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Final Environmental Impact Statement

Buck Springs Range Allotment Analysis

Mogollon Rim Ranger District, Coconino National Forest
Coconino County, Arizona

FINAL ENVIRONMENTAL IMPACT STATEMENT
RANGELAND MANAGEMENT
BUCK SPRINGS RANGE ALLOTMENT

CHAPTER 1: PURPOSE AND NEED

This Chapter describes the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

THE PROPOSED ACTION

The Proposed Action is described in detail in Chapter 2. In general, the Mogollon Rim (previously Blue Ridge) Ranger District proposed to issue a grazing permit for 634 cow/calf pairs (equivalent to 915 yearlings), and 8 horses. The grazing strategy would be a deferred-rest-rotation system, with season of use running from about May 15 to October 15. Actions connected to this proposal include:

- Precommercially thin dense thickets of small trees on 1,500 acres to promote ease of livestock handling;
- Adjust the number of livestock allowed per year to resource conditions through Annual Operating Instructions;
- Construct 22 miles of new fencing to exclude livestock from riparian drainages, six wet meadows, and two springs, and to split three pastures to improve livestock distribution;
- Construct up to 2 corrals, 3 waterlots and 1 drylot to increase options for livestock management; and
- Exclude livestock from portions of up to 10 stock tanks to improve habitat for leopard frogs.

PROJECT SCOPE

This Environmental Impact Statement (EIS) summarizes the site-specific planning process and the environmental, social and economic impacts of eight management proposals for managing livestock grazing use on the Buck Springs Range Allotment during the next 10 years. This EIS is not a decision document; it only discloses the

environmental consequences of implementing the proposed actions and alternatives to the proposed action. The Forest Supervisor's decision is explained in the Record of Decision that accompanies the EIS. The Project Record documenting the process and analysis includes the process record and all resource specialists' reports, and is located at the Blue Ridge Ranger District Office (Mogollon Rim Ranger District), Happy Jack, Arizona.

The Proposed Action for Rangeland and Watershed Management for the Buck Springs Range Allotment was mailed to the public in April 1999 [#39]. The proposal called for the continuation of the current deferred-rest-rotation strategy for management of the allotment, and relied on structural improvements to affect distribution of livestock and protect sensitive habitats. The proposal also included projects to improve conditions of the watershed through prescribed burning and thinning of trees and by reducing impacts from road use and management, recreation, and past watershed projects. The proposals for livestock and range management and the proposals for watershed improvements are within the same analysis area, and are interrelated but independent actions. Different issues arose from the public scoping process for the two sets of actions. During analysis, the complexity of the inclusion of both sets of projects in one document became overly cumbersome. The Forest Supervisor decided to separate the proposals into two separate analyses [#65], and a second scoping letter for the Buck Springs Rangeland Management was mailed on April 6, 2001. This EIS addresses rangeland and livestock management.

The East Clear Creek Watershed Road Analysis was conducted to evaluate roads within the watershed. The document is on file at the Mogollon Rim District [#XX] and was used to assess proposed road closures.

Purpose and Need for Action

The purpose of the proposed action is to promote a healthy watershed on the Buck Springs Range Allotment that provides suitable habitat for threatened and endangered species while providing forage for domestic livestock in areas appropriate for livestock grazing, and to respond to goals and objectives of the Coconino Forest Plan (USDA Forest 1986). Comparison of the existing condition of the project area and the desired conditions from the Forest Plan indicates a need for:

- coordinated management of two former allotments combined into one;
- increased protection from livestock for potential, suitable, and occupied habitat for threatened, endangered, and sensitive species; and for sensitive resources, such as wet meadows and riparian areas, for the improvement of watershed conditions;
- an even distribution of livestock grazing; and
- the authorization of livestock grazing where appropriate for a 10-year period.

Background

The East Clear Creek (ECC) watershed has received much scrutiny in recent years. In 1995, a collaborative group comprised of state and federal agencies, local residents, interested people, and tribal representatives initiated an ecosystem assessment of the East Clear Creek (ECC) watershed, which includes 96% of the Buck Springs Range Allotment within its boundaries. The Collaborative Team described existing and desired future functioning conditions of the watershed, and developed lists of possible management practices to take the watershed towards desired conditions. The work of the Collaborative Team was incorporated into a dynamic binder of documents entitled *East Clear Creek Ecosystem Management Area: Existing Conditions and Visions for the Future* (USDA 1996). The work of the Collaborative Team was taken forward into the analysis of the Buck Springs Allotment.

The environmental analysis process for the Buck Springs Range Allotment was initiated by a project initiation letter dated June 25, 1998 [#2]. An Interdisciplinary Team (Team) of Forest Service resource specialists, and representatives from the Arizona Game and Fish Department (AGFD), US Fish and Wildlife Service (USFWS), Arizona Department of Environmental Quality (ADEQ), Arizona Cooperative Extension, and the Allotment Permittee (permittee) developed a guiding document for watershed recovery before undertaking an analysis of the allotment. They described the many factors affecting watershed conditions and a threatened fish species within the allotment, including elk and livestock grazing, recreation, transportation system, and introduced aquatic species. In a cooperative effort, the agencies making up the Team developed the *East Clear Creek Watershed Recovery Strategy for the Little Colorado Spinedace and Other Riparian Species* (ECC Strategy, USDA 1999a) to address many of those factors. Using the document to guide actions proposed for the Buck Springs Range Allotment, the Team expanded on existing and desired conditions developed by the ECC Collaborative Team and developed objectives and proposed management practices for the allotment.

The resulting Proposed Action was mailed to individuals, organizations and cooperating resource agencies for review and comment in April 1999 [#39]. From comments received in response, the Team developed statements to capture the significant issues and developed alternative rangeland management strategies. These issues are listed below, and the management alternatives are presented in Chapter 2. The impacts of implementing each alternative are summarized in Chapter 4, Environmental Consequences.

Notice of the Draft EIS was published in the Federal Register and the Arizona Daily Sun on October 12, 2001. Copies of the Draft EIS were sent to eight agencies and 40 individuals. These parties responded with 10 individual comment letters. One additional alternative was analyzed in response to these comments. All comment letters and Forest Service responses to those comments are located in Appendix G of the EIS.

Location

The Buck Springs Range Allotment is located on the Mogollon Rim Ranger District of the Coconino National Forest, in Coconino County (Figure 1). The administrative office for the permitted livestock use is the Blue Ridge Ranger Station Office in Happy Jack, Arizona.

The Allotment includes approximately 70,000 acres of Forest Service lands primarily within the East Clear Creek watershed southeast of State Highway 87, and mostly south of East Clear Creek. The eastern boundary lies along Leonard Canyon and the Apache-Sitgreaves National Forest. The southern boundary is the Mogollon Rim and the Tonto National Forest, and the western boundary adjoins the Hackberry/Pivot Rock Range Allotment.

Relationship to Forest Plan

National forest planning takes place at several levels: national, regional, forest, and project levels. The Buck Springs Range Analysis EIS is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The Coconino National Forest Plan (USDA 1987, 2003 amended) embodies the provisions of the National Forest Management Act (1976), its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Coconino National Forest. Where appropriate, the Buck Springs Range Analysis EIS tiers to the Coconino Forest Plan FEIS (USDA 1987, 2003 amended) as encouraged by 40 CFR 1502.20.

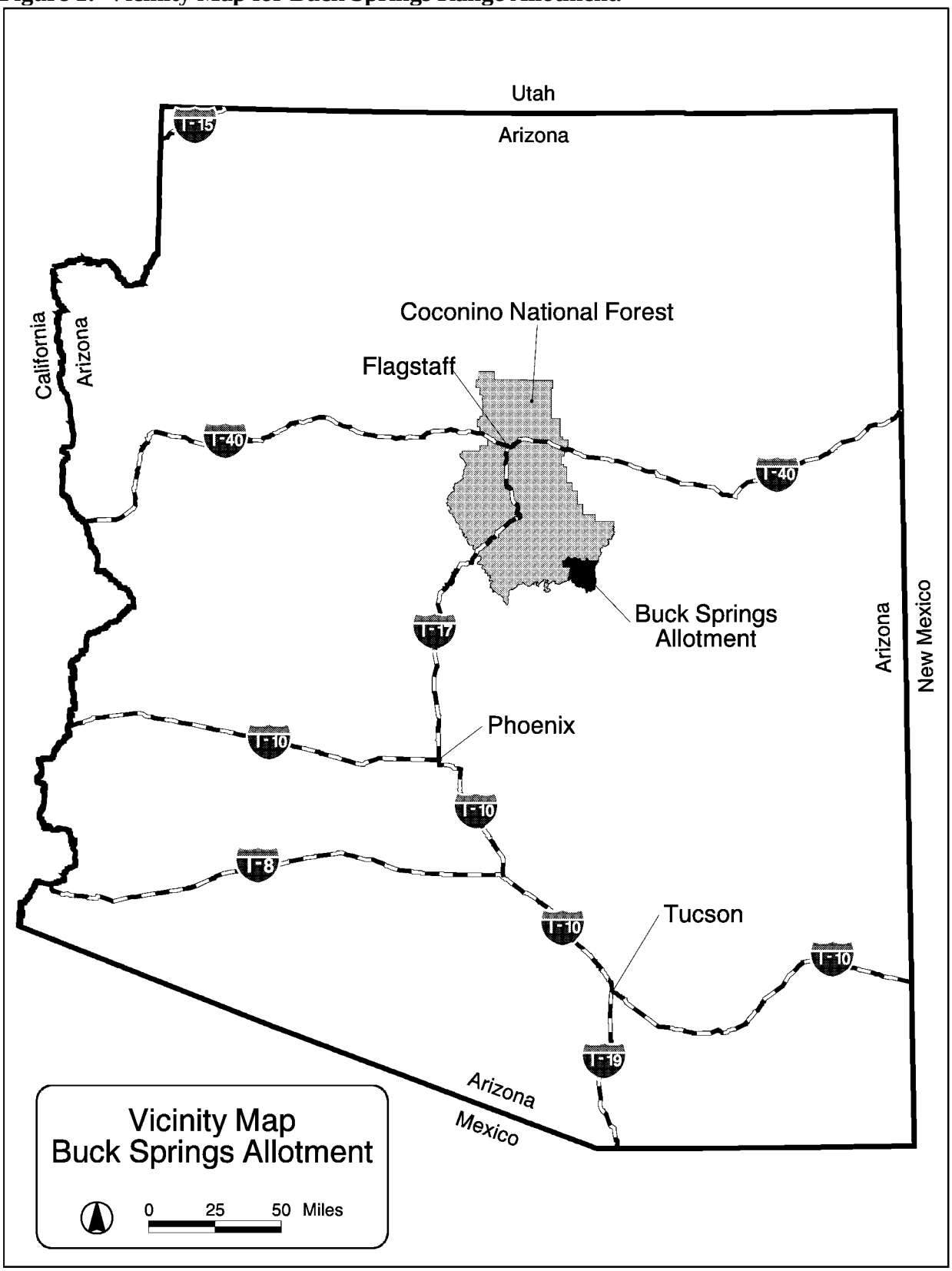
The Coconino Forest Plan established management areas (MAs), which are described in Chapter 3: Affected Environment. The Forest Plan states that grazing allotments will generally be managed to Level C and D in the management areas found on the allotment.

Level C: Livestock grazing is controlled through structural improvements and by physically moving livestock. Long-term capacities are balanced with use by adjusting numbers of livestock. Any forage improvement is generally the result of meeting other resource objectives, such as wildlife habitat improvement.

Level D: Areas are managed intensively for livestock grazing within an overall multiple use concept. Any structural or nonstructural (forage) improvement technique may be used as long as it fits with the natural environment. Reasonable and approved management techniques are applied to sustain capacity and use at high levels.

Full capacity lands are assigned a grazing capacity. Most acres are in a satisfactory soil condition. Less than satisfactory range conditions are improved through completion of the development program contained in Allotment Management Plans (AMPs). In general,

Figure 1: Vicinity Map for Buck Springs Range Allotment.



the Forest Plan stresses that management efforts strive to maintain forage improvement acres in a satisfactory or better condition, while attaining a balanced composition of cool and warm season forage species. Open meadows are maintained and livestock grazing allows for the establishment of suitable vegetation. Management protects and/or enhances soil conditions. Grazing in riparian areas allows natural regeneration of riparian vegetation, including woody species.

PROJECT OBJECTIVES AND ISSUES

Resource objectives were developed based on a comparison of the existing conditions and the desired conditions within and around the project area. The following site-specific project objectives were developed to guide the agency and the permittee in moving toward the desired conditions.

Livestock Grazing

- Manage grazing to promote the development of sponge meadows (meadows with satisfactory soil conditions and proper functioning conditions in riparian areas), which results in an increase in water storage and duration of flows in streams. Restrict livestock trailing along sensitive streams, headwater meadows and across canyons, except at designated crossings.

- Manage livestock grazing distribution and movements to even out the patterns of forage use and improve forage diversity, health and vigor. Achieve forage utilization in balance with ecologically sustainable forage production that provides for the needs of threatened and endangered species, soil conditions, and plant health and vigor.

Soils and Vegetation

- Maintain existing satisfactory soil conditions and vegetative conditions. Minimize impacts due to livestock management. Increase vegetative ground cover to 60-80% of potential in meadows in the 10 years of this plan, and to at least 90% of potential by the year 2020, and promote improvement of unsatisfactory soil conditions.

- Reduce the number and extent of dense sapling thickets that impede the gathering of livestock. Manage for native understory species, and reduce the dominance of non-native species. Manage for a diverse grass, forb, shrub community. Increase vegetative diversity and total biomass in riparian areas and meadows, with an emphasis on riparian species. Increase the extent of wetted areas, and the stubble height of residual vegetation after growing season.

Maintain existing riparian proper functioning conditions. Improve at-risk and nonfunctional riparian stream reaches to proper functioning condition.

Water Quality and Water Quantity

- Maintain current water quality, and improve the duration of flows in headwater meadows and streams.

Wildlife

- Improve habitat for Little Colorado spinedace and northern and Chiracahua leopard frogs in headwater meadows and streams through changes in livestock management.

- Minimize disturbance from livestock operations in Mexican spotted owl Protected Activity Centers (PACs), northern goshawk post-fledgling family areas (PFAs), and turkey nesting areas. Provide cover and vegetative food resources for prey species of raptors, by leaving adequate residual stubble height of grasses in key areas.

Significant Issues

The Proposed Action was distributed for review and comment to 215 individuals, organizations, and agencies. The team received 14 written responses [#46]. Several responses expressed support for the project, or asked to be removed from the mailing list. A few comments were outside the scope of the project. Four primary issues were raised and were used to develop alternatives for managing the Buck Springs Range Allotment. Units of Measure will be used to track how the alternatives respond to the issues.

Issue 1: The Proposed Action exceeds carrying capacity of the allotment, taking into account the large elk population.

The Interdisciplinary Team conducted an analysis of forage availability versus use by livestock and wildlife. In addition, forage production was measured in 1998, 1999, 2000, and 2001 and forage utilization is monitored annually. The information gathered from these processes was used to assign permitted numbers to each alternative, and indicate that the permitted numbers are within carrying capacity of the allotment. Differences in permitted numbers by alternative are based on the acres allotted to livestock grazing; ie: the different alternatives use different pastures, with different grazing schemes that are incorporated into carrying capacity for each alternative. Annual fluctuations in forage production and conditions will be addressed through annual changes to livestock numbers through the Annual Operating Instructions (AOIs). This is addressed in more detail in Chapter 4 and in Project Record [#79].

Units of Measure: Forage utilization levels in key areas, distribution of forage utilization and carrying capacity of livestock.

Issue 2: The Proposed Action, which is a deferred-rest-rotation system, will result in overuse of forage plants that are grazed every year. Recommends a rest-rotation

grazing system, with each pasture rested at least one year in three. Another comment on grazing strategy recommended that herding be used to improve distribution of use.

The current grazing system is a deferred-rest-rotation system, which is carried through several of the grazing alternatives. A separate alternative (Alternative F) was developed specifically to incorporate a rest-rotation grazing system, with pastures rested one year in two, and is described fully in Chapter 2. The topography and pasture layout of the allotment makes a one-year-in-three rest rotation system impractical. Another Alterative (G) incorporates a rest-rotation grazing system that emphasizes use of the northern pastures only. A third alternative (Alternative D) was developed that uses herding as an alternative to extensive fencing. A fourth (Alternative K) was developed in response to comments by the permittee.

Units of Measure: Type of grazing system and distribution of forage utilization.

Issue 3: The Proposed Action, which requires extensive fencing with numerous cattleguards, is not economically feasible.

Several letters commented on the issue of economic cost. They were not only concerned with the total cost of all the proposed new structures, but also wanted to know who would pay for the installation and upkeep and how these changes would affect other forest users and wildlife. With the cost of operating a ranch increasing every year and the public's awareness of federal spending and budget concerns, the public wants to know the economic feasibility of the proposal.

An economic analysis was conducted using the Quicksilver program, which compares the economic benefits and costs. Costs of improvements (fences, cattleguards, corrals, waterlots) are shared by the US Forest Service and the Range Permittee, while maintenance is largely the responsibility of the Permittee. Two alternatives call for the permittee to assume a greater proportion of the improvement costs. Chapter 4 describes the effects of the alternatives on forest users, wildlife, and primary resources, and describes the economic analysis more fully. A comparison of the alternatives and present net value of each is described and includes a table of improvement costs by alternative.

Units of Measure: Benefit/Cost, Present Net Value, Miles of new fence, number of cattleguards, corrals, wetlots, drylots.

Issue 4: The current management of the allotment has been determined to cause adverse effects to the Little Colorado spinedace and its critical habitat (Biological Evaluation and Assessment submitted April 4, 1998, and the resulting Biological Opinion of February 2, 1999, USDI 1999). The Proposed Action addresses some of the impacts of grazing on watershed health and the Little Colorado spinedace, but there is potential for continuing impacts in some areas of the allotment.

The IDT addresses concerns for watershed conditions and potential impacts to the Little Colorado spinedace in the Proposed Action and other action alternatives. Different levels

of protection are offered in the alternatives, with Alternative G developed specifically to include the maximum level of protection while allowing livestock grazing.

Units of Measure: Miles of drainage excluded from livestock, acres of wet meadows excluded from livestock, livestock access by PFC classes (riparian drainages) and soil conditions (meadows).

DECISION FRAMEWORK

The Coconino Forest Supervisor will make a decision based on many factors, and within governing laws, regulations, and policies.

Decision To Be Made

Based on the environmental analysis in this EIS and comments received, the Coconino Forest Supervisor will decide whether and how to manage rangelands and livestock on the Buck Springs Range Allotment in accordance with Forest Plan goals, objectives and desired future conditions. If an action alternative is selected, this decision will include:

- The locations, scheduling, grazing strategy, and livestock numbers appropriate for livestock management on the allotment for the next 10 years;
- The fences and other improvements necessary for the facilitation of livestock management and protection of other resources;
- The vegetative treatments required for the facilitation of livestock management;
- Mitigation measures and monitoring requirements and;
- The authorization of a 10-year term permit for grazing on this allotment.

Federal and State Permits, Licenses, and Certifications

There are no permits, licenses, or certifications required for the implementation of this project. The Forest Service obtained concurrence on no effects to cultural resources from the Arizona State Historic Preservation Office and a determination of non-jeopardy to threatened and endangered species from the US Fish and Wildlife Service.

Applicable Laws and Executive Orders

Shown below is a partial list of federal laws and executive orders pertaining to project-specific planning and environmental analysis on federal lands. While most pertain to all federal lands, some of the laws are specific to Arizona. Disclosures and findings required by these laws and orders are contained in Chapters 2 and 4 of this EIS.

Multiple-Use Sustained-Yield Act of 1960
National Historic Preservation Act of 1966 (as amended)
Wild and Scenic Rivers Act of 1968, amended 1986
National Environmental Policy Act (NEPA) of 1969 (as amended)
Clean Air Act of 1970 (as amended)
Endangered Species Act (ESA) of 1973 (as amended)
Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended)
National Forest Management Act (NFMA) of 1976 (as amended)
Clean Water Act of 1977
American Indian Religious Freedom Act of 1978
Archeological Resource Protection Act of 1980
Cave Resource Protection Act of 1988
Executive Order 11593 (cultural resources)
Executive Order 11988 (floodplains)
Executive Order 11990 (wetlands)
Executive Order 12898 (environmental justice)
Executive Order 12962 (aquatic systems and recreational fisheries)
Executive Order 13186 (responsibilities of federal agencies to protect migratory birds)

Additional NEPA Analyses Being Undertaken

Many factors are affecting the watershed and contributing to unsatisfactory soil conditions and impaired and non-functional riparian conditions. Some of these impacts are being addressed in the East Clear Creek Watershed Health Improvement Environmental Assessment, which includes the proposed action for watershed and forest health that was described in the original proposal. The NEPA analysis includes prescribed burning, channel restoration actions, and thinning around some springs to augment flow at these springs. The assessment addresses additional efforts to improve existing watershed conditions (decision expected fall 2003, contact D. Fleishman, 928-354-2216).

Another project has been proposed that partially overlies the Buck Springs Allotment. The Victorine Fuels Reduction Project includes the northeastern portion of the allotment, extending to the north, and is proposed to protect a large area of Urban Interface. The Proposed Action calls for thinning of small trees, treatment of slash through lop and scatter or chipping, and prescribed burning. The Forest Service has developed alternatives and is currently analyzing effects (contact J. Jerman, 928-477-2255).

The range allotment to the north of the Buck Springs Allotment is currently undergoing NEPA analysis. The Bar T Bar Range Allotment has been combined with the Anderson Springs Allotment to its north, for a detailed analysis of a proposed action submitted by The Diablo Trust, a collaborative team made up of ranchers, agency personnel, environmentalists, and interested community members. The US Forest Service has

developed alternatives to the proposed action, and is currently preparing a draft Environmental Impact Statement (contact E. Humphrey, 928-477-2255).

The Coconino National Forest is one of three Forests (Coconino, Kaibab, and Prescott National Forests) conducting an assessment for the control of noxious weeds (Noxious Weeds, Three Forest Assessment, contact D. Brewer, 928-635-8200). The Proposed Action for the Noxious Weed analysis discusses several means of controlling noxious weed spread, including the potential use of herbicides. The draft environmental impact statement is expected to be out in the spring of 2003.

Ongoing activities within the watershed, or adjacent to the watershed that may have potential cumulative effects to the resources on the allotment area are discussed in Chapter 4: Environmental Consequences.

PROJECT RECORD AVAILABILITY

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Blue Ridge Ranger Station, Mogollon Rim Ranger District, in Happy Jack, Arizona. These records are available for public review pursuant to the Freedom of Information Act (5 U.S.C. 552).

CHAPTER 2: MANAGEMENT ALTERNATIVES

This chapter describes and compares the alternatives and coordination needs for managing the rangeland resource on the Buck Springs Range Allotment. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design (i.e., number of acres grazed and grazing strategy) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., miles of riparian streams impacted by grazing).

ALTERNATIVE DEVELOPMENT

The Mogollon Rim (previously Blue Ridge) Ranger District of the Coconino National Forest proposes actions to revise the allotment management plan for the Buck Springs Range Allotment. If selected by the deciding official, any action alternative considered within the framework of this assessment can be implemented without further NEPA documentation.

The actions are proposed to improve habitat for wildlife and plant species, consider the ranching lifestyle, and enhance range, watershed, and other ecosystem conditions.

See Appendix A for the maps of the alternatives and Appendix B for the tables of proposed improvements and project activities by alternatives.

The Proposed Action generated issues from both the interdisciplinary team and the public. These issues drove the development of alternatives to the Proposed Action and are summarized as follows:

1. Carrying capacity of the allotment and each alternative;
2. Grazing strategy and overuse of plants;
3. Economic feasibility;
4. Threatened, endangered, and sensitive species concerns.

Carrying capacity is analyzed for each alternative, and ties the number of animals to the acreage to be grazed. Individually, particular grazing strategies drove the development of Alternatives D and F. Economic feasibility is analyzed for each alternative, and is key to Alternatives E and G. The threatened, endangered, and sensitive species issues and the distribution of forage utilization issues were addressed at varying levels in all alternatives, and drove the development of Alternatives E and G. Two alternatives were dropped due to duplication with other alternatives and the high costs of improvements that are economically unfeasible.

Coordination and Implementation Practices

Many of the activities that occur on the National Forest require internal coordination as well as coordination with regulatory agencies (both state and federal) in order to comply with laws and policies.

Cultural Resources

The Mogollon Rim Ranger District consulted with the State Historic Preservation Office (SHPO) on the effects of ongoing grazing, and received concurrence of no effects to cultural resources. All archaeological sites in the project area will be protected from the effects of project activities.

Threatened and Endangered (T&E) species

The Mogollon Rim Ranger District consulted with US Fish and Wildlife Service (FWS) on the impacts of the selected alternative on T&E wildlife, fish or plant species, and appropriate mitigation measures. The FWS determined that the project would not jeopardize the continued existence of threatened, endangered, or proposed species.

Migratory Birds

In accordance with Executive Order 13186, the Forest Service evaluated the project with respect to migratory birds.

Noxious Weed Control

Minimize disturbance to the existing native plant population during project implementation, and avoid introducing seeds of unwanted plants. Clean vehicles, equipment, and personal gear if in an infested area. Use only certified, weed-free seed to revegetate areas, and weed-free hay if hay is used as a mulch for projects. Conduct post-project implementation monitoring to insure no noxious weeds are introduced. Control or eliminate established populations of noxious weeds as allowed on the Coconino National Forest.

Arizona Department of Environmental Quality (ADEQ)

Obtain water quality certification and implement Best Management Practices to maintain current water quality.

Best Management Practices to Comply with the Clean Water Act and to Promote Healthy Watershed Conditions

The following project-specific Best Management Practices (BMPs) are designed to minimize the potential adverse effects of sedimentation and turbidity of downstream perennial waters. Unless monitoring proves to the contrary, implementation of the following

site specific Best Management Practices constitutes compliance with Arizona State and Federal Water Quality Standards (Forest Service Handbook 2509.22).

1. Monitor permittee compliance with the Allotment Management Plan, the Terms and Conditions of the grazing permit, and the Annual Operating Plan, throughout the grazing period of each year for the life of the permit. Compliance with the terms and conditions of the livestock grazing permit would be strictly enforced by the District Range Staff and District Ranger (Chapter 5. Monitoring Plan).

2. Manage livestock grazing at an intensity that would improve vegetative ground cover (primarily the litter component) to enhance soil function and to improve the quality and quantity of desirable vegetation. Graze each pasture in a planned sequence. Provide adequate rest during the plants' growing season to allow plants to become established, accumulate root reserves, set seed, grow undisturbed, and allow for accumulation of plant litter. Monitor key grazing areas to determine when cattle should be moved to prevent over-use (Chapter 5. Monitoring Plan). Design a planned grazing system to promote flexibility in the grazing program and to buffer the adverse effects of drought (Chapter 2. Management Alternatives).

3. Use salt to achieve livestock distribution objectives or to correct localized over-use by livestock grazing. Salt at a reasonable distance away from waters or natural congregating areas such as swales, drainages, riparian areas, and meadows (Terms and Conditions: 10-Year Term Grazing Permit, Annual Operating Plan, and Allotment Management Plan).

4. Implement seeding projects to maintain or improve vegetative ground cover in areas where soils are compacted and native seed is scarce, in areas where erosion is contributing sediment directly into a drainage channel, riparian area or a perennial stream channel, and in disturbed areas created by management activities. Provide a period of protection from livestock grazing until herbaceous vegetation is established and soil condition is satisfactory (Chapter 2. Management Alternatives).

5. Maintain existing range structural improvements, and install and maintain new range structural improvements as planned or needed, to allow for proper livestock control and distribution, control graze and rest periods and implement other livestock management techniques necessary to improve and/or maintain long-term soil productivity and water quality. Structural range improvements, such as corrals, troughs, trails, or storage tanks, should not be located in swales, drainages, riparian areas or meadows. Unneeded range improvements will be removed and the site rehabilitated, if needed (Chapter 2. Management Alternatives).

Site specific soil and water Best Management Practices by alternative are listed in Appendix D of this document.

ALTERNATIVES CONSIDERED IN DETAIL

As indicated in Chapter 1, there have been lengthy discussions of concerns related to watershed conditions and grazing within the allotment. Chapter 3 discusses resource concerns associated with the present grazing management or no change as described in Alternative B. Another alternative required by NEPA, is the no grazing alternative (Alternative A). The original proposed action (Alternative C) was developed in consideration of desired condition statements developed through the collaborative discussions and was provided to the public in 1999. The permittee requested an opportunity to emphasize herding as a livestock tool, which was incorporated into Alternatives D and K. Concerns over impacts to headwater meadows and shallow drainages were addressed by resting the southern pastures in Alternative E. A request by the public to address overuse of plants through a rest-rotation strategy drove Alternative F. Concerns over federal expenses, and threatened and endangered species concerns resulted in Alternative G. Two alternatives that called for vast amounts of new fencing, were dropped from detailed study because other alternatives addressed the same issues with less fencing. Altogether, ten alternatives were considered in this analysis. The alternatives considered in detail are summarized in Table 1 at the end of this chapter. The effects of the alternatives are compared in Table 2.

Appendix A includes a map showing the allotment pastures and maps of each alternative. Appendix B indicates the improvements included in each alternative, which improvements must be in place prior to grazing each pasture, and who is responsible for each improvement.

The alternatives are consistent with the Coconino National Forest Land Management Plan and do not violate Federal, State, or local law. All applicable forest-wide and management area standards and guidelines have been incorporated.

Alternative A: No Grazing of Livestock

The No Grazing Alternative would eliminate livestock grazing from the Allotment. There would be no activities associated with livestock grazing under this alternative, though some monitoring may take place, especially for elk use and general utilization rates of wildlife. Range improvements may be left in place, unless they create hazards for people or wildlife. This alternative proposes no actions and no expenditure of public funds. (See Appendix A, Maps 1 and 2).

Fences would be removed when they reach a state of decay that poses additional threats to people and wildlife. Over the 10-year period covered by this analysis, about 50% of the fencing would be removed.

Alternative B: Continue Current Management

The Current Management Alternative is the continuation of current management (i.e., no change or no action alternative), which is guided year by year by permittee instructions through the Annual Operating Instructions (See Appendix A, Maps 1 and 3). Management has varied widely over the past 15 years, and has been influenced largely by Section 7

consultation (Endangered Species Act) for the past 9 years. Precipitation, permittee changes, and financial considerations have also affected the operations.

The range of livestock numbers stocked each year has fluctuated dramatically, from 100% of the permitted numbers in 1997 to 20% in 1998, 45% in 1999, 23% in 2000, and 40% in 2001. No livestock were on this allotment in 2002, due to concerns over resources during a severe drought. The trend has been to lower the allowable numbers to address threatened and endangered species concerns and on occasion for permittee convenience. Permitted numbers would not likely be reinstated without building safeguards to protect those species. In addition, management has included deferral and rest of certain pastures to address threatened and endangered species concerns in most years.

No wildlife-related projects would take place. The permittee and U.S Forest Service would share in the costs of all improvements.

Livestock Grazing

1) Issue grazing permit for up to 746 cow/calf pairs (equivalent to 1065 yearlings) and 8 horses. The actual numbers allowed on the allotment each year would be specified in the Annual Operating Instructions (AOI). These numbers are likely to be much lower than permitted numbers. Recent Section 7 consultation has allowed the stocking of up to 645 yearlings (60%).

2) Continue the deferred-rest-rotation grazing system, with some pastures deferred on a yearly basis and other pastures rested, with season of use from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. Most pastures are available for use, except the riparian pastures, though the Knolls Pasture has been rested for the past four years due to threatened species concerns (and eight of the past ten years), and is likely to continue to be rested. The pastures adjacent to the Mogollon Rim would not be grazed until range readiness allows, as these pastures tend to green-up later than the northern pastures.

3) Collect additional forage production data by pasture to help set annual stocking rates. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, control of livestock, and depth of soils. Lower than permitted numbers would also be set for resource protection during drought or if forage production levels are lower than expected. Capacity takes into account forage needs of wildlife.

4) Use current fencing, livestock trailing, water tanks, and cattleguards to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas.

5) Manage livestock and wildlife to achieve utilization levels set on an annual basis. The following utilizations have been derived through AOI direction agreed to in consultation with USFWS. Allow 25% use on native species in Rim pastures with headwater meadows, 30% utilization levels in pastures with access to secondary drainages and in Mexican spotted owl areas, and 40% utilization levels in upland pastures with no riparian concerns and outside of Mexican spotted owl areas. These levels are subject to further adjustment through the AOI and consultation. A 5% increase in utilization may be allowed during years of above average precipitation. Higher utilization of non-native species such as orchard grass would be allowed to facilitate the replacement of introduced grasses with diverse native vegetation. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in all pastures, especially North, North Battleground, and North Pinchot Pastures.

6) Protect Threatened and Endangered Species through instructions in AOIs. Primary means of protection is through rest of pastures, reduction of livestock numbers and shortening the duration of grazing.

7) Implement all applicable mitigation measures through the AOIs.

Alternative C: Proposed Action

This alternative continues the deferred-rest-rotation strategy and includes fences to exclude livestock access to sensitive spinedace habitat and headwater meadows (See Appendix A, Maps 1 and 4). All pastures are used with the exception of the southern half of Knolls Pasture. Three pastures would be split to improve livestock distribution, resulting in three additional pastures. Appendix B lists the proposed improvements and shows which must be in place prior to livestock use of the pastures. The permittee and U.S Forest Service would share in the costs of all improvements.

Livestock Grazing

1) Issue grazing permit for up to 669 cow/calf pairs (equivalent to 955 yearlings, or 90% of current permitted numbers), and 8 horses.

2) Continue the deferred-rest-rotation grazing system, with pastures deferred on a yearly basis and season of use from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The pastures adjacent to the Rim would not be grazed until range readiness allows, as these pastures tend to green-up later than the northern pastures.

3) Collect additional forage production data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to available resources though the AOI. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production,

control of livestock, and depth of soils. Lower numbers would be set for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use fencing, livestock trailing, waters, cattleguard, and herding of livestock, to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas. All proposed fences are four-strand barbed wire with a smooth bottom wire, unless otherwise noted. Specifically we propose to:

   a) Improve livestock forage utilization in the North Pasture by constructing 1.1 miles of fence and one cattleguard to create a new pasture in the southern portion of the pasture.

   b) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

   c) Eliminate livestock access to riparian areas and spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 1.9 miles of fence along the north side of Buck Springs Canyon and 1.9 miles of fence along the south side of Buck Springs Canyon, and 0.3 mile of fence with cattleguard to exclude livestock from West Leonard Canyon and the southern 1/2 of the Knolls Pasture.

   d) Build approximately 0.2 mile of fence in the McClintock Pasture and add one cattleguard to connect the Upper and Lower Buck Springs riparian pastures. Construct one new earthen tank in McClintock Pasture to substitute for access to water in Buck Springs Canyon.

   e) Improve livestock forage utilization in the North Battleground Pasture by constructing 1.7 and reconstructing 1.1 miles of fence, and one cattleguard to create two pastures.

   f) Reconstruct and move the east boundary fence of the McCarty Pasture (1.1 miles).

   g) Complete fence at Turkey Pen to control livestock movement between North and South Battleground pastures (0.1 mile).

   h) Manage grazing in meadows to achieve sponge effect, improve vegetative ground cover and bank stability, and improve flow regimes using a combination of herding, deferred grazing, rest-rotation, and total exclusion. Establish livestock exclosures to promote formation of meadow sponge effect in Holder Meadow (130 ac), East Bear Meadow (85 ac), West Bear Meadow (110 ac), Upper Barbershop (1,000 ac), Houston Draw (335 ac), McClintock Springs Meadow (90 ac), and Bill McClintock Meadow (150 ac). Acres are exclosure acres, not meadow acres. Use exclosures to monitor forage use by livestock and elk. Construct a small sucker rod exclosure around Fred Haught Springs (7 ac).

i) Maintain existing elk exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs). (FS and AGFD responsibility)

j) Use herding or riding as a supplemental tool to control livestock movements and to keep them out of sensitive riparian areas, sensitive drainages, and headwater meadows.

k) Up to two corrals, three waterlots, and one drylot may be constructed or reconstructed to facilitate loading, unloading, herding and gathering of livestock.

