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**Southwestern
Region**

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Environmental Assessment for Spar Canyon Allotment

Silver City Ranger District, Gila National Forest, Grant County, New Mexico

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Chapter 1 – Purpose and Need

Background

The Spar Canyon Allotment includes lands identified in the Gila National Forest Plan (GNFP) as suitable for grazing (PR[1], #2). Where consistent with other multiple use goals and objectives, there is congressional intent to allow grazing on suitable lands (Multiple Use and Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Management and Policy Act of 1976, and National Forest Management Act of 1976). Where consistent with the goals, objectives, standards and guidelines of plans, it is Forest Service policy to make forage from lands suitable for grazing available to qualified livestock operators (FSM 2202.1, FSM 2203.1, and 36 CFR 222.2 (c)).

Federal actions such as the authorization of grazing and approval of allotment management plans must be analyzed to determine potential environmental consequences (National Environmental Policy Act of 1969 [NEPA] and Rescission Act of 1995 [P.L.104-19]). The Forest Service is preparing this environmental assessment (EA) in compliance with these laws and other relevant Federal and state laws and regulations. This EA will disclose the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

Allotment Description

The Spar Canyon Allotment is located along the western most slopes of the Pinos Altos Mountain Range. It is approximately six miles northeast of Gila, New Mexico and eighteen miles northwest of Silver City, New Mexico, within the Silver City Ranger District of the Gila National Forest. The allotment contains 10,962 acres of National Forest land, of which about 44 percent is within the Gila Wilderness (Range Report, PR #32) (see Maps 1 and 2, Appendix A).

Elevations range from 5,000 feet on lower mesas to 7,363 feet along Goose Lake Ridge. Topographically, the allotment varies from gentle, sparsely covered pinyon and juniper hills south of Goose Lake Ridge, to steep, densely vegetated canyons to the north. Shelley Canyon on the north half of the allotment is a rugged canyon lined with volcanic rock escarpments, which form many pinnacles and spires (Range Report, PR #32).

The pinyon-juniper vegetation association is dominate throughout the allotment with open pinyon-juniper with grassland found along the tops of the lower mesas. Less than one percent of the vegetative associations consist of ponderosa pine but scattered pines are found throughout the Pinion-Juniper types found north of Goose Lake Ridge (Range Report, PR #32).

Drainage from the Spar Canyon Allotment goes into the Gila River Basin. This drainage occurs either directly from the northern drainages via Shelley Canyon, Spring Canyon, Cave Canyon, Crow Canyon, Brock Canyon, or Brushy Canyon, Stone Canyon by way of Bear Creek or directly via Spar Canyon, or Maldonado Canyon into the Gila River (Range Report, PR #32).

[1] PR – project record

Climate

There is generally a warm (June through September) and a cold season (October through May). A preponderance of the yearly moisture comes during the warm season, averaging 45 percent of the total amount (Fig. 1). The winter storms provide most of the moisture for the recharge of groundwater and for the woody and cool season herbaceous plant growth. The summer thundershowers provide moisture to fill stock tanks and for the warm season herbaceous plant growth which makes up the bulk of the forage production (Range Report, PR #32). The annual average precipitation during the past 27 year period (1981-2007) was 16.8 inches.

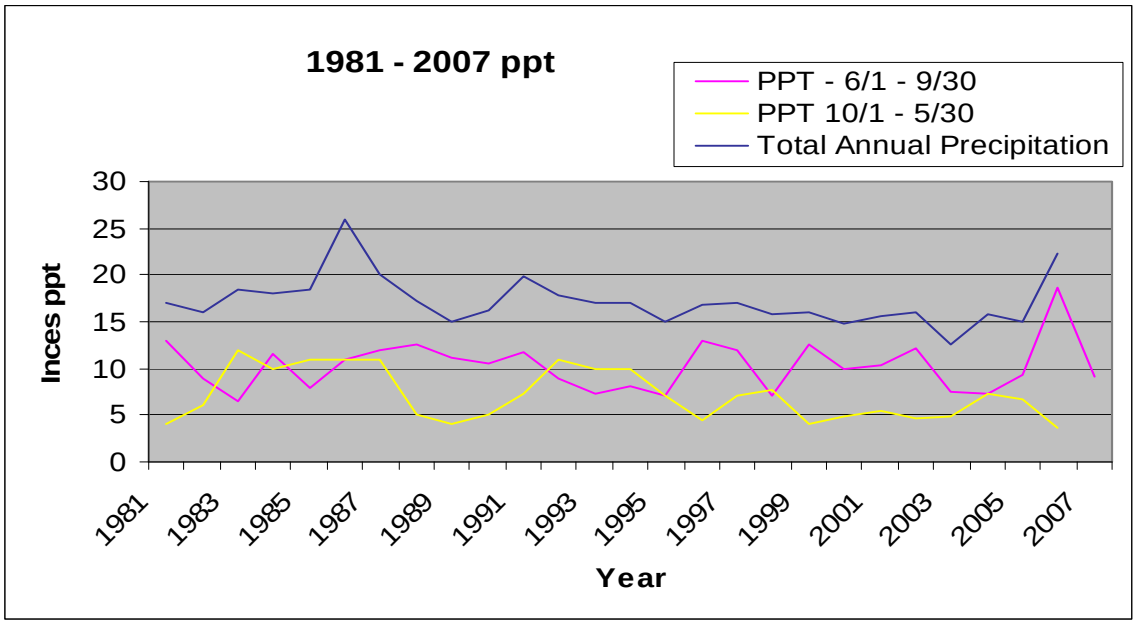


Figure 1. Precipitation from 1981 through 2007 (27 years)

Historical and Current Grazing Management

The first year the Spar Canyon Allotment was run as a single unit was in 1937 with an authorization of 50 cattle yearlong. This was increased to 165 in 1942 and stayed at this number until 2007. Actual stocking was significantly lower than what was permitted based on stocking only Spar and Brushy Pastures and not using Spring Canyon due to the rough topography which made stocking this pasture very difficult (Table 1) (Range Report, PR #32).

The permittee has worked well with the Forest Service and has been compliant with the "Terms and Conditions" of the permit for the past decade. The permittee has a progressive attitude and strives to manage the allotment to the best of his ability. In 2008, in cooperation with the Forest Service, the permittee voluntarily reduced his preference from 165 to 75 cow/calf pairs, yearlong (PR #18).

Table 1. History of actual livestock use.

Year	Cattle	Horses	Annual Precipitation
1997	90	0	15.99
1998	120	0	15.3
1999	64	0	15.57

Year	Cattle	Horses	Annual Precipitation
2000	No Cattle	6	14.37
2001	20	6	15.93
2002	21	6	16.12
2003	21	6	8.48
2004	42	6	16.13
2005	21	6	17.4
2006	21	6	22.52
2007	21	6	16.5

Existing Condition

Vegetation

There are three permanent Parker Three-Step Cluster transects, two in Brushy and one in Spar pastures (see Map 2, Appendix A). Each cluster consists of three permanent transects. Based on data collected at these sites, both range and watershed conditions improved dramatically (Tables 2 and 3). Vegetative condition classifications improved from two transects with poor conditions with a downward trend and one transect with fair conditions in 1979 to all three transects having fair condition[2] with upward trends in 2006. The number of forage plant species increased dramatically resulting in an improved forage cover index (PRs, #12-13 and 32).

Even though vegetative conditions have improved and are satisfactory, forage species composition decreased from 33 to 26 which is an indication that desirable forage species have decreased (Table 3) (PRs, #12-13 and 32). There can be many reasons for this other than livestock grazing. The number and size of pinyon and juniper trees are increasing which limits forage production and can affect species composition. Management of livestock alone will not change this condition. Drought, with or without livestock, will decrease forage production and can lead to decrease in species composition.

Table 2. Summary of Vegetation and Watershed Condition and Trend Scores

Cluster	1979		2006/2007	
	Vegetation	Watershed	Vegetation	Watershed
1	Poor with downward trend	Poor with stable trend	Fair with upward trend	Fair with upward trend
2	Poor with downward trend	Poor with stable trend	Fair with upward trend	Good with stable trend
3	Fair with stable trend	Fair with stable trend	Fair with upward trend	Good with upward trend

[2] A rating of fair or better is considered to be satisfactory.

Table 3. Key Vegetation Condition Variables for All Transects Indicating and Upward Trend.

Variables	1979	2006/2007	Trend
Total number of Forage Plants	72	185	Increase in the overall number of forage plant species
Amount of Bare Soil	510	181	Decrease in amount of bare soil (increase in plant cover)
Forage Cover Index	6	13	Increase in plant cover
Erosion Hazard Index	16	29	Improvement in watershed conditions
Composition	33	26	Decrease in composition indicates reduction in number of desirable forage plants.

Watershed and Soils

The allotment is drained primarily by ephemeral drainages with some intermittent flow associated near springs. Brock Canyon, Spring Canyon, Shelley Canyon, and Cave Canyon flow towards the north/northwest into the Gila River. Spar Canyon and Maldonado Canyon flow towards the south/southwest into the Gila River. Cottonwood Canyon, Brushy Canyon, Stone Canyon, and Seep Springs Canyon flow towards the south into Bear Creek (Watershed, Soils, and Air Specialist Report, PR #35).

Spar Canyon Allotment is located within the Bear Creek and Mogollon Creek 5th Code Watersheds (Table 4) which are within the Upper Gila River Basin. The Bear Creek watershed was rated as unsatisfactory overall however key area monitoring of the soil/watershed condition on the Spar Canyon Allotment found soil/watershed conditions satisfactory on all of the key areas with stable or upward soil/watershed condition trends (Table 2) (PRs, #12-13, and 32). The amount of bare soil decreased dramatically leading to an increase in the erosion hazard index. Field reviews in 2007 and 2008 indicated that this data was indicative of overall watershed condition across the allotment pastures. As a general rule, slopes greater than 40 percent tend to be unstable. Slopes in excess of 40 percent were excluded from the capacity calculations for the Spar Canyon Allotment due to such soils concerns (Watershed, Soils, and Air Specialist Report, PR #35).

Table 4. Watersheds found within the Spar Canyon Allotment.

5th Code Watershed	Watershed Acres In Watershed	Allotment Acres In Watershed (includes pvt land acres)	Percent of % Allotment in Watershed	Percent of Watershed Occupied by Allotment	5th Code Watershed Condition Rating
Bear Creek (15040002050)	134,791	5,766	52%	4%	Unsatisfactory
Mogollon Creek (15040001060)	160,442	5,265	48%	3%	Satisfactory

Riparian

Riparian areas were evaluated at Cottonwood Spring, Dog Spring, Seep Spring, Perry Spring, and Brushy Canyon using Proper Functioning Condition surveys (PFC)[3]. Other riparian areas within the allotment included Spring Canyon and Shelley Canyon. No other riparian vegetation was observed in any of the remaining drainages within the allotment (Watershed, Soils, and Air Specialist Report, PR #35).

Cottonwood Spring was evaluated as PFC. This spring is a very dry site with limited potential. A trough is located at the spring, with no flowing water noted during the field review of October 2007. Riparian species present included Fremont cottonwood, baccharis, deer grass, black walnut, black willow, and canyon grape. There is limited potential at this spring for anything more than what is currently present (Watershed, Soils, and Air Specialist Report, PR #35).

Dog Spring was evaluated as PFC. This spring is located in a bedrock channel with sufficient armoring to limit negative effects from disturbance. Little browse was noted on the riparian woody species present, with limited evidence of ungulate use. Riparian species present included black willow, velvet ash, Fremont cottonwood, Arizona alder, deer grass, canyon grape and carex species. Good regeneration of velvet ash was observed throughout the area of spring influence (Watershed, Soils, and Air Specialist Report, PR #35).

Seep Spring was evaluated as Functional at Risk (FAR) with a trend that is not apparent for approximately 200 yards. The channel below the spring has experienced some downcutting and sidecutting. Trampling of the herbaceous cover was noted at the head of the spring. The woody riparian in the reach shows evidence of browse, with little recruitment occurring. The seedlings and saplings that were present have all been nipped, thus suppressing vigor, in particular, on the amorpha. Riparian species present included black willow, baccharis, amorpha, water cress, carex species, and Kentucky bluegrass. This spring has reliable water, indicating more potential than was noted during the site visit. A non-functional livestock exclosure surrounds the spring, which is in need of repair (Watershed, Soils, and Air Specialist Report, PR #35).

Perry Spring was evaluated for approximately ½ mile as FAR with a trend that is not apparent. This spring displays similar conditions and potential to Seep Spring, however does not currently have any exclosure fence around the associated riparian area. The channel below the spring is downcut slightly; however there is bedrock in many places, limiting further erosion of the channel bottom. There is limited herbaceous cover on the banks, with evidence of hoof trampling noted during the site visit. Riparian plants included black willow, Arizona walnut, baccharis, amorpha, watercress, carex species, and Kentucky bluegrass. This reach appears to have more riparian potential due to the permanent water flow in the channel, however is not expected to be a lush riparian system. Little recruitment is occurring of riparian woody vegetation. Desired future conditions include more recruitment of riparian woody and herbaceous vegetation, and less trampling by both domestic and wild ungulates (Watershed, Soils, and Air Specialist Report, PR #35).

Brushy Canyon was evaluated for approximately one mile as PFC. This reach has a high percentage of stone and bedrock in the channel which provides armoring during high flow events. The channel is controlled by bedrock in many places. Riparian species in this reach included

[3] Proper Functioning Condition is considered to be satisfactory condition. Functional at Risk and Nonfunctional condition ratings are considered to be unsatisfactory.

