg) of forage per day on an oven-dry basis” (SRM 2017).

Comment 1-8: ...WWP recommended the Forest Service develop an alternative that would reduce the number of AUMs authorized on the allotment, and an alternative that would reduce the utilization to 15-20% (or less), instead of the 30-40%. This reasonable suggestion was rejected without adequate explanation (other than “[c]onservative use levels of 30-40% are consistent with the Forest Plan[,]” resulting a violation of the National Environmental Policy Act. Response to Comments Table 2, page 2, comment ID 2-3. The Forest Service adds that “15% utilization levels for solely livestock was not analyzed because it does not meet the purpose and need for the project to meet the Forest Plan desired conditions of ensuring livestock management plans are consistent with other resource desired conditions on National Forest System lands.” EA at 10. However, the no action alternative would apparently also fall into this category (doesn’t meet desired conditions).

Response: Further clarification has been added to the final EA under the *Alternatives Eliminated from Detailed Analysis* section. The no action alternative was analyzed to provide an environmental baseline against which the effects of the action alternative may be compared, as described in the *Proposed Action and Alternatives* section of the EA. The Decision Notice provides the rationale for the selected alternative.

Comment 1-9: The Forest Service misinterpreted WWP's suggested that the 15-20% utilization would be solely for livestock.

Response: Further clarification was added to the *Alternatives Eliminated from Detailed Analysis* section of the EA.

Comment 1-10: In the Forest Service's pushback on WWP's suggested 15-20% utilization, the EA cites to Galt et al., 2000. Notably absent from the Forest Service's response is the important cautionary statement in Galt that "grazing capacity is part myth and part reality: The average number of livestock a ranch has carried over the previous 5, 10, or 20 years may have little relevance to what it will support in any given year or group of years." Galt et al., *Grazing Capacity and Stocking Rate*. *Rangelands*. 22(6):6-11, at 7. Additionally, there is nothing in Galt et al. that would indicate the Forest Service could not consider a 15-20% utilization rate and indeed, Galt et al. "increasingly hold the opinion that a 25% harvest coefficient is a sound idea for most western rangelands." *Id.* at 8. They also indicate that most ranchers lack the skills or time and labor resources to quantify forage production and using greater than 25% utilization "invariably leads to land degradation" especially when drought occurs because of rancher reluctance to destock. *Id.* The Forest Service must do more to explain why our reasonable alternative was rejected and why they did not adopt an alternative that was in line with the 25% utilization recommended by Galt et al.

Response: Additional information related to the 15-20% utilization alternative was included in the *Alternatives Eliminated from Detailed Analysis* section of the EA. This comment uses the terms "harvest coefficient" and "utilization" interchangeably, which they are not. These terms are defined as:

Harvest Coefficient: The percent of total forage produced that is assigned to grazing animals for consumption (Galt et al. 2000).

Utilization: The proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects) compared with the total amount of forage produced during the year. Utilization is measured at the end of the growing season when the total annual production can be accounted for and the effects of grazing in the whole management unit can be assessed (SRM 1998).

When Galt et al. stated they "increasingly hold the opinion that a 25% harvest coefficient is a sound idea for most western rangelands," they are not referring to the amount of utilization but rather the total amount of forage that is available for grazing animals (i.e. harvest coefficient). The Kaibab NF's conservative utilization levels of 30-40% includes utilization wildlife, insects, trampling, etc. in addition to livestock, thereby leaving more than 50% for site protection, as recommended by Galt et al. As such, the proposed action is in line with Galt et al.'s recommendations.

Comment 1-11: ... The Forest Service has chosen to ignore reasonable alternatives and is not evaluating a reasonable range of alternatives.

Response: Alternatives that were presented by the public during the scoping and comment period were considered but eliminated from detailed analysis because they did not meet the purpose of and need for the EA and were not feasible to implement. The intent of this analysis is to allow for more flexibility in the management process for the Forest Service and the permittee.

Comment 1-12: WWP recommends the Forest Service select the no-action alternative.

Response: The decision for this project, and associated rationale, will be addressed in the decision notice.

Comment 1-13: WWP remains concerned about the existing conditions of the soils in the project area. With more than 20% of the soils classified as impaired or unsatisfactory, the Forest Service should be looking to reduce the impacts livestock have on soil condition, regardless of whether past livestock grazing has had an impact on the current soil condition.