5) Manage livestock and wildlife to achieve maximum site-specific utilization levels of 25% on native species in Rim pastures with headwater meadows, 30% in pastures with access to secondary drainages and in Mexican spotted owl areas, and 40% maximum utilization in upland pastures with no riparian concerns and outside of Mexican spotted owl areas. An increase of 5% may be allowed during years of above average precipitation. Higher utilization of non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) Small sections of several level 3 roads would be closed where new fences cross the roads. A total of 1.6 miles would be closed on the following Forest Roads: 9713G, 9737R, 9714E, and 9737Y.

7) Implement all applicable mitigation measures through the AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in North, North Battleground, North Pinchot, and McCarty Pastures.

2) Precommercially thin approximately 1,500 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and for gathering livestock in the Burn and North Battleground Pastures.

Wildlife

1) Select up to ten suitable stock tanks for leopard frogs and fence off portions of the tanks (<1/3 of tank). (FS responsibility)

Alternative D: Herding Emphasis (developed in response to issue #2)

This alternative relies heavily on herding of livestock to control access to sensitive areas such as headwater meadows and riparian areas, and to utilize low stress livestock handling techniques. All pastures (except riparian pastures) are available for grazing, though the southern half of Knolls Pasture would only be used if herding is highly effective at keeping livestock out of meadows and riparian areas. Fences separating these pastures from those that would not be used would be regularly maintained, primarily boundary fences between the north and south pastures, and between South Battleground and South Pinchot Pastures (See Appendix A, Maps 1 and 5). If the permittee is unable to "herd" the cattle termporarily, livestock grazing would restricted to certain pastures that have fewer headwater meadow and riparian area concerns.

Some new fences are proposed to exclude all livestock from critical spinedace locations and habitats, and to facilitate herding of the livestock. Other current fences not needed for spinedace protection or described in the previous paragraph, may not be maintained on a regular schedule, and may deteriorate. A high number of waterlots, corrals, and training pastures are proposed to facilitate control of livestock, but all may not be constructed. No pastures would be split. Herding of livestock is expected to improve livestock distribution and reduce problems of over- and under-utilization. Appendix B lists the proposed improvements and shows which must be in place prior to livestock use of the pastures. The permittee and U.S Forest Service would share in the costs of all improvements.

Livestock Grazing

1) Reissue grazing permit for up to 780 cow/calf pairs (equivalent to 1114 yearlings, or 105% permitted numbers), and 8 horses.

2) Continue the deferred-rest-rotation grazing system, with pastures deferred on a yearly basis and season of use from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The pastures adjacent to the Rim would not be grazed until range readiness allows, as these pastures tend to green-up later than the northern pastures.

3) Collect additional forage production and utilization data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to resources through the AOI. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, control of livestock, and depth of soils. Lower numbers would be set for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use herding of livestock as the primary means to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas,

and to increase livestock control in sensitive areas. Use minimal fencing, waters, and cattleguards to tighten control in highly sensitive areas. All proposed fences are four-strand barbed with a smooth bottom wire, unless otherwise noted. Specifically we propose to:

a) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

b) Eliminate livestock access to spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 1.9 miles of fence north of Buck Springs Canyon, and 0.4 mile of fence adjacent to Leonard Canyon downstream of Knoll Lake**.** Use herding to keep livestock out of the southern 1/2 of the pasture, south of West Leonard Canyon. If herding of livestock is successful in controlling livestock without fences, and adequate forage is available, the southern 1/2 of Knolls Pasture may be used in the future.

c) Complete fence at Turkey Pen to control livestock movement between North and South Battleground pastures (0.1 mile).

d) Reconstruct the north boundary fence of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir. Use herding and riders to drive livestock from Jumbo Pastures along this lane.

e) Construct a drift fence for 0.1 miles in South Battleground Pasture to funnel livestock away from General Springs Cabin and sensitive areas.

f) Construct drift fences at entry trails to meadows to reduce access by livestock at West Bear Meadow and Upper Barbershop Canyon. Construct livestock exclosures at Holder Meadow (130 ac), upper Houston Draw (160 ac), and Bill McClintock Meadow (150 ac). Construct a 0.1 acre pipe and sucker rod exclosure around Aspen Springs.

g) Maintain existing and proposed exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs) for monitoring elk and livestock use of headwater meadows and riparian areas. (FS and AGFD responsibility)

h) Use cowboys and dogs to "herd" the cattle in one or more units as a tool to control livestock movements and to keep them out of sensitive riparian areas, sensitive drainages, and headwater meadows. Move the livestock as needed to avoid sensitive areas, limit utilization on individual plants, and obtain more even grazing patterns. However, livestock may pass through riparian areas and meadows if needed to achieve herding objectives. Allow the use of lead herd animals to facilitate livestock movements.

i) Establish small "training pastures" to be used early in the season to train the livestock as a herding unit. These pastures would be approximately 300 acres each, and would be constructed in the North Jumbo (2), North Pinchot (at south end), and Burn (NE

corner) Pastures (2.8 miles of fence). Limestone, South Jumbo, and Dines Pastures may also be used as training areas, though Dines would not be used in years of low precipitation. Utilization may be higher in the training areas, with allowable use up to 60%, except Dines Pasture which has a maximum utilization of 40%. Areas must have 22 months of rest before reuse. One of the training pastures may be used for a horse pasture.

j) If for any reason, the permittee is temporarily unable to "herd" the cattle, livestock grazing strategy would revert to current method of deferred-rest-rotation and would be restricted to the following pastures: North, North Pinchot, North piece of Knolls (north of Buck Springs Canyon), North and South Jumbo, North Battleground, McCarty, South Battleground, Moonshine, Horse, Dines, and Burn Pastures. If herding is effective as a strategy, but is ineffective in a particular pasture, that pasture would be taken out of the rotation until herding or other methods are proven effective at controlling livestock distribution. These changes and solutions would be specified in the AOIs.

k) Some of the existing fences must be maintained, specifically between the northern and southern pastures, and exterior allotment fences, between Knolls and McClintock Pastures, and between South Battleground and South Pinchot.

l) Up to three corrals, twelve waterlots, and six drylots may be constructed or reconstructed to facilitate loading, unloading, and gathering of livestock.

5) Manage livestock to achieve maximum site-specific utilization levels of 25% (includes wildlife use) on headwater native species meadows, 30% in secondary drainages and in Mexican spotted owl areas and northern goshawk PFAs. If levels are above these levels in sensitive areas due solely to wildlife, livestock may remain in the pasture, as long as they can be kept out of the sensitive areas and do not contribute to utilization in those areas. Utilization levels of 40% are allowable in other areas of all pastures. An increase of 5% in utilization may be allowed during years of above average precipitation. Higher utilization of non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) Small sections of several level 3 roads would be closed where new fences cross the roads. A total of 1.2 miles would be closed on the following Forest Roads: 9713G, 9737R, 9714E.

7) Implement all applicable mitigation through AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-

grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in all pastures, especially the North, North Battleground, North Pinchot, and McCarty Pastures.

2) Precommercially thin approximately 1,000 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and for gathering livestock in the Burn and North Battleground Pastures.

Wildlife

1) Select up to six suitable stock tanks for leopard frogs and fence off portions of the tanks (<1/3 of tank). (FS responsibility)

Alternative E: Northern Pastures Emphasis (issue #4)

This alternative continues the deferred-rotation grazing scheme while primarily using the northern pastures of the allotment to provide maximum protection to sensitive riparian systems and to recover the Little Colorado spinedace. These pastures do not include major headwater meadows, and the topography restricts livestock access to sensitive riparian drainages. Additional structures needed to protect meadows and riparian areas would be constructed. However, livestock would have some access to drainages that are not overly steep. The pastures used would be: North, North Battleground, North Pinchot, McCarty, North Jumbo, South Jumbo, Burn, Horse, Dines, Moonshine, and South Battleground Pastures; Knolls Pasture north of Buck Springs Canyon, and the northern portion of the South Pinchot Pasture. The North Pasture and the North Battleground Pasture would be split, creating two additional pastures and improving livestock distribution in those pastures. (See Appendix A, Maps 1 and 6).

The southern pastures typically include headwater meadows and riparian drainages that are easily accessed by livestock. These pastures would be excluded, and include Knolls (south of Buck Springs Canyon), North McClintock, McClintock, and the southern portion of South Pinchot.

Fences critical to this alternative are those fences necessary to protect Little Colorado spinedace habitat (identified in Appendix B). The critical fences within each pasture must be constructed before each individual pasture is available for grazing. The Forest Service would provide materials for those fences and corrals required for the use of pastures needed for a viable rest-rotation strategy (Pastures North Pinchot, North Battleground, South Battleground, North, and Forest Service). The permittee is responsible for construction and maintenance of these fences. The permittee would be responsible for the temporary electric fence at General Springs whenever the South Battleground Pasture is used. The permittee would be responsible for the materials and labor for other critical fences, in order to use additional pastures (McCarty, Dines, South Pinchot, and Northern Knolls). Appendix B lists the proposed improvements and shows which must be in place prior to livestock use of these pastures and who is responsible for construction.

Livestock Grazing

1) Issue grazing permit for up to 531 cow/calf pairs (equivalent to 758 yearlings, or 71% of current permitted numbers), and 8 horses.

2) Continue the deferred-rest-rotation grazing system, with pastures deferred on a yearly basis and season of use from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The South Battleground Pasture would not be grazed until range readiness allows.

3) Collect additional forage production and utilization data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to resources through the AOI. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, control of livestock, and depth of soils. Lower numbers would be set for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use fencing, livestock trailing, control of waters, and cattleguards to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas. All proposed fences are four-strand barbed with smooth bottom wire, unless otherwise noted. Specifically we propose to:

    a) Improve livestock distribution and forage utilization in the North Pasture by constructing 1.1 miles of fence and one cattleguard at FR321 to create a new pasture in the southern portion of North. Construct short drift fence (0.5 mile) and cattleguard on FR96 to spit the remainder into east and west pastures, making three pastures from one.

    b) Construct a drift fence along Yeager Canyon in Forest Service Pasture (0.3 mile).

    c) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

    d) Create a new pasture from the portion of Knolls Pasture north of Buck Springs, by constructing 0.8 mile of fence along Leonard Canyon and 1.9 miles of fence along Buck Springs Canyon. The remainder of the Knolls Pasture would be rested.

    e) Construct 1.7 miles of fence from north side of Burn Pasture north and reconstruct 1.2 miles of boundary fence, with one cattleguard on FR123 to split the North Battleground Pasture into 2 pastures. Build a waterlot at Gobbler Tank.

f) Complete the fence at Turkey Pen to control livestock movement between North and South Battleground Pastures (0.1 mile).

g) Construct a 3.2-mile fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. Reconstruct the north fence along the boundary of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir. Reconstruct and move the east boundary fence of the McCarty Pasture.

h) Construct an exclosure around meadow system in southwest portion of the South Battleground Pasture (1.8 miles), with two cattleguards.

i) Construct a drift fence to funnel livestock away from General Springs (0.1 mile). Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture.

j) Construct a 0.5 mile division fence and a cattleguard in the South Pinchot Pasture from East Bear Canyon to the riparian pasture at Merritt, to allow use of the northern portion of the pasture. The portion south of this fence, and between Bear Canyon and East Bear Canyon, would not be used by livestock.

k) Establish livestock exclosures to promote formation of meadow sponge effect around Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock. Construct sucker road exclosures around Pinchot and Aspen Springs. Build 0.8 mile of fence from Aspen Pasture to Bear Canyon to create a small exclosure in Houston Draw. Construct a livestock exclosure around upper Houston Draw (1.4 miles).

l) Maintain existing and proposed elk exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs). (FS and AGFD responsibility)

m) Up to four corrals, six waterlots, and two drylots may be constructed or reconstructed to facilitate loading, unloading, and gathering of livestock.

n) Movement of livestock between pastures requires long drives using fences, topography, and riders to contain livestock. Drives would not take place in areas with high risk meadows, and generally would take place along a North Route. Temporary electric fence would be used to exclude East Clear Creek and traffic control measures would be required.

o) Take the Aspen Horse Pasture out of the rotation from cattle grazing, and construct a fence (holding pasture) to create a horse pasture in very south of North Pinchot pasture. The corrals at Aspen Springs can be used for horses only.

5) Manage livestock and wildlife to achieve maximum site-specific utilization levels of 30% in pastures with access to secondary drainages (Moonshine, North Knolls, Burn, Horse, Dines, North Pinchot, South Battleground, North, North Battleground, McCarty)

and in Mexican spotted owl areas, and maximum levels of 40% in upland pastures with no riparian concerns (North Jumbo, South Jumbo) and outside of Mexican spotted owl areas. An increase of 5% utilization may be allowed during years of above average precipitation. Higher utilization of non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) A small section of one level 3 road would be closed where a new fence crosses the road. A total of 0.2 mile would be closed on the following Forest Road: 9713G.

7) Implement all applicable mitigation through the AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in all pastures, especially the North, North Battleground, North Pinchot, and McCarty Pastures.

2) Precommercially thin approximately 200 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and in the Burn and North Battleground Pastures.

Wildlife

1) Select up to three suitable stock tanks for leopard frogs in the northern pastures and fence off portions of the tanks (<1/3 of tank). (FS responsibility)

Alternative F: Rest-Rotation (issue #2)

This alternative splits the allotment into an east management unit and a west management unit. Each unit is grazed every other year, allowing approximately 1/2 of the allotment to be rested each year. The large amount of improvements (fences, waterlots, corrals, cattleguards) would ensure protection for the Little Colorado spinedace and its habitat, and provide more control over the distribution of livestock. Pasture splits would result in six additional pastures, reducing problems of over- and under-utilization and allowing for one year of rest in two years (See Appendix A, Maps 1 and 7). Appendix B lists the proposed improvements and shows which must be in place prior to livestock use of the pastures. The permittee and U.S. Forest Service would share in the costs of all improvements.

Livestock Grazing

1) Issue grazing permit for up to 407 cow/calf pairs (equivalent to 581 yearlings, or 55% of current permit), and 8 horses while cattle are on the Battleground Unit, and for up to 356 cow/calf pairs (equivalent to 508 yearlings, or 48% of current permit) and 8 horses while cattle are on the Buck Springs Unit. Use the Annual Operating Instructions to adjust numbers an annual basis, depending on resource conditions.

2) Establish a rest-rotation grazing system, with one-half of the pastures rested on a yearly basis. Season of use is from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The pastures adjacent to the Rim would not be grazed until range readiness allows, as these pastures tend to green-up later than the northern pastures.

    a) Year 1 pastures: North, Dines, north portion of Knolls, Moonshine, McClintock, North McClintock, Horse.
    b) Year 2 pastures: North Jumbo, South Jumbo, McCarty, N. Battleground, S. Battleground, Burn, N. Pinchot, S. Pinchot.

3) Collect additional forage production data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to resources through the AOI. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, control of livestock, and depth of soils. Lower numbers would be set for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use fencing, livestock trailing, control of waters, and cattleguards to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas. All proposed fences are four-strand barbed with smooth bottom wire, unless otherwise noted. Specifically we propose to:

    a) Improve livestock forage utilization in the North by constructing 1.1 miles of fence and one cattleguard on FR321 to create a new pasture in the southern portion of North, and installing a short drift fence (0.5 mile) and cattleguard on FR96 at Yeager Canyon to create east and west pastures.

    b) Construct a drift fence along Yeager Canyon along southern portion of the North Pasture (area considered the Forest Service Pasture) (0.3 mile).

    c) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

d) Eliminate livestock access to riparian areas and spinedace habitat in the Knolls Pasture by constructing 0.8 mile of fence along Leonard Canyon, 1.9 miles of fence along the north side of Buck Springs Canyon and 1.9 miles of fence along the south side of Buck Springs Canyon, and 0.3 mile of fence with cattleguard (FR161B) to exclude livestock from West Leonard Canyon and the southern 1/2 of the Knolls Pasture.

e) Build approximately 0.2 mile of fence and add one cattleguard to connect the Upper and Lower Buck Springs riparian pastures. Construct one new earthen tank in McClintock Pasture to substitute for access to water below the weir in Buck Springs Canyon.

f) Divide the North Pinchot pasture into 2 pastures with 2.5 miles of fence from bluff above East Clear Creek south along FR95 west to Houston Draw exclosure. Place a cattleguard on FR95D, and build a waterlot at 95D Tank.

g) Divide the North Battleground Pasture into two pastures with 1.7 miles of fence from the north side of the Burn Pasture north and reconstruct 1.1 miles of the McCarty Pasture, with one cattleguard on FR123. Install a waterlot at Gobbler Tank.

h) Complete fence at Turkey Pen to control livestock movement between North and South Battleground Pastures (0.1 mile).

i) Construct a 3.2-mile fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. Reconstruct and move the east boundary fence. Reconstruct the north boundary fence that serves as a lane to access the northern portion of the North Battleground Pasture.

j) Divide South Battleground Pasture into 2 pastures with a division fence (3.2 miles of fence, see map) from the southeast corner of the Burn Pasture, crosses General Springs Canyon to Fred Haught Springs, south to Bear Canyon. This division requires 1 cattleguard on FR95. Three waterlots are proposed.

k) Construct a drift fence in South Battleground Pasture to funnel livestock away from General Springs Cabin (0.1 mile). Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture (permittee responsibility).

l) Divide South Pinchot into 2 pastures by constructing 2 division fences (1.65 miles of fence): 1) from FR139 cattleguard northwest to Bear Canyon; 2) from Merritt exclosure to FR139 cattleguard with a waterlot. One cattleguard is required at FR139.

m) Establish livestock exclosures to promote formation of meadow sponge effect in Holder Meadow (130 ac), East Bear Meadow (85 ac), West Bear Meadow (110 ac), upper Houston Draw (335 ac), lower Houston Draw (180 ac), and Bill McClintock

Meadow (150 ac). Construct drift fences at entry trails to Upper Barbershop Canyon to reduce access by livestock. Exclude livestock from Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock and wildlife. Install watergaps across Bear Canyon. Install cattleguards on FR95, FR95B, and FR139A.

n) Construct pipe and rod exclosures around Pinchot and Aspen Springs to exclude livestock and elk.

o) Construct a cattle exclosure around the existing elk exclosure at McClintock Spring (cattle = 90 ac, elk = 1 ac). Maintain existing exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs) for monitoring elk and livestock use of headwater meadows and riparian areas. (elk exclosures are FS responsibility)

p) Up to four corrals, seven waterlots, and three drylots may be constructed or reconstructed to provide options for loading and unloading livestock.

5) Manage livestock and wildlife to achieve maximum site-specific utilization levels of 30% on native species in headwater meadows in Rim pastures. Maximum utilization levels of 35% are acceptable in pastures with access to secondary drainages and in Mexican spotted owl areas, and levels of 45% utilization are allowed in North and South Jumbo Pastures, which have no riparian concerns and are outside of Mexican spotted owl areas. These higher levels are allowed when pastures are rested one year in two. An increase of 5% utilization may be allowed during years of above normal precipitation. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species. Higher utilization of Arizona fescue and non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) Small sections of several level 3 roads would be closed where new fences cross the roads. A total of 1.6 miles would be closed on the following Forest Roads: 9713G, 9737R, and 9714E.

7) Implement all applicable mitigation measures through the AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in North, North Battleground, North Pinchot, and McCarty Pastures.

2) Precommercially thin approximately 200 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and in the Burn and North Battleground Pastures.

Wildlife

1) Select up to eight suitable stock tanks for leopard frogs and fence off portions of the tanks (<1/3 of tank). (FS responsibility)

Alternative G: Northern Pasture Emphasis with Rest Rotation -- Preferred Alternative (issues #3 and #4)

This alternative primarily uses the northern pastures of the allotment, with a number of structures that are needed to protect meadows and riparian areas for recovering watershed function and the Little Colorado spinedace. These pastures generally do not include headwater meadows, and the topography limits livestock access to sensitive riparian drainages. However, livestock would have some access to the more shallow drainages that are not overly steep. The pastures allowed to be grazed by livestock would be: North, North Battleground, North Pinchot, McCarty, North Jumbo, South Jumbo, Burn, Horse, Dines, Moonshine, South Battleground Pastures, Knolls Pasture north of Buck Springs Canyon; and the northern portion of the South Pinchot Pasture (See Appendix A, Maps 1 and 8).

The allotment would also be run as a rest-rotation strategy, with pastures grazed one year in two. The allotment would be managed with an east management unit called the Buck Springs Unit (North, Horse, Dines, Knolls, North McClintock and Moonshine Pastures), and a west management unit called the Battleground Unit (North Jumbo, South Jumbo, McCarty, North Battleground, North Pinchot, Burn, South Pinchot, and South Battleground Pastures). The proposed improvements (fences, waterlots, corrals, cattleguards) are the minimum number required to provide protection for the riparian areas and associated wildlife species (i.e. Little Colorado spinedace). One pasture split would rely on a drift fence, resulting in one additional pasture, while two pastures would be made smaller. This alternative was developed for additional protection and enhancement of riparian area health and Little Colorado spinedace habitat, and to transfer some of the costs to the permittee.

The southern pastures typically include headwater meadows and shallow riparian drainages that are easily accessed by livestock. These pastures would be excluded from livestock grazing, and include Knolls (south of Buck Springs Canyon), McClintock, and the southern portion of South Pinchot.

Fences critical to this alternative are those fences necessary to protect Little Colorado spinedace habitat (identified in Appendix B). The critical fences within each pasturemust be constructed before each individual pasture is available for grazing. The Forest Service would provide materials for those fences and corrals required for the use of pastures needed for a viable rest-rotation strategy (Pastures North Pinchot, North Battleground, South Battleground, North, and Forest Service). The permittee is responsible for construction and

maintenance of these fences. The permittee would be responsible for the temporary electric fence at General Springs whenever the South Battleground Pasture is used. The permittee would be responsible for the materials and labor for other critical fences, in order to use additional pastures (McCarty, Dines, South Pinchot, and Northern Knolls). Appendix B lists the proposed improvements, indicates which must be in place prior to livestock use of these pastures, and who is responsible for construction.

Livestock Grazing

1) Issue grazing permit for up to 393 cow/calf pairs (equivalent to 561 yearlings, or 53% of current permitted numbers), and 8 horses while cattle are on the Battleground Unit, and for up to 250 cow/calf pairs (equivalent to 357 yearlings, or 34% of current permitted numbers), and 8 horses while cattle are in the Buck Springs Unit. These numbers are reasonable for the Western (Battleground) Management Unit, while fewer numbers would be allowed on the Eastern (Buck Springs) Management Unit (34% or 250 cow/calf pairs or 357 yearlings, and 8 horses). The permitted numbers (stated above) for each Management Unit correspond with the capability to graze all pastures listed for each respective year in 2a and 2b below. The number of livestock permitted to graze any given year would be based on improvements implemented to allow pasture availability for the year and Management Unit. Adjustments in annual numbers would be specified in each year's AOI.

2) Establish a rest- rotation grazing system, with approximately 1/2 of the pastures rested on a yearly basis. Season of use is from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The pastures would not be grazed until range readiness allows.

    a) Year 1 pastures: North, Dines, north portion of Knolls, North McClintock, Moonshine, Horse Pastures.

    b) Year 2 pastures: North Jumbo, South Jumbo, McCarty, N. Battleground, S. Battleground, Burn, N. Pinchot, northern half of S. Pinchot Pastures.

    Pastures with critical fences for Little Colorado spinedace protection would not be grazed prior to construction or annual maintenance. Pastures would be added into the grazing landbase as fences are constructed. The permittee would be required to maintain these critical fences both before the grazing season and during the season.

3) Collect additional forage production and utilization data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to resources through the AOIs. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, intensity of livestock management, and condition of soils. Livestock

numbers would be adjusted for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use fencing, livestock trailing, control of waters, and cattleguards to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas. All proposed fences are four-strand barbed with smooth bottom wire, unless otherwise noted. Responsibility for structures is indicated in parentheses (X) and in Appendix B. Specifically we propose to:

   a) Construct gap fencing across Yeager Canyon at suitable locations up and downstream of the 96 Road crossing, with a cattleguard and wing fences, to split the pasture into east and west pastures, making 2 pastures from one. These gap fences would tie into bluffs and would exclude livestock from access to Yeager Canyon from FR96 and would be considered critical. Drift fences would also be constructed at points where livestock may access the canyon. (FS/Permittee partner)

   b) Construct a drift fence along Yeager Canyon in Forest Service Pasture (0.3 mile). (FS/Permittee partner)

   c) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence. (Permittee)

   d) Create a new pasture from the portion of Knolls Pasture north of Buck Springs by constructing 0.8 mile of fence along Leonard Canyon and 1.9 miles of fence along the north side of Buck Springs Canyon (becomes North Knolls Pasture). The remainder of the Knolls Pasture would be rested. (Permittee)

   e) Complete the fence at Turkey Pen to control livestock movement between North and South Battleground Pastures (0.1 mile). (FS/Permittee partner)

   f) Construct a 3.2-mile fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. (Permittee) Reconstruct the north fence along the boundary of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir. (FS/Permittee partner)

   g) Construct a drift fence to funnel livestock away from General Springs (0.1 mile). (FS/Permittee partner)

   h) Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas when livestock are in the South Battleground Pasture. Permittee must construct this fence before using the pasture. (Permittee)

   i) Construct a 0.5 mile division fence and a cattleguard in the South Pinchot Pasture from East Bear Canyon to the riparian pasture at Merritt to allow use of the northern

portion of the pasture. The portion south of this fence and between Bear Canyon and East Bear Canyon would not be used by livestock. (Permittee)

j) Establish livestock exclosures to promote formation of meadow sponge effect around Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock. Construct pipe and sucker rod exclosures around Pinchot and Aspen Springs. (FS)

k) Build 0.8 miles of fence from Aspen Pasture to Bear Canyon to create a small exclosure in Houston Draw north of the Aspen Horse Pasture (FS/P partner). Construct a livestock exclosure around upper Houston Draw south of the Aspen Horse Pasture (1.4 miles, Permittee). Take the Aspen Horse Pasture out of the rotation from cattle grazing, and construct a fence (holding pasture 0.8 miles FS/P partner) to create a horse pasture in very south of North Pinchot pasture. The corrals at Aspen Springs can be used for horses only.

l) Establish a 90 acre livestock exclosure adjacent to the McClintock Springs elk exclosure. Construct a drift fence at side draw to Dane Canyon in North McClintock Pasture. Trail livestock into the pasture on the U-Bar Trail and use temporary fences and riders to ensure that livestock do not wander up or down-canyon. Or ship livestock in and out of the pasture. (permittee)

m) The Forest Service, in partnership with the Arizona Game and Fish Department, maintains existing elk exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs, Kinder Draw).

n) Up to two corrals, three waterlots, and two drylots may be constructed or reconstructed to facilitate loading, unloading, and gathering of livestock. (FS/P partner)

5) Manage livestock and wildlife to achieve maximum site-specific utilization levels of 35% in pastures with access to secondary drainages (Moonshine, North Knolls, Burn, Horse, Dines, North Pinchot, South Battleground, North, North Battleground, McCarty) and in Mexican spotted owl areas, and maximum levels of 45% in upland pastures with no riparian concerns (North Jumbo, South Jumbo) and outside of Mexican spotted owl areas. An increase of 5% utilization may be allowed during years of above average precipitation. In Alternative G, site-specific utilization levels were increased because the year of rest will be sufficient to allow for plant recovery with the higher utilization rate. These site-specific current levels were reviewed and approved through consultation with the US Fish and Wildlife Service. Higher utilization of non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) A small section of one level 3 road would be closed where a new fence crosses the road. A total of 0.2 miles would be closed on Forest Road 9713G.

7) Implement all applicable mitigation measures through AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs.

2) Precommercially thin approximately 200 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and in the Burn and North Battleground Pastures.

Alternative K: Modified Herding (developed in response to Knight's comments to the DEIS)

This alternative differs from Alternative D in the use of temporary fences instead of permanent fences in some areas. It relies heavily on herding of livestock to control access to sensitive areas such as headwater meadows and riparian areas, and all pastures may be used. Fences separating these pastures from those that would not be used would be regularly maintained, primarily boundary fences between the north and south pastures, and between South Battleground and South Pinchot Pastures (See Appendix A, Maps 1 and 5). If the permittee is unable to "herd" the cattle termporarily, livestock grazing would be restricted to certain pastures that have fewer headwater meadow and riparian area concerns.

Some new fences are proposed to exclude all livestock from critical spinedace locations and habitats, and to facilitate herding of the livestock. Other current fences not needed for spinedace protection or described in the previous paragraph, may not be maintained on a regular schedule, and may deteriorate. A high number of waterlots, corrals, and training pastures are proposed to facilitate control of livestock, but all may not be constructed. No pastures would be split. Herding of livestock is expected to improve livestock distribution and reduce problems of over- and under-utilization. Appendix B lists the proposed improvements and shows which must be in place prior to livestock use of the pastures. The permittee and U.S Forest Service would share in the costs of all improvements.

Livestock Grazing

1) Reissue grazing permit for up to 780 cow/calf pairs (equivalent to 1114 yearlings, or 105% permitted numbers), and 8 horses.

2) Continue the deferred-rest-rotation grazing system, with pastures deferred on a yearly basis and season of use from May 15 to October 15 allowing for plant maintenance needs. When conditions are suitable, allow entry before May 15th so that livestock can utilize native grasses in the northern pastures, particularly the fescue, while the plants are still green, growing, and palatable. The pastures adjacent

to the Rim would not be grazed until range readiness allows, as these pastures tend to green-up later than the northern pastures.

3) Collect additional forage production and utilization data by pasture to ensure that permitted numbers continue to be within carrying capacity. Adjust annual numbers to resources through the AOI. Variables that are used to set annual stocking rates include threatened and endangered species concerns, prior wildlife utilization, rainfall, forage production, control of livestock, and depth of soils. Lower numbers would be set for resource protection during drought or if production levels are lower than expected. Capacity takes into account the forage needs of wildlife.

4) Use herding of livestock as the primary means to manage the distribution of livestock grazing and utilization of upland native species, to avoid meadows and riparian areas, and to increase livestock control in sensitive areas. Use minimal fencing, waters, and cattleguards to tighten control in highly sensitive areas. Most proposed fences are four-strand barbed with a smooth bottom wire, with temporary fences used in specific areas. Specifically we propose to:

    a. Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

    b. Annually, construct a temporary drift fence along Yeagar Canyon (0.3 miles) to create the Forest Service Pasture and to keep livestock out of Yeagar Canyon.

    c. Eliminate livestock access to spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 1.9 miles of fence north of Buck Springs Canyon,**.** Use herding and low stress management techniques to keep livestock out of the southern 1/2 of the pasture, south of West Leonard Canyon. If herding of livestock is successful in controlling livestock without fences, and adequate forage is available, the southern 1/2 of Knolls Pasture may be used in the future.

    d. Complete fence at Turkey Pen to control livestock movement between North and South Battleground pastures (0.1 mile).

    e. Reconstruct the north fence along the boundary of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir. Use herding and riders to drive livestock from Jumbo Pastures along this lane.

    f. Construct a temporary electric fence (0.1 mile drift fence) in South Battleground Pasture to funnel livestock away from General Springs Cabin and sensitive areas.

g. Construct temporary drift fences at entry trails to meadows to reduce access by livestock at West Bear Meadow (0.6) and Upper Barbershop Canyon (0.5). Construct livestock exclosures at Holder Meadow (130 ac), upper Houston Draw (160 ac), and Bill McClintock Meadow (150 ac). Construct a 0.1 acre pipe and sucker rod exclosure around Aspen Springs.

h. Maintain existing and proposed exclosures (Buck Springs, Houston Draw, Merritt Draw, General Springs, McClintock Springs) for monitoring elk and livestock use of headwater meadows and riparian areas. (FS and AGFD responsibility)

i. Use cowboys and dogs to "herd" the cattle in one or more units as a tool to control livestock movements and to keep them out of sensitive riparian areas, sensitive drainages, and headwater meadows. Move the livestock as needed to avoid sensitive areas, limit utilization on individual plants, and obtain more even grazing patterns. However, livestock may pass through riparian areas and meadows if needed to achieve herding objectives. Allow the use of lead herd animals to facilitate livestock movements.

j. Establish small "training pastures" to be used early in the season to train the livestock as a herding unit. These pastures would be approximately 300 acres each, and would be constructed in the North Jumbo (2), North Pinchot (at south end), and Burn (NE corner) Pastures (2.8 miles of fence). Limestone, South Jumbo, and Dines Pastures may also be used as training areas, though Dines would not be used in years of low precipitation. Utilization may be higher in the training areas, with allowable use up to 60%, except Dines Pasture which has a maximum utilization of 40%. Areas must have 22 months of rest before reuse. One of the training pastures may be used for a horse pasture.

k. If for any reason, the permittee is temporarily unable to "herd" the cattle, livestock grazing strategy would revert to current method of deferred-rest-rotation and would be restricted to the following pastures: North, North Pinchot, North piece of Knolls (north of Buck Springs Canyon), North and South Jumbo, North Battleground, McCarty, South Battleground, Moonshine, Horse, Dines, and Burn Pastures. If herding is effective as a strategy, but is ineffective in a particular pasture, that pasture would be taken out of the rotation for a year, through the AOI.

l. Some of the existing fences must be maintained, specifically between the northern and southern pastures, and exterior allotment fences, between Knolls and McClintock Pastures, and between South Battleground and South Pinchot.

m. Up to three corrals, twelve waterlots, and six drylots or small holding pastures may be constructed or reconstructed to facilitate loading, unloading, and gathering of livestock.

n. The following trails may be used, maintained, and improved, with approval of the Forest Service: East Clear Creek crossing, the trail at the mouth of Miller Canyon, the trail that crosses Miller Canyon in T13N, R10E, Section 13, the use of FR95 to cross Houston Draw and Bear Canyon, the use of FR300 to cross General Springs, and a second crossing of General Springs in T13N, R11E, Section 30, U Bar Trail and Barbershop Trail.

5) Manage livestock to achieve maximum site-specific utilization levels of 25% (includes wildlife use) on headwater native species meadows, 30% in secondary drainages and in Mexican spotted owl areas and northern goshawk PFAs. If levels are above these levels in sensitive areas due solely to wildlife, livestock may remain in the pasture, as long as they can be kept out of the sensitive areas and do not contribute to utilization in those areas. Utilization levels of 40% are allowable in other areas of all pastures. An increase of 5% in utilization may be allowed during years of above average precipitation. Higher utilization of non-native species such as orchard grass would be allowed to facilitate replacement with diverse native vegetation.

6) Small sections of several level 3 roads would be closed where new fences cross the roads. A total of 1.2 miles would be closed on the following Forest Roads: 9713G, 9737R, 9714E.

7) Implement all applicable mitigation through AOIs.

8) Maintain existing and new improvements as needed.

Soils and Vegetation

1) Manage ungulates to maintain vegetative ground cover in the uplands. Throughout the allotment, manage for increased utilization levels on non-native species such as orchard-grass to reduce vigor and facilitate replacement of non-native grasses with native grasses, forbs, and shrubs. Manage areas dominated by Arizona fescue to retain plant vigor and health and to increase diversity of other native species in all pastures, especially the North, North Battleground, North Pinchot, and McCarty Pastures.