Fremont cottonwood, narrowleaf cottonwood, black willow, Arizona sycamore, baccharis, and Arizona walnut. The reach was in good condition despite some high flow events in 2005 and 2006. Good regeneration of sycamore was noted in the area (Watershed, Soils, and Air Specialist Report, PR #35).

Spring Canyon and Shelley Canyon are both located within the Spring Canyon pasture. It was determined that these two canyons are virtually inaccessible to domestic livestock due to topographical controls, thereby eliminating negative impacts from grazing. Aerial photos were also evaluated to confirm lack of accessibility. The terrain is extremely rugged and steep, with the only feasible access being from the mouths of Spring Canyon or Shelley Canyon at the Gila River, approximately ¼ mile north of the allotment boundary. Numerous waterfalls in these drainages further impede travel up the canyon bottoms. Rugged topography found in association with Both Spring Canyon and Shelley Canyon excludes livestock grazing, with the exception of perhaps an occasional stray. These two canyons are narrow bedrock channels confined by bluffs. Riparian vegetation in the bottoms of the two canyons is expected to be similar to the Brushy Canyon; however these two channels may be drier sites. Vegetation in these channels is expected to consist of black willow, Arizona walnut, Arizona sycamore, baccharis, and cottonwood. Considering bedrock control, steep narrow canyons, diversity of riparian vegetation, and lack of impacts due to accessibility, these two drainages are likely at or near their potential (PFC) (Watershed, Soils, and Air Specialist Report, PR #35).

Desired Condition

The desired condition is to continue to maintain satisfactory range, watershed, and soil conditions. Riparian areas that are less than satisfactory need restoration (rested from grazing). Upland species composition will also need to be restored. This may require control of woody tree encroachment which is outside the scope of this project which is limited to livestock management.

Gila National Forest Plan Goals and Standards

Direction for range is found in several different places within the GNFP (PR, #2). The Spar Canyon Allotment is completely within Management Area (MA) 7F (GNFP, page 227-234). The management emphasis for MA 7F is to manage for wildlife, range, fuelwood, timber, and recreation. This MA is best summarized in the GNFP by the desire to achieve a management situation that can respond to local or national demands for livestock production, water yield, and a wide mix of recreation opportunities including wildlife-related uses as described in the various goals listed on pages 11 and 12. Specific plan directions applicable to this project are as follows:

- (Goal) Provide forage to the extent benefits are commensurate with costs without impairing land productivity and within the constraints of social needs (GNFP, page 11).
- Permitted numbers will be balanced with grazing capacity by the end of the second decade (GNFP, page 32).
- Manage to bring all grazing allotments to satisfactory management by the mid-point of the third decade (GNFP, page 32).
- Grazing in riparian zones will be managed to provide for the maintenance and improvement of riparian areas (GNFP, page 32).

- Manage riparian areas in accordance with legal requirements regarding floodplains, wetlands, wild and scenic rivers, and cultural and other resources (GNFP, page 30).
- Manage riparian areas to protect the productivity and diversity of riparian-dependent resources by requiring actions within or affecting riparian areas to protect and where applicable, improve dependent resources (GNFP, page 30).
- Give preferential consideration to resources dependent on riparian areas over other resources (GNFP, page 30).
- Improve riparian ecosystems in unsatisfactory condition to satisfactory condition and maintain riparian ecosystems currently in satisfactory condition (Amendment No. 10, 2005).
- Manage for a diverse, well-distributed pattern of habitats for wildlife populations and fish species; maintain and/or improve habitat for threatened or endangered species and work toward the eventual recovery and delisting of species through recovery plans (GNFP, page 12).
- Provide for the management of sensitive soils in all surface-disturbing activities to minimize or control erosion (GNFP, page 36).
- Maintain or improve watershed conditions to a satisfactory condition on 70 to 90 percent of the unsatisfactory watersheds by the end of the fifth decade (GNFP, page 36).

Purpose and Need for Action

The purpose and need for the Spar Canyon Allotment EA is to authorize livestock grazing in a manner consistent with the Gila National Forest Plan (GNFP) and to provide long-term management direction on grazing through allotment management plans (AMPs). This project is needed to meet the requirements of the Rescission Act of 1995 (P.L. 104-19) Sec. 504. The Rescission Act of 1995 requires that all range allotments undergo analysis as outlined in the National Environmental Policy Act (NEPA). The purpose is to determine the best approach to resolve resource issues and to ensure that management of the Spar Canyon Allotment complies with the Gila National Forest Land and Resource Management Plan as well as other applicable laws and regulations.

Rough topography, lack of fences, and lack of water have historically makes it difficult to incorporate the Spring Canyon Pasture into a viable management strategy. Perry and Seep Springs in the Spar Pasture were functioning at risk and need protection from excessive trampling.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

> In consideration of the best available science and direction found in the Gila National Forest Plan as amended, the District Ranger will decide whether or not to authorize livestock grazing on the Spar Canyon Allotment. If livestock grazing is authorized, the District Ranger will determine the type and duration of permits to issue with the associated AMP. The District Ranger may select any of the alternatives analyzed in detail, or may modify and select a combination of alternatives, so long as the resulting effects are within the range of

this analysis and disclosed in this document and the supporting reports. If a permit is issued, the District Ranger would decide on the following:

- Where and when grazing would take place.
- How the allotment would be managed (management practices, grazing systems, supplements, standards, livestock numbers, timing of grazing, seasons of use, utilization guidelines, etc.).
- What connected actions such as resource treatments, new range developments or reconstruction of existing improvements would be implemented and on what schedule these actions would occur.
- What design features would be implemented.

This assessment is not a decision document. Rather, it discloses the environmental consequences of implementing the proposed action and alternatives to that action. This analysis incorporates by reference (as per 40 CFR 1502.21) the Project Record, including specialist reports and other technical documentation used to support the analyses. Although analysis was completed for range, wildlife, hydrology, soils, and heritage; it is acknowledged that in some instances there may be incomplete or unavailable information, scientific uncertainty, and the variability inherent in complex systems. Information from these reports has been summarized in this environmental assessment. A Decision Notice, signed by the District Ranger (deciding official) after the completion of the assessment, would document the decisions made as a result of this analysis. Future actions will be evaluated through the NEPA process and will stand on their own as to environmental effects and project feasibility

Public Involvement

The proposed action was listed in the Schedule of Proposed Actions (PR, #30). The grazing permittee was involved early and has been involved throughout the process (PR, #9). The Proposed Action was mailed under a cover letter February 14, 2008, to approximately 89 state, Federal, Tribal governments, non-government organizations, and individuals detailing the proposed action for management on the Spar Canyon Allotment (PRs, # 19-20). A variety of individuals, environmental, professional, multiple-use organizations, and government agencies were represented on the mailing list (PR, #20). The scoping comments were reviewed and no significant issues were identified (PR, #31). The EA was circulated for an additional 30 day review August 22, 2008. All comments were reviewed and no new issues were brought forward (PR, #53)

Issues

A comment analysis was completed for all comments received during the scoping period. The Forest Service process is to separate the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan, or other higher level decision; (3) irrelevant to the decision to be made; or (4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" All issues were non-significant and no new issues were developed as a result of

comments received from the public (PR, #31). However, the Forest Service identified three primary concerns (listed as follows) that will be used in the analysis of impacts of the proposed action. Impacts will be quantified to the extent practicable, but when they can not, a qualitative narrative based on the expertise of an appropriate resource specialist will be presented.

- **Grazing effects on vegetation:** Grazing at the proposed utilization levels may impede the attainment of Gila National Forest Plan objectives for range vegetation.
- **Grazing effects on riparian:** Authorization of grazing may have adverse effects on riparian vegetation.
- **Grazing effects on wildlife:** Authorization of grazing may have adverse effects on threatened, endangered, proposed, sensitive (TEPS) species or on management indicator species (MIS) or their habitats.

Additional environmental components to be considered in the EA include air, watershed, economics, and heritage resources.

Chapter 2 – Alternatives

This chapter describes and compares the alternatives considered for the Spar Canyon Allotment, presenting the alternatives in comparative form to sharply define the differences between each alternative and provide a clear basis for choice among options by the decision maker and the public.

Alternatives Considered

Alternative One (No Action)

Forest Service Policy (Forest Service Handbook 2209.13) requires the Forest Service to identify no grazing as the no-action alternative. Under this alternative, grazing would not be authorized and use of the allotments by domestic livestock would be discontinued. Existing boundary fences would be assigned to adjacent permittees. Interior fences would be removed to mitigate potential adverse impact to wildlife and public users. Water developments, important for wildlife, would be maintained where feasible using other program funds or volunteers.

Alternative Two (Proposed Action)

The proposed action incorporates management flexibility by providing a range of allowable numbers that reflects variations in resource conditions and management objectives over time. Within this range, annual permitted livestock numbers will be specified in annual operating instructions. Initial stocking rates will be set based on existing resource and infrastructure conditions and will be based on range resource conditions. Changes in stocking would occur as a result of changes in resource conditions or management objectives. Herd movements would be determined by utilization levels, forage conditions and water availability and will be specified in annual operating instructions. A new allotment management plan (AMP) will be developed. The plan will also include mitigation measures and Best Management Practices to avoid or minimize effects to wildlife, soil and water quality. Monitoring of forage availability and utilization, range readiness and resource conditions will be used to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions. Existing range improvements are considered sufficient to accomplish management on the allotment.

The Silver City Ranger District, Gila National Forest, proposes to authorize grazing on the Spar Canyon Allotment under the following terms and conditions that define the limits for the numbers, duration, intensity, frequency and timing of grazing.

- **Numbers and Duration:** Authorize grazing for up to 75 cow/calf pairs (or equivalent use by other kind or class of livestock) for up to 12 months.

  The proposed action will incorporate management flexibility by providing a range of allowable numbers (0 – 75) that reflects variations in resource conditions and management objectives over time. Within this range, annual permitted livestock numbers will be specified in annual operating instructions (AOIs). Initial stocking rates will be set based on existing resource and infrastructure conditions. Changes in stocking would occur as a result of changes in resource conditions or management objectives.

- **Intensity:** Set herbaceous forage utilization at a conservative use level, approximately 31 to 40 percent utilization (Holechek et al. 1999[4]), including wildlife use, throughout all areas and not more than 25 percent of riparian wood sprouts; seedlings and saplings in a riparian reach being heavily hedged.
- **Frequency and Timing:** A two pasture management systems will be designed to incorporate growing season rest or deferment in order to provide for grazed plant recovery. Timing of pasture moves will be dictated by utilization monitoring and management objectives specified in allotment management plans with the following design criteria:
    - For the Spar and Brushy pastures herd movements would be determined by utilization levels, forage conditions, water availability, and current climatic conditions and will be specified in annual operating instructions. Timing of pasture moves will be dictated by amount of available forage, grazing intensity, availability of water, and management objectives specified in an allotment management plan. In order to meet the resource objectives for the allotment it will be necessary to monitor grazing intensity while livestock are present in each pasture. When there are indications that livestock are concentrating in any part of a pasture or on special sensitive areas, action will be taken to reduce the potential impacts by moving the livestock to other portions of the pasture or to another pasture on the allotment.
    - The Spring Pasture will be excluded from the livestock grazing rotation system.
- **Livestock Management**: A new allotment management plan (AMP) will be developed. The plan will include mitigation measures and Best Management Practices to avoid or minimize effects to wildlife, soil and water quality. Monitoring of forage availability and utilization, range readiness and resource conditions will be used to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions.
    - Construct riparian protection fences, with livestock access points, around Perry and Seep Springs in the Spar pasture.
    - Restore all current range infrastructures, such as fences and waters, to good condition where needed and continue to improve the current infrastructure that is currently in critical to satisfactory condition.
    - Ensure all future range fence reconstruction would be designed to be wildlife friendly.
    - Provide supplement for livestock as follows (to strategically manage livestock distribution and forage use):
        - Locate supplement sites 0.25 mile or more from waters except where prior written approval has been obtained from District Ranger.
        - Place supplements where forage is abundant and current grazing use levels are low. Supplements should not be place at any one location more than once during the grazing season to prevent the concentration of livestock.

[4] Holecheck, J.L., H. Gomez, F. Molinar, and D. Galt. 1999. Grazing studies: what we've learned. Rangelands 21(2), 5 pg.

- Limit supplement types to salt, protein, and mineral blocks to reduce risk of spreading noxious weeds and to reduce the risk of creating areas of concentrated livestock use.
- If there is a need to use energy supplements such as grain, hay, surplus milk products, ethanol production by-products or molasses based products; a supplemental plan will need to be developed and approved by the District Ranger prior to placing these energy type supplements on National Forest lands.

Monitoring

Continue monitoring livestock management activities and the effects that livestock grazing activities are having on the allotment. Monitoring will be accomplished annually through allotment inspections, measuring current year forage production and grazing intensity, and the normal allotment record keeping activities. Periodically, various data collection techniques will be used to record vegetative and watershed conditions for a point in time to be compared with the same area at a later time to determine vegetative condition trend.

Alternatives Eliminated from Detailed Study

Alternative 3, Current Management is similar to the Proposed Action with the same number of authorized livestock and Spring Canyon Pasture being excluded from the gazing rotation system. With the exception that two small riparian areas will be fenced to exclude livestock current management is essentially the same as the proposed action. Therefore, the Current Management Alternative will not be considered in detail.

Future Review of the Decision

In accordance with Forest Service Handbook direction (FSH 1909.15 (18)) an interdisciplinary review of the decision will occur within 10 years or sooner, if conditions warrant. If this review indicates that management is meeting standards and achieving desired condition, the initial management activities will be allowed to continue. If monitoring demonstrates that management options beyond the scope of the analysis are warranted, or if new information demonstrates significant effects not previously considered, further analysis under NEPA will occur.