Response: Impaired and unsatisfactory soil conditions within the Partridge Creek Allotment area are generally associated with 1) steep slopes, 2) areas with high pinyon/juniper canopy cover, 3) areas with shallow soils and/or 4) areas close to stock tanks. Potential recovery for impaired and unsatisfactory soils is dependent upon site-specific variables. Impaired soils on steep slopes or shallow soils have relatively low potential for improvement. Impaired soils where high pinyon/juniper canopy exists have moderate potential for recovery where vegetation treatments are implemented to reduce the overstory. Impaired soils that exist in close proximity to stock tanks are unlikely to improve, as these areas would continue to be utilized by livestock and wildlife. Unsatisfactory soils have degraded to the point, for most areas, rest alone is not likely to allow them to recover their function in a reasonable period of time.

Comment 1-14: The EA reports that three of the four watersheds analyzed as part of this project are Functioning at Risk (FAR), yet the Forest Service still plans to allow livestock grazing throughout these watersheds despite the fact that “Livestock grazing would increase sediment delivery to stream courses and water bodies and increase nutrient concentrations in surface waters.”

Response: This sentence was taken out of context. The full statement reads, “Managed livestock grazing would increase sediment delivery to stream courses and water bodies and increase nutrient concentrations in surface waters (stock tanks).” With the sentence following this reading, “These effects would be minor in regard to water quality due the high amount of ephemeral drainages, low gradient and lack of perennial water.”

Surface waters, as described within the Soil and Watershed report, within the Partridge Creek Allotment are comprised of existing stock tanks. Natural perennial waters do not exist within the Partridge Creek Allotment therefore no water quality information exists. No natural riparian areas, springs or wetlands are documented within the Partridge Creek Allotment area. Increased sediment delivery to stream courses would not change watershed condition at the subwatershed scale. Effects from increased sediment delivery to stream courses and water bodies and increased nutrient concentrations would be minor regarding water quality due to the high amount of ephemeral drainages, low gradient and lack of perennial water.

Comment 1-15: The analysis in the EA also apparently ignores the need for the use of, and continued deterioration of, roads for livestock management. Roads are identified as a cause of the FAR classification, yet impacts of the use of these roads as part of livestock management are not analyzed.

Response: High road densities, road placement near drainages and lack of road maintenance affect watershed condition within the Partridge Creek Allotment. Changes in road and Off Highway Vehicle use management through the Travel Management Revision Project would lessen the impact to the upland vegetation within the analysis area through a reduction in the number and mileage of roads open for vehicular use and the elimination of off-road vehicle use. This was analyzed in cumulative effects for the effected resource areas. No maintenance or road construction is proposed within this project.

Comment 1-16: WWP remains concerned about the minimization of livestock grazing impacts when projects are analyzed in a vacuum, and the larger, landscape –scale impacts of millions of acres of livestock grazing authorizations seem to eternally escape analysis. The Forest Service’s usual policy of authorizing livestock grazing on an allotment-by-allotment basis using EAs is a clear example of breaking down an action into small parts or determining it is temporary in order to render the impacts individually insignificant. WWP asked the Forest Service to look at livestock grazing in the Williams Ranger District holistically, and utilize a watershed-scale approach to analyzing cumulative impacts and connected actions. Unfortunately, this request was ignored.

Response: The effects of a continued livestock grazing program on a broad scale (forest-wide) were analyzed in the environmental impact statement completed for the revised forest plan for the Kaibab National Forest (USDA Forest Service 2014b). Grazing on the Partridge Creek Allotment as proposed here would be consistent with the forest plan desired conditions, guidelines, and management approaches for livestock grazing on plan pages 68-70 because an adaptive management strategy would be applied to adjust grazing practices annually and throughout the grazing season in response to changing conditions or resource concerns in order to ensure livestock grazing is consistent with other desired conditions in the plan.