2) Precommercially thin approximately 1,000 acres of dense seedling/sapling/pole stands to allow for ease of driving livestock along FR137 in the Horse and Moonshine Pastures, and for gathering livestock in the Burn and North Battleground Pastures.

MITIGATION MEASURES

The following mitigation measures are required for the implementation of all alternatives that allow livestock grazing (Alternatives B-G).

General

1) Remove unnecessary fences before they deteriorate to the point where they become hazards to people or wildlife. This is also required for the No Grazing alternative.

2) Construct all new fences along potentially eligible Wild and Scenic River sections of East Clear Creek, Barbershop Canyon, and Leonard Canyon out of sight of the drainage bottoms, where feasible. No actions would be taken that would degrade the outstanding remarkable characteristics of these areas.

3) No actions would be taken that would degrade the roadless quality of Inventoried Roadless Areas.

Wildlife

1) Construct new fences, waterlots, drylots, corrals, cattleguards, or other improvements; and implement road closures, within Mexican Spotted Owl PACs, in goshawk nest stands, and within ¼ mile of peregrine eyries, outside of the breeding season (construction can occur between September 1 – February 29) or after non-nesting has been determined.

2) Do not use salt or minerals in Mexican spotted owl PACS, goshawk nest stands, or within ½ mile of peregrine eyries.

3) Do not gather livestock, or brand within Mexican spotted owl PACS, goshawk nest stands, or within ½ mile of peregrine eyries.

4) If a bald eagle roost is located, do not construct structures within ¼ mile during the times when eagles are present on the allotment (November – March).

5) Survey potential southwestern willow flycatcher habitat. If potential habitat becomes suitable, surveys would be conducted for flycatcher occupancy annually. If these sites are determined to have breeding flycatchers within 5 miles of the allotment, Coconino National Forest would reinitiate consultation and incorporate specific Reasonable and Prudent Measures.

6) Survey earthen tanks for Chiracahua leopard frogs prior to maintenance activities. Maintain stock ponds during the fall or winter, if possible, to avoid impacts to adult frogs tadpoles, and eggs. Maintain when dry or nearly dry.

7) Waterlots would be at least five acres in size. Wire open waterlots and drylots, when not in use.

8) Modify elk exclosures to allow entry by turkeys and medium-sized mammals.

9) Maintain existing fences to meet wildlife specifications.

Noxious weeds

1) Evaluate each activity prior to implementation to determine risk for introducing or expanding noxious weed populations and assign measures to reduce this risk.

2) Clean equipment (dozers, tractors, chainsaws) before and after use on the allotment, when known to have been in areas infested with noxious weeds. Clean equipment before moving to a new area within the allotment when known to have been in infested areas.

3) Avoid areas infested with noxious weeds, especially when using equipment.

Cultural Resources

1) In order to insure the *status quo*, management practices that tend to concentrate livestock (and most likely wild ungulates) such as placement of salt, haying, construction of waters, etc., would be located away from cultural resources. This measure would be included in each year's Annual Operating Instructions and would be a discussion at the annual meeting with the permittee.

2) Ground disturbing activities such as construction of improvements (tanks, new cattleguards, harrowing and seeding, etc.) and watershed maintenance activities would require separate archaeological surveys and clearances prior to implementation. These activities would be managed to avoid sites to ensure there is no effect.

3) Maintenance, reconstruction, or replacement of existing facilities, such as existing cattleguards, gates, fences, and culverts, are undertakings that do not have the potential to cause effects on historic properties as long as the work does not involve additional ground disturbance. The Forest, Zone, or District Archaeologist would be notified of these activities prior to implementation to confirm that there is no potential to cause effects on historic properties. Any new fence construction, fence relocation, or clearing for fence realignment, whether by hand or mechanical means, requires separate evaluation and documentation from the Forest Archaeologist to determine if there is potential for effects on historic properties or whether separate clearances or surveys are needed.

Aquatic Resources

1) Insure that any and all newly proposed and existing critical fences required for the protection of spinedace fencing are constructed/maintained prior to pasture use by livestock (identified in Appendix B).

2) Prior to use of the Miller / ECC confluence crossing, a fisheries biologist would survey for the presence of any sensitive fish species, and evaluate fish habitat conditions. If spinedace, or any other sensitive fish species are located at or within the vicinity of the crossing (1/4 mile up or downstream of the confluence \ crossing), the crossing would not be used. In the absence of sensitive fish species, the crossing could be used with the following stipulations:

   Protect the drainages from trampling by erecting a temporary fence across the mouth of Miller Canyon, and across ECC immediately upstream from the confluence with Miller Canyon. These fences and the use of riders would help in controlling livestock through the crossing, and direct their travel up and out of the drainage.

3) Prior to use of other stream course crossings, a fisheries biologist would survey for the presence of any sensitive fish species, and evaluate fish habitat conditions. If spinedace, or any other sensitive fish species are located at or within the vicinity of the crossing, measures must be taken to protect sensitive fish and fish habitat. Use the following protective measures regardless of whether fish are present or not:

   a. Protect the drainages from trampling by erecting temporary fences to help in controlling livestock through the crossing, and direct their travel up and out of the drainage.

   b. Use riders to ensure that livestock would not be allowed to move up or down drainage, or be allowed to mill around within the vicinity of the drainage crossing.

Soil and Water

1) Soil and water concerns are mitigated through the application of site-specific Best Management Practices. Appendix D displays the site-specific improvements for the Buck Springs Allotment by alternative that mitigate the negative effects of livestock grazing.

DESCRIPTION OF ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to

the Proposed Action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of managing livestock management on the Buck Springs Range allotment, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, three alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

Alternative H: Maximum Range Improvements

This alternative would use extensive fencing with cattleguards, corrals, and waterlots to gain greater control over the distribution and duration of grazing, and for protection of riparian drainages and headwater meadows. Currently there are 22 pastures. Several pasture splits requiring 58 miles of new fence would result in a total of 35 pastures.

Rationale for Eliminating the Alternative

The purpose for this alternative was to provide strict control over livestock distribution and forage utilization through structures, while eliminating livestock access to sensitive riparian areas. Early analysis indicated that over 58 miles of fence would be required, with numerous cattleguards, waterlots, and drylots, for this alternative. This amount of additional fencing would create substantial new hazards for many wildlife species, and the financial reality of such large expenditures is economically impractical. Control over livestock distribution and forage utilization is also covered in alternatives A, D, E, and F.

The concern over access to sensitive habitats for TES species is addressed in various ways in Alternatives A, C, D E, F, and G. This alternative would not increase protection for TES species habitats more than Alternatives C, E, or G. Therefore, it was felt that the primary issue driving this alternative was addressed in other alternatives, the amount of additional fencing would cause unnecessary harm to wildlife, and Alternative H would be economically impractical.

Alternative I: Northern Pasture Emphasis with Maximum Range Improvements

This alternative restricted livestock to the northern pastures of the allotment, while incorporating the maximum number of pasture splits for strict physical control of livestock distribution. Major pastures would be split, requiring 38 miles of new fence and resulting in a total of 30 pastures. Movement between pastures would require using major roads, and must be executed with tight control over the livestock.

Rationale for Eliminating the Alternative

Early analysis indicated that over 38 miles of fence would be required to implement this alternative. Four large pastures (about 35% of the area) would be removed from the allotment landbase. This amount of additional fencing would create substantial new hazards for many wildlife species, and the financial reality of such large expenditures for a drastic

reduction in livestock capacity would be economically impractical. Control over livestock distribution and forage utilization is also covered in Alternatives A, D, E, and F.

The issue of eliminating livestock access to headwater meadows through removal of the southern pastures from the landbase is duplicative of Alternatives E and G. The concern over access to other sensitive habitats for TES species is addressed in Alternatives A, D, E, F, and G. This alternative does not increase protection for TES species habitats more than other alternatives. Therefore, it was felt that this alternative was duplicative of other alternatives, the amount of additional fencing would cause unnecessary harm to wildlife, and the alternative would be economically impractical.

Alternative J: Alternative Submitted by Permittee

The permittee for the Buck Springs Range Allotment submitted this alternative with an emphasis on herding and low stress management techniques, minimal use of fencing to control livestock, and the continuation of current permitted numbers.

Rationale for Eliminating the Alternative

The Interdisciplinary Team assessed this alternative and determined that it would result in unnecessary environmental harm. The alternative does not provide adequate control over livestock for protection of riparian stream systems and the threatened Little Colorado spinedace. It relies on the herding of livestock, which has not been found to provide that have fewer headwater meadow and riparian area concerns.

The ID Team also assessed current permitted numbers in association with areas that would no longer be grazed. Over the past several years, riparian pastures and areas with wet meadows have been rested from grazing. Several of the alternatives remove pastures or additional acreage from the grazing landbase. Each alternative was evaluated for the number of livestock that could be supported by the available forage, taking wildlife and vegetation needs into consideration [#79]. Reductions in the number of acres that could be grazed under each alternative required a corresponding reduction in permitted numbers based on the amount of forage available on the remaining acres. The acres that would be grazed under most action alternatives would not support the current permitted numbers.

SUMMARY OF ALTERNATIVES

The eight alternatives analyzed in detail exhibit a wide range of actions for the management of livestock on the allotment. Table 1 summarizes the actions proposed for each alternative.

The alternatives exhibit a wide range of actions that in turn have a wide range of effects on the physical, biological, social, and economic resources of the allotment. Table 2 summarizes the effects of the alternatives through the issues and units of measure. Carrying capacity has been shown to be adequate for the livestock numbers proposed in each alternative. A rest-rotation grazing system provides a year of rest for a year of livestock grazing in Alternatives F and G. While this system allows for plants to be rested from

livestock grazing, elk grazing would still occur and would likely remain high. Alternatives C, D, and E address the concerns for overgrazing on individual plants through herding and pasture splits that would even out grazing distribution.

Table 1: Summary of the components of eight alternatives for management of livestock on the Buck Springs Range Allotment.

Alternative Components	Alt. A No Graze	Alt. B No Change	Alt. C Proposed Action	Alt. D / K Herding	Alt. E Northern Pastures	Alt. F Rest-Rotation	Alt. G North Rest-Rot.
Permitted Livestock (#cow/calf) or (#yearlings) and (#horses)	0 0 0	746 1065 8	669 955 8	780 1114 8	531 758 8	E½/W½ 356/407 508/581 8	E½/W½ 250/393 357/561 8
Grazing strategy	None	Defer-Rest-rotation	Defer-Rest-rotation	Defer-Rest-rotation	Defer-Rest-rotation	Rest rotation	Rest rotation
Acres in Rotation	0	68,010	60,078	59,717	43,832	66,449	45,876
# livestock pastures	0	23	24	25	23	29	22
Current Fence (miles)	90	90	90	90	90	90	90
Proposed new permanent fence (mi)	0	0	22	13.5/11.4	18	33	13.5
# cattleguards	0	0	5	0	3	8	2
# corrals	0	0	2	3	4	4	2
# waterlots	0	0	3	12	6	7	3
# drylots	0	0	1	6	2	3	2
Pre-commercial Thinning (ac.)	0	0	1,500	1,000	200	200	200
Frog ponds	0	0	10	6 / 0	3	8	0
Miles of roads closed	0	0	1.6	1.2	0.2	1.6	0.2

The economic analysis illustrates that five of the seven action alternatives provide for a positive benefit/cost ratio for the permittee, with Alternative B the most profitable and Alternative F the least profitable. Though Alternative B is the most profitable based on current management, it would likely result in the US Fish and Wildlife Service issuing a Jeopardy Opinion through the Endangered Species Act, which would require the removal of livestock from the allotment. Therefore, Alternative K would more likely be the most profitable for the permittee, followed closely by Alternative D. Alternatives C, E and G indicate a low positive benefit/cost ratio.

The results of the economic model point out the high costs for the Forest Service for all alternatives, including Alternative A: No Grazing. Alternative A has no benefit/cost ratio, since it would have no benefits. It has the lowest costs for the Forest Service. Alternative B with full permitted numbers, would have the best benefit/cost ratio (B/C ratio), but is likely to incur a Jeopardy Opinion through the Endangered Species Act and removal of all livestock from the allotment. The next best B/C ratio would be provided by Alternative E, followed by Alternatives G and K, then D. Alternatives C and F would incur much higher expenses for the Forest Service.

Table 2: Summary of effects on the measures for eight alternatives for the management of livestock on the Buck Springs Range Allotment.

Significant Issues Unit of Measure	***Alt. A*** **No Graze**	***Alt. B*** **No Change**	***Alt. C*** **Propose d Action**	***Alt. D*** **Alt. K[1] Herding**	***Alt. E*** **Northern Pastures**	***Alt. F[2]*** **Rest-Rotation**	***Alt. G[2]*** **North Rest-Rotation**
Carrying Capacity (Issue 1)							
Permitted Livestock (#cow/calf) or (#yearlings) and (#horses)	0 0 0	746 1,065 8	669 955 8	780 1114 8	531 758 8	**E ½/W½** 356/407 508/581 8	**E ½/W ½** 250/393 357/561 8
Grazing System and Plant Overuse (Issue 2)							
Grazing strategy	None	Defer-Rest-rotation	Defer-Rest-rotation	Defer-Rest-rotation	Defer-Rest-rotation	Rest rotation	Rest rotation
Economic Feasibility (Issue 3)							
Grazing Fee ($)	N/A	5,169	4,636	5,405	3,680	2,820	2723
Benefit/Cost (permittee)	N/A	1.94	1.19	1.33 1.36	0.89	0.65	1.17
Benefit/Cost (Forest Serv.)	N/A	0.16	0.09	0.13 0.13	0.14	0.07	0.13
Improvements				87,750			

[1] Alternatives D and K have the same effects to resources. The difference between the two is a difference between the use of permanent or temporary fences. Therefore, the only difference between the two alternatives will be the costs. In this table, there will be two values listed in the B/C ration section of the table. The top number in the table is the value for Alternative D, the bottom number is the value for Alternative K.
[2] Information in parentheses within the table conveys additional formation on the rest rotation strategy. See previous discussion for more information describing the effects of rest-rotation.

Significant Issues Unit of Measure	***Alt. A*** **No Graze**	***Alt. B*** **No Change**	***Alt. C*** **Proposed Action**	***Alt. D*** **Alt. K[1] Herding**	***Alt. E*** **Northern Pastures**	***Alt. F[2]*** **Rest-Rotation**	***Alt. G[2]*** **North Rest-Rotation**
Costs - Permittee	0	0	80,500	80,500	121,100	134,700	87,350
Threatened and Endangered Species Concerns (Issue 4)							
Meadow Acres **Excluded (improved miles)**	412	234	394	368	412	394	412
Meadow Acres Accessible	0	178	18	44	0	18	0
Riparian Drainages Excluded (improved miles)	144	49	62	62	93	70	92
Access to Riparian Drainages (impact miles)	0	95	82	82	51	74 (1 in 2 years)	52 (1 in 2 years)
Number of MSO PACs grazed	0	21	21	21	20	21 (7 E/16 W)	20 (7 E/15 W)
Structures in Goshawk PFAs	0	0	0.25 mile fence	1 mile fence + waterlot	0	1.25 mile fence	0
Number of Goshawk PFAs grazed	0	6	6	6	4	5 (E ½) 2 (W ½)	3 (E ½) 1 (W ½)
PFC streams Excluded (improved miles)	94	41	48	46	58	48	59
PFC streams Accessed (potential impact miles)	0	53	46	49	36	46	36
At-risk Stream Excluded (improved miles)	34	4	7	9	21	9	21
Non-functional	14	3	7	7	12	12	12

Significant Issues Unit of Measure	***Alt. A*** **No Graze**	***Alt. B*** **No Change**	***Alt. C*** **Propose d Action**	***Alt. D*** **Alt. K[1] Herding**	***Alt. E*** **Northern Pastures**	***Alt. F[2]*** **Rest-Rotation**	***Alt. G[2]*** **North Rest-Rotation**
Streams Excluded (improved miles)							
Non-functional Streams Accessed (potential impact)	0	11	7	7	2	2	2
Amount of SWWF habitat Grazed	None	None	None	None	None	None	None
Protection for Mogollon thistle (describes impact)	No grazin g	Full grazing	Full grazing	Herding	No grazing	Grazed every other year	No grazing
Number of Frog Ponds Improved	0	0	10	6	3	8	0

PREFERRED ALTERNATIVE

The Forest Service's preferred alternative is Alternative G. The Forest Service believes that this alternative best meets the purpose and need by coordinating management of the entire allotment and by greatly reducing impacts to watershed conditions, sensitive habitats, and threatened and endangered species. This alternative best meets the project objectives as outlined in Chapter 1 by allowing for livestock grazing on appropriate acres, improving soil and vegetative conditions, reducing dense thickets that impede livestock management on 200 acres, and improving riparian conditions and habitat for threatened and sensitive species. Additionally, the Forest Service believes that this alternative best meets the issues raised within the analysis which were outlined in Chapter 1. Alternative G protects the most miles of stream and habitat for riparian dependent species of any of the action alternatives, and still provides for some level of livestock grazing to meet the needs of the permittee.

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the physical, biological, social, and economic environments of the project area that would affect or that would be affected by the alternatives if they were implemented. In conjunction with the description of Alternative A (No Graze) and Alternative B (No Change), in Chapter 2 and with the predicted effects of these alternatives in Chapter 4, this chapter establishes the baseline against which the decision maker and the public can compare the effects of all action alternatives.

This chapter summarizes the specialist reports located in the Project Record at the Mogollon Rim Ranger Station [#21-33, 72, 73, 74, 76, 80, 101, 104]. Each specialist report gives much more detail on the existing conditions on the allotment, including information on surveys of the allotment. They reference other reports, journal articles, and databases.

HISTORY OF HUMAN USE AND CULTURAL RESOURCES
(Cultural Resources Report [#33, #80])

The Buck Springs Allotment falls within the East Clear Creek Watershed. Approximately 5% (3770 acres) has been intensively surveyed for prior projects, recording 28 archaeological sites within the allotment.

An overview of the area and surrounding areas indicates that the known sites represent a fairly typical cross section of the Sinagua settlement pattern. Site types include artifact scatters, field houses, farmsteads, villages, and community centers. A small amount of Archaic Period lithic scatters suggests early utilization during the Middle and Late Archaic Periods of ca. 5000 BC to AD 500. The major prehistoric occupation of the allotment area represents the Sinagua from around AD 700 to about AD 1450.

After 1450 and an apparent abandonment of the area by the prehistoric puebloan peoples, lithic scatters, roasting pits, and petroglyphs indicate utilization of the area by the Hopi, Yavapai, and the Pine Mountain Band of the Northern Tonto Apache, with possible sporadic use by the Navajo and Hualapai. Euroamerican use of the allotment is primarily related to ranching and logging, starting in the 1880's but being most important since the 1920's. The many springs and meadows in the area attracted early settlers.

The General Crook Trail was established in 1871, and provided access between Fort Apache on the east and Fort Verde on the west. The Battle of Big Dry Wash between the Apache scouts and the US Cavalry in 1882 was a prominent historic event that took place with the allotment from General Springs to Rock Crossing. Historic battleground markers mark these areas.

RANGELAND MANAGEMENT
(Range Specialist's Report [#21])

Livestock Management

Currently the allotment is managed at Level D (see Chapter 1). Full capacity lands are considered the upland areas of the allotment, where slopes are less than 40%, and forage is at least 100 pounds per acre. Potential capacity areas are those with impaired soils. There are approximately 51,900 acres of full capacity lands, and 2,000 acres of potential capacity, with another 2,500 acres in livestock exclosures.

The current permit allows for 746 cows with calves, or 1065 mid-weight yearlings. Actual use between 1992 and 1998 ranged from 96% of permitted numbers (1992) to 60% (1993) and from 100% (1997) to 18% (1998). The entire allotment was rested in 2002 due to drought conditions. Changes in use were based on resource concerns that include impacts to the Little Colorado spinedace, watershed conditions, and drought, as well as economic considerations of the rancher. Current management can be summarized as a deferred-rest-rotation grazing scheme. Occasionally some pastures are rested yearlong.

The Buck Springs Range Allotment is a combination of the former Buck Springs Allotment (Allotment Management Plan (AMP), USDA 1988), and the Battleground/Pinchot Allotment (USDA 1986). In 1990, the two allotments were consolidated with a permit for 746 head cattle and 8 horses, to be run together from May 15 to October 15 each year. Much of the information on the allotment is described in three sub-units known as the Buck Springs Unit, the Battleground Unit, and the Pinchot Unit.

The allotment is divided into 14 pastures, 3 riparian pastures (livestock excluded), and 6 horse pastures for a total of 23 pastures. Several large pastures have an uneven grazing distribution, resulting in patterns of overuse and underuse of forage in uplands, especially in North and North Battleground Pastures. The presence of highly palatable, non-native grass species, such as orchard-grass, results in overuse of this resource. Native Arizona fescue dominates some areas. Some conflicts occur between livestock and recreationists (livestock use of trails; fences affect recreation access; livestock in campgrounds). The entire allotment is within one mile of water. The current 90 miles of fences require constant maintenance for reasons such as terrain, elk, treefall, and snowpack. Large investments of time and money are needed to keep fences in a functioning condition.

Recent and historical overuse in riparian areas and meadows from combined livestock and elk grazing has resulted in impaired riparian and meadow functioning (Haines 1993). The 1998 Proper Functioning Condition Assessment identified 14 miles of nonfunctional riparian streams and 34 miles of functional at-risk streams. The Terrestrial Ecosystem Survey of 1987-1991 identified 412 acres of unsatisfactory soil conditions (all meadows) and 2100 acres of impaired soil conditions on the allotment. Meadow surveys conducted in 1995 found large amounts of bare ground, a lack of litter, and a lack of vegetative diversity. Riparian pastures (totaling about 2900 acres) include approximately 230 acres of meadows and are currently rested from livestock grazing. Seven large elk exclosures, totaling about 15 acres, are located within headwater meadows in Upper Buck Springs, Merritt Draw, Houston Draw, Whistling Springs, General Springs, McClintock Springs, and Kinder Draw.

Three of these exclosures have been in place for 10 or more years, and demonstrate how the meadows can be restored when rested from both wildlife and livestock grazing [#22, 24].

Recent consultations on impacts to threatened and endangered species and their habitats within the allotment resulted in the implementation of projects to control livestock distribution (implementation dates are in parentheses):

1) The construction of 3/4 mile of drift fence in the North Battleground Pasture to restrict livestock access into Blue Ridge Reservoir (East Clear Creek, constructed 1999);

2) Complete rest from livestock grazing in the Knolls Pasture from 1998 through 2002;

3) Elimination of livestock access to the portion of East Clear Creek above Jones Crossing in McCarty Pasture (potential spinedace habitat, fence constructed 2000);

4) Construction of elk exclosures at Whistling Springs (Merritt Riparian Pasture), General Springs (South Battleground Pasture), and Kinder Draw (Kinder Riparian Pasture) (summer 2000); and a temporary livestock exclosure around sensitive areas in association with an elk/livestock exclosure at General Springs (summer 2001).

Range Condition

Range condition is "…the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of a climax plant community for the site" (USDA Rangeland Analysis and Management Training Guide 1997). The terms used to describe range conditions, excellent, good, fair, and poor are defined in terms of providing forage for livestock and do not assess conditions for many species of wildlife (Kie et al. 1994).

Range condition, as measured by the Parker Three-Step or other methods, should be monitored on a periodic schedule, ideally every 10 years or so. The method has been conducted on the three Management Units of the Allotment at differing intervals.

The Parker Three Step Clusters are made up of several transects. Each transect samples a 50 by 150 foot plot. The information gathered for each transect is accurate only within the 50 to 150 foot plot. It is impossible to install sufficient numbers of clusters across each pasture so as to make site-specific determinations of range condition, using only transect data. Range conservationists use the information gathered from the Clusters to train their eyes so that they can make ocular estimates of conditions over much larger areas.

The Forest Service evaluates overall conditions across pastures through subjective evaluations, along with how these conditions change over time. Using these evaluations on a pasture level and incorporating vegetative trend data from all of the Parker Three Step

Clusters across the allotment, personnel estimate that trends on the Buck Springs Allotment are static or that there is no apparent upward or downward trend.

Trends are generally tied to management, and one would expect to see indicators that trends are either generally up or down. On the Buck Springs Allotment, management has been variable every year for at least the last 11-12 years for pasture use, rest, and numbers, making it very difficult to tie conditions to management strategies.

There are several factors that influence current range conditions on the Buck Springs Allotment:

- Numbers of cattle and timing and length of use has varied on the different Management Units, both before and after they were combined into the Buck Springs Allotment.
- Topography complicates livestock management. North-south ridges separated by canyons characterize the allotment, and the vegetation varies from thick mixed-conifer stands interspersed with headwater meadows on the south to more open ponderosa pine stands to the north.
- Vegetation changes have occurred over time. Forest canopy closures in the ponderosa pine and mixed conifer vegetation types have increased since the clusters were read in the 1960's through the 1980's [#72]. Increases in canopy result in decreases in understory and poor vegetation scores.
- Elk populations have dramatically increased since the mid-1970's [#24]. Areas that are rested from livestock grazing often experience heavy grazing by these large ungulates, especially meadows and riparian areas.

The Battleground and Pinchot Units were read in 1963, 1989, and 1998 (most recently 9 years apart). The Buck Springs Unit was read in 1962, 1977, and 1998 (most recently 21 years apart). Vegetation and soil stability condition ratings were compared between monitoring periods (Table 3). Overall, 1998 vegetation ratings indicate that 31% of the clusters rated as poor range condition, 38% as fair range condition 25% as good range condition, and 6% as excellent range condition. Soils stability ratings indicate that 0% of the clusters rated as poor, 19% as fair, 75% as good, and 6% as excellent range condition. Incorporating visual estimates throughout the allotment and comparing these to earlier ratings, the scores show either a static condition, or no apparent trend.

In the 21 years since the clusters were read in the Buck Springs Unit, elk populations have increased dramatically [#24]. The 1989 summary for the Battleground and Pinchot Units noted that the non-native cool-season species where being impacted heavily by elk.

Range inspection reports since 1989 have noted consistently high utilization in meadows and on the seeded cool-season species on the ridges across the entire allotment, whether cattle were in the pasture or not [#21].

Table 3: Current range resource condition ratings -Summary of 1998 Parker Three-Step-Data for vegetation and soil stability.

MANAGEMENT UNIT	PASTURE	CURRENT AND PREVIOUS YEAR READ	CLUSTER NO.	VEGETATION TYPE	VEG SCORE/ RATING 1998/ PREVIOUS	SOIL STABILITY RATING 1998/ PREVIOUS
Battleground	Kinder Riparian	1998 1989	C1	PP/ bunchgrass	Fair/ Fair	Fair/ Fair
	McCarty	1998 1989	C2	MC/ bunchgrass	Poor/ Poor	Fair/ Fair
	McCarty	1998 1989	C3	Bluegrass meadow	Poor/ Poor	Fair/ Fair
	South Battleground	1998 1989	C4	PP/ bunchgrass	Fair/ Fair	Good/ Good
	North Battleground	1998 1989	C5	PP/ bunchgrass	Fair/ Poor	Good/ Excellent
Pinchot	North Pinchot	1998 1989	C1	PP/ bunchgrass	Good/ Fair	Good/ Fair
	South Pinchot	1998 1989	C2	PP/ bunchgrass	Fair/ Good	Excellent/ Excellent
	South Pinchot	1998 1989	C3	PP/ bunchgrass	Good/ Excel.	Good/ Good
	North Pinchot	1998 1989	C4	PP/ bunchgrass	Poor/ Fair	Good/ Excellent
	North Pinchot	1998 1989	C5	PP/ bunchgrass	Fair/ Poor	Good/ Excellent
Buck Springs	McClintock	1998 1977	C1	Bluegrass meadow	Fair/ Good	Good/ Good
	McClintock	1998 1977	C2	Bluegrass meadow	Poor/ Good	Good/ Good
	S. Buck Spr. Exclosure	1998 1977	C3	Bluegrass meadow	Good/ Good	Good/ Good
	North	1998 1977	C4	PP/ bunchgrass	Good/ Good	Good/ Good
	Knolls (North)	1998 1977	C6	PP/ bunchgrass	Poor/ Fair	Good/ Good
	Knolls (South)	1998 1977	C7	MC/ bunchgrass	Fair/ Good	Good/ Good

The South Buck Springs Exclosure excludes livestock grazing while allowing elk grazing. The cluster located in the exclosure indicates that conditions have remained static, and that elk grazing has limited improvement in conditions. Current efforts by Arizona Game and Fish Department to reduce the elk population through increased hunting pressure, and Forest Service efforts to promote better control over livestock distribution and grazing pressure are expected to result in improving conditions over the long term.

Grazing Capacity

An analysis of forage production, forage use by livestock and wildlife, and proposed livestock numbers indicate that the current permitted numbers are within the capacity of the allotment (Table 4). The analysis used forage production and steepness of slopes to determine capacity. The analysis assumes that all acres with greater than 40% slopes are not available for livestock use and all acres with impaired or unsatisfactory soils or less than 100 pounds of forage per acre do not provide forage for livestock, as recommended by the Rangeland Analysis and Management Training Handbook (USDA 1997) [#21f].

Table 4 displays the forage requirements for livestock and wildlife, the forage available on the allotment and the percent utilization that would occur on the allotment with the current numbers of livestock and wildlife. These figures indicate that the current permitted numbers can be accommodated on the allotment in normal years, with a utilization standard of 35%. However, these numbers do not illustrate current problems with over- and under-utilized areas of the allotment due to distribution problems and the disproportionate grazing that occurs in meadows and riparian areas.

Table 4: Estimated forage availability and use by livestock and wildlife under current management with 746 cow/calf pairs.

	LIVESTOCK	**WILDLIFE**
FORAGE REQUIRED	3,942,562 lbs	1,300,000 lbs
FORAGE AVAILABLE	15,024,166 lbs	17,851,530 lbs
ESTIMATE OF FORAGE USE	26.2%	7.3%

Estimated forage production data were taken from each TES soil mapping unit that occurs within the allotment. This information was adjusted through site-specific measurements of forage production taken in 1998 and 1999, and resulted in an estimate of approximately 17,851,530 pounds of forage on the allotment (Table 5). Approximately 15,024,160 pounds of forage are available to livestock outside of livestock exclosures, and in grazed areas under the assumption that acres with impaired and unsatisfactory soils, slopes over 40%, and acres with less than 100 pounds of forage per acre are not available. In addition, the total forage

remaining for livestock includes a reduction of 10%, as recommended by the Rangeland Analysis and Management Training Guide (USDA 1997).

Table 5: Acres, dominant vegetation type, average slope, and pounds of forage per pasture for the entire analysis area.

PASTURE	ACRES	VEGETATION TYPE	SLOPE	FORAGE AVAILABLE LIVESTOCK (lbs.)	TOTAL FORAGE (lbs.)
Aspen Springs	472	PP	0-40%	0	151,167
Burn	639	PP	15-40%	205,973	232,074
Dines	1105	PP	15-40%	299,105	324,861
Dines Tank Exclosure	32	PP	15-40%	0	8268
Genes	68	PP	0-20%	22,576	24,256
Jumbo	1541	PP	0-30%	610,917	614,269
Kinder	1355	PP	0-60%	0	504,572
Knoll Lake CG	191		0-25%	0	36,965
Knolls	11932	PP & MC	0-40	2,389,928	2,612,089
Lane	83	PP	0-20%	28,686	31,150
Limestone	172	PP	0-30%	54,414	58,427
McCarty	4361	PP	0-120%	1,058,480	1,282,307
Merritt Excl	400	PP/MC/meadow	0-20%	0	121,545
Moonshine	1286	PP	0-40%	362,732	388,664
N.BuckSprings Exclosure	105	PP	0-15%	0	24,756
North	9821	PP	0-120%	2,624,858	2,903,524
N.Battleground	7570	PP	0-120%	1,611,463	1,830,337
N. Holding	78	PP	0-20%	26,500	28,684
N. McClintock	2044	PP	0-80%	449,257	513,811
N. Pinchot	6205	PP	0-120%	1,449,213	1,615,105
S. BuckSprings Exclosure	703	PP/MC/meadow	0-15%	0	217,169
Schneider	101	PP	0-20%	31,940	34,063
S. Battleground	7444	PP	0-30%	1,422,373	1,575,961
S. McClintock	7241	PP&MC	0-40%	1,327,278	1,507,327
S. Pinchot	5600	PP&MC	0-60%	969,356	1,125,651
Steer	246	PP	0-20%	79,17	84,527
Grand Total	**70,795**			***15,024,166**	**17,851,530**

*** forage available for livestock excludes forage in livestock exclosures, and on slopes greater than 40%, in areas with less than 100 pounds per acre, and where soil conditions are "impaired" or "unsatisfactory".**

PP = Ponderosa Pine, MC = Mixed Conifer

Wildlife populations (elk and deer) are not restricted by livestock exclosures, impaired soils, and steep slopes, and therefore have access to approximately 17,851,530 pounds of available forage. Wildlife forage requirements are estimated to be between 1,100,000 and 1,350,000 pounds a year, based on population estimates provided by the Arizona Game and Fish Department and average consumption per animal.

The analysis of capacity for current management (Alternative B, Table 4) shows that about 26.2% of the available forage is required by 746 cows with calves (Table 4) in areas available to livestock, while wildlife require about 7.3% of the forage in areas available to them. Under the assumption that wildlife use forage evenly across the allotment, the cumulative utilization consumption in areas grazed by both livestock and wildlife would be 26.2% plus 7.3% for an average of 33.5% forage utilization. Forage available only to wildlife would have 7.3% utilization. This analysis shows that current permitted livestock are within capacity of the allotment, given a 35% utilization standard.

VEGETATION

Overstory Vegetation
(Silviculturist Specialists' Report [#72])

The analysis area consists of two major vegetation types: ponderosa pine forest and mixed conifer forest, with small inclusions of aspen, maple, southwestern white pine, pinyon-juniper woodlands, and mountain grassland. Approximately 82 percent of the forested acres within the analysis area is ponderosa pine type, 16 percent is mixed conifer, and the remaining 2 percent is primarily in aspen and other hardwoods. Ponderosa pine is found throughout the area, while mixed conifer stands occur primarily on cooler sites such as north slopes in the steeper drainages. Mixed conifer also increases in abundance near the edge of the Mogollon Rim, due to an increase in precipitation. The extent of the mixed conifer type is gradually increasing due to a successful fire prevention strategy over the past 100 years that favored the climax white fir and Douglas-fir trees over the thick-barked ponderosa pine, which is more fire resistant (Figure 2).

The Coconino National Forest Plan classifies the forest into Management Areas (MA) based on forest type, slope, or special designations (Table 6). The Coconino National Forest Plan identifies standards and guidelines for management activities based on these MAs.