Minor additions to existing infrastructure such as fencing or waters to achieve the objective of restoring range conditions will be tiered to this Environmental Analysis and are allowed providing that all new structures would have heritage and biological clearances prior to implementation and all Forest Plan Standards and Guides would be followed.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 5 focuses on those activities and effects that can be distinguished quantitatively or qualitatively between the alternatives.

Table 5. Comparison of the Proposed Action with No Action Alternative.

Criteria	No Action Alternative	Proposed Action Alternative

Criteria	No Action Alternative	Proposed Action Alternative
Number of livestock authorized (animal unit months)	Zero	Up to 75 cow/calf, pairs (or equivalent use by other kind or class of livestock) for up to 12 months.
Vegetation Condition	Statisfactory (Fair) with upward trend; juniper encroachment would continue to have a negative effect.	Statisfactory (Fair) with upward trend; juniper encroachment would continue to have a negative effect.
Watershed and Soil Condition	Statisfactory (Fair to Good) with stable to upward trend.	Statisfactory (Fair to Good) with stable to upward trend.
Grazing Intensity	No Livestock Use, light wildlife use.	None or very light use on slopes over 40 %, Conservative use (31–40 % utilization) for remainder of upland areas, No use on Seep and Perry Springs, restricted use on remainder of riparian (no more than 25% of sprouts, seedlins and saplings heavily hedged).
Frequency and Timing	No Use	No use on Spring Canyon Pasture. Rest deferred management on Brushy and Spar Pastures.
Economics	No permittee income, permit revenue would be lost; administrative costs would be slightly reduced, but FS maintenance costs would increase; no improvement costs.	No change in economic situation due to no change in stocking from current management.
Effects on Threatened, Endangered, Proposed, or Sensitive species	No Effects	May affect, not likely to adversely affect Mexican spotted owl, Chiricahua leopard frog, loach minnow, spikedace, southwestern willow flycatcher and not likely to jeopardize the Mexican gray wolf. No effects on all other listed species; the proposed action would not result in a trend toward federal listing or loss of viability for any sensitive species.

Criteria	No Action Alternative	Proposed Action Alternative
Effects to Management Indicator Species	No Effects	Small reduction in herbacious vegetation; viable populations maintained
Heritage Resources	No Effect	Effects avoided or mitigated

Chapter 3 - Environmental Consequences

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in the chart above. The analysis is organized by resource. Within each section, the affected environment is briefly described followed by the environmental consequences (effects) of each alternative.

Vegetation Condition

Affected Environment

Grazing by domestic livestock can impact vegetation by changing the mix of species in the plant community being grazed (vegetation composition), by changing the density and frequency of perennial herbaceous plants (plant frequency), and by changing the vigor of grazed plants. The combined effects of composition, density and plant vigor can be used to measure the condition and trend of rangeland plant communities.

Range condition is evaluated in terms of its ecological status, which is an evaluation of the status or health of the vegetation and soil relative to their combined potential to produce a stable biotic community. For the purposes of determining rangeland condition, vegetation conditions were evaluated between 1979 and 2006/2007 in the project area.

The Gila National Forest Plan calls for rangelands to be brought into satisfactory range condition. Satisfactory range condition is defined as fair or better range condition with a stable or upward trend and stable soil. With the exception of two small riparian areas the allotment is in satisfactory (fair) range condition with an upward trend (Table 2, page 3), but areas could be enhanced through improved management. Stocking adjustments based on forage production and resource conditions has been a standard operating procedure. Juniper encroachment throughout the allotment is a problem and it is expected that range conditions will slowly deteriorate over time with or without livestock grazing.

Environmental Consequences (Vegetation Condition)

No Action or No Grazing Alternative: There will be no direct or indirect effects from livestock grazing. Light use by deer and elk is expected to continue. Over the long term, the effects of this alternative would be increases in the frequency, density and vigor of herbaceous species in most areas maintaining suitable range conditions. Pinyon and juniper trees would continue to dominate some sites and trees per acre would continue to increase at the expense of herbaceous forage in the absence of fire. Range structural improvements (fences and water developments) would not be maintained. Maintenance of allotment boundary fences would become the responsibility of the adjoining allotment permittees. Eventually, interior range improvements would be removed except those needed and funded by other program areas such as the wildlife program

Proposed Action: The Proposed Action will continue to allow livestock grazing under current management which excludes the Spring Pasture from the grazing rotation system. Seep and Perry Springs will be fenced to exclude use.

Capacity estimates were generated using two analyses, a production utilization study in 1980 (PR #1) and a computer model simulation in 2008. Based on the average of these two studies the proposed stocking rate of 75 head is within the potential capacity of this allotment (Range Report, PR #32).

The Proposed Action Alternative is expected to provide sufficient residual herbaceous vegetation to protect soils and contribute to improved range conditions over time based on conservative stocking of 75 head or less, utilization of 31-40 percent in key areas[5], and adaptive management. Forage removal would be higher than under the No Action Alternative, but is considered sustainable based on past management experience. Occasional overuse of forage in some areas may be expected followed by corrections in stocking or management. Flexible stocking rates, based on existing resource conditions should allow management to respond proactively to changing conditions before problems occur (Range Report, PR #32).

Cumulative Effects (Vegetative Condition)

Past, present and future actions in the project area that affect rangeland vegetation are similar to those described for watershed (see section below). The effect of past livestock grazing, in combination with fire suppression has been an increase in woody species and a corresponding loss of herbaceous vegetation. These conditions are not likely to change significantly in the absence of fire. Monitoring demonstrates that current management has resulted in improvements in rangeland condition. The combination of adaptive management with light to conservative grazing intensity and seasonally deferred grazing, in combination with the other design features of this alternative is not expected to result in significant direct or indirect negative effects to vegetation. This alternative will provide sufficient fine fuels to support wild fires and return the area to a more natural fire regime.

Watershed, Riparian, and Soils

Affected Environment

Soils on the Spar Canyon Allotment are highly variable and were derived primarily from rhyolite, rhyolitic tuffs, old alluvium, basalts and to a lesser degree from sandstone and shale. The topography ranges from nearly level mesa tops to moderately steep to very steep hill and mountain lands. Soils on the mesa tops tend to be deep while soils on the hill and mountain slopes tend to be shallow to moderately deep with a high percentage of surface and subsurface rock fragments (Watershed, Soils, Air Specialist Report, PR #35).

With the exception of two small riparian areas (Seep and Perry Springs) the watershed conditions within the allotment are satisfactory (see *Existing Conditions*).

[5] Holechek, JL, RD Pieper, and CH Herbel. 2001. Range management, principles and practices. 4th ed., Prentice-Hall, Inc.

Environmental Consequences (Watershed, Riparian, and Soils)

No Action or No Grazing Alternative: There will be no direct or indirect effects from livestock grazing. In satisfactory soil condition areas, the adequate diversity and vegetation groundcover would contribute to maintaining a satisfactory nutrient cycling and soil structure. The hydrologic function and runoff would continue to be satisfactory. Reduction of soil compaction and improved soil infiltration should reduce the likelihood of soil movement during runoff events and ultimately moving into downstream channels. Reduced soil loss, increased soil infiltration, and improved soil organic material cycling would also improve overall soil productivity (Watershed, Soils, Air Specialist Report, PR #35).

Proposed Action: The proposed action on the Spar Canyon Allotment is to continue with the grazing management and permitted livestock numbers that are currently in place, with the addition of two small riparian exclosures. Conditions on the allotment indicate that watershed, riparian, and soil resources impacted by current stocking rates are meeting or will move towards Forest Plan standards and guidelines with implementation of the proposed action. Field assessments indicate that there have been no adverse physical, chemical or biological impacts to watershed and air resources under current livestock grazing management. It is expected that satisfactory watershed conditions will be maintained within the areas managed by the Forest. All key areas are currently in satisfactory watershed condition. Based on field reviews, these satisfactory results are a fair representation of watershed conditions, allotment-wide (Watershed, Soils, Air Specialist Report, PR #35).

Soil conditions are currently stable within the allotment with the exception of those soils on steep slopes that are not typically grazed and along roadways with inadequate drainage features. Some soil compaction will continue to occur near salt grounds and watering sites, as well as evidence of hoof action in moist soils. These impacts occur in small areas and are not negatively impacting overall watershed or riparian condition, based on recent surveys. The road network is minimal within the allotment as a large portion of it is within wilderness. There is very limited soil movement off of the existing roadways within the allotment. The Spring Canyon Pasture is excluded from livestock, thus this pasture will have watershed/soil conditions similar to the No Grazing Alternative (Watershed, Soils, Air Specialist Report, PR #35).

Five of seven riparian areas evaluated on the allotment are currently considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines. These five riparian areas impacted by current grazing management are expected to remain in Proper Functioning Condition. The remaining two riparian areas (Seep Spring, Perry Spring) that are not meeting Forest Plan standards and guidelines will be fenced to exclude livestock grazing. This activity is expected to move these two spring areas towards satisfactory condition within a short period of time (2-5 years), based on site potential. Wetlands associated with all riparian areas across the allotment are expected to remain in satisfactory condition, or move towards satisfactory condition with implementation of the proposed action (Watershed, Soils, Air Specialist Report, PR #35).

The State of New Mexico has identified no water quality concerns within the allotment. State water quality standards will continue to be met with the proposed action on the allotment (Watershed, Soils, Air Specialist Report, PR #35).

There are no designated municipal watersheds in either of the two watersheds impacted by the Spar Canyon Allotment. Public water supply systems in the nearby Cliff/Gila valley are

associated with groundwater wells. Continuation of current grazing will have no effect on municipal water supplies (Watershed, Soils, Air Specialist Report, PR #35).

Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns across a majority of the allotment. With implementation of the proposed action, it is not anticipated that livestock grazing will have negative impacts on water quality or bank stability, with implementation of Best Management Practices and future exclosures. The proposed action is expected to allow for those areas in satisfactory condition to be maintained, and for those in unsatisfactory condition to have an upward trend, thus it is consistent with Forest Plan guidance. Floodplains associated with all drainages within the allotment, are not being negatively impacted by current grazing management, and there are no anticipated changes to floodplain function. The wetlands present within the allotment are all associated with riparian areas, and will remain intact through a combination of current management and the proposed exclosures, thus reducing and/or eliminating adverse effects. The proposed action meets the intent of Executive Orders 11988 (Floodplains) and 11990 (Wetlands). There are no designated municipal watersheds associated with the 5th code watersheds impacted by the Spar Canyon Allotment; therefore this decision will not affect municipal watersheds. Public water supply (groundwater wells and associated well heads) are not being impacted by current livestock grazing management, nor has drinking water contamination by livestock been reported. Required public involvement has been met through NEPA. There are no extraordinary circumstances with regard to floodplains, wetlands, or municipal watersheds (Watershed, Soils, Air Specialist Report, PR #35).

In summary, the Proposed Action Alternative does not provide as much relief from grazing pressure as the No Grazing Alternative, no significant negative watershed, riparian, soil, and air effects are anticipated from its implementation. It is expected that Forest Plan standards and guidelines will continue to be met with implementation of the proposed action.

Cumulative Effects (Watershed, Soils, and Riparian)

The following cumulative effects discussion is form the Watershed, Soils, Air Specialist Report (PR #35). Spar Canyon Allotment is split between the Bear Creek and Mogollon Creek 5th code watersheds. Approximately 53 percent of the Bear Creek watershed and 95 percent of the Mogollon Creek watersheds are on National Forest system lands while the remainder falls on private, state, or other federally owned lands. The majority of the private lands within the Bear Creek and Mogollon Creek 5th code watersheds are range lands used for grazing. The majority of land within the Mogollon Creek watershed is within the Gila Wilderness boundary, thus activities are minimal.

Mining

The Gila National Forest has had a long history of mining activities that have occurred, or are still occurring, on patented land within the Forest's boundaries. Currently the Bear Creek 5th code watershed has several small active mines occurring on private lands within the basin. Very limited activity occurs within the Mogollon Creek watershed, particularly within the portion in Wilderness.

Livestock Grazing

Primarily since 1995, grazing by livestock has been analyzed for compliance with Forest Plan standards and other laws. Decisions to balance permitted livestock use with capacity (Gila National Forest Plan p. 31-33) have been made and others are planned. To date, decisions such as these have generally resulted in downward changes in permitted grazing from 33 to 50 percent on the Forest, although some decisions have resulted in less of a decrease and a few have resulted in an increase in permitted grazing.

Impaired watershed condition is estimated to improve to satisfactory on fully capable range within one to three decades following full implementation of grazing allotment decisions resulting in permitted cattle numbers balancing grazing capacity. Permitted use is currently at, or below, capacity on most of the allotments in the Bear Creek and Mogollon Creek 5th code watersheds. Actual stocking levels have been at less than permitted use numbers on many allotments for various reasons. Examples include administrative action to reduce season of use or numbers for resource benefit or due to drought conditions, and permittee preference to graze lower numbers for economic reasons or to protect the environment. All Gila National Forest grazing decisions to date incorporate Best Management Practices (BMPs), which implement Clean Water Act requirements and all upcoming grazing decisions will incorporate them as well. Monitoring of BMP effectiveness and implementation is accomplished as part of grazing permits administration.

Timber Sales and Fuelwood Harvest

There has been very little timber harvest activity in the Bear Creek and Mogollon Creek 5th code watersheds in the past. Both watersheds are currently open to down and dead fuelwood harvest, outside of the Gila Wilderness. No roads are constructed to accommodate this activity and impacts are minimal.