The analysis in this EA is consistent with Forest Service Handbook (FSH) direction. The Grazing Permit Administration Handbook provides for allotment-specific analyses, stating, “...analyses may be conducted on an allotment or group of allotments that share similar ecological conditions and resource issues” (FSH 2209.13 §92). The National Environmental Policy Act Handbook (1909.15 §15) provides direction for defining the spatial and temporal boundaries for cumulative effects analyses. Spatial and temporal boundaries are selected by resource area to reflect where cumulative effects are anticipated to occur, i.e. in instances where direct and indirect effects from the current project overlap in space and time with effects from other past, present, or reasonably foreseeable future actions. Where this overlap does not occur, cumulative effects do not occur. The cumulative effects analysis in this EA is consistent with this direction (see, for example, environmental effects for soils and watershed, which defines the spatial cumulative effects boundary as all of the 6th-level [HUC12] hydrologic unit watersheds that intersect the Partridge Creek Allotment, recognizing that effects of grazing on other allotments in these watersheds may cumulatively affect soils and watersheds). No cumulatively significant impacts were identified, as described in the finding of no significant impact.

The commenter appears to suggest grazing authorizations on different allotments are connected actions. Connected actions for purposes of NEPA analysis are “Actions that: (1) automatically trigger other actions which may require environmental impact statements; (2) cannot or will not proceed unless other actions are taken previously or simultaneously; [or] (3) are interdependent parts or a larger action and depend on the larger action for their justification” (40 CFR 1508.25). Livestock grazing on different allotments is typically managed independently, and, as a result, does not meet the definition of connected actions.

Finally, the commenter alludes generally to concerns about grazing impacts, but this comment does not identify specific issues that were analyzed inadequately in the EA. The analysis in the EA is structured around issues raised internally and through public comments. Because no specific issues are raised in this comment, and for the reasons discussed above, no changes to the analysis are made in response to this comment. Conducting analysis for the sake of analysis, without a basis in issues raised during the planning process, does not align with legal requirements or recent Forest Service efforts to improve environmental analysis and decision making (summarized at <https://www.fs.usda.gov/managing-land/eadm>).

Comment 1-17: Because livestock grazing occurs on multiple allotments covering generations of livestock ranchers and is authorized on a decade-by-decade system, the Forest Service has an obligation to analyze the impacts of livestock grazing on each allotment, to look at those impacts holistically to identify, disclose, and allow public comment upon, the actual, widespread, long-term, and significant impacts livestock grazing has on lands management by federal agencies for the public.

Response: See response to comment 1-16. The public did have the opportunity to comment on the holistic approach to livestock grazing and the grazing capability/suitability determination provided by the Kaibab NF Forest Plan (2014) on multiple occasions during plan development. Separately, the public was given the opportunity to comment on the Partridge Creek Allotment project through both the scoping and comment periods identified in the *Public Involvement* section of the EA. Opportunities for public comment will become available for other allotments once the NEPA process has started on those allotments, and public comment opportunities have been provided for previous allotment analyses.

Comment 1-18: The Forest Service must address the cumulative impacts of unauthorized grazing by permittees as well. In 2016, the Government Accounting Office identified actions needed by federal agencies to improve the tracking and deterrence efforts on this front. See GAO Report to the Committee on National Resources, House of Representatives: Unauthorized Grazing: Actions Needed to Improve Tracking and Deterrence Efforts, submitted previously. This 2016 GAO report found that the frequency and extent of unauthorized livestock grazing on Forest Service lands is largely unknown because agencies “prefer to handle most incidents informally” with a phone call and these violations of law are not recorded... Apparently, this is the most rare of livestock allotments where absolutely no trespass livestock or unauthorized use has occurred over the past ten years which WWP finds very unlikely. Therefore, the impacts associated with trespass and unauthorized use remains undisclosed in this EA. We ask that this deficiency be corrected... WWP again asks the Forest Service to disclose how many incidents of unauthorized use or trespass livestock occurred in the project area (on the allotment) over the past 10 years, regardless of whether any formal documentation of such uses was documented.

Response: See response to comment 1-2. Because no unauthorized grazing is documented, there are no cumulative effects.

Comment 1-19: WWP requested that the Forest Service, via the EA, address the important issue of range suitability, including an analysis of suitable range for each of the pastures and any verification of determinations made in the Forest Plans regarding livestock suitability. In response to this request, the Forest Service refers WWP back to the Forest Plan. This is, again, an unfortunate violation of NEPA

Response: The Kaibab NF, Forest Plan was completed under the 1982 Planning Rule. The 1982 Planning Rule requires that the suitability of rangelands on NFS lands and their capability for

producing forage for grazing animals be determined in forest planning. Thus, the grazing suitability of the area was determined during the Forest Plan analysis. A map of area suitable for grazing on the Kaibab NF can be found in *Appendix D: Grazing Suitability*.