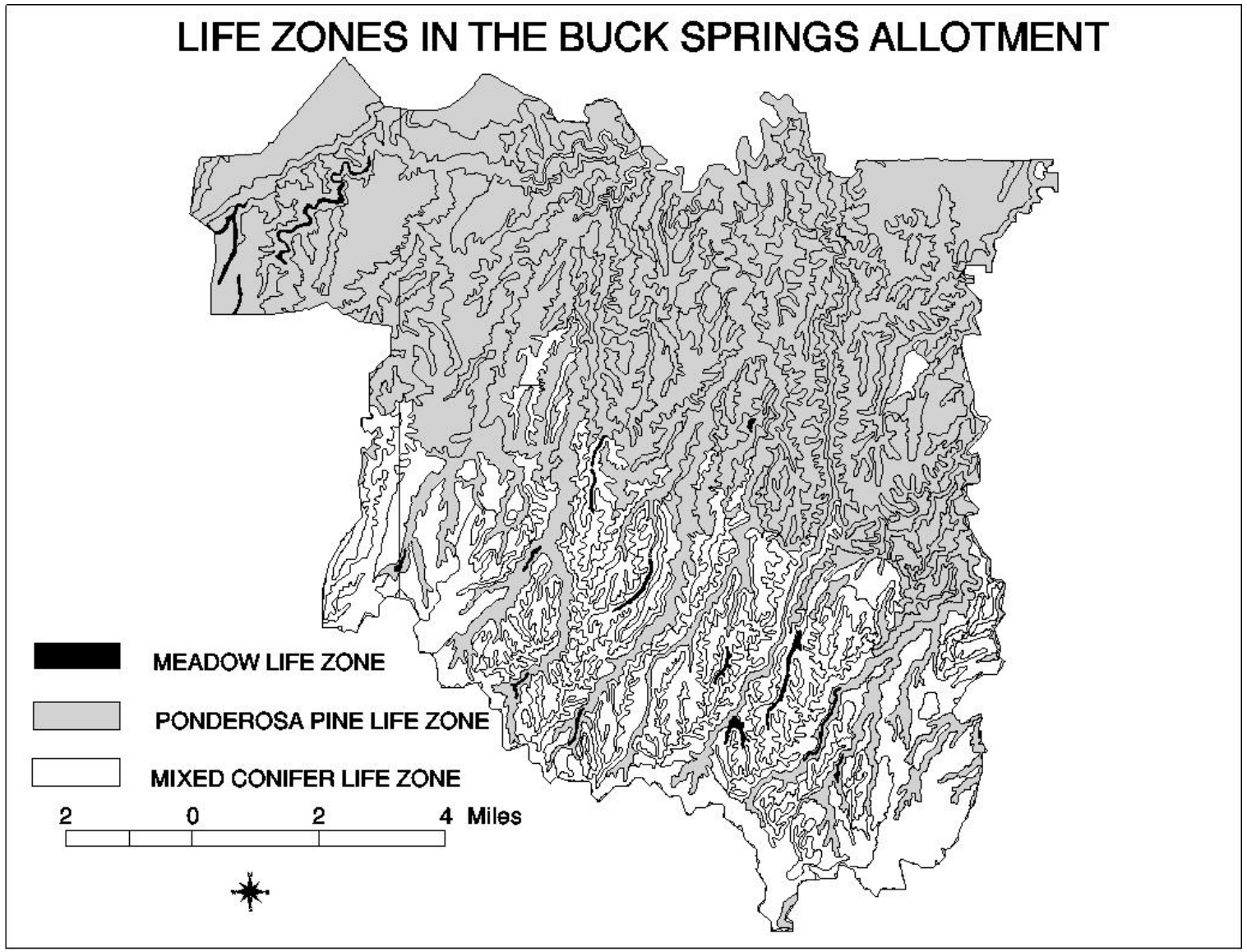


Figure 2: Life zones within the Buck Springs Allotment Area.

Table 6: Acres by Coconino Forest Plan management areas (MA).

MANAGEMENT AREAS	DESCRIPTION	ACRES	PERCENT OF TOTAL
MA-3	Ponderosa Pine & Mixed Conifer, < 40% Slopes	45,650	64.5
MA-4	Ponderosa Pine & Mixed Conifer , > 40% Slopes	11,558	16
MA-5	Aspen	266	0.4
MA-6	Unproductive Timber Lands	1,395	2
MA-7	Pinyon-Juniper Woodland, < 40% Slopes	32	0.05
MA-9	Mountain Grassland	49	0.07
MA-12	Riparian & Open Water	1,606	2
MA-19	Mogollon Rim	9,533	14
No Data		803	1
TOTAL ACRES		70,892	

Fire and Fuels
(Fire Ecology Specialist's Report [# 32])

The current fire regime in ponderosa pine has fallen into an unnatural condition due to a century of fire suppression. There are dense stands of ponderosa pine seedlings and saplings, which have excellent laddering potential and continuous canopy cover which extends over hundreds of acres in a stretch. These stands have not experienced fire that thins the stands and breaks up the continuity of the canopy allowing the smaller weaker trees to recycle and the stronger dominate trees to thrive.

Current levels of dead/down fuels on the allotment range from 5 to 35 tons per acre, compared to historic levels from 3 to 15 tons per acre. Fuels treatments have reduced harvest slash and dead/down fuels in areas of timber harvest, along the Rim, and along a few major roads. Fuels are highest in canyons and on steep slopes where there have been few treatments. Maintenance of long-term soil productivity in forested environments is related to the amount of Coarse Woody Debris (CWD, tree limbs, boles and roots in various stages of decay) that exists on site. Graham et al (1994) recommend retaining at least 5-10 tons/acre of CWD in pine/oak forest types in Arizona. To retain soil productivity on mixed conifer sites in Arizona, Graham recommends retaining 10-15 tons/acre of CWD.

Live fuel loadings (live trees) have increased over time and contribute significantly to annual levels of dead fuel loadings. Covington and Moore (1991, 1994) found an increase from 19 trees per acre during pre-settlement to 851 trees per acre in 1990, on studied stands in the Bar-M area south of Flagstaff Arizona.

Wildfires occur at a more frequent rate than historically, and over an increasing number of acres. Lightning still continues to be the main ignition source, causing more than 100 small fires (1/4 acre to 10 acres) each year in the Mogollon Rim area. Person-caused fires average

about 15% of all fires. Increases in person-caused fires correspond to the increased population of nearby cities and new developed recreation sites in the area.

Understory Vegetation
[# 31]

Under the ponderosa pine overstory in the Buck Springs Management Unit (M.U.), there is an oak and juniper midstory, and an understory consisting of Arizona fescue, orchard grass, screwleaf muhly, pine dropseed, muttongrass, squirreltail, elk sedge, spike muhly, junegrass, western wheatgrass, Arizona three-awn, Pringle's pinyon ricegrass, redtop, intermediate wheatgrass, blue grama, Kentucky bluegrass, smooth brome and assorted forbs. There is relatively little browse, other than oak, aspen, and remnant willow. The southern pastures shift to a mixed conifer overstory in the higher elevations near the Mogollon Rim. The midstory is Gambel oak, New Mexican locust, and some aspen. The understory on the ridgetops is dominated by exotic species such as orchard grass. In the wetter meadows and riparian areas, the species shift to more mesic types such as redtop, sedges, rushes and spike rushes.

Timber harvests in the late 1950's and 1960's were confined to the ridgetops, because of topography, and resulted in more open stands. Seeding of exotic grass species after timber sales resulted in improved forage conditions on the ridges. Approximately 18,000 acres were seeded between 1974 through 1986, generally behind slash-piling activities, to prevent erosion and provide forage for livestock and wildlife. In addition, timber sale contracts seeded skid trails, landings, and spur roads. Early seed mixtures were predominately non-native species such as orchard grass and timothy, while later mixes used more native species.

The understory vegetation on the Battleground and Pinchot M.U.'s include the same species as the Buck Spring M.U., plus bull muhly. The wetter meadows and riparian areas support the same species as listed above, while the riparian areas include woody species such as aspen, alder and Bebb's willow.

Riparian Vegetation

Across the allotment, many riparian meadow areas have been converted inadvertently into dry meadows by a drop in the water table, and through over-use, shrub and tree loss, and deep cutting of the water channels. As the water channels cut deeper, more of the water drained out of the flood plain, leaving it drier, less productive, and more susceptible to erosion.

The majority of the steep walled canyons with riparian areas in the bottoms are in good condition, with multiple age classes of many woody plant species present. In most locations, banks are stable and vegetated. The upper reaches of these drainages, with more shallow side slopes and easy accessibility, are not as healthy. Here the soils have been de-watered due to erosion and channel down cutting. Woody plants are infrequent.

Various surveys have shown that riparian area conditions were either stable or declining in the mid 1970's. The majority of the riparian areas showed signs of heavy use by livestock and moderate grazing use by wildlife. In response, stock tanks were built to provide water for both livestock and wildlife in areas outside of the sensitive riparian bottoms and exotic, palatable grasses were planted following timber sales, creating available forage on the uplands. The stream courses showed signs of improvement. In the late 1980's and early 1990's, the riparian areas again showed signs of high grazing use, corresponding to the rise of elk populations.

Noxious Weeds
[#73]

The Coconino, Kaibab, and Prescott National Forests Noxious Weeds Strategic Plan and list of noxious weed species were consulted. Species that may occur or are known to occur near or within the allotment include *Cirsium vulgare* (bull thistle), *Centaurea (Acroptilon) repens* (Russian knapweed), *Salsola iberica* (Russian thistle), *Convolvulus arvensis* (field bindweed), and *Marrubium vulgare* (horehound). The three forests are currently working on an EIS to address the treatment of noxious weeds (Noxious Weeds, Three Forest Assessment, contact: D.Brewer, 928-635-8200).

Technicians surveyed the allotment for noxious weeds in 1997 and 1999. Bull thistle (*Cirsium vulgare*) is common along several roads in the allotment, and especially on old timber landings. An infestation of Russian knapweed *(Cirsium (Acroptilon) repens)* is located at Blue Ridge Reservoir, just north of the allotment. Cheatgrass *(Bromus tectorum)* is rapidly spreading through the allotment along major roads and another brome is located at the junction of Forest Roads 300 and 321. A group of plants located on Road 141 may be oxeye daisy *(Chrysanthemum leucanthemum).* This plant is recognized in *Weeds of the West* (Whitson, et al. 1999) but is not on the forest list. Various species are located along highways corridors outside of the allotment.

Noxious weeds can be introduced by many activities. Vehicles that travel through infested areas may transport seeds or plant parts to other areas. Seeds or plant parts may be transported by recreationists on their clothing or personal gear, in the fur of domestic or wild animals, by road or logging equipment or in infested hay. Some species can also be dispersed in the feces of animals that have eaten the plants in other areas.

Ground disturbing activities such as logging activities provide sites for establishment of noxious weeds. Many old slash pile sites and log deck areas are infested with bull thistle. This species does not appear to be aggressively invasive and seems to remain limited to the area of introduction as long as there is no additional disturbance. The exception to this seems to be where seeds enter drainages and wet areas and individual plants become established among the existing vegetation. The seeds of bull thistle are primarily wind dispersed, with some dispersal of seeds in runoff water from rainfall. Other ground disturbing activities such as heavy use from recreation or grazing may also provide introduction sites for noxious weeds.

SOIL AND WATER
(Watershed Specialist's Report [# 22])

Soil Condition

A variety of soil types and depths occur within the allotment. Soil condition categories, satisfactory, impaired, and unsatisfactory, reflect soil quality status (USDA Forest Service, 1991, 1995):

Satisfactory Soil Condition - Indicators signify that soil quality is being sustained and the soil is functioning properly and normally. The ability of the soil to maintain resource values, sustain outputs and recover from impacts is high.

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 further investigate the ecosystem to determine the cause and degree of decline in soil functions. Changes in management practices or other preventative actions may be appropriate.

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

These soil condition ratings reflect soil disturbance resulting from management practices and activities in relation to maintenance of long-term soil productivity (i.e., changes in physical, chemical or biological properties of the soil resource) (USDA Forest Service, 1991). Management activities affect soil functions that are important to maintenance of long-term productivity, specifically, the soil's ability to accept, hold and release water is affected by physical compaction. The nutrient recycling function of the soil is affected by removal of vegetation, organic matter and coarse woody debris that impacts above-ground nutrient inputs into the system. Finally, the soil's resistance to erosion is affected by changes in plant density and protective litter.

Climate

The majority of the precipitation falls from October 1 to March 31, mainly in the form of snow. The winters are cold and soil temperatures are subject to freezing and thawing. Summer precipitation is spotty, but usually takes place in the form of high-intensity, short duration thunderstorms during the monsoon season (July through September). Precipitation on the average varies from 18 to 26 inches annually in the ponderosa pine cover type, and from 26 to 30 inches in the mixed conifer cover types.

Landform

A variety of landforms occur within the allotment. Table 7 indicates average slope and acres by landform.

Table 7: Average slope and number of acres by landform.

LANDFORM	AVERAGE SLOPE	ACRES
Elevated Plains	<15%	33,290
Hills/Scarp Slopes of Plains	15-40%	22,210
Valley Plains	<2%	412
Escarpments	>40%	14,610
Reservoir	0%	180
No Data	0%	190
TOTAL ACRES		70,892

No data acres are small polygons that exist on the boundary.

Soil Conditions of the Buck Springs Allotment

Table 8 summarizes the existing soil conditions within the Buck Springs Allotment by forest type. Under this broad-scale level of analysis (coarse filter analysis approach), soil conditions within a given ecological unit may vary widely. A full discussion of soil condition by life zone can be found in the soil and watershed specialist report.

Table 8: Approximate acres of soil condition by forest type.

LIFE ZONE	TOTAL ACRES	SATISFACTORY	IMPAIRED	UNSATISFACTORY
Meadow	412	0	0	412
Ponderosa Pine	46,690	44,930	1,760	0
Mixed Conifer	23,790	23,450	340	0
TOTALS	70,892	68,380	2,100	412

The impaired soils in the ponderosa pine and mixed conifer zones are small, discreet areas and are not mapable.

Riparian Condition

Streamcourses

A riparian assessment for streamcourses using the Bureau of Land Management (BLM) Proper Functioning Condition (PFC) protocol and scoresheet (Prichard et al. 1998) was accomplished in the East Clear Creek portion of the allotment in the summer/fall of 1995 and again in 1998 and 1999. The following are definitions of the PFC classes described in the document:

Proper functioning condition - A riparian-wetland area is considered in proper functioning condition when adequate vegetation, landform, or large woody debris 1) dissipate stream energy; 2) filter sediment, capture bedload, and aid floodplain development; 3) improve flood-water retention and ground-water recharge; 4) develop root masses that stabilize streambanks; 5) develop diverse ponding and channel characteristics to provide habitat for a variety of uses; and 6) support greater biodiversity.

Functional at-risk - Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Nonfunctional - Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality etc.

These assessments identified 94 miles of streams in proper functioning condition, 34 miles of at-risk streams, and 14 miles of nonfunctional riparian streams (see Figure 3). The nonfunctional reaches occur primarily in headwater meadows, while functional-at-risk areas are primarily located in shallow drainages (see Figure 4). Proper functioning condition reaches are generally found in areas with steep canyon walls and in areas with total grazing exclusion. In addition to the riparian streamcourses, there are about 80 miles of non-riparian drainages within the allotment.

Many of the streamcourses are not perennial, and go dry in the summer months. There are roughly 66 miles of perennial streams and interrupted perennial streams within the allotment, contained primarily within the East Clear Creek drainage (see Figure 5). A number of other canyons contain small pockets of perennial water. They include portions of Leonard Canyon, Barbershop Canyon, Yeager Canyon, Bear Canyon, General Springs Canyon, Dane Springs Canyon, and Buck Springs Canyon.

Wetlands

Three intermittent lakes exist within the allotment - Lost Lake, Myrtle Lake and Dude Lake. All three lakes were inventoried in the 1995 meadow inventory. The lakes are seasonal in nature, and contain abundant riparian vegetation.

Water Rights

Tanks and springs that divert water from a streamcourse require filing of water rights. Water rights have been applied for 58 of the 115 tanks, 29 borrow pits, 17 springs, and 10 backhoe springs listed for the allotment. The outcome of current adjudication in the Little Colorado River and the Verde Watersheds may affect pending water rights. The Project Record contains the list of improvements and the water rights status of these improvements.

The amount of water contained within the impoundments is minimal within the entire watershed. The following water budget displays the amount of water held in the tanks.

There are approximately 70,892 total acres within the analysis area. On average, the area receives approximately 24" of precipitation per year (The TES survey displays an average for the mixed-conifer country of 28" and an average in the ponderosa pine lifezone of approximately 22"). A weighted average for the precipitation in these lifezones is 24.2" of moisture. For this analysis, the average will be 24" per annum of moisture. As such, a total of 141,784 acre feet per year of precipitation falls on the analysis area (2 ft X 70,892 acres).

Evaporation, sublimation, and transpiration all act to remove water from the system. A 1993 study of the watershed condition of three subwatersheds within the East Clear Creek Watershed notes that average yield of water is 4-5 area inches (Haines 1993). This calculates to approximately 15% of the water that falls on the watershed is available as water yield, or approximately 12,268 acre feet of water per annum. A sum of the capacity of tanks and springs that are listed in the specialist report comes to approximately 135 acre feet of storage. Thus, the tanks account for less than 1% of the total yield within the watershed.

Roads

There are approximately 468 miles of roads within the allotment. Open roads make up 250 miles, 119 miles have been previously closed, and 99 miles have been obliterated. The allotment contains 110 square miles of area, resulting in an open road density of 2.2 miles of open roads per square mile. The road density of all roads is 4.2 miles of road per square mile. The existing open road system is located primarily on ridge tops, however, there are some open roads that are located in or adjacent to streamside filter strips, many cross non-riparian drainages. Approximately 5.3 miles of road within the allotment impact riparian drainages and are described in the Project Record (Road Connected Disturbed Areas).

The East Clear Creek Road Analysis (USDA 2001) examined the 120,000 acres of the watershed that lies on the Coconino National Forest. The analysis identified all roads, explored the interactions of roads within the watershed and identified issues of concern. The team identified risk factors associated with aquatic systems and, wildlife, benefits for access, and the potential for re-assessing the Visual Quality Objectives for the watershed.

WATER QUALITY
[#22]

The Buck Springs Allotment falls within the following watersheds: East Clear Creek (67,774 acres), West Clear Creek (830 acres), East Verde River (729 acres), Upper Tonto Creek (1,084 acres) and Jacks Canyon (194 acres). For this analysis, only the East Clear Creek watershed and watercourses will be discussed, since the other four watersheds are negligible within the allotment (totaling less than 5% of the area). A detailed description of all watersheds and Arizona Water Quality Assessments undertaken by ADEQ (ADEQ 2000) can be found in the specialist's report. In general, the East Clear Creek watershed is in full compliance for all designated uses: 1) aquatic and wildlife; 2) full body contact; 3) fish consumption; 4) agricultural irrigation watering; and 5) agricultural livestock watering. Table 9 displays a summary of water quality parameters as detailed by the 2000 ADEQ 305(b) report.

Figure 3: Riparian Streams by PFC and Non-Riparian Streams

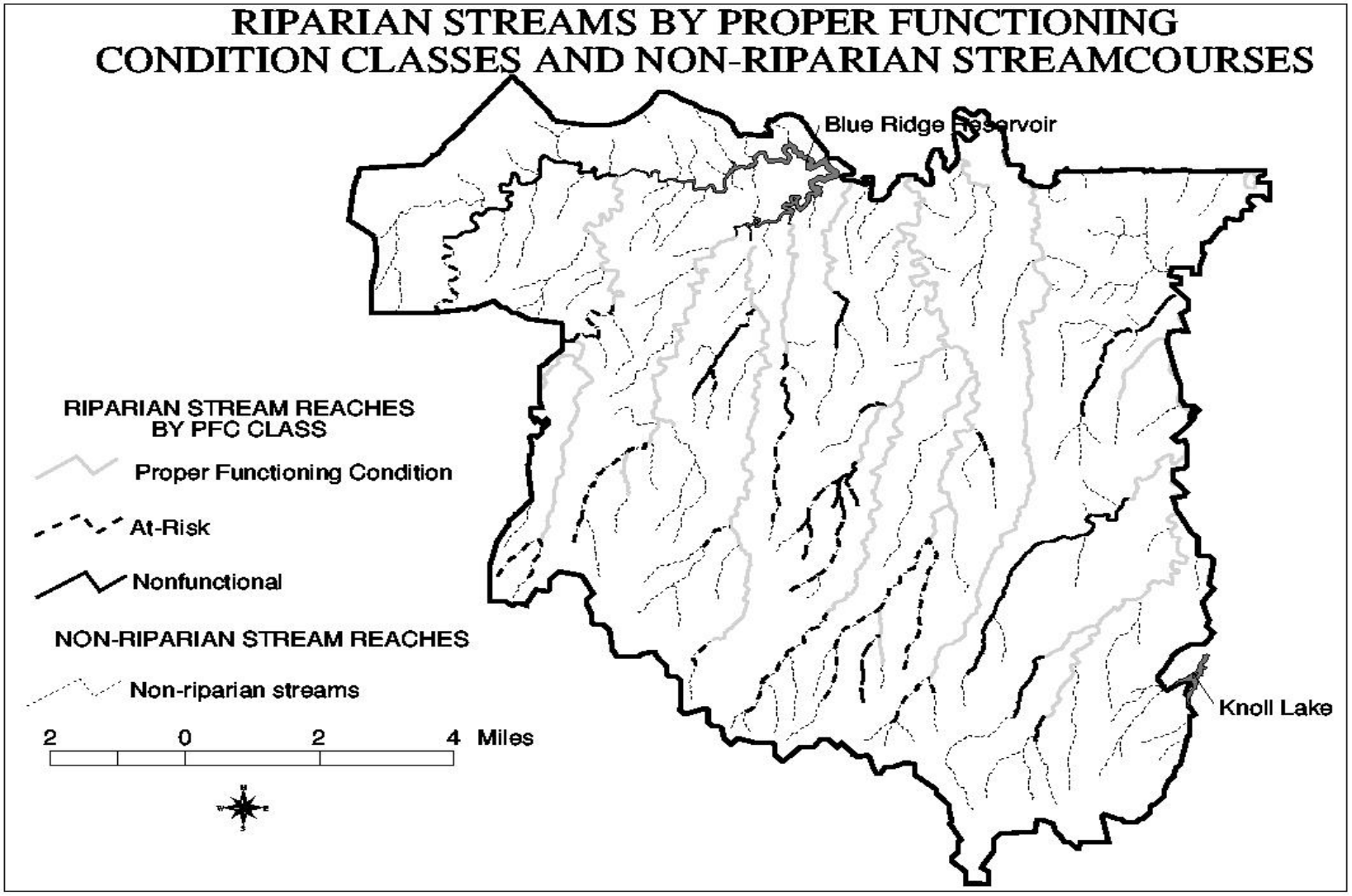


Figure 4: PFC Streams and Meadows with Unsatisfactory Soil Condition

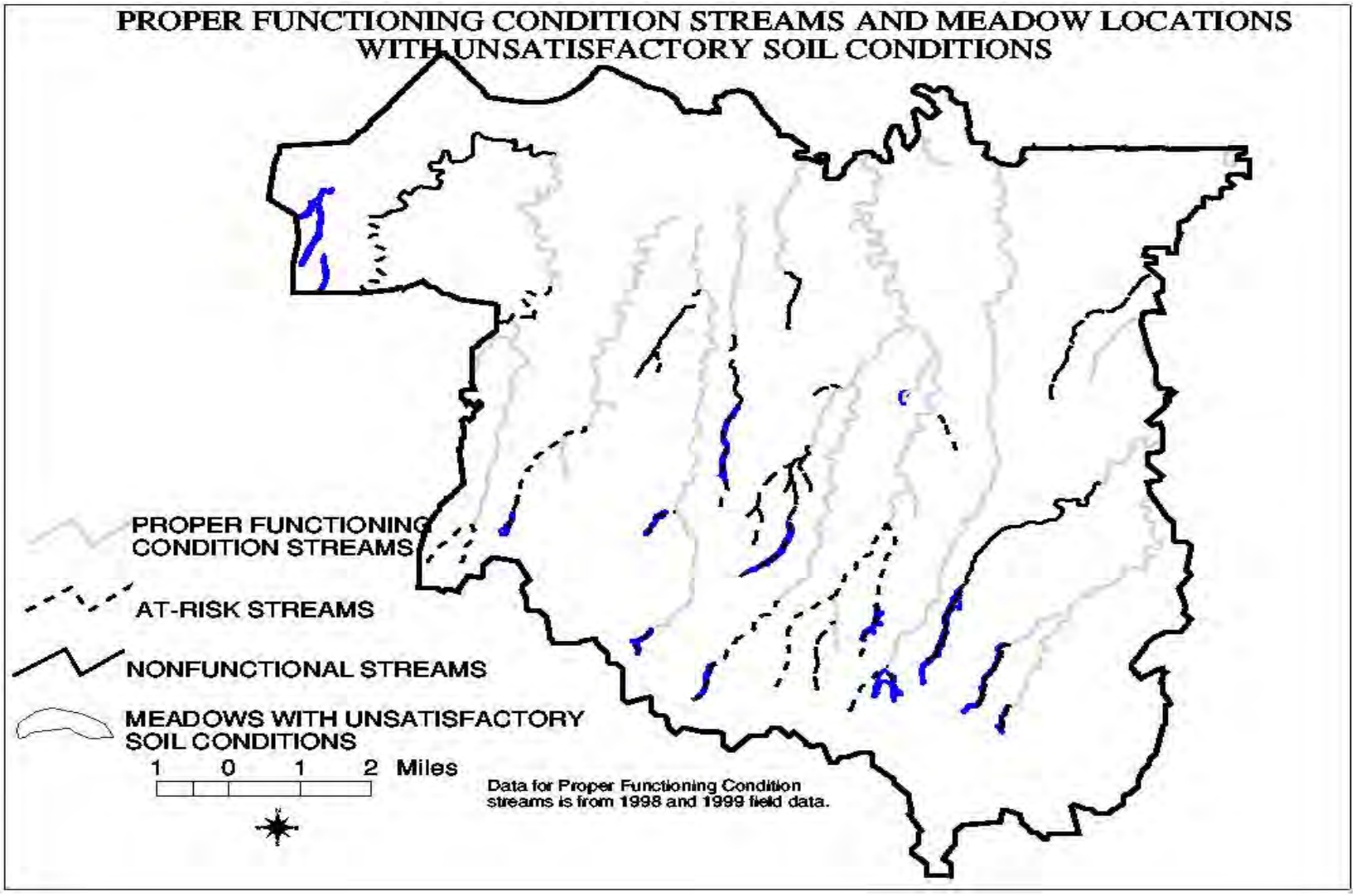


Figure 5: Perennial Streams

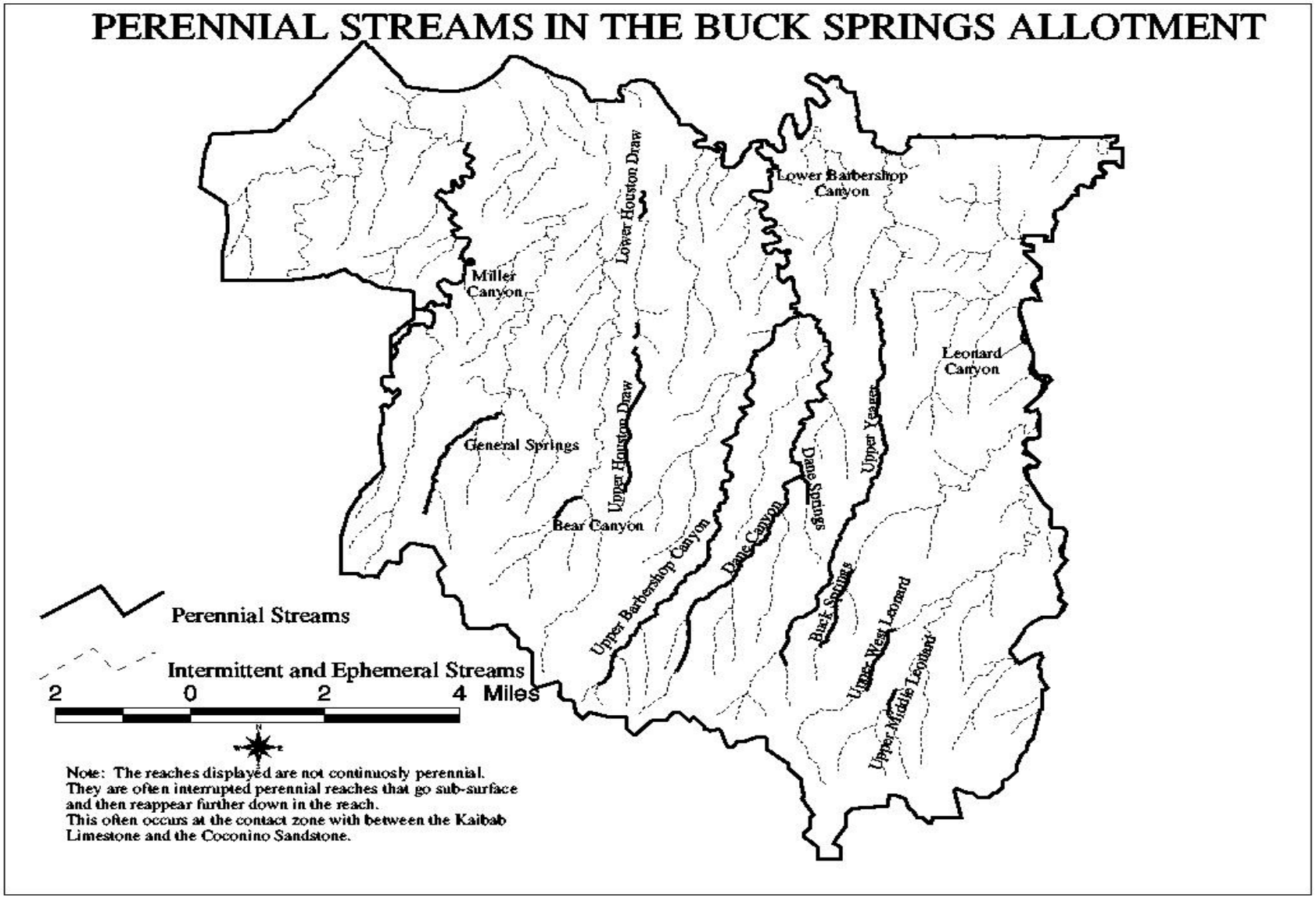


Table 9: Water quality data for stream reaches within the East Clear Creek Watershed.

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY PROGRAM SITE DESCRIPTION SITE CODE	SAMPLES	PARAMETER UNITS	STANDARD	RANGE OF RESULTS (MEDIAN)	FREQUENCY EXCEEDED STANDARDS	USE SUPPORT*	COMMENTS
Barbershop Canyon Creek headwaters-East Clear AZ15020008-537 A&Wc, FC, FBC, AgL	ADEQ Biocriteria Program East Clear Creek confluence LCBRB000.18	1992 - 1 water, bugs 1993 - 1 water, bugs 1994 - 1 water, bugs 1997 - 1 water, bugs	Dissolved oxygen mg/l	7.0 (90% saturation)	6.7-8.95	1 of 4	Full	Naturally low dissolved oxygen in pool
	ADEQ Biocriteria Program At Merritt Draw LCBRB003.84	1992 - 1 water, bugs 1993 - 1 water, bugs 1994 - 1 water, bugs 1997 - 1 water, bugs	OK				Full	
Buck Springs Canyon Creek headwaters-Leonard AZ15020008-557 A&Wc, FC, FBC, AgL	ADEQ Biocriteria Program Outside exclosure of cattle and elk LCBCK003.20	1995 - 1 water	Dissolved oxygen mg/l	7.0 (90% saturation)	6.84	1 of 1		Natural low DO during low summer flows. Combine with other site.
			Turbidity NTU	10	14.6	1 of 1		Combine with other site to assess
	ADEQ Biocriteria Program Inside exclosure of cattle and elk LCBCK003.81	1995 - 1 water	Dissolved oxygen mg/l	7.0 (90% saturation)	3.77-6.11	2 of 2	Full	Natural low DO --mostly pool habitat
			Turbidity NTU	10	12.5-19.1	2 of 2	Partial A&Wc	
			pH SU	6.5-9.0	5.98-6.62	1 of 2	Full	Naturally low pH.
East Clear Creek headwaters-Yeager Canyon AZ15020008-009 A&Wc, FC, FBC, AgI, AgL	ADEQ Biocriteria Program Above Yeager Canyon LCECL007.86	1992 - 1 water, bugs 1993 - 1 water, bugs 1994 - 1 water, bugs	OK				Full	
East Clear Creek headwaters-Yeager Canyon AZ15020008-008 A&Wc, FC, FBC, AgI, AgL	ADEQ Biocriteria Program Above Mack's Crossing LCECL004.07	1992 - 1 water, bugs	OK				Full	

The sample site of the last reach listed in the table is downstream and outside of the Buck Springs Allotment boundary. Source: AZ Department of Environmental Quality 200 305b report (EQR 00-03).

AIR QUALITY
[#76]

The Buck Springs Allotment falls within the Little Colorado Airshed (Airshed #3). There are no Class 1 or non-attainment areas within this airshed. Livestock grazing on Forest Service Allotments does not impact air quality in the airshed.

WILDLIFE, THREATENED, ENDANGERED, AND SENSITIVE SPECIES
(Wildlife Specialist's Reports [#24 and #23])

Wildlife are integral components of the ecosystem that make up the Buck Springs allotment. The area has seen many changes since pre-European settlement, with some species no longer found in the area (Merriam's elk, grizzly bear, and Mexican wolf) and some as recent additions to the area (Rocky Mountain elk, feral pigs, starlings, rainbow trout, green sunfish, and crayfish). Wildlife play an important part in contributing to local economies through tourism from hunting, fishing, bird watching, and general recreation. Some species conflict with livestock use of the land. The allotment falls within Game Management Unit (GMU) 5A, Arizona Game and Fish Department. More detailed information on population status of many wildlife species of interest and impacts of various activities may be found in the specialist reports.

Game and Non-game Wildlife

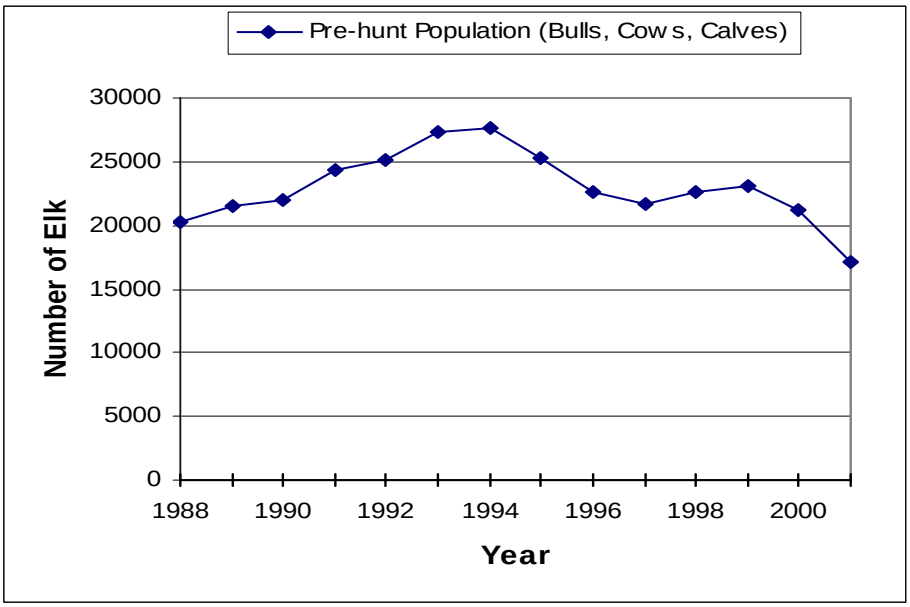
Game species occurring on the allotment include the introduced Rocky Mountain elk, mule deer, Coue's white-tailed deer, turkey, bear, and small game species such as Abert's squirrel, red squirrel, rabbits, and fur bearers. For non-game species, the allotment is home to many ground, tree, and cavity nesting birds. Small mammals such as woodrats, mice, and other rodents are relatively abundant, especially near rock outcrops along the canyon fringes. Over 130 species of birds are found there, including many neotropical migrants and migratory waterfowl. There is also a variety of reptiles and amphibians inhabiting the allotment. These, in turn, supply food for raptors and carnivores such as fox, coyote, bobcat, mountain lion, and bear.