Recreation and Travelway Use

Road density is relatively low on Forest system lands within the Bear Creek (0.68 miles per square mile) and Mogollon Creek (0.07 miles per square mile) watersheds. Both watersheds are used for many types of forest recreation. Hunting, hiking, mountain biking, horseback riding, and motorized off-highway driving are common activities outside of Wilderness. Many of the roads in the watershed are unimproved roads, lacking adequate maintenance and drainage. These roads may be used during wet weather, which can cause ruts and affect the water drainage on the road. Soil loss and downstream sedimentation is occurring on many of these roads that lack proper drainage features. Within the Wilderness portion of the Mogollon Creek watershed, activities are limited to hiking, camping and horseback riding.

Fire

During the past thirty years, wildland and prescribed fires of all sizes have burned in the watersheds. A majority of these fires have been relatively small in size, however some large fires have burned. Large fires are most likely to have the greatest effect on water flow and watershed condition. Within the Mogollon Creek watershed on the Gila National Forest, approximately 91,000 acres have burned over the last 23 years (57% of watershed). Within the Bear Creek watershed, approximately 8,300 acres have burned, over the last 20 years (6% of watershed). Tables 6 and 7 list the largest fires in each watershed by year, type and name.

Table 6. Mogollon Creek 5th Code Watershed Fire History.

Fire Name	*Type*	*Burn Intensity*	*Year*	*Acres*
Rock	Wildland Fire		2003	6
Seep	Wildland Fire		1992	21
Buds	Wildland Fire		1993	130
Pasture	Wildland Fire		1997	179
Tadpole	Wildland Fire		1987	303
Tadpole	Wildland Fire		1996	303
Brush	Wildland Fire	Moderate	2005	466
Pelican	Wildland Fire	Moderate, 25% hot	1997	641
Mogollon	Wildland Fire		1984	957
Granny	Fire Use for Resource Benefit	Low, moderate	2004	1,180
Granite	Wildland Fire	Limited hot areas, <10%	1995	1,553
Granny	Wildland Fire	Moderate, < 10% hot	2003	1,761
Turnbo	Fire Use for Resource Benefit	Hot 75%	2003	4,228
Sprite	Wildland Fire	Hot	1995	5,753
Bloodgood	Wildland Fire	Low/mod, <10% hot	2000	7,170
Shelley	Wildland Fire	Hot	1989	7,959
Lookout	Wildland Fire	Hot 75%	1996	9,529
Brush Straw	Wildland Fire	Moderate, 25% hot	1993	15,252
Dry Lakes Complex	Fire Use for Resource Benefit	25% hot	2003	33,326
Total Acres of Fire in Watershed				***90,715***

Portions of the Mogollon Creek watershed are still experiencing adverse effects from fires of high intensity over the past 10 years, in particular areas within the Dry Lakes Complex and Turnbo fires on the north side of the Gila River (approximately 8% of the watershed). These residual negative effects will likely diminish with five to 10 years, with disturbed areas of the Mogollon Creek watershed recovering fully from all high intensity fires within 25 years. Visual inspection of the Shelley Fire (1989) in March 2007, confirmed that watershed conditions have recovered, although dominance type conversion and potential may have been altered due to soil loss.

Table 7. Bear Creek 5th Code Watershed Fire History

Fire Name	*Type*	*Burn Intensity*	*Year*	*Acres*
Mill	Wildland Fire		2000	0
Cherry	Wildland Fire		1996	10
Tadpole	Wildland Fire		1993	13
Jay Bird	Wildland Fire		2003	14
Black	Wildland Fire		1999	15
Scott	Wildland Fire		1994	24
Tadpole	Wildland Fire		1987	26

Fire Name	*Type*	*Burn Intensity*	*Year*	*Acres*
Tadpole	Wildland Fire		1996	26
Goose Chase	Wildland Fire		2003	33
Dime	Wildland Fire		2000	40
Bobtail	Wildland Fire		2000	52
Mesa	Wildland Fire		1996	102
Goat	Wildland Fire		1994	127
Qball	Wildland Fire	Some hot in brush fuel types on south side ridge. On north side low/mod in pine/mc	1995	175
Shelley	Wildland Fire		1989	177
Reading	Wildland Fire		1994	364
Glass	Wildland Fire	50% mod/low, 50% hot	1994	1,472
Torres	Wildland Fire	Some hot in brush fuel types on south side ridge. On north side low/mod in pine/mc	1995	5,637
Total Acres of Fire in Watershed				***8,307***

In the Bear Creek watershed within the past 10 years, there have been few fires of high intensity, and these collectively involved approximately 155 acres. These fires have involved less than 1 percent of the watershed, thus negative cumulative impacts are not expected. Full watershed recovery of areas disturbed by all high intensity wildfires within the Bear Creek watershed is expected within 25 years.

Current and Future Activities

Activities currently occurring in the watershed are expected to continue. Some Wildland Urban Interface (WUI) activities are planned for implementation in portions of the Bear Creek watershed over the next several years. These projects are intended to reduce hazardous fuels adjacent to private lands and homes, and typically are less than 500 acres in size. These projects will most likely involve a combination of mechanical removal of trees in conjunction with burning to reduce hazardous fuels.

Other ongoing actions include the adjustment of grazing levels over the next one to 11 years as a result of grazing permit decisions to align permitted numbers with grazing capacity. Road system analysis could result in reductions in or improvement of poorly located and eroding roads. Some roads could potentially be closed. Other vegetation treatment projects within the watersheds will be identified as a result of the Forest's ongoing efforts to restore fire adapted ecosystems. There has been an increased emphasis on the reduction of fuel loading on the forest to reduce the risk of replacement-type wildfires.

Cumulative Effects Conclusions:

No long-term negative effects to soil productivity, water quality or quantity are expected with the implementation of the Proposed Action. Currently, the Bear Creek and Mogollon Creek watersheds are not experiencing adverse cumulative watershed effects for the areas managed by the Gila National Forest. In these watersheds, past activities on Forest include fuelwood harvest, prescribed burns, wildland fires, and road and trail construction. Timber sale activities have been very minimal and small in size, and fuelwood cutting has been dispersed and will continue to be. Large wildland fires within the last 25 years have occurred, in particular, on the Mogollon Creek watershed. Some negative effects continue to occur on approximately eight percent of this watershed following the Dry Lakes Complex and Turnbo fires. Watershed conditions within these burns are expected to improve within the next five years, and fully recover within 25 years. Some prescribed burning is anticipated within the next several years. A small amount of mining activities occur within the watersheds. Current activities include road maintenance, hunting/camping, wildlife use, OHV use, water impoundments, and fuelwood harvest. Current road densities within the two major 5th code watersheds are less than 1 mile per square mile, within limited road access within the Spar Canyon Allotment. Adjacent allotments and those within the 5th code watersheds will continue to be grazed at levels consistent with Forest Plan direction. Livestock grazing has seen reductions with added measures taken to either exclude riparian areas or implement riparian specific management along streams. No large projects are currently planned for implementation within the Bear Creek or Mogollon Creek watersheds, thus future impacts should be consistent with current impacts.

In both watersheds, implementation of the proposed action, combined with past, present and reasonably foreseeable activities is not expected to negatively impact watershed, soil, and riparian condition, nor is it anticipated to degrade stream characteristics, water quality, or impact municipal watersheds. Implementation of the proposed action in these watersheds is not expected to negatively contribute to downstream unsatisfactory watershed conditions currently occurring off-forest (state, BLM, and private lands) (Watershed, Soil, and Air Specialist Report, PR #35).

General Wildlife

The Forest Service is directed in the National Forest Management Act of 1996, Section 6 (3) (g), subsection (B), to “provide for diversity of plant and animal communities based on the suitability and capability of the specific area in order to meet overall multiple-use objectives…” This direction is further clarified in CFR 219.19 it states that: “Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”

Biological diversity (Biodiversity) has been defined as the variety of life in an area, including the variety of genes, species, communities, ecosystems, and processes by which individual organisms interact with one another in their environment. The practical objective of biodiversity is to assure that sufficient diversity exists to provide for the continued existence of each entity, the potential for future adaptations, and options for future use by man.

The proposed action under consideration would maintain a variety of habitat types (vegetative communities) and seral stages. The continued implementation of this action is not likely to independently or cumulatively, with other reasonably foreseeable actions, change the total number of species present within the project area. The continued implementation of this action is

not likely to independently change the relative abundance of various species within the project area (Wildlife Specialist Report, PR 43).

Livestock grazing potentially affects plant and animal species in a number of specific ways. These effects include: direct competition for forage, removal and trampling of herbaceous and/or shrubby vegetation used for food or cover, change in plant composition favoring one foraging group over another, use and trampling of water sources and associated vegetation, utilization of riparian dependent plant species, and barrier and potential injury effects of fences. The large number of wildlife species makes it impossible to discuss each species individually but species can be placed into guilds based on the groups defined in Table 8.

Table 8. Wildlife Guilds Used to Analyze Wildlife Species.

Group	Reproduces	Feeds	Examples
1	In water	In water	*Trout, Spikedace, Loach minnow, Chihuahua chub*
2	In water	In water and on ground	*Chiricahua leopard frog*
3	Cliff, caves, mine shafts	In the air or on flowering plants	Pale Townsend's big-eared bat, *Mexican long-nosed bat, Lesser long-nosed bat*
4	On ground, no specific association	On the ground	**Elk, Mule deer, Mearn's quail, Merriams Turkey**
5	In trees and bushes	In flowering plants	Lucifer Humminbird
6	In trees and bushes	In trees, bushes and the ground	Gray vireo
7	In conifers or deciduous trees	In trees, bushes, on the ground, and air	Swainson's hawk, Ferruginous hawk
8	Primarily in conifers	On the ground and in the water	Bald eagle
9	Coniferous trees, cliffs, and caves	On the ground, or the air	*Mexican spotted owl*
10	On ground, In a den underground	On ground	*White-nosed coati, jaguar, Mexican gray wolf*

Bold type = Management Indicator Species
Italic type = Federally listed as Threatened or Endangered
Plain type = Region 3 sensitive species

Direct competition for forage: Livestock grazing directly competes with foraging wildlife by selective removal of palatable vegetation. The primary wildlife competitor for the forage resource in the project area is Group 4. Other game and non-game animals (small mammals, non-game birds, etc.) are also dependent on forage and seed availability (Wildlife Specialist Report, PR #43).

Vegetation composition has increased, and plant vigor has improved under existing management. The proposed conservative livestock utilization standards (31 to 40%) that includes wildlife use and a stocking rate that is within the available grazing capacity minimizes potential competition for forage with wildlife. Long term monitoring has documented an overall improvement in ecological condition therefore; the long term trend in foraging conditions for Group 4 has improved. This trend is expected to continue under existing management (Wildlife Specialist Report, PR #43).

Removal and trampling of herbaceous and/or shrubby vegetation used as food or cover: Livestock and other grazing/browsing herbivores remove material that provides cover for hiding, resting, nesting, reproduction or prey species. Vegetation removed and damaged is directly related to stocking rate. The higher the stocking rate, the more vegetation would be removed. The proposed action alternative contains allowable utilization guidelines. These guidelines would mitigate effects of livestock grazing by maintaining a set level of vegetation for food and/or cover, maintaining hiding, resting, nesting, reproduction, and/or prey species habitat for wildlife species in Groups 2, 4-10. This would maintain or improve watershed and range condition on the allotment, which is consistent with maintaining viable populations of wildlife species that are in some way dependent on herbaceous or woody vegetation (Groups 2, 4-10) (Wildlife Specialist Report, PR #43).

Change of plant composition: Livestock selectively remove material from those plants most palatable to them. Over time this may result in a change in the herbaceous and shrub composition. Generally there would be a reduction in palatable grasses and forbs, cool season grasses (plants that grow in spring and fall) and palatable shrubs. There could be a concurrent increase in non-palatable shrubs, forbs (particularly composites), and grasses. This benefits some seed eating species since annual forbs produce more seed than perennial grasses. It is detrimental to perennial grass/sedge dependent species (i.e. Group 4) as the palatable shrubs, grasses, and sedges tend to decline under heavy grazing pressure. Range condition scores include evaluation of plant composition, vigor, and diversity. Higher scores in range condition indicate dominance by perennial, palatable grass and forbs species, high vigor plants, with a good mixture of cool and warm season species. The proposed action would benefit species that prefer perennial grasses, sedges, and palatable forbs; those whose requirements overlap with livestock forage use to a large extent (Group 4). The proposed action would provide for continued increase in the amount of cool season and palatable species in the composition by providing for use at or below current capacity. The proposed action also provides for protection of riparian areas. Current management would maintain or improve existing range and watershed condition. No measurable off site sedimentation or water yield would be produced from proposed levels of livestock grazing, this is a benefit to Groups 1 and 2 (Wildlife Specialist Report, PR #43).

Use and trampling of water sources and associated vegetation: All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, except for Perry and Seep Springs which were functioning but considered at risk. These two springs will be fenced to exclude livestock (Watershed, Soils, Air Specialist Report, PR, #35). Spring and Shelley Canyons are within the Spring Canyon Pasture which will be excluded from all grazing.

Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability, with implementation of Best Management Practices. The proposed action is expected to allow for those areas in satisfactory condition to be maintained. Floodplains associated with all drainages within the allotment, are not being negatively impacted by current grazing management, and there are no anticipated changes to floodplain function. There are no wetlands present within the allotment (Watershed, Soils, Air Specialist Report, PR #35). Additionally, to help maintain satisfactory riparian conditions the Proposed Action Alternative provides direction that not more than 25 percent of riparian wood sprouts; seedlings and saplings in a riparian reach can be heavily hedged.