The Forest Plan states, “A suitable determination indicates that grazing is compatible with the desired conditions for the relevant portion of the plan area. It is guidance for project and activity decision making, and is not a commitment or a final decision. It does not mean that grazing will or will not occur in a particular area. The final decision to authorize livestock grazing and the determination for how lands are managed, including those that have been identified as not capable of producing forage, is made at the project/allotment level. The decisions are made following consideration site-specific environmental analysis and review analysis consistent with the National Environmental Policy Act (NEPA)” (p. 112). This EA satisfies this analysis requirement, and the Decision Notice will describe the resulting authorization for livestock grazing.

Comment 1-20: The EA should analyze the impacts of livestock grazing to native wildlife species that are affected by social displacement due to livestock grazing.

Response: This has been addressed the Wildlife portion of the Environmental Effects section of the EA as well as the Wildlife Specialist Report.

Comment 1-21: We... again recommend that no livestock grazing be authorized for this allotment.

Response: See response to comment 1-12.

Appendix C: Supplemental Feed

Further Explanation of Supplemental Feed on the Kaibab NF:

Guidance Document: Use of hay in the form of a supplement.

Terms and conditions: This practice is to be incorporated into Annual Operating Instructions (Section VIII) on all allotments forest wide.

Authored by: Iric Burden – Range, Weed and Botany Program Manager. Kaibab National Forest, Supervisors Office, Williams Arizona

Supplementing with hay:

This practice may be approved for use on all Kaibab National Forest allotments provided the following criteria are being met:

1. A deficiency supplement during sustained unusual heavy snow/ice events. This criterion is a Best Management Practice (BMP).
2. Only certified weed-free hay may be authorized to prevent the spread of noxious weeds. This criterion is a BMP.
3. Supplemental feed will not be used in place of forage if forage runs low within a pasture. Adaptive management will be practiced for this situation. This criterion is a BMP.
4. This practice will only be allowed for a specific location and time under the authority of the District Ranger (FSM 2200 Range Management Chapter Zero Code – 2204.3 Item 2).