Three game species are designated as Management Indicator Species (MIS) for the Coconino National Forest. Elk are indicators of early-seral stage ponderosa pine, mixed-conifer and spruce-fir habitats. They allotment provides summer range for these animals, with some individuals remaining year-round, especially in years of light snow-fall.
The native elk of Arizona was the Merriam's elk, which was extirpated from the state by the 1920's. Historians speculate that the Merriam's elk existed at fairly low densities on the Forest, since few explorers and naturalists reported their presence (Davis 1982).

Rocky Mountain elk from Wyoming were transplanted to the Sitgreaves National Forest south of Winslow in 1913 and adjusted easily to the mild climate of northern Arizona (AGFD 1962).

The state elk population in 1980 was estimated at approximately 10,000 adults after the hunting season. Populations increased dramatically between the mid-80's through the early 90's, and the state population was estimated at 30,000 adults post-hunt in 1989 (Figure 6, AGFD 1995). The Buck Springs Allotment falls within Game Management Unit 5A, and increases in the population parallel the increases statewide. Evidence of elk impacts on vegetation was first noticed in riparian meadows and in seeded areas following timber harvest, particularly those areas seeded with orchard grass. The population continued to increase and in 1992, the AGFD decided to reduce elk populations in by 50% in GMU 5A and GMU 5B south and 10% in GMU 6A. It was later determined that these three units should be combined for modeling purposes, due to elk movements among the units. According to population models, these objectives were met in 1997 with an overall reduction of about 30% in the three Management Units (AGFD 2001b).

Figure 6: Elk population trend on the Coconino National Forest, from 1988-2001.



Despite these reductions, impacts to riparian areas and meadows remained high. Paired exclosures for livestock and for livestock and elk illustrate that both animals tend to concentrate in headwater meadows, where they exert substantial grazing pressure that compacts soils, reduces plant biomass, and break down streambanks (Neary and Medina 1996). Current management of elk populations in GMUs 5A, 5BS, and 6A target reductions in very specific sub-unit areas in response to habitat needs (AGFD 2001b).

As a MIS for the Coconino National Forest, elk populations increased between 1988 and 1994, then decreased to pre-1988 levels by 2002 (USDA 2002). These reductions were targeted by the AGFD through the issuance of hunting permits. Calf crops began dropping in the late 1990's and coincided with years of drought. The lower reproduction may indicate that nutrition is no longer optimal.

Mule deer are indicators of early-seral stages of aspen and pinyon-juniper woodlands on the Coconino National Forest (USDA 1987). Early stages of ponderosa pine, mixed-conifer, and chaparral habitats are also important for this species. They frequent the allotment year-round, though many move to the pinyon-juniper woodlands during the winter. Forest-wide populations were estimated to be around 8800-11,000 in the mid-1980's. Over the past 15 years, state and Forest trends show a slight decline in populations (AGFD 2001a, USDA 2002). Population estimates for GMUs 5A / 5B do not show such a decline (USDA 2002).

MIS for late seral ponderosa pine habitat include wild turkeys. They also frequent the allotment in the summer and generally move into pinyon-juniper habitat in the winter. Populations on the Forest were thought to be declining in the 1980's (USDA 1987). Increases in population in the late 1990's are thought to be a response to a change in hunt management and to the maturing of pine trees established in the 1919 seed year. Overall mast production has increased with the maturing of these trees (USDA 2002).

Habitat Components

Cover

Animals utilize cover to modify extremes of weather, shelter their young, and avoid detection and or capture by predators. Thermal cover is desired for bedding and travel; while hiding cover is important adjacent to dependable water, key openings, and travelways. Surveys indicate that there are about 6800 acres of thermal cover, 4200 acres of hiding cover, and 10,500 acres of combination cover within the allotment (total 21,500 acres).

Old-growth

Many of the threatened, endangered, and sensitive avian species of Region 3 have a strong association with old-growth conditions, which provide feeding and nesting habitat. Many other species use old-growth. Birds are often in higher densities in old-growth, while elk and deer take refuge there during heavy snow accumulations. There are approximately 8650 acres of existing old-growth, and 8340 acres of developing old-growth on the allotment. Much of the old-growth occurs in the canyons and drainages.

Water Sources

Reliable, well-distributed sources of water are essential for all wildlife species. Natural water sources on the allotment include perennial reaches of East Clear Creek and Leonard Canyon. Major tributaries such as Barbershop, Miller, Buck Springs, Yeager, and Dane Canyons provide water from spring sources. There are many springs throughout the allotment. Earthen tanks, built to draw livestock out of the drainages, provide water on the uplands of the allotment. However, some of the shallow drainages and headwater meadows still receive heavy livestock use. No area on the allotment is

greater than one mile from a water source. In addition, Blue Ridge Reservoir and Knoll Lake are two reservoirs on the allotment.

Management Indicator Species
[#179]

Management Indicator Species (MIS) are species whose well-being is considered an indication of the general health of the ecosystem. The species were chosen because their population changes are believed to indicate the effects of management activities on other species within the major biological communities (USDA 1987). Management Indicator Species are chosen by management area (MA, Table 10).

MA7 and MA9 represent less than 0.1% of the allotment, and are discountable for providing habitat for wildlife, including two MIS, pronghorn and plain titmouse. The yellow-breasted chat and Lucy's warbler are MIS species for MA12, but are lower elevation riparian species, and are not found within the elevational range of the allotment. Therefore, four species are not evaluated in this document (pronghorn, plain titmouse, yellow-breasted chat and Lucy's warbler).

Table 10:Management indicator species (MIS) by management area (MA) for the Buck Springs Allotment.

MANAGEMENT INDICATOR SPECIES	MA3	MA4	MA5	MA6	MA7	MA9	MA12	M19
Turkey	X	X						
Northern Goshawk	X	X						
Pygmy Nuthatch	X	X						
Elk	X	X		X	X	X		
Abert's Squirrel	X	X		X				
Red Squirrel	X	X						
Hairy Woodpecker	X	X		X				
Mexican Spotted Owl	X	X						
Red-Naped Sapsucker			X					
Mule Deer			X	X	X			
Plain Titmouse					X			
Pronghorn						X		
Cinnamon Teal							X	
Lincoln's Sparrow							X	
Yellow-breasted Chat							X	
Lucy's Warbler							X	
Macroinvertebrates							X	

No Mgt Ind Species								X
Percent of Allotment	64.5%	16%	0.4%	2%	<0.1%	<0.1%	2%	14%

Habitat requirements of each of the remaining 13 MIS are described in the specialist's report. Turkey, northern goshawk, pygmy nuthatch, elk, red and Abert's squirrels, hairy woodpecker, Mexican spotted owl, red-naped sapsucker, mule deer, and macroinvertebrates all have breeding populations on the allotment. Cinnamon teal and Lincoln's sparrow are not known to occur on the allotment. Suitable cinnamon teal nesting habitat does not occur, though the ducks may pass through the area. Lincoln's sparrow inhabits high elevation riparian areas, generally at elevations higher than found on the allotment.

Information on MIS in this document tiers to the report *Management Indicator Species Status Report for the Coconino National Forest* (USDA 2002). Conditions of the Mexican spotted owls are discussed in the threatened, endangered, and sensitive species section. Existing conditions for turkey, elk, and mule deer on the allotment are discussed under Game Species. Current conditions of the remaining MIS are discussed below.

The northern goshawk is an indicator of late seral stage ponderosa pine habitat, and is dependent on the forest's ability to provide a continuous flow of habitat structural types over time. The Forest Plan was amended in 1996, in part, to provide guidelines for management of goshawk habitat. Six territories have been delineated within the allotment. Sightings indicate additional goshawks reside in the area, but have not been tied to territories. Despite extensive surveys and designation of new territories yearly, the population trend is considered to be inconclusive on the Forest.

Abert squirrel is a common small game species on the allotment and the Forest. Though the Forest Plan designated this squirrel as an indicator of early-seral-stage ponderosa pine forest, more recent research indicates that this species' preferred habitat is the intermediate to old aged forest (Dodd et al. 1998, Elson 1999).

The Forest Plan designates the red squirrel as an indicator for late-seral-stage mixed conifer and spruce-fir forests. It is a common species in the mixed conifer portion of the allotment and the Forest.

The pygmy nuthatch is found in late-seral stages of both the mixed conifer and ponderosa pine forests. Data from the Coconino National Forest indicate that populations are stable on a gross, long-range scale with dramatic population fluctuations over short time frames (one to three years, Sauer et al. 2001, National Audubon Society 2001). It is a common species on the allotment.

Data from the Coconino National Forest indicate that populations of the hairy woodpecker, an indicator for the snag component of the Forest, are stable, or slightly increasing on a long-range scale (Sauer et al. 2001, National Audubon Society 2001, Martin 2002).

Available population data indicate that red-naped sapsucker populations fluctuate over time, but are stable overall on the Coconino National Forest (National Audubon Society 2001, Martin 2002). Future trends are of concern, since aspen regeneration is inadequate to provide replacement habitat as aspen stands decline.

The Forest-wide trend for cinnamon teal, indicators of wetland and aquatic habitats, is inconclusive. Population data are limited to two studies, and the results are not necessarily comparable (Myers 1982, Gammonly 1996). Cinnamon teal showed low nesting and reproductive success, largely as a result of nest losses to avian predators. The allotment does not provide nesting wetland habitat, but may be used by migratory birds.

Lincoln's sparrows are ground nesting neotropical migrant songbirds. They occur in wet areas such as riparian thickets and wet meadows, along forest edges, and in open forests with a good understory. They tend to nest in shallow depressions with clumps of vegetation. Lincoln's sparrows eat insects, grains, and seeds. They may benefit from pasture rotation and burning/clearing for early successional plants (Block and Finch 1997).

Macroinvertebrates were selected as indicators for high and low elevation late-seral riparian areas (USDA 1987). ADEQ sampling data from 1992 through 1999 indicate that peaks and valleys occurred in the data in 1993 and 1995, likely related to disturbance to stream channel substrates and water quality before and after the 1993 flood. At present the greater majority of the flood impacted riparian zones are densely vegetated with both woody and herbaceous plants and are in an early to mid-seral stage of development.

Threatened, Endangered, Proposed, and Sensitive Species (TEPS)

TEPS species include one federally listed endangered species, four threatened species, and several sensitive species that are known to occur within the Buck Springs Allotment (Tables 11and Table 12. Suitable and potential habitat exists for additional sensitive species (Table 12. The wildlife specialist's report describes basic habitat needs, known information on populations in the allotment, and management direction for these species.

Table 11: Status of threatened, endangered, and proposed species on the allotment.

SPECIES	SCIENTIFIC NAME	FEDERAL STATUS	STATUS ON ALLOTMENT
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered	Potential Habitat
Bald Eagles	*Haliaeetus leucocephalus*	Threatened	Present in Winter
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened	Present
Little Colorado River Spinedace	*Lepidomeda vittata*	Threatened	Present

Chiricahua Leopard Frog	*Rana chiricahuensis*	Threatened	Historic records Suitable Habitat

Southwestern Willow Flycatcher

The flycatcher was listed as endangered in 1995 (USDI 1995a). No records are known from the allotment, nor from the elevation range of the allotment. Marginal habitat for this species exists along East Clear Creek. Biologists surveyed this habitat for flycatchers in 1993 and 1994. No birds responded to the taped calls. The floods of 1993 reduced the willow communities along the creek, and degraded the habitat for willow flycatchers. The Forest Service assesses the habitat and potential for flycatchers and evaluates all activities that have the potential to affect the habitat or disturb the birds. Habitat evaluations were last conducted in 2002, with no change in condition of the habitat.

Current management guidelines require that suitable habitat be surveyed for flycatchers annually following established protocols. If birds colonize the habitat, livestock use cannot occur with five miles during the breeding season, or within two miles if cowbird trapping is conducted. These guidelines are under revision and may change.

Bald Eagle

The bald eagle was down-listed from endangered to threatened status by the U.S. Fish and Wildlife Service in 1995 and is currently proposed for de-listing (USDI 1995c, 1999b). Eagles are seen frequently along Highway 87 during the winter months and throughout the allotment area. Potential roost locations are abundant along the slopes of the canyons, though no traditional roost sites have been identified. Eagles appear to opportunistically use roosts in response to food availability and weather conditions.

The Forest Land Management Plan requires that a 300 foot radius be protected as an uncut zone around identified bald eagle roosts. Road development should avoid the roost and uncut zone.

Mexican Spotted Owl

The Mexican spotted owl was listed as a threatened species in 1993, and a recovery plan was published in 1995 (USDI 1993, 1995b). The entire East Clear Creek watershed has been surveyed for owls and 21 territories have been delineated partially or wholly within the allotment. The Mexican spotted owl Recovery Plan identifies management recommendations and criteria that must be met in order to delist the owl. The Buck Springs Allotment lies within the Upper Gila Mountains Recovery Unit, which is one of three critical recovery units. The plan stresses the importance of population and habitat monitoring to assess recovery of the owl.

Mexican spotted owl Protected Activity Centers (PACs) make up about 12,000 acres of the allotment. Approximately 3300 acres of restricted habitat are designated as Target threshold habitat. An additional 8250 acres with steep slopes provide protected habitat,

while another 7650 acres fall into restricted habitat. The remaining 40,000 acres of the allotment are covered with ponderosa pine forests, an unrestricted habitat type.

The Mexican spotted owl was identified as a management indicator species for the late seral stage of mixed conifer and spruce/fir (USDA 1986, amended 2003). Management for this species is emphasized in MA 3 and MA 4, which are ponderosa pine and mixed conifer habitats. Despite extensive surveys and intensive study of the demography of spotted owls on the Coconino National Forest from 1991 to 2001, population trends are inconclusive (USDA 2002).

Little Colorado Spinedace

This species will be discussed under aquatic resources.

Chiricahua Leopard Frog

The Chiricahua leopard frog was listed as a threatened species in 2002 (USDI, 2002). A few historic locations of Chiricahua leopard frogs exist from East Clear Creek and Leonard Canyon. Arizona Game and Fish Department surveys conducted in 1992 and 1993, and fish surveys in 1998-2002 did not relocate this species on the allotment. The nearest intact population is located about 17 miles from the allotment. Statewide surveys indicate a severe decline in this species (Sredl 1997).

On the Buck Springs allotment, East Clear Creek and several of the major tributaries provide historic habitat that is considered suitable habitat, with the exception of the presence of nonnative fish and crayfish. All of the allotment is within one mile of water sources, which include perennial and intermittent stream, springs, earthen stock tanks, and shallow natural pools. Though most stock tanks are devoid of riparian and aquatic vegetation, a few are vegetated and provide potential habitat. Historic locations are from perennial streams.

Sensitive Species

In 1999, the Regional Forester's Sensitive Species List for Region 3 of the US Forest Service was updated to eliminate several species that were no longer considered sensitive, and to add species that were now considered sensitive due to habitat modification, impacts, or new information (USDA 1999b).

Several species of sensitive plants and animals are known to occur on or adjacent to the Buck Springs Range Allotment (Table 12). Peregrine falcons were often seen along the cliff faces along the Mogollon Rim, prior to the Dude Fire of 1990. They are currently infrequently seen flying through the allotment. Eight territories of northern goshawks have been documented within the allotment. The Little Colorado sucker is found in East Clear Creek and its tributaries. Historical locations exist on the allotment for northern leopard frog and Arizona southwestern toad. The Mogollon thistle is known exclusively

from the watershed, in two small drainages. Cliff fleabane is found on cliffs in East Clear Creek and Barbershop Canyon.

Potential habitat for several sensitive stream and riparian-dependent species exists on the allotment, particularly along East Clear Creek, Leonard Canyon, and their major tributaries. Potential habitat exists for roundtail chub, narrow-headed gartersnakes, Arizona bugbane, Eastwood alum root, Mountain silverspot buttterfly, unnamed tiger beetle, Maricopa tiger beetle, blue-black silverspot butterfly, and spotted skipperling.

Sensitive upland species that may occur on the allotment include several plants and one insect. Plants include the Mount Dellenbaugh sandwort, Rusby's milkvetch, Flagstaff pennyroyal, Arizona sneezeweed, and Flagstaff beardtonque. The early elfin is a butterfly whose larva feed on cliffrose.

Table 12: Sensitive species that occur on, or have potential habitat on the allotment.

COMMON NAME	SCIENTIFIC NAME	STATUS ON ALLOTMENT
Peregrine Falcon	*Falco peregrinus anatum*	Present
Northern Goshawk	*Accipiter gentilis*	Present
Eared Trogon	*Euptilotis neoxenus*	Incidental
Little Colorado sucker	*Catostomus sp. 3*	Present
Roundtail Chub	*Gila robusta.*	Potential
Northern Leopard Frog	*Rana pipiens*	Historic
Arizona Southwestern toad	*Bufo microscaphus microscaphus*	Historic
Narrow-headed gartersnake	*Thamnophis rufipunctatus*	Historic
Arizona bugbane	*Cimicifuga arizonica*	Potential
Mogollon thistle	*Circium parryi mogollonicum*	Present
Cliff fleabane	*Erigeron saxatilis*	Present
Mt. Dellenbaugh sandwort	*Arenaria aberrans*	Potential
Rusby's milkvetch	*Atragalus rusbyi*	Potential
Flagstaff pennyroyal	*Hedeoma diffusum*	Potential
Arizona sneezeweed	*Helenium arizonicum*	Potential
Eastwood alum root	*Heuchera eastwoodiae*	Potential
Flagstaff beardtongue	*Penstemon nudiflorus*	Potential
Mt. Silverspot butterfly	*Speyeria nokomis nitocris*	Potential
Tiger beetle	*Cicindela hirtocollis corpuscula*	Potential
Maricopa tiger beetle	*Cicindela oregona maricopa*	Potential
Blue-black silverspot butterfly	*Speyeria nokomis nokomis*	Potential
Early elfin butterfly	*Incisalia fotis*	Potential
Spotted skipperling	*Piruna polingii*	Potential

Migratory Birds
[#101]

On January 10, 2001, President Clinton signed Executive Order #13186 for the "Responsibilities of Federal Agencies to Protect Migratory Birds" which directed the federal agencies to develop an MOU with the US Fish and Wildlife Service to promote conservation of migratory birds. Agencies shall identify potential impacts to migratory birds and their habitats, avoid or minimize adverse impacts, restore and enhance habitats, and evaluate the effects of actions on migratory birds. Where they exist, other analyses should be used, such as the Arizona Partners in Flight Conservation Plan.

The Arizona Partners in Flight Bird Conservation Plan (Latta, 1999) identifies priority species by habitat for the state of Arizona. Habitats that are found within the Buck Springs Range Allotment include: mixed conifer, ponderosa pine and pine-oak, aspen, and high-elevation riparian. Priority species were chosen based on a set of 11 criteria that evaluated all of Arizona's native landbirds based on population trend, distribution, threats to the species, and the importance of Arizona to the overall status of the species. These criteria then generated a species ranking list. Species were grouped by habitat association and the top ranking species in each habitat were designated as priority species. Table 13lists the priority species for each of the habitats found in the Buck Springs Allotment.

Table 13: Arizona Partners In Flight designated priority species by habitat.

HABITAT	PRIORITY SPECIES
Mixed Conifer	Northern Goshawk Mexican Spotted Owl Olive-Sided Flycatcher
Ponderosa Pine and Pine-Oak	Northern Goshawk Olive-Sided Flycatcher Cordilleran Flycatcher Purple Martin
Aspen	Red-Naped Sapsucker
High Elevation Riparian	Common Black Hawk Elegant Trogon Southwestern Willow Flycatcher MacGillivray's Warbler Red-Faced Warbler

Of the priority species listed, the northern goshawk, Mexican spotted owl, and southwestern willow flycatcher are addressed under threatened, endangered, and sensitive species. The elegant trogon is restricted to high elevation riparian habitats in southeastern Arizona and its range does not include the vicinity of the allotment. The common black hawk is found on the Coconino National Forest, and frequents portions of the Long Valley Ranger District to the west. It has not been found on the Buck Springs Allotment, which is probably too high in elevation and has too dense of canopies to

support the hawk. The olive-sided flycatcher, Cordilleran flycatcher, purple martin, red-naped sapsucker, MacGillivray's warbler, and red-faced warbler remain as species to be addressed, and all have breeding populations on the Buck Springs allotment.

There are no Important Bird Areas (IBAs) in the projects area. IBAs are specific areas that are nominated and designated as areas that are important to birds on a national level, though the importance may be local in nature. The nearest IBA is located at Mormon Lake approximately 30 miles northwest of the allotment. There are also no areas that are important as overwintering areas on the allotment.

AQUATIC WILDLIFE AND FISH
(Fisheries Specialist's Report [#25])

The allotment drains south to north into East Clear Creek by way of several major tributaries (McCarty Draw, Miller and East Miller Canyons, General Springs Canyon, Bear Canyon, Houston Draw, Barbershop Canyon, Dane Canyon, Yeager Canyon, and Leonard Canyon). West and Middle Leonard Canyons, Buck Springs Canyon, and Limestone Canyon drain northeast into Leonard Canyon, forming the eastern boundary of the allotment. For the most part, these drainages sustain flowing water interrupted by dry stretches through the drier summer months. Even under the driest of years, some of these drainages contain isolated pools. Several springs keep many of the drainages watered during years with a good snow pack. Substantial summer "monsoon" rains maintain pooled water through intermittent and/or ephemeral flows.

Two dams were constructed in the early 1960's within the East Clear Creek watershed. Phelps Dodge constructed the Blue Ridge Reservoir (BRR) as a water source for the corporation's use. At full capacity, water backs up into ECC, Bear Canyon and General Springs Canyon. The second dam is located near the headwaters of Leonard Canyon and forms Knoll Lake.

Species Identification

Fishes found within East Clear Creek and Leonard Canyon subwatersheds, associated with the Buck Springs Allotment, include at least nine species (Table 14, Minckley 1993, Rinne and Minckley 1991). The first four species in the table are native to Arizona, while the last five are non-native, introduced species. As shown, *Lepidomeda vittata* (Little Colorado spinedace) is the only Federally listed species (USDI 1987). *Rhinichthys osculus* (speckled dace) and *Catostomus sp* (Little Colorado sucker) are species of special concern. Given the status and special interest surrounding the Little Colorado spinedace, the majority of the following information addresses the situation for this spinedace.

Other fishes have been stocked within the ECC watershed over the past few decades. These other species included such fishes as *Salvelinus fontinalis* (brook trout), *Oncorhynchus clarki* (cutthroat trout), *Thymallus arcticus* (arctic grayling), *Ictalurus punctatus* (channel catfish), and *Micropterus salmoides* (largemouth bass). The earliest of these stockings was *O. clarki* in 1937 in Barbershop Canyon, and the latest was *I. punctatus* in 1991 in ECC. None of these other stocked fishes have shown up in recent AGFD survey collections. Habitats of the fish species can be found in the fisheries specialist's report [#25].

Occurrence of the Little Colorado Spinedace

The Little Colorado spinedace is found only in the north-flowing tributaries and the upper mainstream of the Little Colorado River (Miller and Hubbs, 1960 in Minckley 1973). The "remarkably variable occurrence" (Minckley 1993) of spinedace populations, over time, is illustrated by historical accounts and survey information (Miller and Hubbs 1960,

Minckley 1973, Miller 1963, Denova and Abarca 1992). These accounts and surveys indicate that use of fish poisons, the introduction of exotic species, changes in stream flow, and prolonged drought in the early 1970's have contributed to the decline in the species.

Table 14: Status of fish species found in the East Clear Creek Watershed.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]
Little Colorado Spinedace	*Lepidomeda vittata*	Federally Threatened
Little Colorado sucker	*Catostomus sp*	Wildlife of Special Concern in Arizona
Speckled Dace	*Rhinichthys osculus*	Forest Service Sensitive
Bluehead Mountain-Sucker	*Pantosteus discobolus*	No Status
Rainbow Trout	*Oncorhynchus mykiss*	No Status
Brown Trout	*Salmo trutta*	No Status
Golden Shiner	*Notemigonus crysoleucus*	No Status
Red Shiner	*Notropis lutrensis*	No Status
Fathead Minnow	*Pimephales promelas*	No Status

Consultation between the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service in 1994 concerned the stocking of rainbow trout in the Blue Ridge Reservoir and Knoll Lake and impacts to the Little Colorado spinedace. Trout stocking was halted for two years, then resumed in 1996, following receipt of a "no jeopardy" opinion from the USFWS (USDI 1997b). The AGFD has implemented management strategies aimed at providing a sport fishery in the two lakes while reducing impacts to the Little Colorado spinedace. Three permanent fish survey stations lie adjacent to the north central boundary of the allotment (AGFD 1992, 1994, 1997).

Recovery Plan

A recovery plan (USDI 1998) for the Little Colorado spinedace was approved January of 1998. This plan describes reasons for decline of the species, including changes to the watershed through management activities such as dam construction, road construction, logging, and overgrazing by ungulates. These activities affect the watershed through changes in water quality and quantity, channel modifications, sediment loading, increased peak flows, reduced water storage within riparian areas, and reduced base flows. The

[1] **Federally Threatened:** Federally listed under the Endangered Species Act (1973) as threatened
Wildlife of Special Concern in Arizona: Arizona Game & Fish Department classification pending revision to Article 4 of the State Regulations).
Forest Service Sensitive: Forest Service sensitive species, USFS, Southwestern Region, Regional Forester's List (1988).

goal of the plan is to protect and restore spinedace populations and habitat conditions. Among the many steps needed for the recovery of the spinedace, the plan identifies the need to alter and/or remove negative impacts associated with overgrazing and destruction of the riparian corridors.

The elements of the recovery plan were analyzed in more detail for the East Clear Creek watershed in the document *East Clear Creek Watershed Recovery Strategy for the Little Colorado spinedace and Other Riparian Species* (USDA 1999a). The document recommended specific actions to be considered in the allotment to move toward recovery of the threatened fish. Some of these are incorporated into the Buck Springs Range Allotment Analysis.

Other Species of Concern

The speckled dace is a small fish of streams and creeks, widely distributed in western North America. It is generally found in riffles or below riffle habitats of stream, where it feeds on both plant material and small aquatic invertebrates. During drought years this fish becomes very scarce but rapidly recolonizes favorable habitats when conditions improve. Adult speckled dace are capable of holding their position during floods, though young are often washed great distances down stream. It is a fairly common species in the East Clear Creek watershed.

As its name implies, the Little Colorado sucker is found only in the Little Colorado drainage, which includes East Clear Creek. It has been proposed as a Category 2 species and it is likely that it will be accepted. Little is known about the species or its habitat. It apparently likes pools with abundant cover, spawns in the spring, and the young move into slow moving riffles. It has not been described as a species and is found in East Clear Creek.

RECREATION USE AND VISUAL QUALITY
(Recreation Specialist's Report [# 30])

The Coconino National Forest Plan lists the Recreation Opportunity Spectrum classes within the allotment as Roaded Natural, (RN) and Semi-Primitive Motorized (SPM) throughout most of the allotment, with Semi-Primitive Non-Motorized (SPNM) in the canyons. Visual Quality Objective (VQO) Designations include Retention and Partial Retention along major roads and their viewsheds. A designation of Modification covers the remaining areas of the allotment. A Retention VQO provides for management activities that are not visually evident while a Partial Retention VQO requires that management activities remain visually subordinate to the characteristic landscape.

The Buck Springs Allotment is within the East Clear Creek Watershed, which offers a wide variety of recreational opportunities, from developed campgrounds and reservoirs, to dispersed camping, hiking, and outdoor activities.

There are two developed campgrounds within the allotment. The Rock Crossing Campground sits above the Blue Ridge Reservoir and within a short drive of the boat ramp and access. Trails lead to popular fishing spots. The Knoll Lake Campground is located on the southeastern boundary of the allotment, on Knoll Lake. Boating and fishing are popular activities on the lake.

Dispersed recreational use can be characterized by the common themes of summer activities, winter activities, consumptive uses, and educational/personal development type activities.

An estimated 70% of the visits to the area occur during the summer season (Memorial Day to Labor Day). It is estimated that a full 90% of the users are Arizona residents, with many users returning to their favorite sites or settings on an annual basis. Recreational activities include: hiking; viewing wildlife; dispersed car-camping; backpack camping; water-based activities such as boating, canoeing, and water play; orienteering; horseback riding, caving, rock climbing, photography, picnicking; taking scenic drives; bicycling; off highway vehicle travel; shooting; and gathering in family or social groups.

The local hunting seasons last from about mid-August through December and account for much of the fall visitors to the area. The winter snow pack generally limits access from most recreational users from mid-December to mid-March and limits access to snowmobiles during most winters.

The gathering of forest resources often ties subsistence with the pursuit of recreation. Consumptive uses within the allotment include: firewood cutting, post and pole cutting, Christmas tree cutting, collecting boughs and cones, collection and transplanting of wildlings, collection of native mineral resources (i.e.: sandstone, chert), fishing, hunting, gathering antlers, collecting food and medicinal resources, and collecting biological specimens for research.

Some visitors desire to learn more about the natural and cultural history of the area. These users may visit natural viewpoints, explore historic sites, or view nature programs. Others utilize the outdoor setting to develop skills in a variety of recreational pursuits. Still others seek restorative experiences and put a high value on solitude, fresh air, healthy vegetation, a comfortable temperature, and the smells and sounds of nature.

SOCIAL CONCERNS AND ECONOMIC INFLUENCES
(Recreation Specialist's Report [#30])

Social Concerns and Perceptions

Social concerns for livestock grazing use are related to public perception of the appropriate use of public lands, customs and traditions of the area and the community and ranching life-style in relation to forest resources. Based on comments from local residents and forest visitors, there is a wide variation in reactions to cattle on the Forest. To the visitor traveling along the highways or backroads, cattle may be thought of as

picturesque and typical of the "western life-style". But to someone who dislikes any kind of "un-natural" structures or animal on the landscape, the presence of cattle disrupts their perception of the Forest as a wild place. Some people object to livestock grazing of western public lands based on ecological concerns, such as damage to riparian areas, watersheds and wildlife habitat, which can be caused by poorly managed livestock use. However, to those whose economic and social well-being is tied to the land, and to ranching in particular, livestock use is perceived as part of everyday life. Based on responses to the proposed action for the Buck Springs Range Allotment, there appears to be overall public acceptance of livestock grazing as long as the animals are controlled, impacts to all resources are considered and monitored, and sensitive areas (especially riparian areas) are protected from unwanted impacts.

The allotment is located in an isolated area of the Forest that is a popular recreation area for local residents and people from the Phoenix area. Two developed campgrounds, two reservoirs, and a few isolated private parcels are located here. Many people recreate in dispersed areas as well. Occasionally, there are conflicts when ATV users cut fences, or recreationists leave gates open that are needed to keep livestock in the appropriate pastures.

Economic Influences

The economy of Northern Arizona has long been tied to agricultural-based activities such as ranching and logging. With urbanization and the associated changes in values have come changes in the economic base of this area. Tourism is now considered the leading industry in Northern Arizona. However, domestic livestock grazing still contributes to the livelihood of the permittees, their employees and employees of ranching–based services, as well as directly and indirectly to the economy of the local communities and counties.

The Ranch

The permit holder has this allotment, as well as a primary ranch in the Wickenburg area. Though not solely dependent on revenues generated from this allotment, his livelihood is completely tied to the ranching industry. In addition, he has one ranch worker who is totally dependent on this allotment for his livelihood, and several seasonal employees who work on a part-time basis. The Ranch contributes to the local and regional economy by providing jobs, directly through the ranch operation and indirectly through purchases and investments in the Ranch and spending by employees in the local community.

In addition, the Forest Service pays a portion of the fees collected from grazing permits (25%) in lieu of taxes to Coconino County each year. Although these fees are only a part of the total payments made by the Forest Service, the revenue gained by the county is important to highway maintenance and school budgets.

Recreation Use

Recreation users contribute to the economy when they purchase hunting and fishing licenses and permits, pay fees at the campgrounds and purchase goods and services needed for particular activities. Indeed the revenues generated by hunting and fishing in Arizona alone are estimated by Congressional Sportsman's Foundation as equal to $140/resident, with added tax revenues equal to $16/resident (CFS 1998). Many of these purchases are made locally, but may be made at other locations throughout the State and region.

WILD AND SCENIC RIVERS
[# 29]

Coconino National Forest personnel evaluated East Clear Creek, Leonard Canyon and Barbershop Canyon in 1993 for their outstanding remarkable values (ORVs) and for potential Wild and Scenic River recommendations. In the *Preliminary Analysis of Eligibility and Classification for Wild, Scenic, and Recreational River Designation,* East Clear Creek has been recommended for status as "wild" due to its fisheries habitat and scenic values. Leonard Canyon was recommended for "recreational" status with the ORV of fisheries habitat values. Barbershop Canyon was considered eligible for a "wild" classification, due to the ORV of scenic values, and threatened and endangered species habitat. Further analysis of the eligibility and classification of these creeks is planned during revision of the Coconino National Forest Plan.

INVENTORIED ROADLESS AREAS
[#104]

Inventoried Roadless Areas (IRA) have been delineated for the Coconino National Forest. These areas were first delineated under the RARE II roadless area review process in the early 1980's. The original designation as roadless areas have been included in the proposed Roadless Area policy formulated under the Clinton administration. This proposed policy is currently under review by the Bush administration and is also under litigation.

The Buck Springs Range Allotment contains one complete IRA and a portion of another IRA within the boundaries of the allotment. The 1,310 Barbershop IRA lies completely within the boundaries of the allotment. A total of 309 acres of the 2,035 acre East Clear Creek IRA lies within the boundary of the allotment. These two IRAs were considered for inclusion into the Wilderness System under the Arizona Wilderness Bill in August of 1984, but were not included because they were considered too small. The Coconino National Forest is committed to maintaining the roadless character of these areas.

ENVIRONMENTAL JUSTICE
[#74]

Environmental justice ensures that Forest Service programs, policies, and activities affecting human health or the environment do not exclude minorities and low-income groups from participation in or the benefits of programs or activities based on race or economic status.

Native Americans in the area (such as Navajo and Hopi) use the allotment area for the collection of plants and plant parts for medicinal and cultural activities. The primary roads are accessible for handicapped drivers, though "Texas-style" gates on side roads may pose some barriers. Low-income groups may use the area for collection of forest products, such as fuelwood. Local residents also use the area to collect fuelwood.

CHAPTER 5: MONITORING

Some monitoring is required by the Coconino Forest Land Management Plan (CFLMP), as amended; by requirements established through lawsuits and court orders; and by reasonable and prudent measures required by Biological Opinions of the US Fish and Wildlife Service.

REQUIRED MONITORING

Cultural Resources

Project administrator must ensure that all ground-disturbing activities receive archeological surveys and clearances prior to implementation.

Rangeland Management and Understory Vegetation

1) Monitor East Clear Creek, Leonard Canyon, and livestock exclosures for unauthorized use.

2) Utilization monitoring (Coconino Forest Land Management Plan, Amendment 11). Conducted with permittee to determine pasture moves during grazing season. Also conducted at the end of the growing season with permittee to determine overall pasture utilization.

3) Range Administration. Ongoing throughout the grazing season, and critical when cattle are in sensitive pastures to ensure cattle are not in Leonard Canyon, East Clear Creek, Dines Tank Exclosure, Knolls Pasture, rested pastures, other exclosures, and other sensitive areas when identified by one of the District resource staffs. Ensure required improvements are in place before cattle enter restricted pastures.

4) Monitor “key areas” in restricted habitat and meadows in owl habitat and in goshawk PFAs on an annual basis, to ensure that specified utilization standards are followed (CFLMP). Monitor utilization levels in those key areas after livestock leave in the fall. (see wildlife #3).