Maintenance of existing water developments would serve to distribute some of the use by herbivores away from the natural waters. Maintenance of riparian vegetation would continue to

mitigate the movement of sediment to areas downstream of the allotment. No measurable off site sedimentation or water yield would be produced from proposed levels of livestock grazing, this is a benefit to Groups 1 and 2 (Wildlife Specialist Report, PR #43).

Fences injure and kill wildlife and create barriers to wildlife movement: Fences can interfere with wildlife in two ways. They create a barrier to movement of big game and they serve as a source of injury or mortality to big game, bats and some birds (particularly low flying raptors). Proper location and construction of wire fences including "elk jump" crossings, smooth bottom wires, and raised bottom wires would mitigate much of the big game conflicts. Well-maintained barbed wire fences that are properly constructed impede big game less than loose, poorly maintained fences. Mortality of big game in properly constructed and maintained fences is uncommon. Mortality of raptors on fences has been documented. Such mortality is minor compared to expected normal annual losses to a population due to other factors such as predation and disease. Use of standard regional specification for fence construction, reconstruction and maintenance is required. These specifications incorporate wildlife design specifications to minimize the risk of injury or death to crossing wildlife. Species in Groups 3, 4, and 7 have the potential to be impacted by the continued need for fences on the allotment under the continued implementation of current management. The impacts will be so small that the level of effect to these species will be negligible (Wildlife Specialist Report, PR #43).

Disease Transmission between Livestock and Wildlife: Transmission of diseases between domestic livestock and wild animal populations occurs in both directions. Diseases endemic in wild populations can spread to domestic livestock. Disease transmission between domestic livestock and wild animals is a risk. Permitting livestock grazing on National Forests may increase the level of contact between livestock and wild animals. Enclosed tracts of private land within National Forest lands contain domestic livestock. Contact between wild and domestic ungulates appears to be inevitable. The increased risk of disease transmission attributable to permitting cattle grazing on National Forest lands is negligible (Wildlife Specialist Report, PR #43).

Threatened and Endangered Wildlife, Plants, and Fish

Section 2 of the Endangered Species Act of 1973, as amended 1978, 1979, 1982, and 1988 (16 U.S.C. 1531et seq.) declares that "…all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." Section 7 directs Federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (16 U.S.C. 1536 et sq.). Federal agencies also must consult with the Secretary of the Interior (U.S. Fish and Wildlife Service) whenever an action authorized by the agency is likely to affect a species listed as threatened or endangered or to affect its critical habitat. The act mandates conference with the Secretary of the Interior whenever an action is likely to jeopardize the continued existence of any species proposed for listing as threatened or endangered, or whenever an action might result in destruction or adverse modification of critical habitat proposed for listing (16 U.S.C. 1536(a) 4).

Affected Environment

Seventeen wildlife and fish species are listed on the Endangered Species List[6] for Grant County, New Mexico. It was determined that only six species could be present within the allotment or may be affected by the action being proposed (Table 9) (PR #44). No other listed or proposed species, or their habitat, occurs within this allotment. Consistency determinations for the Spar Canyon Allotment were made using the Framework for Streamlining Informal Consultation for Livestock Grazing Activities (PR, #8). The US Fish and Wildlife Service (USFWS) finds that the management of the Spar Canyon Allotment analyzed using grazing forms will adhere to the Guidance Criteria. For this reason, the USFWS anticipated that the use of allowable use guidelines and utilization monitoring will provide a mechanism for livestock use adjustments and this will ensure that effects to listed species are insignificant and discountable. The USFWS concurred with the following determinations (PR #46).

Table 9. Listed Species that may occur or may have habitat on Spar Canyon Allotment.

Name		Determination[1]	
Common	**Scientific**	**Species**	**Critical Habitat**
Mexican spotted owl	*Strix occidentalis lucida*	MANLAA	MANLAA
Chiricahua leopard frog	*Rana chiricahuensis*	MANLAA	
Loach Minnow	*Tiaroga cobitis*	MANLAA	MANLAA
Spikedace	*Meda fulgida*	MANLAA	MANLAA
Southwestern willow flycatcher	*Epidonax traillii extimus*	MANLAA	MANLAA
Mexican gray wolf	*Canis lupus baileyi*	NLJ	

[1]MANLAA – May affect, not likely to adversely affect. NLJ – Not likely to jeopardize

Chiricahua Leopard Frog

There are no documented occurrences of this species on the allotment. New Mexico Game and Fish Department, Western New Mexico University, and Forest Service records were reviewed for occurrence records. The nearest occurrence is just upstream of the allotment (Spring Canyon Pasture) at the confluence of Panther Creek and the mainstream of the Gila River. Surveys of Panther Creek in 2005 did not find any Chiricahua leopard frogs (CLFs) (Biological Assessment, PR #44). Any potential CLF habitat is in Spring Canyon Pasture which will not be grazed.

Using the Framework for Streamlining Informal Consultation for Livestock Grazing Activities it was determined that the effect of the Proposed Action Alternative will be insignificant and discountable; therefore, a determination of "May Affect, Not Likely to Adversely Affect" is made for this species based on the following criteria (Biological Assessment, PR #44):

1. There will be no livestock use or livestock management activities where the species is reasonably certain to occur or there is occupied aquatic habitat (grazing is allowed in non-occupied suitable habitat).
    a. No occupied CLF habitat occurs on the allotment therefore, there will be no direct effects.

[6] http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

2. Indirect effects occurring within the action area, where the frog is reasonably certain to occur, which result from upland livestock grazing are determined to be insignificant or discountable.
    a. Implementation of the proposed action alternative will continue to allow grazing upstream of potentially occupied habitat. The Gila River is located directly downstream of the northern portion of the allotment. The Gila has not had any documented occurrences of this species in many years but because this river is a complex system the potential for an isolated population still exist; therefore, the potential for indirect effect still exist.
    b. Drainages on the northern part of the allotment, like Shelley, Spring, and Cave Canyon that flow directly into potential habitat on the Gila River are excluded from grazing by topography.
    c. Indirect effect to the CLF within the action area will be insignificant and discountable because; 1) no CLF occupied habitat has been documented on the allotment ever, 2) no CLF occupied habitat has been documented adjacent to the allotment in over 15 years, 3) drainages adjacent to potentially occupied habitat downstream of the allotment are excluded from grazing by topography, 4) soil/watershed conditions are in an upward or stable trend, and 5) riparian areas on the allotment are in PFC or at their potential.
3. Proposed livestock management activities, within the action area, will not increase the likelihood that non-native predators will be introduced or chytrid fungi will colonize such aquatic sites.
    d. Proposed livestock grazing on the allotment will not increase the likelihood of chyrid fungi or non-native predators being introduced to potential habitat on the allotment.

Loach Minnow and Spikedace

No historic habitat for either species occurs on the allotment. Historic habitat for both species does occur within the action area just downstream of the northern part of the allotment (Spring Canyon Pasture) in the Gila River. This section of the river is listed as historic habitat and designated critical habitat, but there are no documented occurrence records for either species on this section of the river. The last surveys were completed around the year 2000. Experts have speculated that this could be related to the gradient of the river along this section of the Gila. The closest documented occurrence for either species on the Gila River is around 5 miles downstream of the allotment boundary and 14 miles upstream of the allotment boundary (Biological Assessment, PR #44).

Non-native fish species directly compete with loach minnow. Several species of non native fish occur in the Gila River, which parallels the Northern boundary of the allotment. Non native species that are common in the Gila include red shiners, mosquito fish, flathead catfish, channel catfish and smallmouth bass (Biological Assessment, PR #44).

Using the Framework for Streamlining Informal Consultation for Livestock Grazing Activities it was determined that the effect of the Proposed Action Alternative will be insignificant and discountable; therefore, a determination of “May Affect, Not Likely to Adversely Affect” is made for both loach minnow and spikedace based on the following criteria (Biological Assessment, PR #44):

1. Evidence suggests that there is reason to believe listed aquatic species are reasonably certain to occur in the action area,
    a. Loach minnows or spikedace do not occur on the allotment because there is no perennial stream habitat on the allotment. Both species have been documented on the Gila River approximately 5 miles downstream of the allotment. This distance of 5 miles is within what can be considered the potential affected area, from actions occurring on the allotment.
2. Direct effects to listed fish will be avoided by yearlong exclusion of livestock from occupied TEP species habitats in the action area,
    a. Loach minnows or spikedace do not occur on the allotment; therefore there will be no direct effects from proposed grazing on the allotment. .
3. Indirect effects to listed fish occurring within the action area which result from upland livestock grazing are determined to be insignificant or discountable.
    a. Occupied habitat has been documented approximately 5 miles downstream of the project area on the main stem of the Gila River. The Gila River is located directly downstream of the northern portion of the allotment (Spring Canyon Pasture). Implementation of the proposed action alternative will continue to allow grazing upstream of potentially occupied habitat.
        i. Key area monitoring of the soil/watershed condition on the Spar Canyon Allotment found soil/watershed conditions satisfactory on 100 percent of the key areas with upward soil/watershed condition trends (see Watershed, Riparian, and Soils Section, pg 14).
        ii. All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced off with an exclosure to move towards potential conditions (see Watershed, Riparian, and Soils Section, pg 14).
        iii. Indirect effect to either fish species within the action area will be insignificant and discountable because; 1) occupied habitat is located downstream of the allotment boundary, 2) satisfactory watershed conditions are being maintained and/or are improving under existing management, and 3) riparian areas on the allotment are expected to remain in either PFC, or at their potential under existing management.

Loach Minnow and Spikedace Critical Habitat: Designated critical habitat occurs within the action area just downstream of the Spring Canyon Pasture in the Gila River. Due to the lack of habitat within the allotment there are no direct effects. Indirect effects from the implementation of the Proposed Action Alternative will be insignificant and discountable for all primary constituent elements. A determination of “May Affect, Not Likely to Adversely Affect” is made for designated loach minnow and spikedace critical habitat based on the following habitat primary constituent elements:

1. Permanent, flowing water with no or minimal pollutant levels
    a. There is no direct effect because neither fish species occur within the allotment due to a lack of perennial stream habitat on the allotment.
    b. Drainages on the northern part of the allotment, like Shelley, Spring, and Cave Canyon that flow directly into potential habitat on the Gila River are excluded from grazing by topography.

   c. Key area monitoring of the soil/watershed condition on the Spar Canyon Allotment found soil/watershed conditions satisfactory on 100 percent of the key areas (see Watershed, Riparian, and Soils Section, pg 14).
   d. All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced off with an enclosure to move towards potential conditions (see Watershed, Riparian, and Soils Section, pg 14).
   e. Range, watershed, and soils data collected on the allotment indicates that the implementation of the proposed action alternative will not cause a modification of the flow regimes into designated critical habitat. Additionally, existing information shows that elevated sediment levels into designated critical habitat will not occur from the implementation of the proposed action.
2. Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness.
   a. Existing data indicates that the implementation of this project will not modify the natural hydrograph, will not cause elevated levels of sediment, and will not cause the increase in embeddedness in the designated loach minnow critical habitat. All riparian areas evaluated on the allotment are considered in Proper Functioning Condition (PFC), or at their potential. Riparian areas in PFC mitigate downstream effects
3. Streams that have low gradients, water temperatures in the range of 35 to 82 degrees, pool, riffle, run, and backwater components, and an abundant aquatic insect food base.
   a. Existing data indicates that the implementation of the proposed action alternative will not modify the natural hydrograph of the Gila River; therefore, this project will not affect gradients, water temperature, natural habitat ratios, or the food base for either fish species in the downstream reach of designated critical habitat.
4. Habitat devoid of nonnative aquatic species or habitat in which nonnative aquatic species are at levels that allows persistence of loach minnow and spikedace.
   a. Implementation of the proposed action alternative will not have an affect on this primary constituent element.
5. Areas within perennial, interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.
   a. Implementation of the proposed action alternative will not have an affect on this primary constituent element.

Southwestern Willow Flycatcher

There are no documented occurrences of southwestern willow flycatcher and there is no suitable habitat within the Spar Canyon Allotment. Using the Framework for Streamlining Informal Consultation for Livestock Grazing Activities it was determined that the effect of the Proposed Action Alternative will be insignificant and discountable; therefore, a determination of “May Affect, Not Likely to Adversely Affect” is made for this species based on the following criteria (Biological Assessment, PR #44):

1. Grazing activities in the action area, do not measurably or detectably reduce the suitability or regeneration of southwestern willow flycatcher habitat,

   a. Since this species does not occur on the allotment and does not have habitat on the allotment there will be no direct effects to the species or its habitat from the implementation of the proposed action alternative.
   b. No suitable SWWF habitat is located on the allotment. The allotment is drained primarily by intermittent and ephemeral drainages. The closes potential habitat is located on the Gila River. The northern boundary of the allotment parallels the Gila River. The closes documented occurrence of the species is approximately 11 miles downstream of the allotment.
   c. Key area monitoring of the soil/watershed condition on the Spar Canyon Allotment found soil/watershed conditions satisfactory on 100 percent of the key areas with upward soil/watershed condition trends (see *Watershed, Riparian, and Soils section*, pg 14).
   d. All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced off with an exclosure eliminating grazing.
   e. Range, watershed, and soils data collected on the allotment indicates that the implementation of the proposed action alternative will not cause a modification of the flow regimes, will not reduce the suitability of SWWF habitat, and will not effect the regeneration of SWWF habitat.
2. Indirect effects occurring within the action area resulting from livestock grazing on the allotment are determined to be insignificant or discountable,
   a. Existing management on the allotment is allowing for improved range, watershed, and soils conditions on the allotment. All riparian areas on the allotment are in PFC or at their potential. Soil and watershed conditions on the allotment are in satisfactory condition; and drainages that flow directly into potential habitat are not being grazed due to their topography further reducing the potential for downstream effects.
3. Livestock grazing should comport with or be more conservative than the descriptions provided in Table 2, Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Recovery Plan.
   a. Upland grazing and watershed conditions clearly indicate that implementation of the proposed action alternative will not prevent or slow progression of potential SWWF habitat toward suitability and will not affect the maintenance of suitable habitat, all of which is located downstream of the allotment.