Appendix D: Grazing Suitability

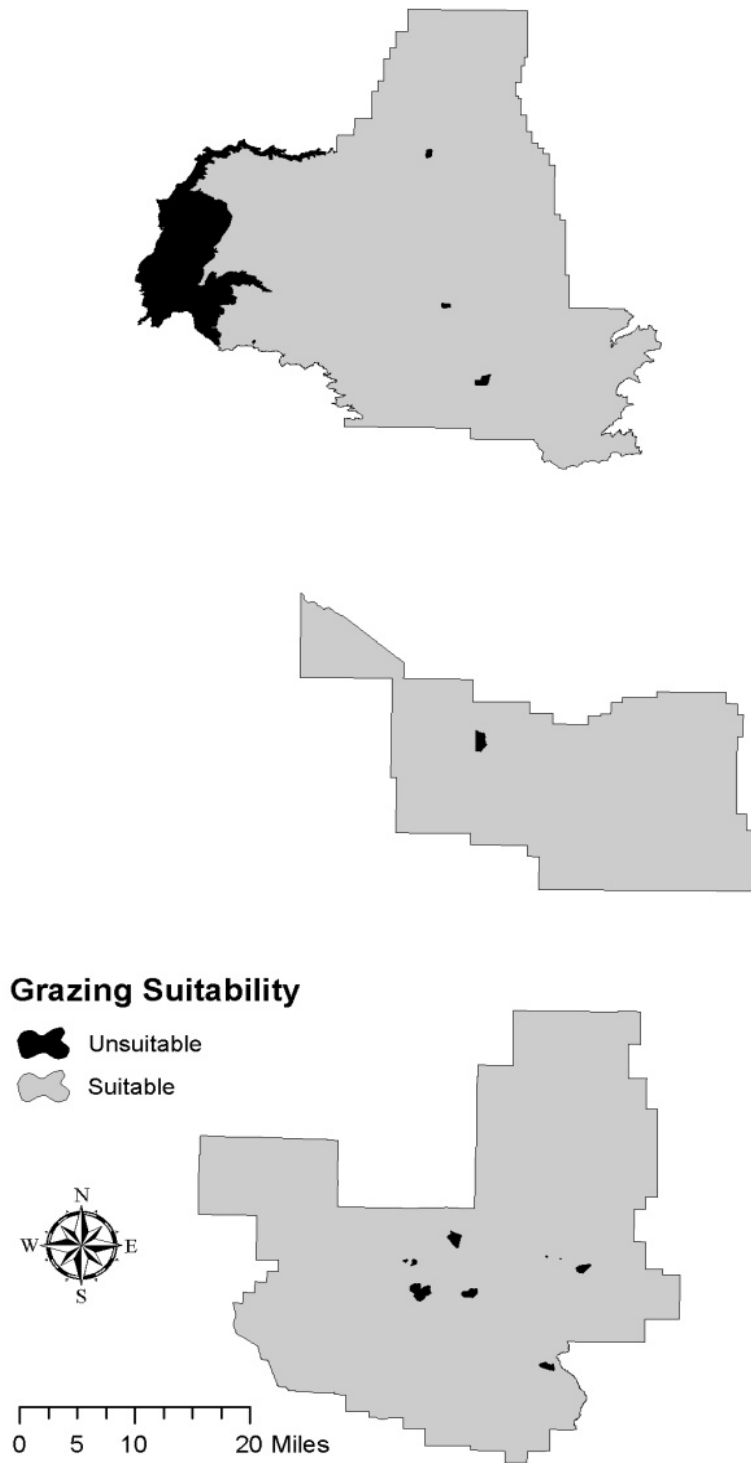


Figure 4: Kaibab NF Lands Suitable and Unsuitable for Livestock Grazing

Appendix E: Glossary

Adaptive Management:

A system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes. If not, adaptive management facilitates management changes that will best ensure that those outcomes are met or reevaluated. Adaptive management stems from the recognition that knowledge about natural systems is sometimes uncertain.

Animal Unit (AU):

Considered to be one mature cow of about 1,000 pounds, either dry or with calf up to 6 months age, or their equivalent, consuming about 26 pounds of forage on an oven-dry basis.

Animal Unit Month (AUM):

The amount of oven-dry forage (forage demand) required by one animal unit for a standardized period of 30 animal-unit-days. The term AUM is commonly used in three ways: (a) stocking rate, as in “X acres per AUM”; (b) forage allocations, as in “X AUMs in Allotment A”; (c) utilization, as in “X AUMs utilized in Unit B”.

Carrying Capacity (Grazing Capacity):

The average number of livestock and/or wildlife which may be sustained on a management unit compatible with management objectives for the unit. In addition to site characteristics, it is a function of management goals and management intensity.

Continuous Grazing Management:

Grazing a particular pasture or area during the entire authorized graze dates, including the dormant season

Deferred-Rotation Management:

A grazing system that provides for a systematic rotation of the deferment among pastures to provide for plant reproduction, establishment of new plants, or restoration of plant vigor.

Forage:

All non woody plants (i.e. grass, grass-like plants, and forbs) and portions of woody plants available to livestock and wildlife for food.

Forage Production:

The weight of forage produced within a designated period of time on a given area. Production may be expressed as green, air dry, or oven dry weight. The term may also be modified as to the time of production such as annual, current year, or seasonal forage production.

Grazing Capability:

Grazing capability of a land area is dependent upon the interrelationship of the soils, plants, and animals. Grazing capacity is a function of capability, proper use by livestock, and the level of management that may be applied.

Grazing Capability Classes:

Soil stability determinations and site productivity evaluations are used in combination to determine and assign one of the three following grazing capability classes:

Full Capability:

Full Capability areas are those which can be used by grazing animals under proper management without long-term damage to the soil resource or plant communities.

Typically, this land is stable. Vegetative ground cover is maintaining site productivity and producing a minimum of 100 pounds of dried forage per acre per year. Soil loss as judged by available techniques is within tolerance.

Potential Capability:

Areas which could be used by grazing animals under proper management but where soil stability is impaired, or range improvements are not adequate under existing conditions to obtain necessary grazing animal distribution. The area is not capable of being fully or adequately utilized by grazing animals. Generally, this land has impaired soil stability, lack of water, steep terrain, lack of access and/or there is insufficient vegetative ground cover to protect the soil, but if treated, developed, or properly managed, could become Full Capability.