Wildlife

1) Southwestern Willow Flycatcher: Monitor potential habitat to determine if habitat reaches suitability. When suitability is reached, conduct flycatcher surveys to determine occupancy. If flycatchers are found within five miles of the allotment, follow protocols to trap brown-headed cowbirds and exclude grazing within two or five miles as required. This monitoring was required as a “term and condition” of “reasonable and prudent measures” for ongoing grazing of the Buck Springs Allotment (USDI 1999), and will be carried forward as required

monitoring for the new AMP unless amended by the US Fish and Wildlife Service.

2) Bald Eagle: Establish a 300 foot radius around identified bald eagle roosts where mineral and salt supplementation and gathering of livestock will be excluded (CFLMP).

3) Mexican Spotted Owl and Northern Goshawk: Continue to monitor "key areas" in restricted habitat and meadows in owl habitat and in goshawk PFAs to ensure that specified utilization standards are followed (CFLMP). Monitor utilization levels in those key areas after livestock leave in the fall.

Aquatic Resources

1) Monitoring of habitat conditions and fish populations will continue through the efforts of Forest Service personnel and the Arizona Game and Fish Department. The monitoring of aquatic insect (macroinvertebrate) abundance and species diversity will also occur on sites selected within the watershed.

2) In conformance with Regional Direction (June 2, 1997), inventories of spinedace habitat will continue as a part of the overall management for the species.

3) Regional Direction (Regional Forester, June 2, 1997) also specifies the establishment of permanent monitoring sites for the collection of long-term datasets. These datasets will provide trend information on fish population and community structure viability and habitat parameters for the spinedace and other native fish. This measure has been a "term and condition" for the implementation of a "reasonable and prudent measure" for ongoing grazing of the Buck Springs Allotment (USDI 1999, p.72).

4) The Forest Service shall monitor livestock when they occupy the North Pasture to ensure that cattle are not entering habitat occupied by Little Colorado spinedace in Yeager Canyon; the North McClintock pasture to ensure that cattle are not entering Dane Canyon; and any other pasture that may be found to contain occupied habitat.

Soil and Water

1) Implementation of the Best Management Practices will be accomplished through construction activities completed by the permittee and the Forest Service.

2) Monitoring of the soil and water BMP's will be done through contract administration and the AOI (the AOI will specify what pastures can be used based on the structures completed within the pastures).

Additional required monitoring of riparian areas will be accomplished by utilization measurements within riparian area key areas as designated in MSO monitoring.

CHAPTER 6: PREPARERS

LIST OF PREPARERS

NAME	POSITION	INPUT
Core Team Members		
Cathy Taylor:	Wildlife Biologist	Team Leader/Wildlife
Rogers Steed:	Plans Staff and Forester	Overstory veg/editor
Dick Fleishman:	Watershed specialist	Soils and water/editor
Jerry Gonzales:	Range Conservationist	Range/editor
Mark Whitney:	Fisheries Biologist	Fisheries
Debbie Crisp:	Wildlife Technician	Note Taker
Additional FS Input		
Larry Sears:	District Ranger	Consultant/Reviewer
Liz Blake:	NEPA Specialist	NEPA input/note taker
Katherine Farr: NEPA	NEPA Specialist	Forest Planner and Coordinator
Jim Beard:	Landscape Architect	Recreation Input
Ed Paul:	Fire Ecologist	Fire/Air/Smoke
Angela Crossley	Archeologist	Cultural Resources
Peter Pilles	Forest Archeologist	Tribal Liaison
Outside Representatives		
Rick Miller:	Az Game and Fish Wildlife Rep.	General Discussions Wildlife Input
Chuck Benedict:	Az Game and Fish Fisheries Rep.	General Discussions Fisheries Input
Jim Sprinkle:	Az Cooperative Ext. Service Rep.	General Discussions Production and Utilization Measurements
Phil Knight:	Range Permittee	Input of Ranch

CHAPTER 7: INDIVIDUALS CONTACTED

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED AND/OR PROVIDED COPIES OF THE PROPOSED ACTION

INDIVIDUALS CONTACTED

Mr. and Mrs. Phillip K. Knight
Mr. Bill Armstrong
Mr. Robert Barris
Mr. Eldon Bowman
Mr. and Mrs. Del Chase
Ms. Gail Cunningham
Ms. Carol Daily
Mr. Joe DiSilvestro
Mr. Danny DeBarry
Mr. and Mrs. Herman Dorum
Mr. and Mrs. Chuck Edwards
Mr. David Elms
Mr. and Mrs. Carl Erwin
Mr. Howard Fisher
Mr. Bill Hardt
Mr. Murray W. Hardy Sr.
Mr. Gordon Haxel
Mr Mitchell Holder
Mr. Brian Jennings
Mr. and Mrs. Austin Jones
Mr. Stuart Jones
Mr. and Mrs. Lee Jones
Mr. Bruce Johnson
Mr. James Kawa
Mr. Tom King
Mrs. Beth Malmgren
Ms.Tommie Cline-Martin
Ms.Barbara J. Managan
Ms.Cythia Sidrane
Ms.H. F. Sowers, Jr.
Mr. Steve Spearman
Ms. Joan Steninger
Ms.Carole Wilke
Mr. Tom Tanner
Mr. Tom O'Brien
Mr. and Mrs. Bill Judge

Mrs. Linda O'Kelley
Ms. Char Tarr
Mr. Eric Zurcher
Mr. Brian Tangeman
Mr. Jeff Burgess
Mr. Wade Finch
Mr. Lou Hoover
Mr. and Mrs. Lloyd Lamothe
Mr. Dan Daggett
Mr. Jack Mattox
Ms. Jane Baxter
Ms. Bobbie Tyrell
Dr. Merri Schall
Mr. Theodore Reel
Ms. Sally Randall
Mr. and Mrs. Wendell A. Randall
Mr. and Mrs. Robert D.Aasmussen
Mr. and Mrs. Jack Myers
Ms.Anita McFarlane
Mr. Jerry Huddlestun
Mr.Tony Goen
Mr. and Mrs. Dennis Griggs
Mr.James E. Evans
Mr. Harold Dunnagan
Mr. Rick Erman
Mr. and Mrs. Glenn Carlson
Mr. Jess Chinn
Mr. Jerry Brown
Mr. Robert Bemindt
Mr. Charles G. Blair
Mr. Charles Allen
Ms. Karen Applequist
Mr. Richard Bansberg
Mr. Bill Acheson
Mr. Curt Silvestri
Mr. and Mrs. Doug Jorden
Mr. Bill Fechter
Ms. Barbara J. Mangan
Mr. Alan Elsroad
Ms. Susan Brandes
Mr. John Parsons
Ms. Amelia Jaskulski
Mr. Andy Odell
Mr. Shawn Browning
Mr. Mike McDonald
Mr. and Mrs. Dave Lamkin

Mr. William Volk
Mr. and Mrs. George Kinney

INDIVIDUALS CONTACTED	ORGANIZATION
Mr. Fareed Abouhaidar	Sierra Club, Grand Canyon Chapter, Palo Verde Group
Mr. Robert Manson	Gila County Commission and Planning
Mr. Malcus Baker, Jr.	Rocky Mountain F & R Experiment Station
Mr. Donald E. Cox	Sun City Sportsment/State EHPP
Dr. Laura DeWald	NAU School of Forestry
Ms. Lesley Fitzpatrick	U.S. Fish and Wildlife Service
Mr. Tim Flood	Friends of Arizona Rivers
Mr. Bob Brister	Southwest Forest Alliance
Mr. Mark Haver	National Resource Conservation Service
Mr. Terry Heslin	Arizona State Parks
Mr. Lufkin Hunt	Tonto Natural Resource Conservation District
Mr. Bill Marshall	Central Arizona Guides Association
Dr. Alvin Medina	Rocky Mountain F & R Experiment Station
Mr. Jack Metzger	Flying M Ranch
Mr. and Mrs.Leo Parham	People for the West
Ms. Gail Peters	Friends of Arizona Rivers
Mr. and Mrs. Bob Prosser	Bar T Bar Ranch, Inc.
Mr. Joe Ruby	Creepy Crawlers 4 WD Club
Mr. John Smith	Precision Pine and Timber
Dr. Robin D. Silver	Conservation Committee, Maricopa Audubon Society
Mr. Don Steuter	Sierra Club Conservation Chair
Ms. DeAnna Gordon	TrusteeCanyon State Naturists, Inc.
Mr. Max Taylor	Hopi Tribal Council
Dr. Robert Witzeman	Audubon Society
Ms.Karen Goodwin	Southwest Forest Watch
Mr. Lonnie Porter	Precision Pine and Timber
Mr. Frank Welsh	Maricopa Audubon Society
Dr. Liz Taylor	NAU School of Forestry
Ms. Debbie Noel	Arizona Game and Fish Department
Mr. Ken Clay	Arizona Game and Fish Department
Mr. Clifford D. Finch	Crooked H Ranch
Ms. Landi Fernley	Southwest Center for Biological Diversity
Ms. Suzanne Jones	The Wilderness Society
Mr. Stephen J. Waters	Iowa Department of Natural Resources
Mr. Barry Devenney	REI Outreach Coordinator
Mr. Wally Smith	Wally Smith Logging, Inc.
Mr. Larry Phoenix	Arizona Game and Fish Department
Ms. Sharon Galbreath	President Sierra Club Plateau Group
Mr. Ed Armenta	District Ranger Payson Ranger District
Mr. Dennis Becenti	Acting Director Office of Range Management
Ms. E. J. Jamsgard	Constituent Service Representative Office of John Kyl

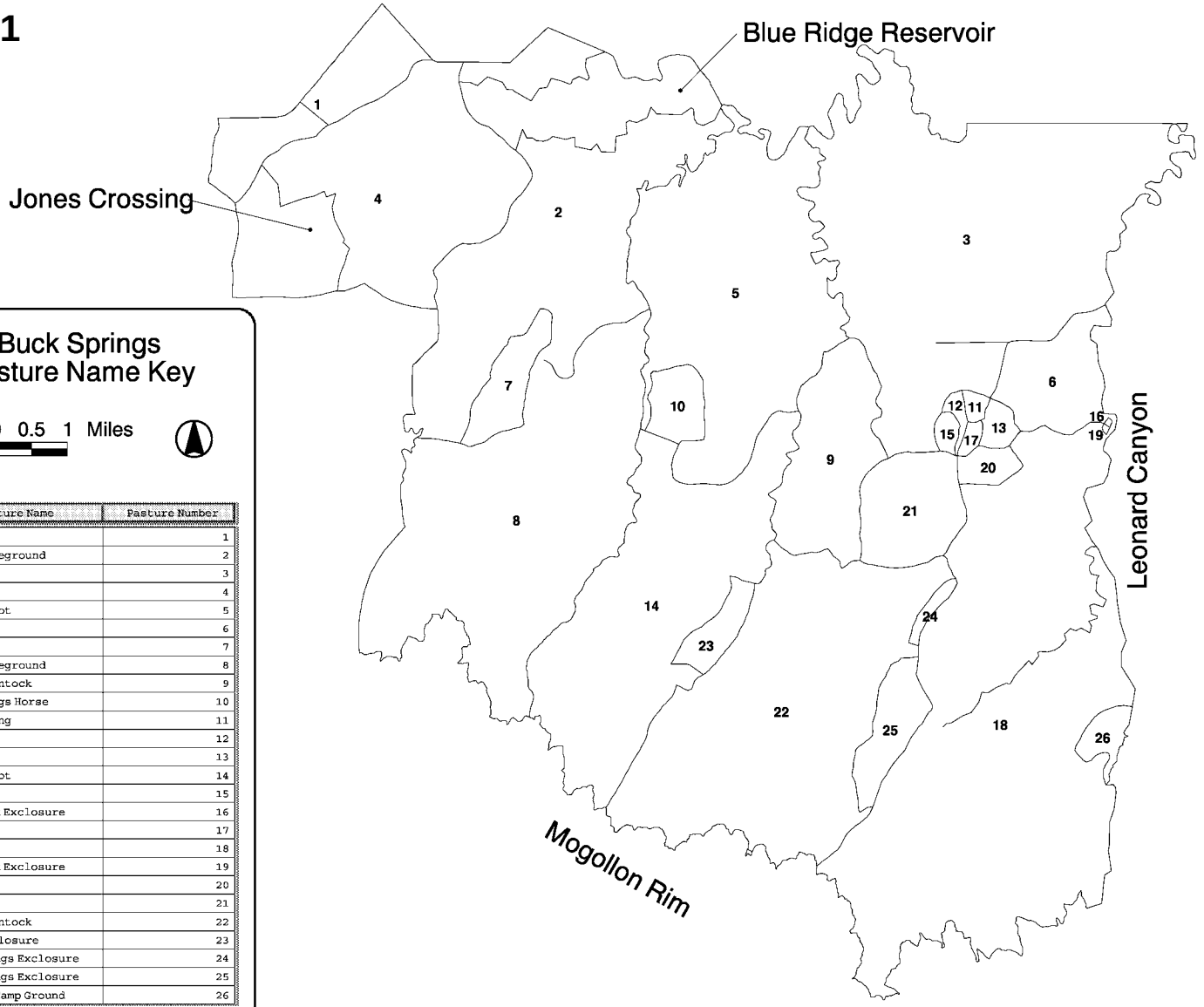
Ms. Ruth Kezele	President Forest Lakes Owners Association
Ms. Kate Klein	District Ranger Heber Ranger District
Mr. Don Farmer	President Arizona Wildlife Federation
Ms. Anette McGivney	Outdoor Editor Tribune Newspaper
Mr. Matt Ryan	Supervisor, District 3 County Administration Center
Mr. J. A. Swan	Holbrook District Engineer Arizona Department of Transportation
Ms. Joni Saad	Department of Commerce Arizona State Clearing House
Mr. John Talberth	Executive Director Forest Guardians
Mr. Jim Sprinkle	Area Extension Agent Animal Science, Gila, Yavapai, and Coconino Counties
Mr. Ron Seig	Region II, Supervisor Arizona Game and Fish Department
Ms. Elaine Moffitt	District Representative Congressman J. D. Hayworth
Ms. Evelyn Acothley	Chapter President Bodway/Gap Chapter
Mr. Mark Hullinger	Arizona Wildlife Federation
Ms. Shelly Silbert	Northern Arizona Nature Conservancy
Mr. Bob Button	Rocky Mountain Elk Foundation
Mr. William Belt	Arizona Department of Transportation
Mr. Peter Galvin	Southwest Center for Biological Diversity
Mr. Chris Kane	Bodway/Gap Chapter
Mr. Charles Ester	Salt River Project
Mr. Ron McMenimen	M2C2
Ms. Bellispirito	Northern Arizona Grotto
Mr. Green	Cochise County Cavers
Mr. Bednorz	Mule Mountain Caving Club
Mr. and Mrs.Frank Noel	Rim Country 4 Wheelers
Ms. Nancy Quade	Yavapai Prescott Indian Tribe
Mr. Bob Halla	Verde Valley 4 Wheelers
Mr. Jerry Drury	Stone Forest Industries, Inc.
Mr. Peter Warren	The Arizona Nature Conservancy
Mr. Steve Bennett	Stone Forest Industries
Mr. Wayne House	Northern Arizona Paddlers Club
Mr. Lars Ortegran	Forest Guardians
Mr. David Robbins	Friends of the Coconino N.F.
Ms. Ryna Peterson	Coconino Sportsmen
Mr. Peter Jagow	Arizona Department of Environmental Quality
Ms. Diane Simpson-Colebank	Logan Simpson Design, Inc.
Ms. Kelly Janecek	Grand Canyon Trust
Mr. Ed Smith	Coconino Forest Watch
Ms. Jeanne Rohrer	Channel 15, ABC Affiliate
Mr. Ron Woolwine	Payson Maintenance Arizona Department of Transportation
Mr. Tom Mackin	President Coconino Sportsmen

Mr. BobHart	Supervisory Hydrologist USGS Water Resource Division
Mr. Ron Christensen	Supervisor Gila County District No. 1
Mr. Bill Lowell-Britt	Conservation Chair Central Arizona Grotto
Mr. Dave Hammer	Conservation Chair Escabroso Grotto
Mr. David Harlow	U.S. Fish and Wildlife Service Arizona Ecological Services State Office
Mr. E. Shane Jimerfield	Executive Director Sonoran Bioregional Diversity Project
Ms. Cheryl Buckley	Trails Action Team International Llama Association
Mr. Dave Walker	President Arizona Chapter, Wildlife Society
Mr. Veldon Lee	President, Clear Creek Pines Property Owners Association - Units 8 and 9
Mr. Joseph C. Hull	Science Advisory Committee Trout Unlimited
Mr. Brian Segee	Appeal Coordinator Southwest Center for Biological Diversity
Mr. Charles Lane	Director of Grower Affairs Arizona Cattlegrowers

ADDITIONAL ORGANIZATIONS CONTACTED

American Rivers' Southwest Regional Office
Friends of the Prescott National Forest
Clear Creek Pines - Units 4,5,6; Protective Association Inc.
Northern Arizona Audubon Society
International Llama Association, Trails Action Team

Map 1

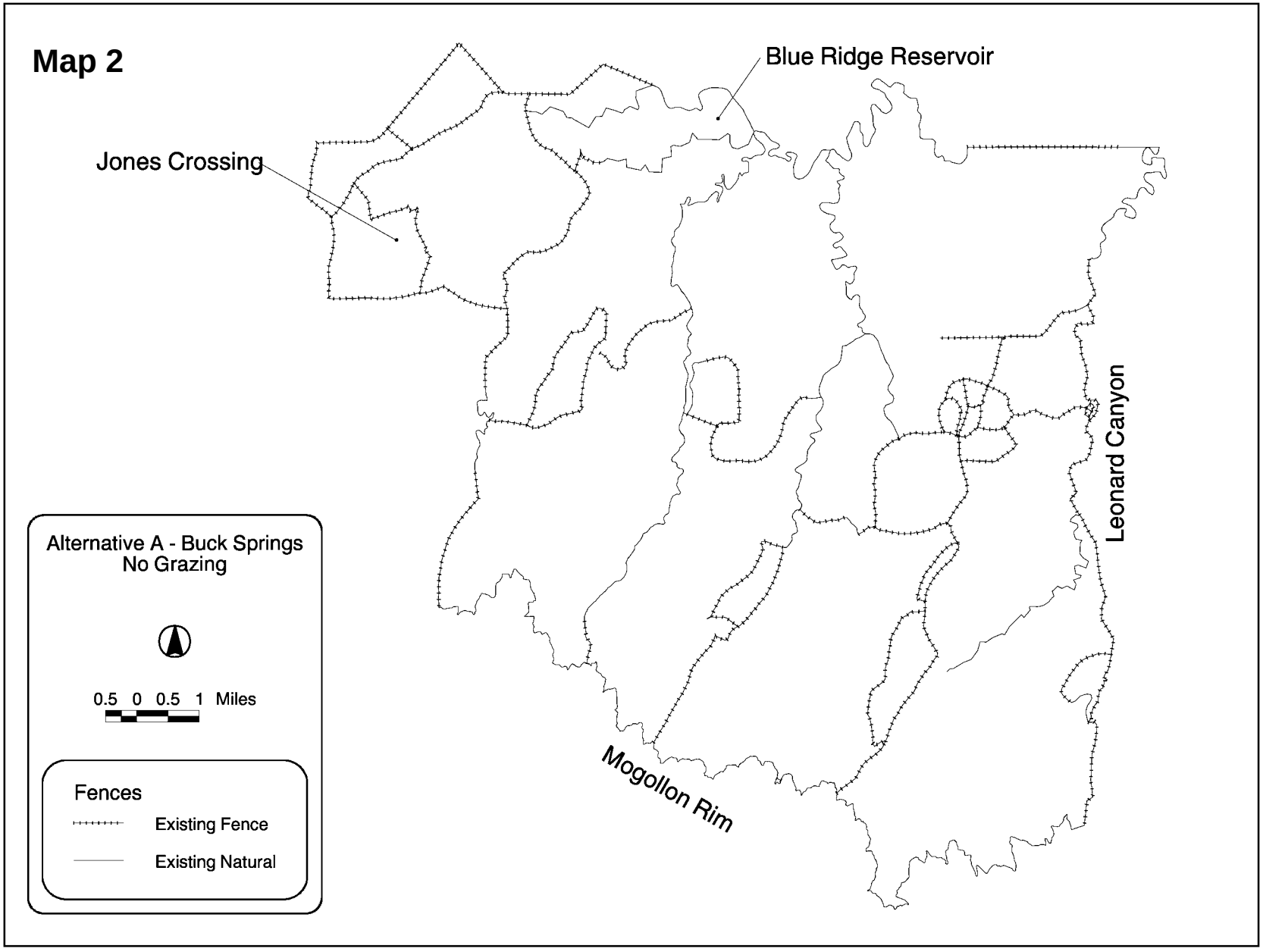


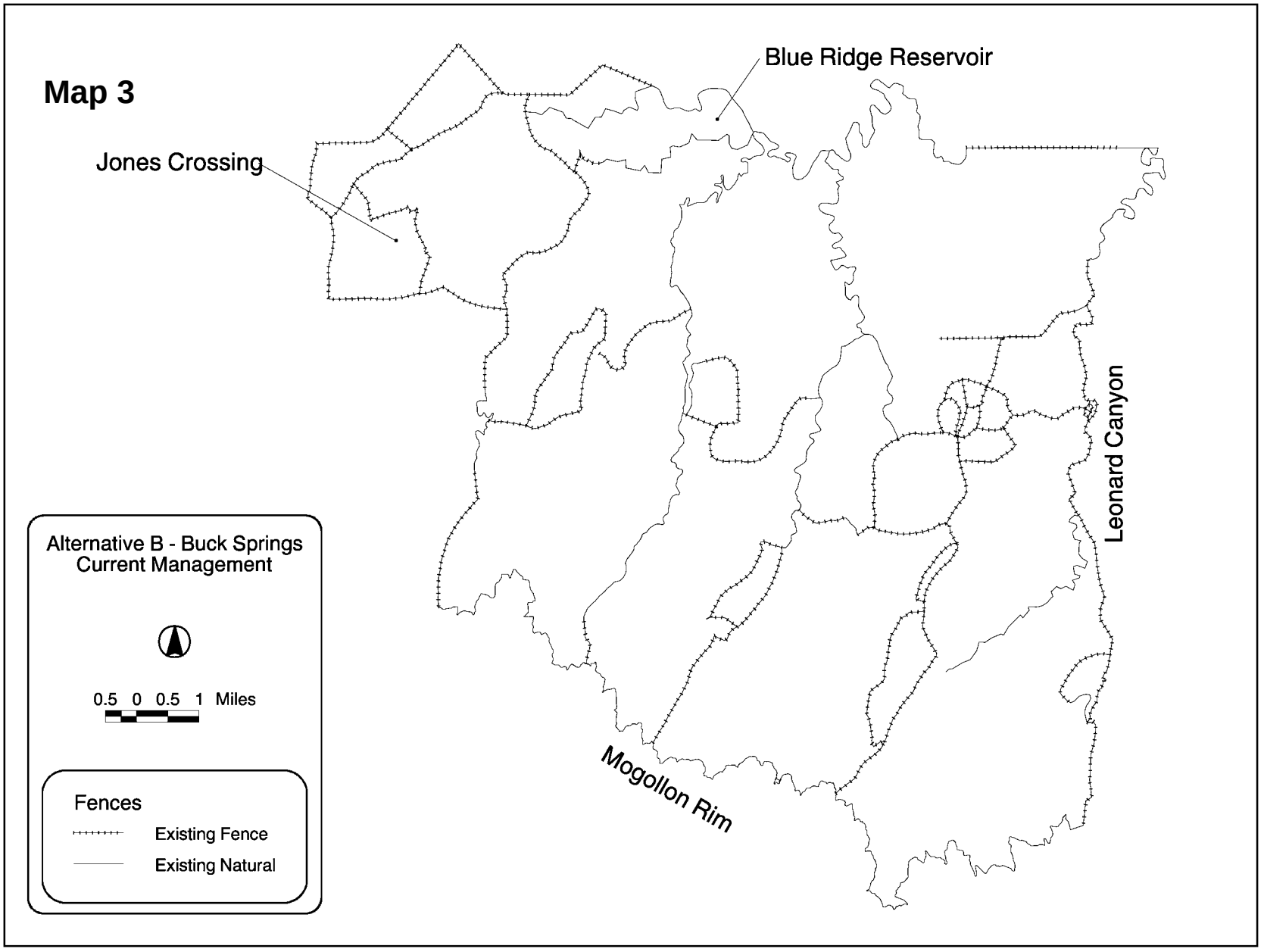
Buck Springs Pasture Name Key

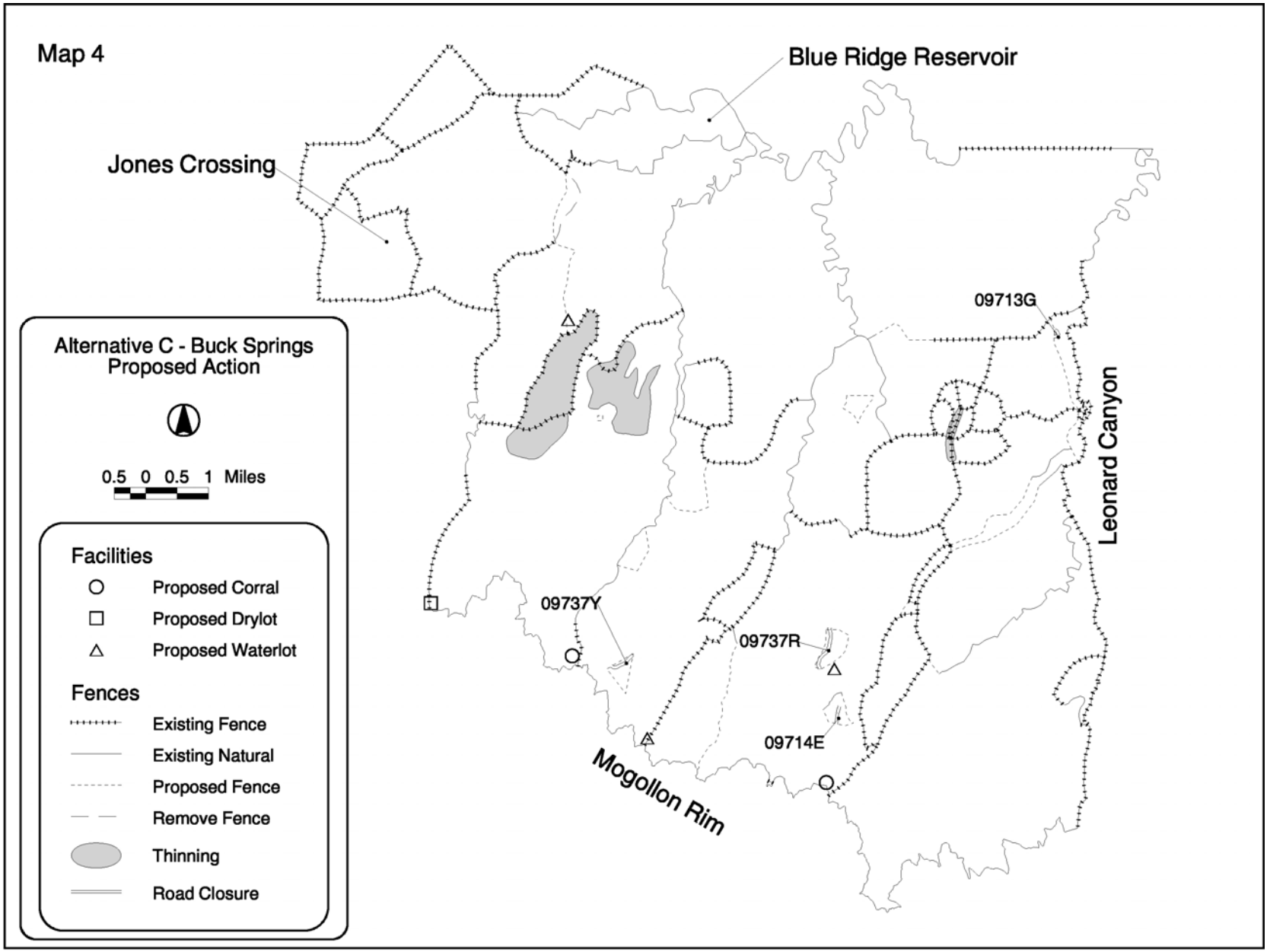
0.5 0 0.5 1 Miles

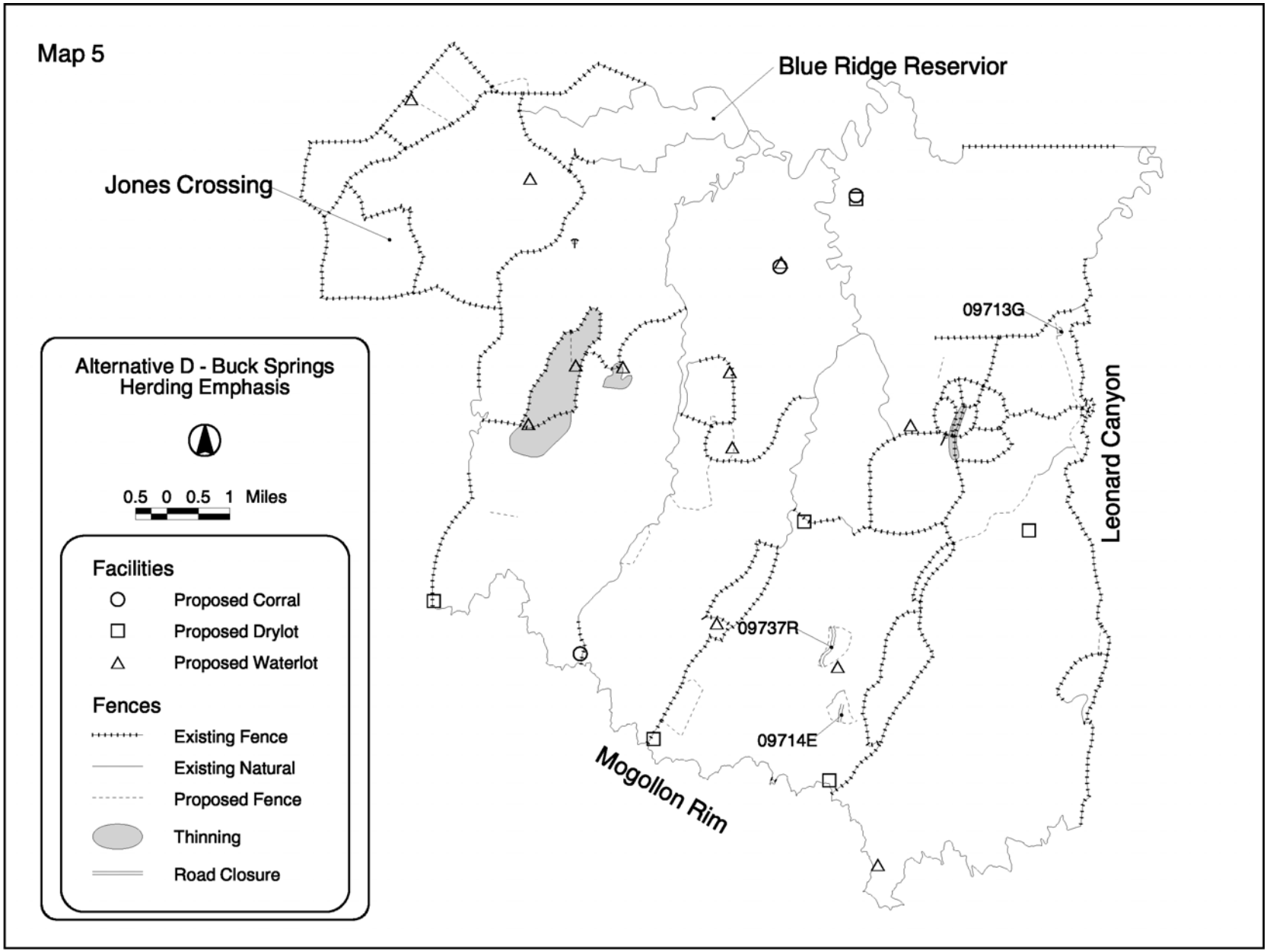
Pasture Name	Pasture Number
Jumbo	1
North Battleground	2
North	3
McCarty	4
North Pinchot	5
Dines	6
Burn	7
South Battleground	8
North McClintock	9
Aspen Springs Horse	10
North Holding	11
Lane	12
Limestone	13
South Pinchot	14
Schneider	15
N Dines Tank Exclosure	16
Genes	17
Knolls	18
S Dines Tank Exclosure	19
Steer	20
Moonshine	21
South McClintock	22
Merritt Exclosure	23
N Buck Springs Exclosure	24
S Buck Springs Exclosure	25
Knoll Lake Camp Ground	26

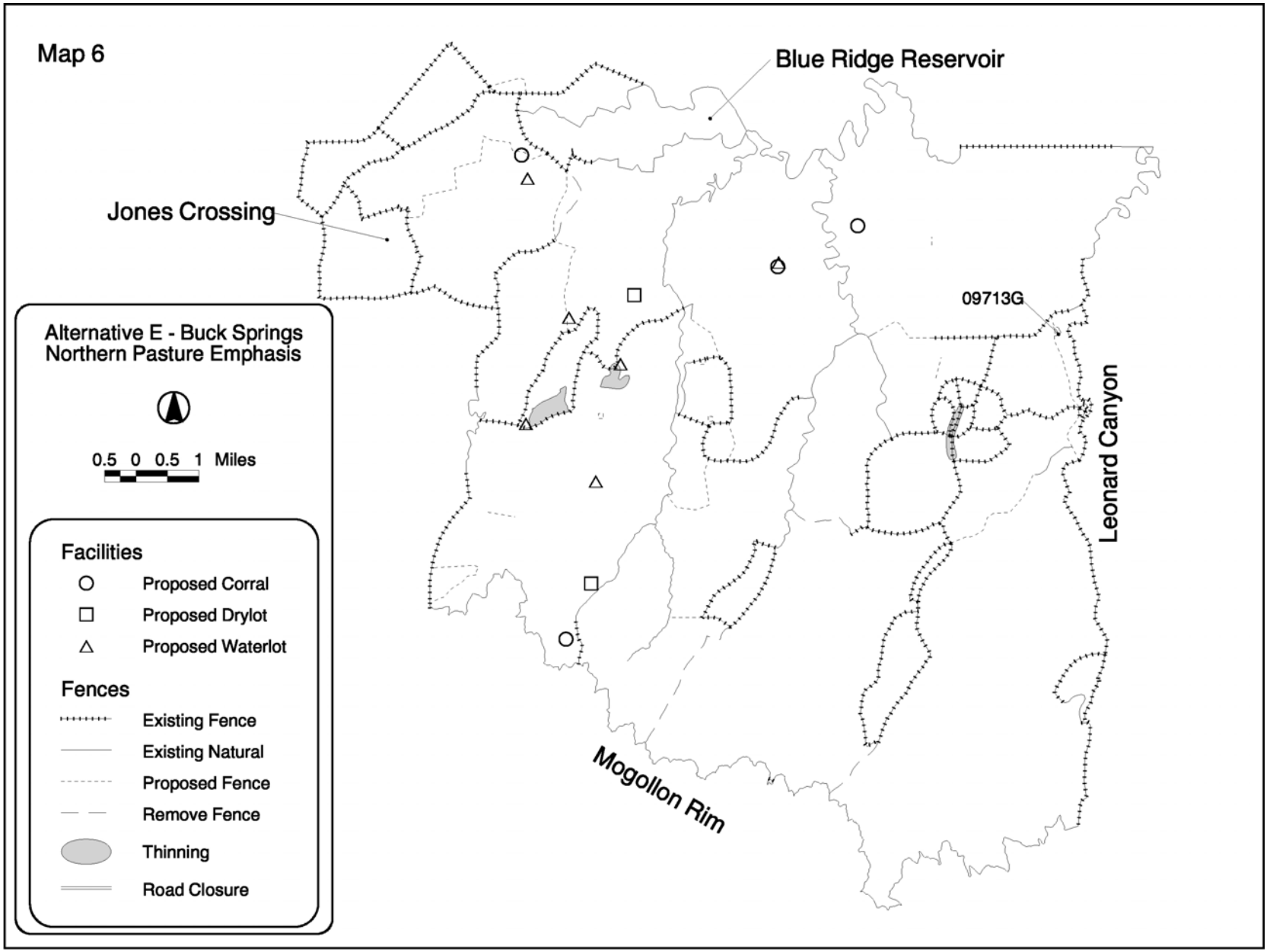
Map 2


Blue Ridge Reservoir
Jones Crossing
Leonard Canyon
Mogollon Rim
Alternative A - Buck Springs
No Grazing
0.5 0 0.5 1 Miles
Fences
Existing Fence
Existing Natural