Southwestern Willow Flycatcher Critical Habitat: No designated critical habitat occurs on the allotment. The closes designated critical habitat is located on the Gila River, approximately 7 downstream from the northern boundary of the Spring Canyon Pasture, which is excluded from gazing. Due to the lack of habitat within the allotment there are no direct effects. Indirect effects from the implementation of the Proposed Action Alternative will be insignificant and discountable for all primary constituent elements. A determination of “May Affect, Not Likely to Adversely Affect” is made for the designated southwestern willow flycatcher critical habitat based on the following habitat primary constituent elements (Biological Assessment, PR #44):

1. Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:
   a. Key area monitoring of the soil/watershed condition on the Spar Canyon Allotment found soil/watershed conditions satisfactory on 100 percent of the key

areas with upward soil/watershed condition trends (see *Watershed, Riparian, and Soils* section, pg 14).

b. All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced to exclude livestock grazing.

c. Range, watershed, and soils data collected on the allotment indicates that the implementation of the proposed action alternative will not cause a modification of the flow regimes into designated critical habitat. Existing information indicates that there will be no measurable effect to designated SWWF critical habitat located downstream of the allotment.

2. A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments.
    a. Since there will be no measurable effects to the riparian community in designated SWWF critical habitat located downstream of the allotment, there will be no change to the habitat that supports the insect prey base needed by SWWF.

Mexican Gray Wolf

On January 12, 1998, the U. S. Fish and Wildlife Service published an Endangered Species Act section 10(j) rule for the Mexican gray wolf that provided for the designation of specific populations of listed species in the United States as "experimental populations". The Mexican gray wolf is in the process of being reintroduced on the entire 3.3 million acres of the Gila National Forest in New Mexico and on the Apache-Sitgreaves National Forests in Arizona. These wolves have been designated as a non-essential experimental population, pursuant to section 10(j) of the Endangered Species Act as amended.

By definition, a non-essential experimental population is not essential to the continued existence of the species. Therefore, no proposed action impacting a 10(j) population so designated could lead to a jeopardy determination for the entire species. Therefore, proposed livestock grazing and livestock management activities in the 10(j) area with Mexican gray wolves are not likely to jeopardize the continued existence of the wolf.

The Mule Pack (2000) and Pipestem Pack (2001) were found adjacent to the Spar Canyon Allotment on private land. Both Packs were removed for being outside the boundary on private land. The Saddle and Aspen Packs each had one location on the adjacent allotment in 2005. There has never been any depredation and there are no dens within or near the allotment (PR #36).

As defined in the ESA §10(j) rule for the Mexican gray wolf, "disturbance causing land use activity" means any land use activity that the USFWS determines could adversely affect reproductive success, natural behavior, or survival of Mexican gray wolves. However, the following activities are specifically excluded from this definition under the ESA §10(j) rule for the wolf:

1. Legally permitted livestock grazing and use of water sources by livestock;
2. Livestock trailing or drives (only if no reasonable alternative route or timing exists);

3. Vehicle access over established roads to private property and to areas on public land where legally permitted activities are ongoing (only if no reasonable alternative route exists);
4. Use of lands within the national park or national wildlife refuge systems as safety buffer zones for military activities;
5. Prescribed fire and associated management actions (except in the vicinity of wolf release pens); and
6. Any authorized, specific, land use that was active and ongoing at the time wolves chose to locate a den or rendezvous site nearby.

On the Spar Canyon Allotment, a determination of **"not likely to jeopardize**" has been made for the Mexican gray wolf (Biological Assessment, PR 44) in compliance with the criteria identified in the document "Framework For Streamlining Informal Consultation For Livestock Grazing Activities" (USDA Forest Service, March 15, 2005) (PR #8).

Even though it has been determined that continuation of current management will not jeopardize the Mexican gray wolf the Forest Service has additional responsibilities for recovery under the Endangered Species Act (ESA).

Mexican Gray Wolf Recovery under 7(a)(1): The USDA Forest Service, including the Gila National Forest, is a signatory of a Memorandum of Understanding (MOU) (PR, #6) between all government agencies responsible for Mexican gray wolf recovery. The Southwestern Region of the Forest Service, including the Gila National Forest, is a key member of the Adaptive Management Oversight Committee (AMOC) which articulated "standard operating procedures" (SOP), including SOP 11 (PR, #7) and 13 (PR, #4) which deal with the control of wolves and procedure for investigating livestock depredation.

The AMOC completed the Mexican Wolf Blue Range Reintroduction Project 5-Year Review (PR, #10) in 2005 as a requirement of the Final Rule to determine whether, and how, to modify the Reintroduction Project. No recommendation was proposed which directed additional on-the-ground management actions to be performed by the Forest Service.

No depredations have occurred within or near the Spar Canyon Allotment. If depredations do occur the Silver City Ranger District will follow the recommendations to address conflicts provided in the "Framework For Streamlining Informal Consultation For Livestock Grazing Activities" (USDA Forest Service, March 15, 2005) (PR, #8). The Silver City Ranger District will continue to work with the affected livestock permittee and the Mexican Wolf Field Team to arrive at a solution. Examples of additional actions that may be taken include, but are not limited to, placing temporary restrictions around a wolf den site, amending Annual Operating Instructions to change pasture rotations to reduce conflicts, rendering livestock carcasses unpalatable, etc.

Sensitive Wildlife, Plants, and Fish

Sensitive species are defined as "those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by: (a) significant current or predicted downward trends in population numbers or density, or (b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution (FSM 2670.5(19))." It is the policy of the Forest Service regarding sensitive species to: (1) assist states in achieving their goals for conservation of endemic species; (2) as part of the National Environmental Policy Act process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species; (3) avoid or minimize impacts

to species whose viability has been identified as a concern; (4) if impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole (the line officer, with project approval authority, makes the decision to allow or disallow impacts, but the decision must not result in loss of species viability or create significant trends toward Federal listing); and (5) establish management objectives in cooperation with the state when projects on National Forest System lands may have a significant effect on sensitive species population numbers or distributions. Establish objectives for Federal candidate species, in cooperation with the U.S. Fish and Wildlife Service and state of Arizona (FSM 2670.32).

Affected Environment

The Spar Canyon Allotment was evaluated to determine which USFS R3 Sensitive Species (mammals, birds, amphibians, reptiles, fish, insects, snails, and plants) or suitable habitat may be present in or adjacent to the project area (Table 10). Species not listed did not have habitat within the project area.

The allotments were evaluated for the presence of sensitive species or potential habitat. A Biological Evaluation (PR #42) was prepared to document the potential effects to these species from implementing the proposed action. Table 10 identifies the species evaluated and the determination of affect under the Proposed Action Alternative. There will be no impact for any species under the No Action Alternative (PR #42).

Table 10. Sensitive Species Analyzed for Spar Canyon Allotment.

Name		**Determination**
Common	**Scientific**	
Western red bat	*Lasiurus blossevilli*	NE*
Western yellow bat	*Lasiurus xanthinus*	NE
Spotted bat	*Euderma maculatum*	NE
Allen's lappet-browed bat	*Idionycteris phyllotis*	NE
Townsend's big-eared bat	***Corynorhinus townsendii***	NE
Coatimundi	***Nasua nasua***	NE
Black-tailed prairie dog	***Cynomys ludovicianus***	NE
Common blackhawk	*Buteogallus anthracinus*	NE
Apache northern goshawk	*Accipiter gentilis apache*	NE
American peregrine falcon	***Falco peregrinus anatum***	NE

Name		Determination
Common	**Scientific**	
Bald Eagle	***Haliaeetus leucocephalus***	NE
Bell's vireo	***Vireo bellii***	NE
Yellow-billed cuckoo	***Coccyzus americanus occidentalis***	NE
Southwestern toad	*Bufo microscaphus microscaphus*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
Lowland leopard frog	*Rana yavapaiensis*	NE
Narrow-headed garter snake	*Thamnophis rufipunctatus*	NE
Mountain silverspot butterfly	*Speyeria nokomis nitocris*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
Blue silverspot butterfly	*Speyeria nokomis coerulescens*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
NM hot spring snail	*Fontelicella (Pyrgulopsis) thermalis*	NE
Gila spring snail	*Fontelicella (Pyrgulopsis) gilae*	NE
Iron Creek woodland snail	*Ashmunella mendax*	NE
Oreohelix chloride	*Oreohelix pilsbryi*	NE
Mimbres figwort	*Scrophularia macrantha*	NE
Gila groundsel	*Senecio quaerens*	NE
Pinos Altos flame flower	*Talinum humile*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
Bloomer's dock	*Rumex orthoneurus*	NE
Gooding's onion	*Allium goodingii*	NE
Mogollon clover	*Trifolium longipes neurophyllum*	NE
Wooton's hawthorn	*Crategus wootoniana*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
Hess's fleabane	*Erigeron hessii*	NE
Parish's alkali grass	*Puccinellia parishii*	NE

Name		Determination
Common	**Scientific**	
Porsild's starwort	*Stellaria porsildii*	May Impact Individuals, Not Likely to cause a trend toward Federal Listing
Mogollon death camus	*Zigadenus mogollonensis*	NE

Southwestern Toad

Habitat for the southwestern toad is present and the species may occur. Habitat requirements include small streams and rivers, and temporary woodland pools. Frogs or frog egg masses can be stepped on by livestock; therefore, the implementation of this project has the potential to directly affect individuals or the reproduction of this species (Biological Evaluation, PR #42).

All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced excluding livestock grazing. Field inventories indicate that current/proposed livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability PRs, #35 and 42).

The implementation of this project under the Proposed Action Alternative may impact individuals, but will not cause a trend toward federal listing or affect the viability of this species (Biological Evaluation, PR #42).

Mountain Silverspot Butterfly and Blue Silverspot Butterfly

Neither species have been documented in Grant County nor are they thought to occur on the Spar Canyon Allotment. This cannot be confirmed so it will be assumed that this species has the potential to occur on the allotment.

Grazing can cause direct effects to this species by removing vegetation used for reproduction, and indirectly by removing vegetation that this species uses as forage. All the available data on the allotment strongly suggest that the potential effects from implementing the proposed action will cause a very low level of effect to no effect to any potential habitat for this species. Grazing capacity estimates conclude there is sufficient forage to support permitted numbers. Under current management range and watershed conditions throughout the allotment has improved from 1979 to 2007 (PRs, #12-13 and 32).

All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced to exclude livestock. Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability (PR #35).

The implementation of this project may impact individuals, but will not cause a trend toward federal listing or affect the viability of this species under the Proposed Action Alternative (PR #42).

Pinos Altos Flame Floer

It is unknown if this species occurs within the Spar Canyon Allotment. This species usually occurs in openings of shallow soil in semi-desert grassland. It has been reported to be restricted to shallow, and possibly rather coarse soils overlying bedrock, where it is free from competitive interactions. Its elevational range has been identified as 4500 to 8000 feet. This species has only been located at a couple of locations on the Forest; one of these areas is approximately 20 miles to the southeast of the allotment. Potential habitat for this species occurs on the allotment.

Grazing can cause direct effects to this species by trampling, and potentially by direct removal through foraging. All the available data on the allotment strongly suggest that the potential effects from implementing the proposed action will cause a very low level of effect to no effect to any potential habitat for this species. Grazing capacity estimates conclude there is sufficient forage to support permitted numbers. Under current management range and watershed conditions throughout the allotment has improved from 1979 to 2007 (PRs, #12-13 and 32).

All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced to exclude livestock. Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability (PR #35).

The implementation of this project may impact individuals, but will not cause a trend toward federal listing or affect the viability of this species (PR #42).

Wooton's Hawthorn

Potential habitat for this species may occur on the allotment. Habitat consists of canyon bottoms and forest understory in lower montane coniferous forest at elevations between 6,500 to 8,000 feet in elevation.

Grazing can cause direct effects to this species by trampling. All the available data on the allotment strongly suggest that the potential effects from implementing the proposed action will cause a very low level of effect to no effect to any potential habitat for this species. Grazing capacity estimates conclude there is sufficient forage to support permitted numbers. Under current management range and watershed conditions throughout the allotment has improved from 1979 to 2007.

All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced to exclude livestock. Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability.

The implementation of this project may impact individuals, but will not cause a trend toward federal listing or affect the viability of this species (PR #42).

Porsild's Starwort

This species is associated with shade and partially open understory of mixed conifer and aspen forests, and occasionally scattered on roadsides with steep, loamy and rocky embankments at elevations of 7,900 to 8,200 feet. Potential habitat for this species may occur on the allotment.

Grazing can cause direct effects to this species by trampling. All the available data on the allotment strongly suggest that the potential effects from implementing the proposed action will cause a very low level of effect to no effect to any potential habitat for this species. Grazing capacity estimates conclude there is sufficient forage to support permitted numbers. Under current management range and watershed conditions throughout the allotment has improved from 1979 to 2007.

All riparian areas evaluated on the allotment are considered in Proper Functioning Condition, or at their potential, which meets Forest Plan standards and guidelines, with the exception of Perry and Seep Spring which were considered Functional at Risk. These springs will be fenced to exclude livestock. Field inventories indicate that current livestock management is not causing floodplain, wetland or riparian concerns, nor is it having negative impacts on water quality or bank stability.