When determining grazing capacity in the Potential Capability class, conservative allowable use assignments must be made. Rationale for assigned allowable use will be documented.

No Capability:

No capability areas are those which cannot be used by animals without long-term damage to the soil resource or plant community or are barren or unproductive naturally. These areas are not capable of being grazed by domestic livestock under reasonable management goals. Grazing capacity will not be assigned to these areas, even though light livestock use may occur.

Grazing Capacity:

See Carrying Capacity.

Impaired Soil Condition:

Indicators signify a reduction in soil quality. The ability of the soil to function properly has been reduced and/or there exists an increased vulnerability to irreversible degradation. An impaired category should signal land managers that there is a need to investigate the ecosystem further to determine the cause and degree of decline in soil functions. Changes in management practices or other preventative actions may be appropriate.

Incidental Use by Burros:

In general, burros are mostly located on the Double A Wild Burro Territory which is fenced. However, grazing by burros on the Partridge Creek Allotment does take place incidentally and is unplanned and subordinate to livestock grazing. When burros do access Partridge Creek Allotment, it is estimated that the number of burros is approximately 10% of the herd. Use by burros counts towards the conservative utilization and seasonal utilization thresholds of 30-40%.

Key Area:

A relatively small portion of a management unit selected because of its location, use, or grazing value as a monitoring point for grazing use. It serves as a monitoring and evaluation point for range condition, trend, or degree of grazing use. Properly selected key areas reflect the overall acceptability of current grazing management over the rangeland. A key area guides the general management of the entire area of which it is a part.

Proper Functioning Condition (PFC):

A methodology for assessing the physical functioning of riparian and wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. In either case, PFC defines a minimum or starting point. The PFC assessment provides a consistent approach for assessing the physical functioning riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. The PFC assessment synthesizes information that is foundational to determining the overall health of a riparian-wetland area. The on-the-ground condition termed PFC refers to how well the physical processes are functioning. PFC is a state of resiliency that will allow a riparian-wetland system to hold together during a 25- to 30-year flow event, sustaining that system's ability to produce values related to both physical and biological attributes.

Range Readiness:

The defined stage of plant growth at which grazing may begin under a specific management plan without permanent damage to vegetation or soil. Usually applied to seasonal range.

Rest- Rotation Management:

A grazing management system in which an individual pasture(s), or grazing unit(s), is given complete rest from livestock grazing for an entire year. The rested pasture will be rested annually to provide all pastures on an allotment with a rest period. Varies from deferred-rotation management in length of time the area is not grazed by livestock: 12 months rather than a portion of the growing season.

Satisfactory Soil Condition:

Indicators signify that soil quality is being sustained and the soil is functioning properly and normally. Ability of the soil to maintain resource values, sustain outputs, and recover from impacts is high.

Seasonal Utilization:

The percentage of the forage produced in the current season to date of measurement that has been consumed or trampled by animals. It is a comparison of the amount of herbage left compared with the amount of herbage that has been produced to the date of the measurement. Seasonal Intensity/seasonal utilization is measured at the end of the grazing period. Seasonal intensity/seasonal utilization differs from utilization because it does not account for subsequent growth of either the ungrazed or grazed plants.

Suitability:

“The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices,” (36 CFR 219.3).

Trend:

The direction of change in resource value ratings or attributes as observed over time. Apparent trend is an interpretation of trend based on observations and professional judgement at a single point in time. Measured trend is quantitative changes in vegetative or soil conditions over time, which can be measured in terms of plant communities or resource values.

Unsatisfactory Soil Condition:

Indicators signify that degradation of soil quality has occurred. Impairment of vital soil functions results in the inability of the soil to maintain resource values, sustain outputs, or recover from

impacts. Soils rated in the unsatisfactory category are candidates for improved soil management practices or restoration designed to recover soil functions.

Utilization:

The proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects) compared with the total amount of forage produced during the year. Utilization is measured at the end of the growing season when the total annual production can be accounted for and the effects of grazing in the whole management unit can be assessed.

Utilization Guidelines:

Guidelines intended to indicate a level of use or desired stocking rate to be achieved over a period of years.