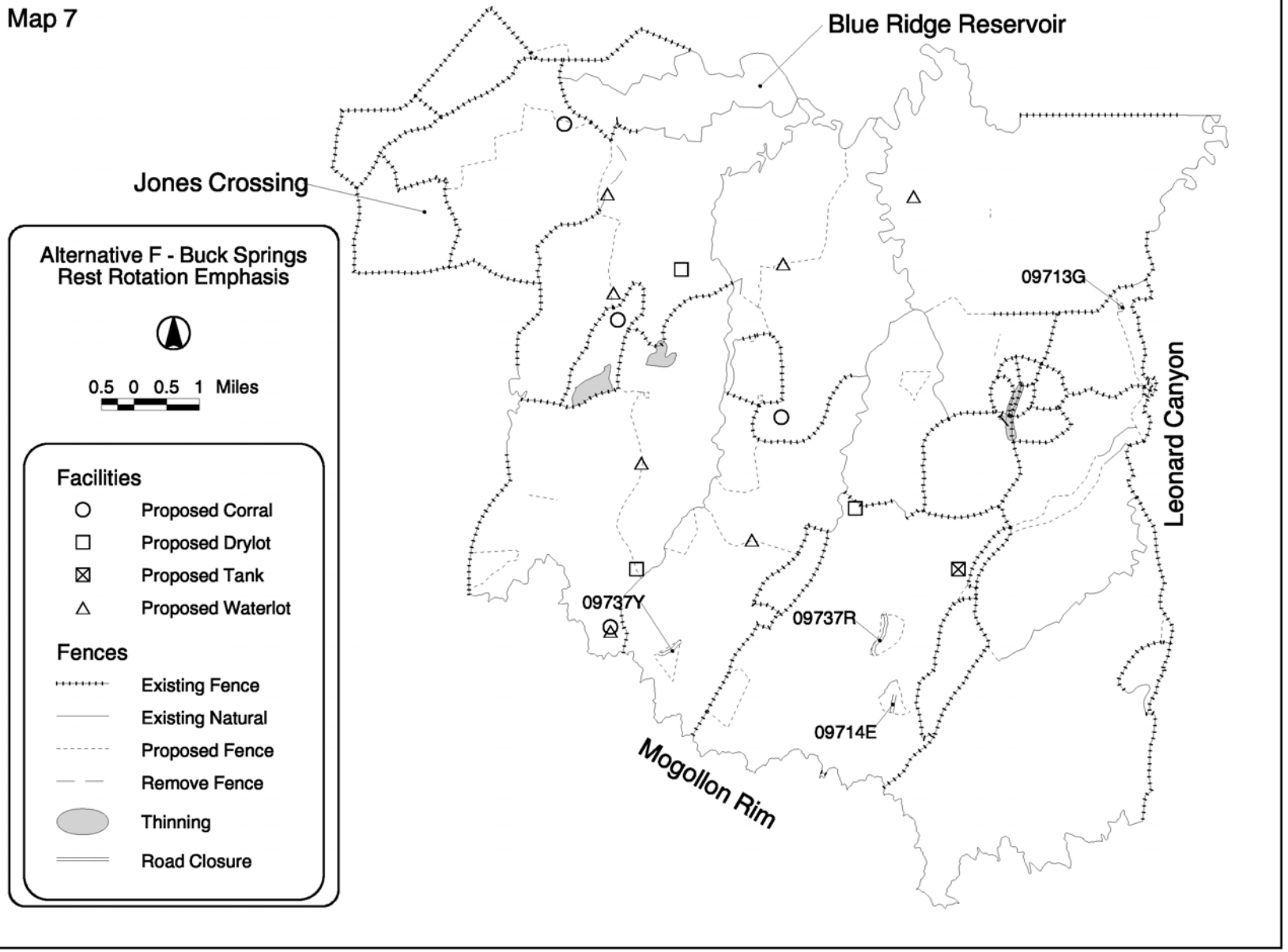

Map 3
Blue Ridge Reservoir
Jones Crossing
Leonard Canyon
Mogollon Rim
Alternative B - Buck Springs
Current Management
0.5 0 0.5 1 Miles
Fences
Existing Fence
Existing Natural

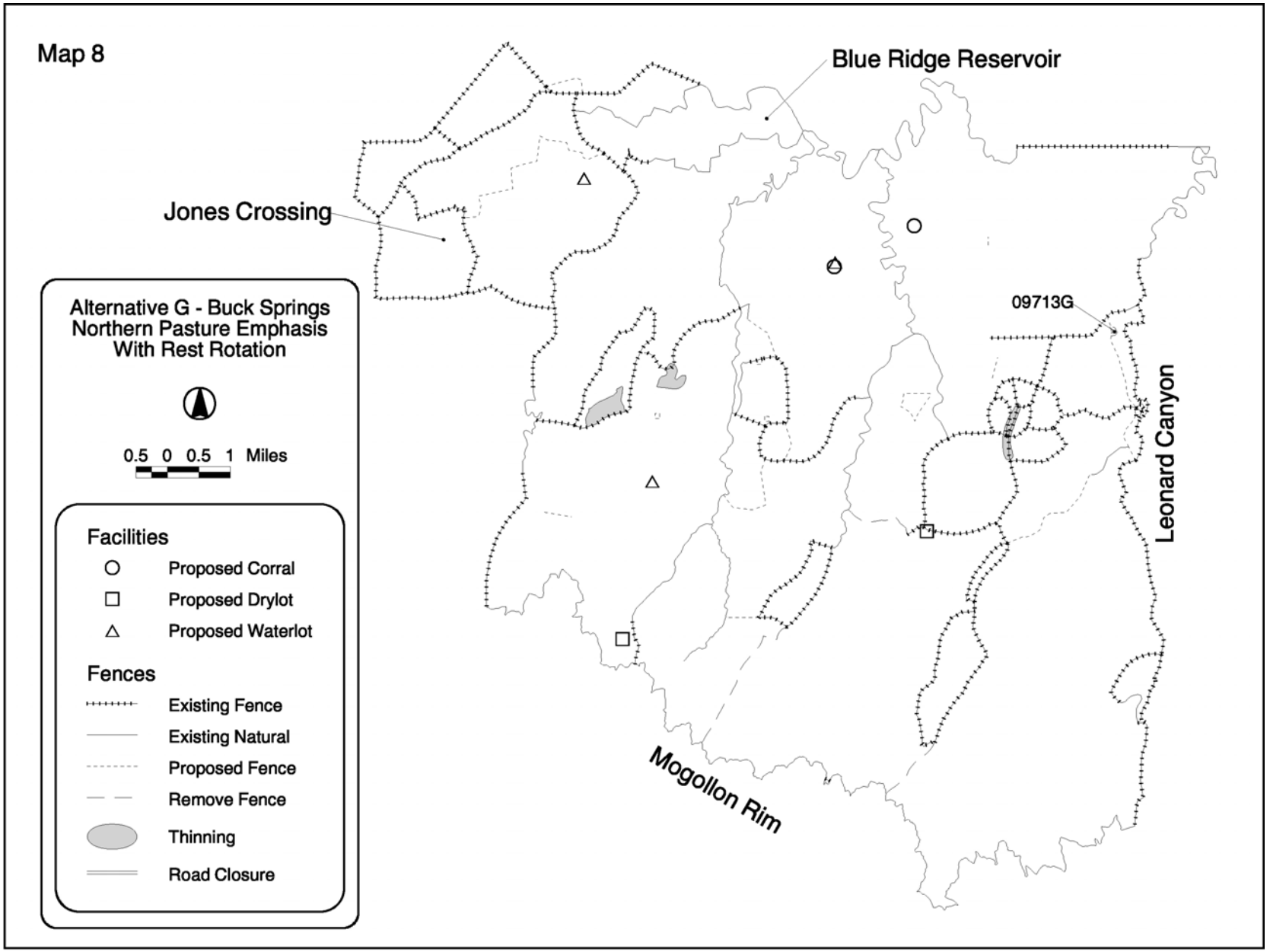

Map 4
Blue Ridge Reservoir
Jones Crossing
09713G
Leonard Canyon
09737Y
09737R
09714E
Mogollon Rim
Alternative C - Buck Springs
Proposed Action
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Remove Fence
Thinning
Road Closure

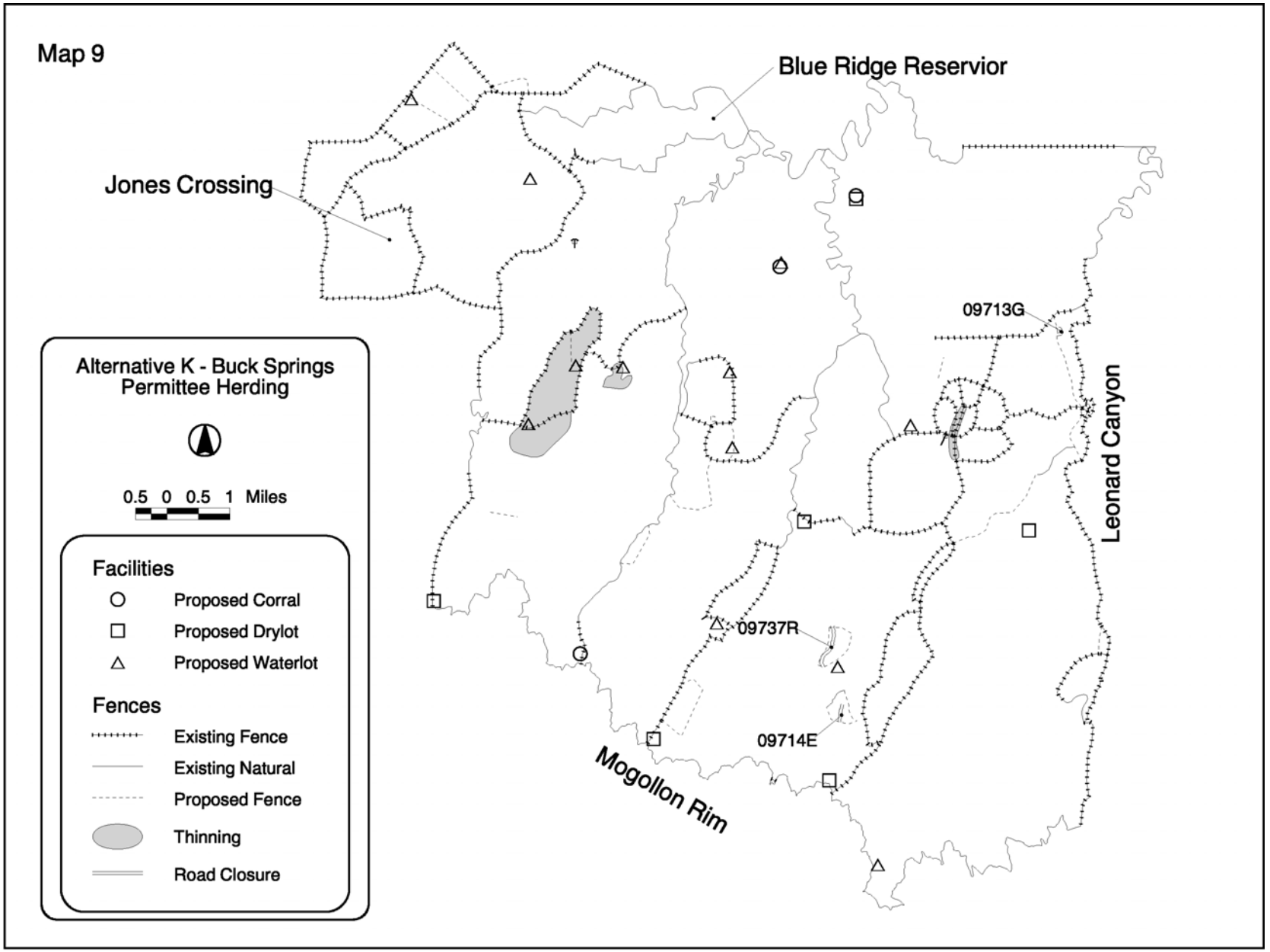

Map 5
Blue Ridge Reservior
Jones Crossing
09713G
Leonard Canyon
09737R
09714E
Mogollon Rim
Alternative D - Buck Springs
Herding Emphasis
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Thinning
Road Closure


Map 6
Blue Ridge Reservoir
Jones Crossing
09713G
Leonard Canyon
Mogollon Rim
Alternative E - Buck Springs
Northern Pasture Emphasis
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Remove Fence
Thinning
Road Closure

Map 7


Blue Ridge Reservoir
Jones Crossing
Alternative F - Buck Springs
Rest Rotation Emphasis
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Tank
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Remove Fence
Thinning
Road Closure
09713G
Leonard Canyon
09737Y
09737R
09714E
Mogollon Rim


Map 8
Blue Ridge Reservoir
Jones Crossing
09713G
Leonard Canyon
Mogollon Rim
Alternative G - Buck Springs
Northern Pasture Emphasis
With Rest Rotation
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Remove Fence
Thinning
Road Closure


Map 9
Blue Ridge Reservior
Jones Crossing
09713G
Leonard Canyon
09737R
09714E
Mogollon Rim
Alternative K - Buck Springs
Permittee Herding
0.5 0 0.5 1 Miles
Facilities
Proposed Corral
Proposed Drylot
Proposed Waterlot
Fences
Existing Fence
Existing Natural
Proposed Fence
Thinning
Road Closure

APPENDIX B

TABLE OF IMPROVEMENTS BY ALTERNATIVE

APPENDIX B BUCK SPRINGS RANGE ALLOTMENT

Proposed fences and cattleguards by alternative with:
Designation of temporary or permanent fences, required or not required prior to pasture use.
Designation of Forest Service and Permittee fence construction responsibilities

ASTURES	FENCE LOCATION	No. of Cattle Guards	Alt. C Proposed Action		Alt. D Herding		Alt. E North Pasture		Alt. F Rest Rotation		Alt. G N. Pasture + Rest Rotation		Alt. K Modified Herding		Miles of Fence
			Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	
North	Division fence, Yeager Canyon to Barbershop Canyon	1	Y	50/50			Y	50/50	Y	50/50					1.1
	Drift fence, FR96 @ Yeager Canyon	1					Y	50/50	Y	50/50	Y	50/50			0.5
	Drift fence, along Yeager Canyon, Forest Service Pasture						Y	50/50	Y	50/50	Y	50/50			0.3
	Gap fence in Yeager Canyon, and drift fences										Y*	50/50			
Dines	Canyon fence along Leonard Canyon		Y*	50/50	Y*	50/50	Y*	Perm	Y*	50/50	Y*	Perm	Y*	50/50	1.6
Knolls	Canyon fence along Leonard Canyon		Y*	50/50	Y*	50/50	Y*	Perm	Y*	50/50	Y*	Perm	Y*	50/50	0.8
	Canyon fence North of Buck Springs Canyon		Y*	50/50	Y*	50/50	Y*	Perm	Y*	50/50	Y*	Perm	Y*	50/50	1.9
	Canyon fence S of Buck Springs Canyon		Y*	50/50					Y*	50/50					1.9
	Fence from riparian pasture to W. Leonard Cyn	1	Y*	50/50					Y*	50/50					0.3
	Canyon fence near Knoll Lake				Y	50/50							Y(t)	50/50	0.4
McClintock	Connect upper + lower Buck Springs exclosures w/ tank		Y*	50/50					Y*	50/50					0.2
	Bill McClintock Draw exclosure		Y*	50/50	Y*	50/50			Y*	50/50			Y*	50/50	1.9
	Holder Cabin meadow exclosure		Y*	50/50	Y*	50/50			Y*	50/50			Y*	50/50	1.2
	Upper Barbershop exclosure,	1	Y*	50/50											2.3
	Upper Barbershop drift fence				Y*	50/50			Y*	50/50			Y(t)*	50/50	1
N Pinchot	Division fence ECC bluff so. to Houston Draw excl.	1							Y	50/50					2.5
	Small Houston Draw exlosure no. to Bear Canyon						Y*	50/50	Y*	50/50	Y*	50/50			0.8
	Holding Pasture, southwest corner				Y*	FS	Y*	FS			Y	FS	Y	FS	0.5
	Pinchot Springs exclosure						Y*	FS	Y*	FS	Y	FS			
	Aspen Springs exclosure				Y*	FS	Y	FS	Y*	FS	Y	FS	Y*	FS	

APPENDIX B BUCK SPRINGS RANGE ALLOTMENT (Continued)

ASTURES	FENCE LOCATION	No. of Cattle Guards	Alt. C Proposed Action		Alt. D Herding		Alt. E North Pasture		Alt. F Rest Rotation		Alt. G N. Pasture + Rest Rotation		Alt. K Modified Herding		Miles of Fence
			Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	Fence Required	Who Builds	
N Battleground	Division fence, Battleground Ridge	1	Y	50/50			Y	50/50	Y	50/50					1.7
	Turkey Pen fence		Y*	50/50	Y*	50/50	Y*	50/50	Y*	50/50	Y*	50/50	Y*	50/50	0.1
McCarty	Canyon fence to exclude ECC - Jones Cg fence						Y*	Perm	Y*	50/50	Y*	Perm			3.2
	Reconstruct Northern Boundary fence				Y	50/50	Y	50/50	Y	50/50	Y	50/50	Y	50/50	
	Reconstruct Eastern Boundary fence		Y	50/50			Y	50/50	Y	50/50					1.1
S Battleground	Division fence, General Spr to Fred Haught Spr to Bear Cyn	1							Y	50/50					3.2
	Drift fence, near General Springs				Y	50/50	Y	50/50	Y	50/50	Y*	50/50	Y(t)	50/50	0.1
	SW corner exclosure	2					Y	50/50							1.8
	Fred Haught Springs exclosure		Y*	FS			Y*	FS	Y*	FS	Y*	FS			0.3
	Temporary fence south of General Springs elk exclosure						Y*	Perm	Y(t)*	Perm	Y*	Perm			0.5
S Pinchot	Upper Houston Draw exclosure (S of Horse past)	1	Y*	50/50	Y*	50/50	Y*	Perm	Y*	50/50	Y*	Perm	Y*	50/50	1.4
	East Bear meadow exclosure		Y*	50/50					Y*	50/50					1.6
	Bear Cyn meadow exclosure, with watergap		Y*	50/50					Y*	50/50					1.1
	Bear Canyon meadow drift fence				Y*	50/50							Y(t)*	50/50	0.6
	Division fence, FR139 west to BearCanyon								Y	50/50					0.7
	Division fence, Merritt exclosure to FR139	1							Y	50/50					1
	Division fence E Bear Cyn to Riparian Pasture	1					Y	Perm			Y	Perm			0.5
N McClintock	McClintock Springs meadow exclosure (cow)		Y*	50/50					Y*	50/50	Y*	50/50			1.0
N Jumbo	Holding Pasture				Y	50/50							Y	50/50	0.75
	2nd Holding Pasture				Y	50/50							Y	50/50	0.75
Burn	Holding Pasture				Y	50/50							Y	50/50	0.5

Y -- denotes a permanent fence
Y* -- denotes a permanent fence that is required prior to pasture use
Y(t) -- denotes an annual temporary fence
Y(t)* -- denotes an annual temporary fence that is required prior to pasture use

50/50 – a split in construction costs between FS and permittee, with FS providing materials and permittee building the fence

Perm – Permittee is responsible for all costs associated with the fence
FS – Forest Service is responsible for all costs associated with the fence

APPENDIX C

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APPENDIX D:

SOIL AND WATER BEST MANAGEMENT PRACTICES

Implementation of the Best Management Practices will be accomplished through construction activities completed by the permittee and the Forest Service. Monitoring of the soil and water BMP's will be done through contract administration and the AOI (the AOI will specify what pastures can be used based on the structures completed within the pastures). Additional required monitoring of riparina areas will be accomplished by utilization measurements within riparian area key areas as designated in MSO monitoring.

Best Management Practices Common To All Action Alternatives

Maintain current riparian meadow exclosures at Upper and Lower Buck Springs, Merritt Draw, and Houston Draw to protect approximately 84 acres of meadow.

Best Management Practices Common to the Alternative C

a) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

b) Eliminate livestock access to riparian areas and spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 3.7 miles of fence along Buck Springs Canyon, and 0.3 miles of fence with cattleguard to exclude livestock from West Leonard Canyon and the southern 1/2 of the Knolls Pasture.

c) Build approximately 0.25 mile of fence in the McClintock Pasture and add one cattleguard to connect the Upper and Lower Buck Springs riparian pastures. Construct one new earthen tank in McClintock Pasture to substitute for access to water in Buck Springs Canyon.

d) Manage grazing in meadows to achieve sponge effect, improve vegetative ground cover and bank stability, and improve flow regimes using a combination of herding, deferred grazing, rest-rotation, and total exclusion. Establish livestock exclosures to promote formation of meadow sponge effect in Holder Meadow (130 ac), East Bear Meadow (85 ac), West Bear Meadow (110 ac), Upper Barbershop (1000 ac), and Houston Draw (335 ac), McClintock Springs Meadow (90), and Bill McClintock Meadow (150 ac). Acres are exclosure acres, not meadow acres. Use exclosures to monitor forage use by livestock and elk. Construct a small sucker rod exclosure around Fred Haught Springs (7 ac).

e) Use herding as a supplemental tool to control livestock movements and to keep them out of sensitive riparian areas, sensitive drainages, and headwater meadows.

Best Management Practices Common to Alternative D and K

a) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

b) Eliminate livestock access to spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 1.9 miles of fence north of Buck Springs Canyon, and 0.4 miles of fence adjacent to Leonard Canyon downstream of Knoll Lake**.** Use herding to keep livestock out of the southern 1/2 of the pasture, south of W. Leonard Canyon. If herding of livestock is successful in controlling livestock without fences, and adequate forage is available, the southern 1/2 of Knolls Pasture may be used in the future.

c) Construct a drift fence in South Battleground Pasture to funnel livestock away from General springs Cabin. Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture.

d) Construct drift fences at entry trails to meadows to reduce access by livestock at West Bear Meadow, and Upper Barbershop Canyon. Construct livestock exclosures at Holder Meadow (130 ac), upper Houston Draw (160 ac), and Bill McClintock Meadow (150 ac). Construct a 0.1 acre pipe and sucker rod exclosure around Aspen Springs.

e) Use cowboys and dogs to "herd" the cattle in one or more units, as a tool to control livestock movements and to keep them out of sensitive riparian areas, sensitive drainages, and headwater meadows. Move the livestock as needed to avoid sensitive areas, limit utilization on individual plants, and obtain more even grazing patterns. However, livestock may pass through riparian areas and meadows if needed to achieve herding objectives.

Best Management Practices Common to Alternative E

a) Construct a drift fence along Yeager Canyon in Forest Service Pasture (0.3 mile).

b) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

c) Construct a 3.2 mi. fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. Reconstruct the north fence along the boundary of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir.

d) Construct an exclosure around meadow system in southwest portion of the South Battleground pasture (1.8 miles), with two cattleguards.

e) Construct a drift fence to funnel livestock away from General Springs (0.4 mile). Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture.

f) Construct a division fence in the South Pinchot Pasture from East Bear Canyon to the riparian pasture at Merritt, to allow use of the northern portion of the pasture.

The portion south of this fence, and between Bear Canyon and East Bear Canyon will not be used by livestock.

g) Establish livestock exclosures to promote formation of meadow sponge effect around Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock. Construct sucker road exclosures around Pinchot and Aspen Springs. Build 0.8 miles of fence from aspen Pasture to Bear Canyon to create a small exclosure in Houston Draw. Construct a livestock exclosure around upper Houston Draw (2.4 miles).

h) Movement of livestock between pastures require long drives using fences, topography, and riders to contain livestock. Drives would not take place in areas with high risk meadows, and generally would take place along a North Route. Temporary electric fence would be used to exclude East Clear Creek and traffic control measures would be required.

Best Management Practices Common to Alternative F

a) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence. Close portion of 9713G road.

b) Eliminate livestock access to riparian areas and spinedace habitat in the Knolls Pasture by constructing 0.8 miles of fence along Leonard Canyon, 3.8 miles of fence along Buck Springs Canyon, and 0.3 miles of fence with cattleguard (FR161B) to exclude livestock from West Leonard Canyon and the southern 1/2 of the Knolls Pasture. Close 9714N Road.

c) Build approximately 0.25 mile of fence and add one cattleguard to connect the Upper and Lower Buck Springs riparian pastures. Construct one new earthen tank in McClintock Pasture to substitute for access to water below the weir in Buck Springs Canyon.

d) Construct a 3.2 mi. fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. Reconstruct and move the north boundary fence. Close 6143.

e) Construct a drift fence in South Battleground Pasture to funnel livestock away from General springs Cabin (0.2). Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture.

f) Establish livestock exclosures to promote formation of meadow sponge effect in Holder Meadow (130 ac), East Bear Meadow (85 ac), West Bear Meadow (110 ac), upper Houston Draw (335 ac), lower Houston Draw (180 ac), and Bill McClintock Meadow (150 ac). Construct drift fences at entry trails to Upper Barbershop Canyon to reduce access by livestock. Exclude livestock from Fred

Haught Springs (7 ac), Pinchot Springs (1/10 ac) and Aspen Springs (1/10 ac). Use exclosures to monitor forage use by livestock and wildlife. Close 9737R, 9714G and north end of 9714E, 9711V, 9739W, 9732Y, 9733Y, 9737Y.

n) Establish livestock exclosures to promote formation of meadow sponge effect around Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock. Construct sucker road exclosures around Pinchot and Aspen Springs.

o) Construct a cattle exclosure around the existing elk exclosure at McClintock Spring (cattle = 90 ac, elk = 1 ac).

Best Management Practices Common to Alternative G

a) Eliminate access to Leonard Canyon in the Dines Pasture with 1.6 miles of fence.

b) Construct a 3.2 mi. fence along south side of East Clear Creek in McCarty Pasture to control livestock access; tie the fence into Jones Crossing Fence. Reconstruct the north fence along the boundary of McCarty Pasture that serves as a lane to access the northern portion of North Battleground Pasture north of the Reservoir.

c) Construct a drift fence to funnel livestock away from General Springs (0.4 mile). Construct a temporary electric fence at General Springs Cabin to keep livestock away from sensitive areas, when livestock are in the South Battleground Pasture.

d) onstruct a division fence in the South Pinchot Pasture from East Bear Canyon to the riparian pasture at Merritt, to allow use of the northern portion of the pasture. The portion south of this fence, and between Bear Canyon and East Bear Canyon would not be used by livestock.

e) Establish livestock exclosures to promote formation of meadow sponge effect around Fred Haught Springs (7 ac). Use exclosures to monitor forage use by livestock. Construct sucker road exclosures around Pinchot and Aspen Springs. Build 0.8 miles of fence from aspen Pasture to Bear Canyon to create a small exclosure in Houston Draw north of the Aspen Horse Pasture. Construct a livestock exclosure around upper Houston Draw south of the Aspen Horse Pasture (2.4 miles).

APPENDIX E

GLOSSARY

GLOSSARY

Affected environment: The natural, physical and human-related environment that would be sensitive to changes from implementation of the alternatives.

Allotment management plan: A plan cooperatively developed by the Range Permittee and the Forest Service that lists the management practices, livestock numbers, lists of improvement needs, salting practices, and administrative policies.

Alternative: A mix of management prescriptions applied to specific land areas to achieve a set of goals and objectives. Each alternative represents a different way of achieving a set of similar management objectives.

Annual operating instructions (AOI): A set of instructions developed by the US Forest Service and given to the Range Permittee on an annual basis, that explains the specific pastures to be used, and adjustments to the Allotment Management Plan for the current year.

Benefit/cost ratio (B/C ratio): The total discounted benefits of an activity divided by the total discounted costs.

Best management practices (BMP): A practice or combination of practices that are the most effective and practical means of achieving resource protection objectives (primarily water quality protection) during resource management activities.

Carrying capacity: In grazing management, the maximum level at which animals can graze an area without damage to the vegetation or related uses. Generally includes use by both livestock and wild ungulates.

Corral: A range improvement that generally is made of logs or board and is used to hold, load, or unload livestock.

Critical habitat: that portion of a wild animal's habitat that is critical for the continued survival of the species ("Critical Habitat" is a formal designation under the Endangered Species Act.)

Cultural Resources: The physical remains ofhuman activitiy (artifacts, ruins, burial mound, petroglyphs, building, etc.) having scientific, prehistoric, or social values.

Cumulative effect: The impact on the environment resulting from the incremental impact of the action added to other past, present or future actions. They can also result from individually minor but collectively significant actions taking place over a period of time.

Deciding officer: The Forest Service official who has the authority to select and/or carry out a specific planning action.

Deferred pastures: Pastures that are not being grazed at a point in time.

Deferred/Rest-Rotation: A combination of two grazing systems on one allotment, in which there is a rotation of deferment among some pastures, so that at some point in the rotation, each pasture is grazed at different intervals during the grazing season to allow for seed production, storage of root reserves, and seedling establishment. At the same time, other pastures are managed so that an entire grazing season of rest is incorporated into the rotation, to accomplish the same objectives.

Direct effects: Effects on the environment which occur at the same time and place as the initial cause or action.

Drift fences: A range improvement, usually a short stretch of fence, designed to prevent cattle from moving into a specific area within a pasture.

Drylot: A range improvement usually constructed of fencing materials, that does not include a water source and is used to hold livestock.

Ecosystem management: The use of an ecological approach that blends social, physical, economic, and biological needs and values to assure productive, healthy ecosystems.

Effects: The results expected to be achieved from implementation of actions relative to physical, biological, and social (cultural and economic) factors resulting from the achievement of outputs. Examples of effects are tons of sediment, pounds of forage, person-years or employment, and income. There are direct effects, indirect effects, and cumulative effects.

Environmental Impact Statement (EIS): The documentation of environmental effects and action required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA), and released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, the Council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the project proposal.

Exclosures: Fenced structures that “exclude” animals from a specific area.

Forage: All non-woody plants (grass, grass-like plants, and forbs) and portions of woody plants (browse) available to domestic livestock and wildlife for food. Only a portion of a plant is available for forage if the plant is to remain healthy.

Forage production: the weight of forage produced within a designated period of time on a given area.

Forage utilization: The degree to which animals have consumed the total current production of plants, expressed in percent. It may refer to the use of a pasture or use of an individual plant.

Game species: Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fishermen under State or Federal laws, codes, and regulations.

Herding: A strategy for managing livestock where the manager maintains the animals in a "herd" and moves them from area to area as a group.

Indirect effects: Secondary effects which occur in locations other than the initial action, significantly later in time, or to one resource that in turn, affects another resource. i.e.: effects to vegetation that may reduce prey species for a raptor.

Interdisciplinary team (IDT): A group of resource professionals with different expertise that collaborate to develop and evaluate resource management actions.

Inventoried Roadless Areas: Areas that were delineated for their lack of roads under the RARE II roadless area review process in the early 1980's.

Key area: Areas of land or water that the responsible official and resource specialists determine to be important to wildlife or fish productivity. Other uses in key areas could result in negative effects to the wildlife or fish. For example, timber sale activity in an elk calving area could disturb the elk and cause calving failures.

Level C: Livestock grazing is controlled through structural improvements and by physically moving livestock. Long-term capacities are balanced with use by adjusting numbers of livestock. Any forage improvement is generally the result of meeting other resource objectives, such as wildlife habitat improvement.

Level D: Areas are managed intensively for livestock grazing within an overall multiple use concept. Any structural or nonstructural (forage) improvement technique may be used as long as it fits with the natural environment. Reasonable and approved management techniques are applied to sustain capacity and use at high levels.

Management area (MA): An area that has common direction throughout and that differs from neighboring areas. The entire Forest is divided into management areas where common standards and guidelines apply.

Management indicator species: A wildlife species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Population changes on an indicator species are believed to indicate effects of management activities on a number of other wildlife species.

Mitigation measures: Actions that are taken to lessen the severity of effects of other actions.

Non-game species: animal species that are not usually hunted

Non-market valued outputs: Goods and services valued in terms of what reasonable people would be willing to pay rather than go without the output.

Noxious weeds: Plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States; detrimental to agriculture or commerce of the United states, or to the public health.

Permittee (Range Permittee): an individual who has been granted a Federal permit to graze livestock for a specific period on a range allotment

Post-fledging family area: A designated area around a known goshawk nesting site or high use area (about 600 acres) that would be expected to be the primary activity area for a pair of goshawk raising fledglings.

Precommercial thinning: Thinning or selectively cutting trees with diameters under 5 inches where material thinned does not have a market value - selectively cutting trees to remove the least desirable trees and improve the spacing of remaining trees to accelerate growth.

Preferred alternative: The alternative that is disclosed by the selecting official as the alternative that is most likely to be selected for implementation, when a Draft Environmental Impact Statement is submitted to the public.

Prescribed fire (planned fire): Fires set under conditions specified in an approved plan to dispose of fuels, control unwanted vegetation, stimulate growth of desired vegetation, and change successional stages to meet range, wildlife, recreation, wilderness, watershed, or timber management objectives

Present net benefit: Future benefits "discounted" to the present by an interest rate that reflects the changing value of a dollar over time. The assumption is that dollars today are more valuable dollars in the future.

Present net cost: Future costs "discounted" to the present by an interest rate that reflects the changing value of a dollar over time. The assumption is that dollars today are more valuable dollars in the future.

Present net value: "The difference between the discounted value (benefits) of all outputs to which monetary values or established market prices are assigned and the total discounted costs of managing the planning area." (36 CFR 219.3)

Project file: An assemblage of documents that contain all the information developed or used during an environmental analysis, and is summarized in an Environmental Impact Statement. The file is part of the administrative record.

Proper functioning condition (PFC): Refers to riparian or wetland areas. A riparian or wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to: 1) dissipate stream energy; 2) filter sediment, capture bedload, aid in floodplain development; 3) improve flood-water retention and ground-water recharge; 4) develop root masses that stabilize streambanks; 5) develop diverse ponding and channel characteristics to provide habitat for wildlife; and 6) support greater biodiversity.

Proposed action (PA): In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency proposes to implement or undertake. The PA is sent to the public, and interested agencies for their review and comment. Comments are then used to develop alternatives to the proposed action.

Protected activity center (PAC): An area established around a Mexican spotted owl nest or roost site, for the purpose of protecting the area. Management of these areas is largely restricted to managing for forest health objectives.

Range allotment: An area operated under one plan of management designated for the use of a prescribed number of livestock owned by one or more permittees

Range capacity levels: Levels are described as follows:

No Allowable Capacity – lands that are incapable of being grazed by domestic livestock under reasonable management goals. Examples include areas under natural conditions that are not capable of producing vegetation, soils that are not capable of producing more vegetation than is needed to prevent excessive erosion rates, and slopes over 45 percent.