The implementation of this project may impact individuals, but will not cause a trend toward federal listing or affect the viability of this species (PR #42).

Cumulative Effects (Threatened, Endangered, and Sensitive Species):

Cumulative effects include the incremental effects of actions likely to occur in the same area or in adjacent areas in the past, present, and reasonably foreseeable future. The following is an analysis of potential cumulative effects (PR #43):

Outside of designated wilderness thinning juniper with fuel wood harvest and other mechanical means within the watershed would provide a temporary opening up of the canopy. This would benefit herbaceous plant growth; litter would change from needle cast to living plants. Anticipated levels of these activities are at or below historical levels. Effects on wildlife species would be within range of natural variability, and would follow appropriate guidelines to protect species richness.

Management of wildlife by the New Mexico Department of Game and Fish is based on specific comprehensive plans for game management units, public demand, Commission direction and agency funding. The allotments fall within Game Management Unit 24. There is no current comprehensive plan for deer, javelina, bear, cougar, or squirrels. The Draft Long Range Plan for Management of Wild Turkey in New Mexico does not establish population or habitat objectives for turkey but sets an objective to "…maintain the current high level of public satisfaction with the management of wild turkeys in New Mexico through 2006…". Meaningful changes in wildlife populations sufficient to affect habitat conditions are unlikely to occur if the Department follows this current path. Department management of populations can negate or compliment changes in habitat conditions. If Department policy constrains the increase in particular populations, the benefit of habitat improvement under any specific alternative would be realized either by another species not constrained by Department policies or by other resources (i.e. Forage not eaten would become litter that would protect soil from erosion and provide fine fuel for fires). If wildlife populations are allowed to increase without constraint, expected benefits from changes in livestock management and stocking rates may not be realized.

Wild fires (including necessary fire suppression actions) and prescribed fires within the watersheds are expected to continue at historical levels. Fires remove forage and expose soil in a manner similar to ungulate grazing. Fires favor a different mix of herbaceous species than livestock grazing does. Fire tolerant, fire resistant or fire stimulated species benefit from both prescribed and wild fires. Fires, particularly on a large scale, alter wildlife habitat use patterns. Initial loss of habitat may drive animals into adjacent areas straining available resources. As the burned area recovers, it often becomes a magnet for wildlife as it offers early seral species not available elsewhere in the habitat. Meaningful movement of wildlife into or out of the allotments could intensify or negate anticipated changes in habitat conditions.

Planned or likely to occur actions applicable to this assessment are within the range of actions that have occurred in the past and in combination with the Proposed Action Alternative are not predicted to markedly change habitat conditions from that predicted in this assessment for management indicator species, Region 3 sensitive species, or federally listed species. The Proposed Action Alternative would likely create short-term disturbances to wildlife but would not be to the extent that permanent changes in habitat use patterns would occur. None of these actions would measurably affect the effects described in this assessment.

Management Indicator Species (MIS)

Twenty-six Management Indicator Species (MIS) were designated in the 1986 Land and Management Plan for the Gila National Forest (USDA 1986). MIS were selected based on what was thought to be their ability to indicate changes in habitat and/or ecosystems that are related to land management activities (e.g., grazing, fire management, roads, water developments, etc.). Since 1986, more knowledge has been gained concerning forest management; therefore the 1986 MIS list was amended to reflect current research on indicator species and current management emphases. The current MIS list consists of 10 species representing nine habitat and/or vegetation types (PR #15).

MIS are addressed in order to implement National Forest Management Act (NFMA) regulations. They are selected because their population changes are believed to indicate the effects of management activities (36 CFR 219.19(a)(1). The MIS approach is designed to function as a means to provide insight into effects of forest management on plant and animal communities. Species are selected to represent several categories, such as commonly hunted or fished species, non-game, and threatened and endangered species (TES). They may be used as a tool for assessing changes in specialized habitats, formulating habitat objectives, and establishing standards and guidelines to provide for a diversity of wildlife, fish, and plant habitats (MIS Report, PR #40).

Population trend is most appropriately addressed at scales above the project level. Many of the selected Management Indicator Species occur and range far beyond a local scale such as a project analysis area. Individuals, family groups, or herds such as elk, annually use areas much larger than the project level and population trend must be examined on a much larger scale to be meaningful. For NFMA implementation, the appropriate scale is that of the Gila National Forest. Evidence from long-term censuses suggests that few natural populations or communities persist at or near equilibrium on a local scale. At a site-specific project level, there is a great deal of fluctuation in wide ranging populations. For most species, it would be technically and practically inappropriate to conduct population trend sampling at the scale of individual projects (MIS Report, PR #40).

Project Level Analysis: MIS species selection for this analysis started with a review of the Forest MIS report and only a subset of the forest-wide management indicator species was selected. These species were selected based upon their associations with the habitat present in the project area and their suitability as indicators of habitat changes brought about by the Proposed Action Alternative. Species considered and rationale for elimination or inclusion is presented in Table 11. Only the mule deer and Mearn's quail were selected for further analysis (MIS Report, PR #40).

Table 11. Gila National Forest Management Indicator Species.

Management Indicator	*Management Indicator For:*	*Selected for Analysis*		*Rationale for Elimination or Inclusion as MIS for this Action*
		YES	*NO*	
Mule Deer (*Odocoileus hemionus*)	Desert shrub, piñon-juniper, shrub oak woodland communities.	X		Habitat exists in the allotment for this species. Long-term population trends for the Gila National Forest appear to be decreasing.
Mearn's [Montezuma] Quail (*Cyrtonyx montezumae mearnsi*)	Plains and Mountain grassland communities.	X		Quail populations fluctuate from year to year for a number of reasons, primarily local weather conditions and predators.
Long-tail Vole (*Microtus longicaudus*)	Wet meadows and wetlands.		X	Effects to this species were not analyzed because habitat for this species does no occur in the project area.
Beaver (*Castor canadensis*)	Low and mid elevation riparian areas.		X	Effects to the beaver were not analyzed because habitat for this species does not occur in the project area.
Plain [Juniper] Titmouse (*Baeolophus ridgwayi*)	Piñon-juniper and shrub oak woodlands.		X	Proposed action would not impact oak trees containing cavities used by this species.
Hairy Woodpecker (*Picoides villosus*)	Ponderosa pine and mixed conifer snag component.		X	Effects to the hairy woodpecker were not analyzed because this action would not impact snags.
Mexican Spotted Owl (*Strix occidentalis lucida*)	Mixed conifer community.		X	The Mexican Spotted Owl is a Federally Listed species that is discussed in the Grazing Consultation Forms and Biological Assessment prepared for this action.
Black Hawk (*Buteogallus anthracinus anthracinus*)	Riparian habitat at low and mid elevations.		X	Effects to this species were not analyzed because habitat for this species does not occur in the project area.
Goshawk (*Accepeter gentiles*)	Ponderosa pine community.		X	The Northern goshawk is considered a Forest Service sensitive species, potential effects to this species are discussed in Biological Evaluation prepared for this action.
Gila Trout (*Oncorhnychus gilae*) Rio Grande cutthroat	Riparian habitat at high elevations.		X	Effects to this species were not analyzed because habitat for these two native trout does not occur in the project area.

Management Indicator	*Management Indicator For:*	*Selected for Analysis*		*Rationale for Elimination or Inclusion as MIS for this Action*
		YES	*NO*	
(*Oncorhynchus clarki virginalis*)				

Mule Deer

Mule deer is the common deer of western mountains, forests, deserts and shrublands. The mule deer was picked as a management indicator species to represent the desert shrub, pinyon-juniper, and shrub oak woodland communities. Analysis indicates the acreage of desert shrub and woodland communities have not changed significantly since the Forest Plan was developed.

It is important to note that even though good habitat may be present there can be other limiting factors that affect the deer populations. Mule deer across the Gila National Forest are not as common as they were in the 1960s. Mule deer population trends on the Gila National Forest are synonymous with what has been occurring throughout New Mexico and other western states. It is widely acknowledged that current populations of mule deer are declining throughout the west. Many biologists believe that the mule deer populations of the 1960's may have been unnaturally high. The high numbers are often attributed to periods of high precipitation, temporarily improved deer habitat, and declining predator populations

Spar Canyon Allotment is located in Game Management Unit (GMU) 24. Estimated numbers of mule deer in GMU 24 have varied, but long term trend estimates indicate mule deer numbers are down. This corresponds with what has been occurring throughout New Mexico and the Forest.

Grazing capacity estimates for Spar Canyon Allotment conclude there is sufficient forage to support both wildlife and livestock. Approximately 43 percent of the allotment is being excluded from grazing and the remainder will be managed under a rest deferred management system with utilization by both wildlife and livestock not to exceed a conservative level of 31 to 40 percent utilization. Both range and watershed/soil conditions on the allotment have improved from 1979 to 2007 with all condition ratings being satisfactory. The improvement of deer habitat conditions within this allotment alone would not have a measurable effect on deer population trends (MIS Report, PR #40).

Mearns' quail

Mearns' (Montezuma) quail occur in the Gila National Forest, San Mateo Mountains, San Andres Mountains, Sacramento Mountains, Peloncillo Mountains, and associated sky islands in the extreme southwestern portion of the state. In New Mexico, the Mearns' Quail is listed as S3 species, which is vulnerable either because it is very rare and local throughout its range, found only in a restricted range, or because of other factors making it vulnerable to extirpation.

It is important to note that even though good habitat may be present there can be other limiting factors that affect quail populations. Quail populations fluctuate from year to year for a number of reasons, primarily local weather conditions and predators. Limiting factors for quail populations include predation, habitat modification and annual precipitation. Annual population fluctuations are positively correlated with the amount of summer precipitation in any given year. The NMDGF manages quail through hunting.

Gila National Forest: Across the Gila National Forest, acreages of plains and mountain grassland have remained stable. Mearns' quail are uncommon, breeding residents of the Gila National Forest. Censusing for Mearns' Quail has not occurred, however, over the past five years the species has been observed in various locations where they were previously unknown. More numerous and larger coveys of quail have been seen on both the Wilderness and Silver City Ranger Districts.

Research suggested that forage utilization in wooded and open grassland within about 46 meters of tree overstory must be below the 51-55 percent range to compensate for dry years. While the 40-45 percent level provides a slight safety margin and should adequately compensate for minor fluctuations in forage production during most years, the 35-40 percent range is preferable as it provides some additional protection for years of extremely low forage production. For Spar Canyon Allotment approximately 43 percent of the allotment (Spring Canyon Pasture) will be completely excluded from grazing and over the remaining acreage grazing utilization will be conservative at 31-40 percent well within the recommended range thought to be preferable for Mearn's quail.

With apparently secure global, and national rankings, vulnerable state rankings, an overall fluctuating trend in New Mexico, and increased observations and larger coveys of Mearns' Quail on the Forest, the trend for the species on the Forest is thought to be stable (MIS Report, PR #40).

Migratory Bird Species

There are no designated Important Bird Areas (IBA) affected by the project. The nearest IBA is the Gila Bird Management Area, located more than 20 miles downstream of the allotment. There is no association or important link between the bird communities on the allotment and the Gila Bird Management Area. Therefore, no IBAs are affected under the No Action or Proposed Action Alternative. The project area provides wintering habitat for bald eagles and red-tail hawks. However, this area is not recognized as an important over wintering area because significant concentrations of birds do not occur here nor due unique or a high diversity of bird's winter here (Migratory Bird Report, PR #41).

Pinyon-juniper vegetation association is dominate throughout the allotment with open pinyon-juniper with grassland found along the tops of the lower mesas. There are small amounts of oak woodland (shrub land) and riparian. Ponderosa pine can mostly be found in the Spring Canyon Pasture. Since this pasture will not be grazed only grassland, shrubland, riparian, and pinyon-juniper vegetation types will be discussed.

The New Mexico Partners in Flight (PIF) high priority species were analyzed by vegetative type. Species that did not have habitat were not included. Representative bird species that depend on habitat types commonly found on the Spar Canyon Allotment are identified in the following table (Table 12). No significant effects will occur to Migratory Birds because the proposed project will not alter existing habitat for migratory bird species of concern, and no anticipated disturbance will occur as a result of either alternative (Migratory Bird Report, PR #41).

Table 12. Vegetation Types and High Priority Migratory Bird Species.

Vegetation Types	Representative Migratory Bird Species Analyzed in Detail

Vegetation Types	Representative Migratory Bird Species Analyzed in Detail
Chihuahuan desert grassland	Prairie Falcon Long-billed Curlew
Montane shrub	MacGillivray's Warbler Green-tailed Towhee Black-chinned Sparrow
Piñon-juniper woodland	Ferruginous Hawk Gray Flycatcher Gray Vireo Black-throated Gray Warbler
Southwestern riparian	Elf Owl Bell's Vireo Abert's towhee

Chihuahuan Desert Grassland

There will be no change in the grassland acres. Current range and watershed conditions are satisfactory. Proposed stocking levels are within capacity. The proposed action will incorporate management flexibility by providing a range of allowable numbers (0 – 75) that reflects variations in resource conditions and management objectives over time. Within this range, annual permitted livestock numbers will be specified in annual operating instructions. Initial stocking rates will be set based on existing resource and infrastructure conditions and will be based on range resource conditions. Changes in stocking would occur as a result of changes in resource conditions or management objectives. Forage utilization will be set at a conservative use level, approximately 31 to 40 percent utilization, including wildlife use (See *Alternatives Considered*, pg 9).

Under either Alternative, there are no anticipated impacts to the prairie falcon and long-billed curlew (Migratory Bird Report, PR #41).