Potential Capacity – lands not undergoing accelerated erosion but requiring access, water developments, or other improvements to bring them up to full capacity.

Full Capacity – lands that are presently stable because effective ground cover is holding soil loss to an acceptable level and are, therefore, suited for grazing and can support a livestock operation.

Record of Decision: A concise public document disclosing the decision made following preparation of an Environmental Impact Statement that explains the rationale for the decision.

Residual vegetation height: Inches of herbage or forage left ungrazed, providing cover for small mammals, food for wildlife, and ground cover.

Rested pastures: Pastures that are not grazed within a given year.

Rest-rotation: The use of different parts of a range in orderly sequence (i.e., regular periodic grazing of each part). If each part is rested, in turn, for a whole year, it is termed rest-rotation grazing.

Riparian area: Definition: Riparian ecosystems are distinguished by the presence of free water within the common rooting depth of native perennial plants during at least a portion of the growing season. Riparian ecosystems are normally associated with seeps, springs, streams, marshes, ponds, or lakes. The potential vegetation of these areas commonly includes a mixture of water (aquatic) and land (phreatic) ecosystems.

Scoping: The procedures by which the Forest Service determines the extent of analysis necessary for a proposed action; i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis needed.

Section 7 consultation: A formal process for consultation on the potential effects of an action on threatened, endangered, or proposed species, that occurs between the agency proposing an action (US Forest Service) and the regulating action (US Fish and Wildlife Agency).

Selected alternative: The alternative chosen for implementation by the selecting official. The selected alternative is identified in the Record of Decision.

Snag: Standing dead tree from which the leaves or needles have fallen.

Sponge effect (meadows): A condition of a meadow that has satisfactory soil condition and proper functioning riparian condition. Meadows with these attributes generally are characterized by high infiltration rates and long-term storage of water on-site.

Stock tank: An earthen tank for providing water for livestock and wildlife.

Threatened and endangered species (TES): Species identified by the Secretary of Interior in accordance with the 1973 Endangered Species Act, as amended.

Training pastures: Small pastures that are used for intensive training of livestock, especially for training them to respond to herding.

Understory: The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

Utilization standards: Standards established to guide the use and removal of forage and measured in terms of the percent of the plant that is removed.

Waterlot: A range improvement usually constructed of fencing materials that encloses a watering structure and is used to hold livestock.

Watershed: The entire area that contributes water to a drainage or stream.

Wetted area: The area around a water source that retains enough soil moisture to produce riparian plants.

Wild and Scenic Rivers (WSR): Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted (Wild and Scenic Rivers Act usage).

APPENDIX F:

INDEX TO THE PROJECT RECORD

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
1	6/19/98	Grazing Consultation	U.S. District Court for AZ	Plaintiffs and USFS	Stipulation Settlement for Ongoing Grazing in the Southwest Region USFS
2	6/25/98	Project Initiation Ltr	Connelly, Erin	Interdisciplinary Team (IDT)	Identifies the IDT and initiates the analysis of the Buck Springs Allotment. Rec. EIS
3	6/25/98	IDT Meeting Agenda	Gonzales, Jerry	IDT	
4	6/25/98	IDT Meeting Notes	Steed, Rogers	IDT	Roles of team members, expectations, status of existing info, public involvement.
5	7/10/98	IDT Meeting Notes	Steed, Rogers	IDT	Scope of the project, and project Objectives. What maps are needed.
6	7/13/98	Participation Ltr	Connelly, Erin	Tom Britt, AZ Game and Fish	
7	7/13/98	Participation Ltr	Connelly, Erin	Field Supervisor, USFWS	
8	7/13/98	Participation Ltr	Steed, Rogers	Michele James, USFWS	
9	7/13/98	Participation Ltr	Connelly, Erin	Jim Sprinkle, Area Extension Agent	
10	7/13/98	Memo for Tribal Participation	Steed, Rogers	Peter Pilles, Coconino NF Archy	Memo asking clarification on how to solicit participation from the tribes, with response
11	7/15/98	Participation Ltr	Connelly, Erin	Rod Held, AZ DEQ	
12	7/21/98	Memo for Tribal Participation	Pilles, Peter	Rogers Steed	
13	7/23/98	IDT Meeting Notes	Steed, Rogers	IDT	Process, timeline, map needs.

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
14	7/27/98	Participation Ltr	Connelly, Erin	Leigh Kuwanwisiwma	Letter to the Hopi Tribe
15	7/27/98	Participation Ltr	Connelly, Erin	Navajo Nation	
16	7/27/98	Participation Ltr	Connelly, Erin	Yavapai-Prescott Tribe	
17	8/7/98	Memo for USFWS Participation	Steed, Rogers	Michele James, USFWS	
18	8/18/98	Participation Reply	Begay, Tim Navajo Nation	Erin Connelly	No concerns or comments
19	8/18/98	Participation Reply	Robert Euler, Yavapai Tribe	Erin Connelly	Outside our area of concern
20	8/27-28/ 1998	IDT Meeting Notes	Liz Blake	IDT Leader	Review objectives, existing conditions, public participation plan, enlarge scope to include spinedace recovery.
21	8/15/ 1998	Specialist's Report Existing Conditions	Jerry Gonzales	IDT Leader	Range existing conditions
21b		SR addendum	Jerry Gonzales	IDT Leader	Grazing Capability and Suitability writeup
21c		SR. addendum	Jerry Gonzales	IDT Leader	Description of Range Trend
21d		SR. addendum	Jerry Gonzales	IDT Leader	History of Grazing Schedules
21e	9/28/98	SR addendum	Jerry Gonzales	IDT Leader	Range condition description
22	9/1998	Specialist's Report Existing Conditions	Dick Fleishman	IDT Leader	Soil and Watershed conditions Revised 2/1999
22b	9/1998	Specialist's Report Existing Conditions	Dick Fleishman	IDT Leader	Terrestrial Ecosystem Survey
22c	9/1998	Specialist's Report Existing Conditions	Dick Fleishman	IDT Leader	Water Rights and Water Improvements

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
23	9/1998	Specialist's Report Existing Conditions	Cathy Taylor	IDT Leader	Status of Threatened, Endangered, and Sensitive Species
24	9/1998	Specialist's Report Existing Conditions	Cathy Taylor	IDT Leader	Status of Wildlife on the allotment
25	9/1998	Specialist's Report Existing Conditions	Mark Whitney	IDT Leader	Fisheries Resources
26	9/29/97	Forest Standards and Guidelines: applied to grazing	Team of Forest specialists	IDT Leader	Summary of Forest Plan Standards and Guidelines applicable to livestock grazing
27	9/1998	Specialist's Report Existing Conditions	Dick Fleishman	IDT Leader	Summary of Existing Conditions of the East Clear Creek Ecosystem Mgt Area
28	9/1998	Specialist's Report Existing Conditions	Cathy Taylor	IDT Leader	Bar T Bar and Pivot Rock Allotments
29	9/1998	Specialist's Report Existing Conditions	Cathy Taylor	IDT Leader	Wild and Scenic Rivers on the allotment
30	9/1998	Specialist's Report Existing Conditions	Jim Beard	IDT Leader	Recreation Use and Visual Quality
31	9/1998	Specialist's Report Existing Conditions	Jerry Gonzales	IDT Leader	Understory Vegetation
32	9/1998	Specialist's Report Existing Conditions	Ed Paul	IDT Leader	Existing Fire Conditions
33	9/1998	Specialist's Report Existing Conditions	Rich Boston	ECC Ecosystem Assessment	Writeup for ECC document, pulled for existing conditions of Cultural Resources.
34	11/3/98	Forage Production data 1998	Dr. Jim Sprinkle	Jerry Gonzales	Summary data sheets of forage data collected Oct. 1998, with Graphs
35	1/22/99	IDT Meeting Notes	Liz Blake	IDT	EIS vs EA discussion. Desired conditions.

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
36	2/18-19/ 1999	IDT Meeting Notes	Debbie Crisp	IDT	Spinedace strategy. More on objectives, existing, desired conditions, ideas for PA.
37	3/15-16/1999	IDT Meeting Notes	Debbie Crisp	IDT Leader	Discuss purpose and need, draft objectives, dfc, and proposed actions.
38	3/29/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	Review of scoping letter and PA; more discussion on EIS vs EA.
39	4/22/99	Final PA and scoping letter	IDT	ECC and D7 mailing lists	Scoping letter, proposed actions, and comment form
40	4/22/99	Mailing list for scoping letter	IDT	ECC and D7 mailing lists	Mailing list for scoping letter
41	4/28/99	IDT Meeting notes	Cathy Taylor	IDT Leader	Economic values. Begin discussion of alternative: No graze, no action, etc.
42	5/12/99	News Release	Karen Malis-Clark	Public	News release informing the public of the proposed action, and asking for comments
43	5/17/99	Meeting Notes	Rogers Steed	IDT Leader	Consultation Meeting for Yavapai-Apache Nation
44	5/24/99	General Springs Field Trip	Cathy Taylor	IDT Leader	Looked at areas for elk exclosures, potential fish barriers, and area where ls unloaded
45	6/07/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	Review of comments to PA; issues raised; grazing alternatives, watershed alts.
46	6/07/99	Summary of Comments	Cathy Taylor	IDT Leader	Summary of comments to the Proposed Action
46.1	5/06/99	Comment	Merri Schall	District Ranger	Requests interpretation of Pioneer women and wagon trails
46.2	5/05/99	Comment	Jim Sprinkle County Extension Agent	District Ranger	Addresses grazing distribution: herding and drift fences. Thin canopies, stocking raites

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
46.3	4/29/00	Comment	Naila Erwin, editor	District Ranger	Local newsletter editor. Use us for information distribution
46.4	4/29/99	Comment	Amelia Jackulsk	District Ranger	Request removal from list. Supports projects and increased funding
46.5	4/28/99	Comment	Jeff Burgess	District Ranger	Supports exclusion from wet meadows and riparian. Overstocked? Rest 1 in 3 years, What is cost and who pays?
46.6	4/30/99	Comment	John B. Smith	District Ranger	Supports grazing. Recognize more people management, control & education. Suggestions for road management.
46.7	4/28/99	Comment	AZ great Outdoors	District Ranger	Delete from mailing list
46.8	5/13/99	Comment	Roland Tang AZ DOT	District Ranger	ADOT< Requests better map of location Map sent 5/30/99
46.9	5/28/99	Comment	James Vaughan	District Ranger	Recommends extending the period of the project to 15-20 years.
46.10	6/05/99	Comment	Brian Segee SWCBD	District Ranger	requests to remain on the mailing list
46.11	6/8/99	Comment	Tim Flood	District Ranger	Supports emphasis on reducing peak flows , increase base flows, effort to restore riparian, native fish, wildlife. Need more monitoring
46.12	5/26/99	Comment	Charles Ester	District Ranger	SRP, recommends a more ambitious burning program
46.13	5/17/99	Comment	Don Cox	District Ranger	If funds not secured, address use of elk and cattle. Use animals after fire to improve soil
46.14	5/17/99	Comment	Yavapai Apache Tribe	District Ranger	Did not mention interest in Allotment Planning efforts missing

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
46.15	11/99	Comment	Chris Harbin	District Ranger	Request to be on mailing list
46.16	1/00	Comment	Ed Smith Grand Cyn Trust	IDT Leader	Grand Canyon Trust, Request to be added to mailing list
46.17	3/00	Comment	Diana Van Sanford Grand Cyn Trust	IDT Leader	Grand Canyon Trust, Request to be added to mailing list
47	6/2/99	Reply to request	Larry Sears	Roland Tang, ADOT	Map of allotment sent as reply to request
48		Pasture Map	Jerry Gonzales	IDT Leader	Pasture Map
49	7/31/95	Forage Production/ Utilization Rates on Buck Springs	Alvin Medina, Research Ecologist	Steven Calish, District Ranger	Data summaries for Forage Production and Utilization rates for paired exclosures in Buck Springs meadows.
50					Intentionally left blank
51		TES Map Units			List of TES map Units on the allotment, and by Quad
52		Quivira Coalition Newsletter			Newsletter on Herding
53	7/20-21/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	Discussion of Alternatives, Should we separate into 2 EAs
54	7/22/99	Letter on Livestock Driveway	Mark Whitney, Fish Biologist	District Ranger	Describes recovery of riparian vegetation in a portion of East Clear Creek
55	8/24/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	More discussion of Alternatives
56	9/29/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	Discuss preliminary Effects Analyses
57	11/5/99	IDT Meeting Notes	Debbie Crisp	IDT Leader	Decision to go with 2 EAs. Discussion of Precommercial thinning, Herding, Burning, and Effects Analyses.

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
58	11/19/99	1999 Forage Production Data	Dr Jim Sprinkle	Jerry Gonzales	Letter with summary analysis, graphs and Raw Data of 1999 Forage Production Data
59					Intentionally left blank
60.1	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Harrison Talgo, San Carlos Apache	
60.2	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Kelsey Begay Navajo Nation	
60.3	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Vivian Burdette Tonto Apache Tribe	
60.4	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Dallas Maaey White Mtn Apache	
60.5	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Stan Rice, Jr Yavapai-Prescott Tb	
60.6	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Vincent Randall Yavapai-Apache	
60.7	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Johnny Murphy Lehi, Sr, San Juan So. Paiute Council	
60.8	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Thomas Siyuja Havasupai Tribe	
60.9	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Carrie Imus Hualapai Tribe	
60.10	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Wayne Taylor Hopi Tribe	
60.11	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Sammie Slivers Dine Med. Men	
60.12	11/22/99	Formal Letter to Tribes	Jim Golden /Peter Pilles	Malcolm Bowekaty Pueblo of Zuni	

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
61					Intentionally left blank
62	2/9/00	IDT Meeting Notes	Cathy Taylor	IDT Leader	Discussion of Burning areas
63	2/22/00	IDT Meeting Notes	Cathy Taylor	IDT Leader	Discussion of missing pieces, Issues raised by public and how addressed.
64					Intentionally left blank
65	4/28/00	Letter Approving range of alternatives	Larry Sears	IDT Leader	Approval of alternatives for 2 Eas, and split into 2 EAs
66	5/17/00	Specialist's Report Affects Analysis	Jerry Gonzales	IDT Leader	Range existing conditions
67		Specialist Report Addendum	Jerry Gonzales	IDT Leader	Description of Stubble Heights (Rangeland Analysis and Mgmt Training Guide, 97)
68	5/23/00	Specialist's Report Affects Analysis	Dick Fleishman	IDT Leader	Soil and Watershed conditions
69	5/2/00	Specialist's Report Affects Analysis	Cathy Taylor	IDT Leader	Wildlife and Threatened, Endangered, and Sensitive Species
70	4/14/00	Specialist's Report Affects Analysis	Mark Whitney	IDT Leader	Aquatic Resource
71	5/1/00	Specialist's Report Affects Analysis	Mark Whitney	IDT Leader	Wild and Scenic Rivers on the allotment
72	5/15/00	Specialist's Report Affects Analysis	Rogers Steed	IDT Leader	Silviculture and Overstory vegetation
73	5/2000	Specialist's Report Affects Analysis	Debbie Crisp	IDT Leader	Noxious Weed Assessment
74	5/2000	Specialist's Report Affects Analysis	Cathy Taylor	IDT Leader	Environmental Justice

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
75	5/2000	Specialist's Report Affects Analysis	Ed Paul	IDT Leader	Forest Fuels
76	5/2000	Specialist's Report Affects Analysis	Ed Paul	IDT Leader	Air Quality
77	5/2000	Specialist's Report Affects Analysis	Jim Beard	IDT Leader	Recreation
78		Specialist's Report Affects Analysis	Dick Fleishman	IDT Leader	Cumulative Effects
79		Specialist's Report Capacity	Jerry Gonzales	IDT Leader	Livestock Capacity Analysis and Monitoring Plan for Draft EIS
80	5/5/00	Cultural Resources Report	Angela Crossley/ Peter Pilles	IDT Leader	Cultural Resources Report and initial clearance for management plan
81	7/20/00	IDT MEETING notes	Cathy Taylor	IDT Leader	Environmental Justice,Cumulative Effects, Monitoring, Prioritization of improvements, Econ. Analysis, Timeline, Final discussion of alternatives
81.1	9/2000	Letter	Phil Knight	John Kennedy AGFD	Letter documenting concurrence with proposed supplemental stocking of spinedace into Yeager and Dane Canyons
81.2	9/21/00	Letter	Larry Sears, District Ranger	John Kennedy AGFD	Concurrence with supplemental stocking of LCS into Yeager and Dane Canyons
82	10/06/00	Comment	Rick Erman	IDT Leader	Request to be added to mailing list
83	11/01/00	Forest Plan direction	Cathy Taylor	IDT Leader	Description of Forest Plan direction for Range Management
84	11/13/00	IDT Meeting Notes	Cathy Taylor	IDT Leader	Discussion with District Ranger: what fences are critical to LCS protection? Put most of costs on permittee, need 7th alt.

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
85	11/30/00	IDT Meeting Notes	Cathy Taylor	IDT Leader	Discussion of doing an EIS, decision. Forest Plan direction, Alt. G and effects, Economic Analysis
86	12/12/01	Capacity for Alt. G	Jerry Gonzales	IDT Leader	Analysis of capacity for alternative G
87	12/18/00	Letter about Notice of Intent	Jim Golden	Director of Ecosystem Mangmt	Letter submitting the Notice of Intent to the Director of Ecosystem Management
88	12/18/00	Letter submit NOI	Jim Golden	Federal Register	Submission of NOI to write an EIS, to the Federal Register
89	1/8/01	Notice of Intent	Rederal Register	Public	Notice of Intent to do an Environmental Impact Statement
90	1/01	Analysis of Effects Alternative G	Jerry Gonzales	IDT Leader	Range analysis of Effects
91	1/18/01	Analysis of Effects Alternative G	Dick Fleishman	IDT Leader	Effects to Soil and Watershed conditions
92	1/17/01	Analysis of Effects Alternative G	Cathy Taylor	IDT Leader	Effects to Wildlife and Threatened, Endangered, and Sensitive Species
93	12/7/00	Analysis of Effects Alternative G	Mark Whitney	IDT Leader	Effects to Aquatic Resource
94	1/8/01	Analysis of Effects Alternative G	Rogers Steed	IDT Leader	Effects to Silviculture and Overstory Vegetation
95	1/9/01	Request for map and add to list	Jerry Gonzales	IDT Leader	Email note of phone call: Robin Alejandro, Phelps Dodge
96	1/10/01	Request for site data	City of Flagstaff	IDT Leader	Request for legal description of the location of the allotment.
97	1/25/01	Request to be on mailing list	SW Forest Alliance	IDT Leader	

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
97.1	1/30/01	2000 production data	Jim Sprinkle	IDT Leader	Letter submitting 2000 forage production data for the allotment
97.2	2/2/01	Meeting notes	Cathy Taylor	IDT Leader	Meeting with the Range Permittee, discussing alternatives
98	2/10/01	Permittee comments	Phil and Karin Knight	Larry Sears	Expressed concerns and suggestions for additions to the alternatives
99	2/15/01	Response to NOI	Laurie Domler National Park Serv.	IDT Leader	No comments at this time
99.1	2/27/01	Request to be on mailing list	Harbin	IDT Leader	Add Kentucky Wolf Info Center to mailing list
100	3/7/01	Response to Knights	Larry Sears	Phil and Karin Knight	Addressed some concerns, Suggested others be resubmitted as comments on the DEIS
101	3/8/01	Writeup on migratory birds	Cathy Taylor	IDT Leader	Discussion of existing conditions, and affects on migratory birds.
102	3/30/01	Email note about Econ. analysis	Karin Knight	Rogers Steed	Notes on some suggested changes for Economic analysis.
103	4/6/01	Letter separating EIS and EA	Larry Sears	Mailing list	Letter explaining the separation of the range allotment EIS from the watershed EA
104	4/10/01	Roadless Area Writeup	Dick Fleishman	IDT Leader	Writeup on Inventoried Roadless Areas
105.1	4/11/01	Response to 4/6/01 Letter	John B. Smith	Larry Sears	Supports project.
105.2	4/15/01	Response to 4/6/01 Letter	Donald E. Cox	Larry Sears	Change of address. Support for project. Concern over elk impacts to riparian areas.
105.3	4/22/01	Response to 4/6/01 Letter	Steve Spearman	IDT Leader	Email response thanking for the information and asks to be removed from the mailing list

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
105.4	4/20/01	Additional Comments	Phil and Karin Knight	Larry Sears	Additional comments on the process
106	4/27/01	Information on streams	Dick Fleishman	IDT Leader	Total miles of perennial and riparian stream reaches with and without livestock access.
107	5/03/01	Note from Forest Archaeologist	Peter Pilles	Archaeologists and IDT members	Request to change Report No. on archaeology report to be consistent with previous reports.
108	5/15/01	Economic Analysis	Jerry Gonzales	IDT Leader	Economic Analysis for the alternatives
109	5/17/01	PFC miles	Dick Fleishman	Cathy Taylor	Miles of PFC by alternative
110	5/23/01	Update of miles of stream in watershed	Dick Fleishman	Cathy Taylor	Clarification of riparian stream miles.
111	6/25/01	BA for LCS	Mark Whitney	IDT Leader	BA for Little Colorado spinedace
112	7/17/01	BAE for other TEP	Cathy Taylor	IDT Leader	BAE for the Mexican spotted owl, bald eagle, sw willow flycatcher, C leopard frog
113	7/18/01	Letters submitting BAEs	Larry Sears, District Ranger	Dave Harlow, USFWS Field superv. Miclele James, Flagstaff office	Letter submitting BA for LCS and BAE for MSO, SWWF, BE, CLFrog; requesting informal consultation and formal conference
114	7/19/01	Letter to permittee	Larry Sears, District Ranger	Phil and Karin Knight, permittees	Notification that BAs were submitted to USFWS, and explanation of applicant status
115	8/9/01	Letter	Phil and Karin Knight	Larry Sears	Letter requesting applicant status
116	9/6/01	Letter	Larry Sears	Phil, Karin Knight	Letter granting request for applicant status
117	9/21/01	Letter	Dave Harlow, USFWS	Larry Sears	Acknowledges receipt of letter requesting initiation of conferencing and consultation; request additional information

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
118	9/5/01	Letter distributing the DEIS.	Jim Golden, Forest Supervisor	Friends	Letter to be enclosed with DEIS, requesting comments, with Abstract and Summary
119	9/28/01	22 Letters	Patricia Callaghan for Larry Sears	Individuals receiving DEIS	Letter to individuals and agencies with copy of DEIS.
120	10/2001	Mailing List	IDT Leader	Project Record	Original mailing list for distribution of DEIS
121	10/2001	Draft EIS	Jim Golden	Mailing List	Draft Environmental Impact Statement
122	10/1/01	FAX: NOI	Patricia Callaghan for Larry Sears	Arizona Daily Sun	FAX to newspaper: Notice of Availability for Buck Springs DEIS
123	10/12/01	Federal Register			Notice of Availability for the DEIS for the Buck Springs Range Allotment
124	10/12/01	Legal Notice: NOI	Arizona Daily Sun		Legal Notice 1601, published in newspaper
125	10/15/01	Email request for DEIS	Kelly Janecek, Grand Cyn Trust	Cathy Taylor	Request for 2nd copy of DEIS. Sent second copy 10/16/01
126	10/17/01	Comment on DEIS	Jeff Burgess	Jim Golden	
127	10/24/01	Email message	Rachel Thomas	Larry Sears	Request for DEIS
128	10/24/01	Email note and document	Shaula Hedwall, USFWS	Cathy Taylor	Request for additional information needed for consultation; comments on DEIS
130	11/1/01	East Clear Creek Roads Analysis	Dick Fleishman	IDT Leader	Analysis of roads within the ECC watershed describing resource issues Version 1.1
131	11/6/01	Request for additional info	Cecil Puente	IDT Leader	Phone call, request for additional info. on water quality, soils and watershed. Sent soil and water specialist report
132	11/6/01	Request for DEIS	R.W. Bill Barris	IDT Leader	In person, given a copy
133	11/8/01	Request for DEIS	Steve Timme	IDT Leader	By phone, sent a copy
134	11/19/01	Request for DEIS	Kirsten Stade, Forest Guardians	IDT Leader	Phone message, sent a copy

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
135	11/19/01	Meeting Notes	Carol Holland	IDT Leader	Meeting to discuss informal consultation with USFWS, USFS
136	11/20/01	Comment on DEIS	Lisa B. Hanf	Jim Golden	US Environental Protection Agency
137	11/21/01	Comment on DEIS	Jim Sprinkle	Jim Golden	Gila County Cooperative Ext. Agent
138	11/21/01	Comment on DEIS	Ron Sieg	Jim Golden	AZ Game and Fish Department
139	11/21/01	Comment on DEIS	Jack Simon	Jim Golden	AZ Wildlife Federation
140	11/26/01	Email request	Phil and Karin Knight	Larry Sears	Request for extension of comment period for comments to DEIS: will accept post-marked by 12/03/01.
141	11/26/01	Phone message	Forest Guardians	Larry Sears	Request for extension of comment period for comments to DEIS: will accept post-marked by 12/03/01.
142	11/27/01	Comment on DEIS	Kirsten Stade	Jim Golden	Forest Guardians
143	11/28/01	Comment on DEIS	Patricia S. Port	Jim Golden	USDI Office of Env. Policy and Compliance
144	11/26/01	Comment on DEIS	Martin Taylor	Jim Golden	Grazing Reform Program, Center for Biodiversity
145	12/03/01	Comment on DEIS	Phillip and Karin Knight	Larry Sears	Allotment Permittees
146	12/12/01	Meeting notes	Cathy Taylor	IDT Leader	Consultation meeting with USFWS/FS, discussing some of the specific info needed to complete consultation package

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
147	12/13/01	Letter	Larry Sears, District Ranger	Persons commenting on DEIS	Letter expressing thanks for comments, with mailing list
148	12/17/01	Amendment to BA	Mark Whitney	IDT Leader	Amendment to the BA for the Little Colorado spinedace, with information requested by USFWS
149	12/17/01	Amendment to BAE	Cathy Taylor	IDT Leader	For the Mexican spotted owl and Chiricahua leopard frog
150	12/20/01	Letter	Larry Sears	David Harlow	Submits requested information in amendments to the BA and BAE, and requests Formal Consultation
151	12/20/01	Letter	Larry Sears	Phil, Karin Knight	Notification that Formal Consultation was requested, and applicant status is invoked
152	2/28/01	Letter	David Harlow, USFWS	Larry Sears, District Ranger	Receipt of request for Formal Consultation for the Buck Springs Allotment
153	1/15/02	IDT Meeting notes	IDT Leader	Project Record	Discussion of comments received on DEIS Issue content analysis
153.1		Comment Analysis	IDT Team	IDT Leader	List of commentors, with main points Of comments
154	1/29/02	Memo on point sources	IDT Leader	Dick Fleishman	Summary of phone discussion on tanks and corrals as potential point sources
155	2/2/02	Meeting Notes	IDT Leader	Project Record	FS/permittee meeting to discuss comments on DEIS, permittee presented Alt. J
156	2/2/02	Alternative J	Knights	Larry Sears + IDT	Write-up of Knights proposal for Alternative J
157	2/22/02	IDT Meeting Notes	IDT Leader	Project Record	Evaluation of Alternative J, and development of Alternative K (FS)
	3/01/02	Description of	ID Team	Project Record	Description of newly developed Alternative

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
158		Alternative K			K
159	3/01/02	Table of improvements	ID Team	Project Record	New Table comparing Alternatives, including J and K.
160	4/11/02	Production Data	Jim Sprinkle	Jerry Gonzales	Letter submitting summary analysis, graphs data for forage production data for 2001
161	5/01/02	Meeting: USFWS, Permittee, USFS	Cathy Taylor	IDT Leader	Discussion of status of LCS, need for supplemental stocking, and need for extension of consultation period
162	5/14/02	Letter	David Harlow	Larry Sears	Request for 45-day extension of consultation period
163	5/14/02	Letter	David Harlow	Jim Golden	Support for actions to salvage spinedace from Dines Tank
164	5/14/02	Letter	David Harlow	Jim Golden	Amendment of 2/2/99 BO for Buck Springs, for period 5/15/02 through 7/15/02
165	5/24/02	Letter	Larry Sears	Phil/Karin Knight	Notice of extension for Formal Consultation and amendment to 2/2/00 BO
166	6/22/02	Status of Buck Springs Allotment	Cathy A. Taylor	IDT Leader	Status of the Buck Springs allotment Compliance with NEPA and ESA
167	7/1/02	MIS Report	Cecelia Overby	IDT Leader	Management Indicator Species Status Report for the Coconino National Forest
168	7/15/02	Letter	Steven L. Spangle, Acting Field Supervisor, USFWS	Jim Golden	Submission of draft Biological Opinion
169	7/15/02	MIS write-up	Cathy Taylor	IDT Leader	Summary of status of MIS on the Forest, effects of the project.
170	7/26/02	Letter	Larry G. Sears	Phil/Karin Knight	Submit Draft biological Opinion
	7/30/02	Summary of Re-	Cathy Taylor	IDT Leader	Update of grazing fees, costs and benefits,

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
171		analysis Econ. Analysis			analysis of Alt. K, drop permittee admin costs
172	8/12/02	Request for DEIS	Judy Smith	Larry Sears	Request for DEIS and add to mailing list
173	8/12/02	Letter with comments	Phil/Karin Knight	Larry Sears, District Ranger	Comments on draft BO, submitted as applicant; expresses no support for preferred alternative
174	8/13-14/02	Re-analysis Econ. Analysis	Cathy Taylor	IDT Leader	Update of grazing fees, costs and benefits, analysis of Alt. K, drop permittee admin costs: Cross-tabs +Transaction List
175	8/20/02	Request for DEIS	Mathew Bishop	Larry Sears	Request for DEIS and add to mailing list
176	8/21/02	Discussion of Comments to DEIS	ID Team	Project Record	Discussion of comments with the decision maker, Jim Golden
177	8/23/02	Formal Consultation Process Notes	ID Team	Project Record	Meeting notes on discussion of the Draft BO between the ID Team and Shaula Hedwall of the USFWS
178	8/29/02	Continue Formal Consultation w applicant	ID Team	Project Record	Meeting notes on discussion of the Draft BO with USFS, the Permittees, and the USFWS
179	9/19/02	IDT Meeting Notes	Cathy Taylor	Project Record	Discussion of adding N. McClintock Pasture, Cumulative Effects, Range Trend, and Training Pastures
180	9/26/02	Amendment #2 to BA/BAE	Cathy Taylor Mark Whitney	IDT Leader	Amendment adding N. McClintock Pasture to Alt. G; Determination of Effects to Chiricahua Leopard Frog
181	2/07/03	Add to mailing list	Jerry Gonzales	IDT Leader	Address for AZ department of Agriculture
182	2/18/03	Briefing agenda	Cathy Taylor	IDT Leader	Agenda for Briefing the Acting Forest Supervisor

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NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
183	2/24/03	2nd draft BO and letter	Steven L. Spangle, USFWS Field Super	Jim Golden	Letter submitting the second draft Biolgicial Opinion
184	2/28/03	Letter	Larry Sears	Phil/Karin Knight	Letter submitting copy of 2nd draft BO
185	3/05/03	Email update	Dick Fleishman	IDT Leader	Update gross acres by alt, and ac. Available to grazing
186	4/19/03	Knights comments	Larry Sears	Phil + Karin Knight	Comments on 2nd draft BO
187	4/21/03	Meeting notes	Cathy Taylor	IDT Leader	Range allotment Consultation Meeting Notes with permittee and USFWS
188	4/23/03	FAX Memorandum	Karin Knight	Larry Sears	Letter in support of supplemental stocking as proposed in 2nd draft BO, Asking to FAX Shaula a copy
189	4/24/03	FAX Transmittal	Cathy Taylor	Shaula Hedwall	Fax to Shaula; Knights support of stocking
190	4/24/03	Letter	Larry Sears	Shaula Hedwall	Knight's comments on 2nd draft BO
191	5/5/03	Letter	Steven Spangle	Rodger Zanotto	USFWS BO
192	5/9/03	Letter	Larry Sears	Phil/Karin Knight	Sent BO to Phil/Karin
193	5/12/03	Agenda and Timeline	IDT Leader	IDT Leader	Discussion with Nora Rasure, Forest Supervisor
194	5/12/03	Briefing paper	IDT Leader	IDT Leader	Briefing Paper for Nora Rasure
195	5/15/03	Meeting notes	Jerry Gonzales	IDT Leader	Notes of meeting on capacity analysis with Knights, Sprinkle, and Warrick
196	5/16/03	Email message	Jerry Gonzales	Larry Sears/Cathy Taylor	Note that Jerry sent data on capacity analysis to Dwayne Warrick (consultant) and Jim Sprinkle
197	5/19/03	Email message	Dr. Jim Sprinkle	Larry Sears	Review of stocking rate calculations for Buck Springs EIS, with recommendations
198	5/19/03	FAX letter	Phil and Karin Knight	Larry Sears	Response to meeting with Gonzales, requesting change in livestock numbers in EIS.

PROJECT RECORD INDEX: BUCK SPRINGS RANGE ASSESSMENT

NO.	DATE	DESCRIPTION	AUTHOR	ADDRESSEE	CONTENTS of MEETING NOTES
199	5/20/03	Email message	Cathy Taylor	Jim Sprinkle	Requesting information on how Sprinkle and Knights analyzed capacity
200	5/20/03	Email message	Cathy Taylor	Phil and Karin Knight	Request for information on how they estimated capacity
201	5/21/03	Email with attachments	Jim Sprinkle	Cathy Taylor	Message with attached spreadsheet concerning capacity estimates
202-206	6/13/03	Final Capacity Analysis	Jerry Gonzales	IDT Leader	Capacity Analysis Info
207	6/20/03	Final Economic Analysis	Jerry Gonzales	IDT Leader	Economic Analysis
208	7/14/03	Letter, amendment #3 to BA's.	Nora Rasure, Forest Supervisor	Steven Spangle, USFWS	Letter submitted as Amendment #3 to the Bas, amending the number of livestock allowed in Alternative G.

APPENDIX G:

COMMENTS TO THE DRAFT EIS

AND

FOREST SERVICE RESPONSE

The Forest Service received 11 comments on the Draft Environmental Impact Statement. Appendix G has the actual comment letters with the Forest Service Responses. These documents are too large to put on this website. If you want to view the letters and responses, please call the Mogollon Rim Ranger Station at (928) 477-2255 and request either a hard copy, or a CD with Appendix G.

SUMMARY: In response to the comments the following changes have been made in the FEIS. These updates and changes resulted in some changes to actual numbers from the Draft EIS (especially in the economics analysis), but did not change the comparisons among alternatives or the rationale use to make a decision.

- The District name has been changed from the Blue Ridge Ranger District to the Mogollon Rim Ranger District.
- The Economic Analysis was run to update figures used to account for the value of AUMs on the allotment, update fees to 2003, and to account for a slight change in numbers. A table was added to compare costs of improvements that would be borne by the permittee and the US Forest Service.
- The livestock numbers increased slightly by alternative, based on a change made in the calculated forage used per AUD, to align with Forest Service Direction.
- A Report on the Status of Management Indicator Species on the Coconino National Forest was summarized and used to better explain effects.
- The discussion of Cumulative Effects was extensively rewritten to clarify the additive effects of this project to past, present, and future foreseeable projects.
- Clarifying information was added to explain text misunderstood by the reviewers, or to add information that was missing; and numbers were corrected in a few tables.
- Alternative K was added to the EIS to address an issue brought up by the permittee.
- North McClintock Pastures was added into Alternative G as a pasture that may be grazed, with meadow exclosure and drift fence.
- A summary of the EIS was added.
- A soil and water section was added to the Monitoring Plan.