Montane Shrub

The Proposed Action Alternative will not modify the age class or shrub cover in the project area. Therefore, the Proposed Action will not modify the habitat parameters that this species depends on for nesting and foraging nor will the proposed action preclude wildland fire from the landscape or alter the shrubland in any way. Under either Alternative, there are no anticipated impacts to the MacGillivray's warbler, green-tailed towhee, or black-chinned sparrow (Migratory Bird Report, PR #41).

Piñon-Juniper Woodland

The Proposed Action Alternative will maintain grassland within the pinyon-juniper (P-J), it will not reduce shrub cover or modify the shrub/tree age class therefore, the habitat parameters that these species need for nesting and foraging will not be affected. Under either Alternative, there are no anticipated impacts to the Ferruginous hawk, gray flycatcher, gray vireo, or black throated gray warbler (Migratory Bird Report, PR #41).

Southwestern Riparian

Riparian potential is very limited within Spar Canyon Allotment with riparian found only around five springs located in Spar and Brush Pastures and two narrow bedrock channels in Spring Canyon Pasture (which is excluded from grazing). Except for two of the springs all riparian areas are properly functioning. The two springs will be fenced to exclude livestock and are expected to recover quickly. Based on project design with adaptive management, stocking within capacity, conservative utilization, and monitoring satisfactory riparian conditions are expected to be maintained for all that are currently satisfactory and where livestock are being excluded quickly restored.

Because of the limited amount of riparian only three out of the 12 PIF high priority species have habitat. The Proposed Action Alternative will not modify the riparian types or structure therefore, the habitat parameters that these species depends on for nesting and foraging will not be affected (Migratory Bird Report, PR #41).

Social and Economic Concerns

Ranchers contribute to the social structure of communities around the allotments by providing some direct and indirect job s for residents of those communities, revenues for county, city, and Federal governments, and the lifestyle associated with ranching for their family, their employees and other people associated with ranching. The number of people involved in ranching today in Grant County is very low compared to the rest of the population.

Domestic livestock grazing contributes to the livelihood of permittees as well as to the economies of local communities and counties. A total of 75 head are authorized on the Spar Canyon Allotment. During the last eight years actual stocking has been considerably less. The economic effect on the local economy is small and will not change with the proposed action. The permittee directly contribute revenues to Grant County through property taxes on private land.

Social Concerns

No Action or No Grazing Alternative: The No Grazing Alternative will eliminate a source of income and possibly a way of life for the Spar Canyon Allotment permittee. This may cause conflicts within the permittee's family and the local community. Planned livestock grazing will not be used to meet the overall biological, social, and economic objectives.

Proposed Action Alternative: Continuing with current stocking levels should not affect and, in fact, should help meet the economic and social objectives and the economic feasibility of the Spar Canyon Allotment's permittee. Maintaining satisfactory range and watershed conditions is key to meeting the overall biological, social, and economic objectives. Project design of a planned livestock grazing system with adaptive management is one of the ways to meet these objectives. The number of livestock authorized through the permit will not change however the actual numbers from year to year may vary based on climatic conditions and the need to restore impaired and/or unsatisfactory soil conditions. Adaptive management is currently being practiced and numbers of livestock have been much lower than permitted numbers. Therefore, there will be little change (if any) from what is currently being practiced.

This alternative will maintain a viable ranch operation, thereby maintaining the incomes of the permittee and any employees. As long as the ranch continue to operate the permittee and any employees will help perpetuate the customs, traditions, and lifestyle long associated with cattle

grazing. This, in turn, will contribute rural sense of the community in Grant County, New Mexico.

Local and Federal Economy

This economic analysis provides a relative comparison of economic effects on the permittee, Forest Service and local community between specific alternatives. This analysis is not intended to portray actual, complete, and accurate economic effects. Since the cost and benefits figures used in the analysis do not reflect actual permittee economic data and display only some of the many factors involved in ranch operations, negative values should not be interpreted to indicate that a particular permittee is actually losing money. All values are used to compare alternatives against other alternatives rather than to predict whether a particular ranch operation would be profitable under a particular alternative. Values in the tables are estimates based upon regional averages and the assumption that the allotment is stocked to the permitted number of livestock.

The Proposed Action Alternative does not change the current stocking level. Therefore, there is no change in the amount of income (or losses) to the Forest Service, permittee, or the County. For the no action alternative there will be a loss of income that is currently based on 75 head of livestock, yearlong. If there is no grazing Grant County and the Forest Service will lose revenues from grazing fees and taxes. It is estimated that for every 100 head of cattle there will be approximately 1.14 jobs within the County. Continuing with 75 head there will be 0.85 jobs which will not change from what is already occurring. The action alternative would maintain the Spar Canyon Allotment ranch as a small business contributing to Grant County's economy and County tax base. This would help provide for community stability by preserving a small business ranch. Maintenance of this ranch would maintain the current property tax base and the current level of expected services from the County. The no action alternative would eliminate these benefits.

Other

Environmental Justice

Environmental Justice On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This executive order was designed to focus the attention of Federal agencies on the human health and environmental conditions in minority and low-income communities. It requires Federal agencies to adopt strategies to address environmental justice concerns within the context of existing laws, including NEPA. The goal of environmental justice analysis is not to shift risks among populations, but to identify potential disproportionately high and adverse effects, and to identify alternatives that may mitigate these impacts. There were few effects expected to occur to minority populations and low-income populations from either of the alternatives. The No Grazing Alternative is expected to negatively affect the ranchers and local economy that depends on the rancher's expenditures for economic survival. This includes employees of the ranches, as well as providers of goods and services that ranchers use on a regular basis.

Recreation

The majority of the Spar Canyon Allotment falls in the Semi-Primitive Non-Mootorized and Primitive Recreation Opportunity Spectrum (ROS) classes. The proposal to continue livestock grazing at the stated levels is not likely to alter the area's ROS (Recreation Report, PR #38)

It is anticipated that the proposal to continue livestock grazing at the state levels will not affect the Visual Quality Objectives (Recreation Report, PR #38).

The Gila Wilderness makes up approximately 44 percent of the allotment with most of this in the Spring Canyon Pasture which will be excluded from the gazing rotation system. Essentially under current management the Spring Canyon Pasture is not being used therefore, there will be little affect on Wilderness resources (Recreation Report, PR #38).

Approximately 5,724 acres are located within an Inventoried Roadless Area. There is no new road construction or mechanical disturbance planned under the Proposed Action Alternative, therefore it is anticipated that the proposal will not affect the roadless character of the area (Recreation Report, PR #38).

No portion of the allotment is situated in Wilderness Study areas or National Recreation Areas. It is anticipated that the Proposed Action Alternative will not produce any additional extraordinary circumstances (Recreation Report, PR #38).

Lands and Minerals Resources

The Gila National Forest has had a long history of mining activities that have occurred, or are still occurring, on patented land within the Forest's boundaries. Currently the Bear Creek 5th code watershed has several small active mines occurring on private lands within the basin. Very limited activity occurs within the Mogollon Creek watershed, particularly within the portion in Wilderness.

Air Quality

Air quality across the Gila National Forest is currently impacted by emission generating smelters established south, southwest and west of the project area, the directions from which the winds blow during most of the year. These smelters are large sources of sulfur dioxide and particulates. In addition to the smelters, several coal-fired power plants are located in the same upwind areas. These power plants emit sulfur dioxide, nitrogen oxides and particulates. Four very large power plants are situated north and north-northwest of the project area, including the Cholla Plant (Joseph City, AZ), the Four Corners Plant, the San Juan Plant (Farmington, NM), and the Navajo Plant (Page, AZ). These four power plants may affect air quality during periods in which winds are from those directions, primarily during the winter season. Currently, the Air Quality Bureau of the New Mexico Environment Department has not designated any airsheds in or around the Gila National Forest as being in non-attainment of National Ambient Air Quality Standards. For established Air Quality Related Values, the Gila Wilderness Area Class I airshed is certified for visibility impairment due to regional haze (Watershed, Soils, and Air Report, PR #35).

Localized conditions that may affect air quality on the allotment include smoke generated from fire, including burns related to wildland fire, wildland fire use, and prescribed burns. This smoke would be intermittent, transient, and having different source locations every year. Some fires

may generate large volumes of smoke for a brief period of time (Watershed, Soils, and Air Report, PR #35).

Any dust generated by livestock activities is expected to stay within the analysis area, as fugitive dust settles out relatively quickly. The project area is not within a recognized area of non-attainment for Particulate Matter-10, Carbon Monoxide, Sulfur Dioxide, Ozone or Total Suspended Particulates, therefore, no analysis is necessary or provided to determine conformity with the State Implementation Plan for Air Quality. (Watershed, Soils, and Air Report, PR #35).

Heritage Resources

Consultation was completed with the New Mexico SHPO; a No Adverse Effect determination was made with concurrence from SHPO (PR, #27 and 33). No issues regarding American Indians and Alaska Native religious or cultural sites were identified. In addition, a scoping letter was mailed to approximately 89 state, federal, tribal governments, non-government organizations, and individuals (PR, #20). No issues regarding archaeological sites or historic properties or areas were identified (PR #31).

Chapter 4 - Consultation and Coordination

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

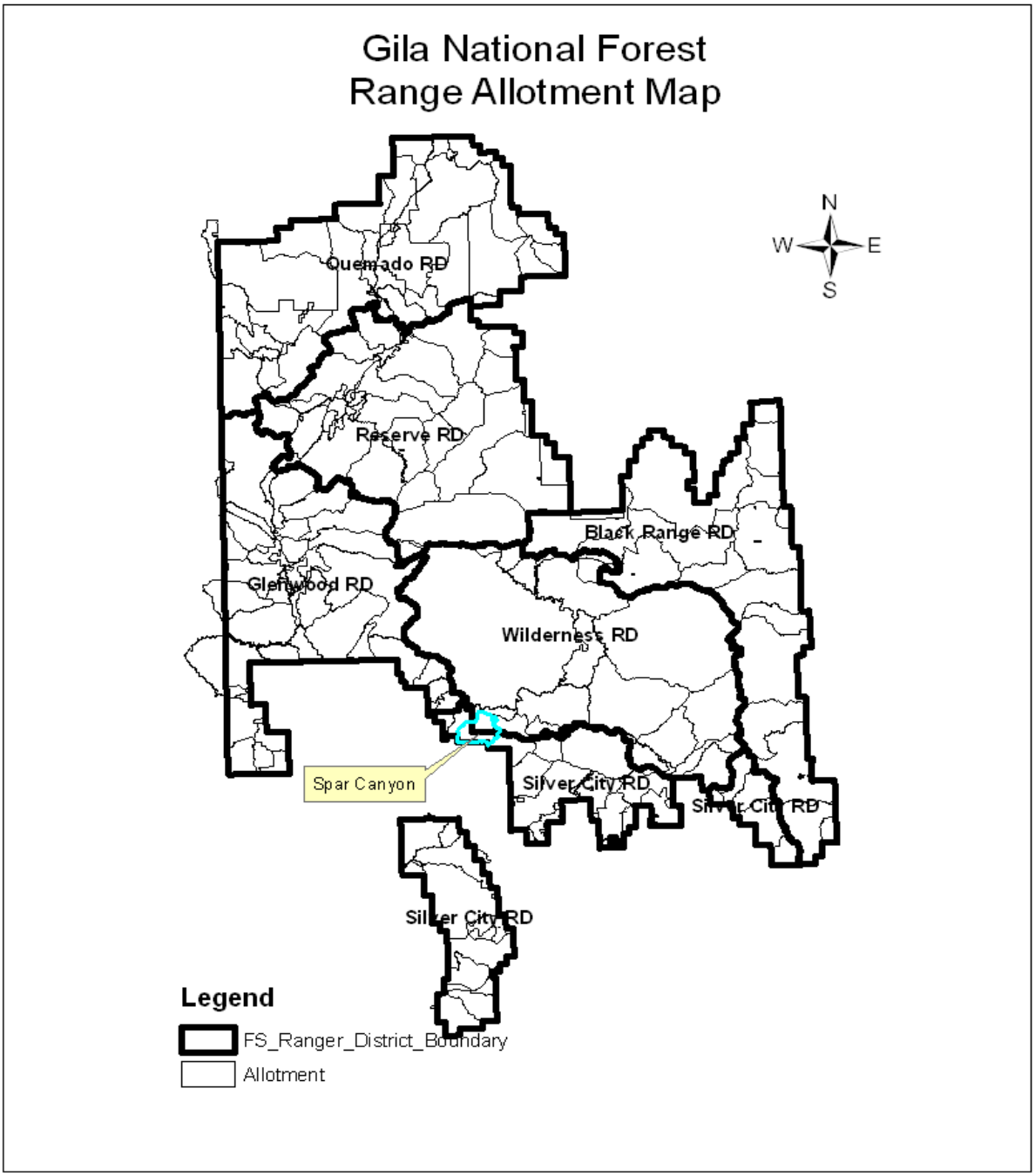
ID TEAM MEMBERS:

Keith Menasco, NEPA Team Leader
Michael Head, Range Staff, Silver City RD
Naomi Salazar, Wildlife Specialist, Silver City RD
David Warnack, Recreation Staff, Silver City RD
Robert Schiowitz, South Zone Archeologist, Silver City RD
Carolyn Koury, Hydrologist, Gila NF
Mike Natharius, Soils Scientist, Gila NF

FEDERAL, STATE, AND LOCAL AGENCIES:

US Fish and Wildlife Service
New Mexico State Historic Preservation Office

Appendix A


Gila National Forest
Range Allotment Map
N
W
E
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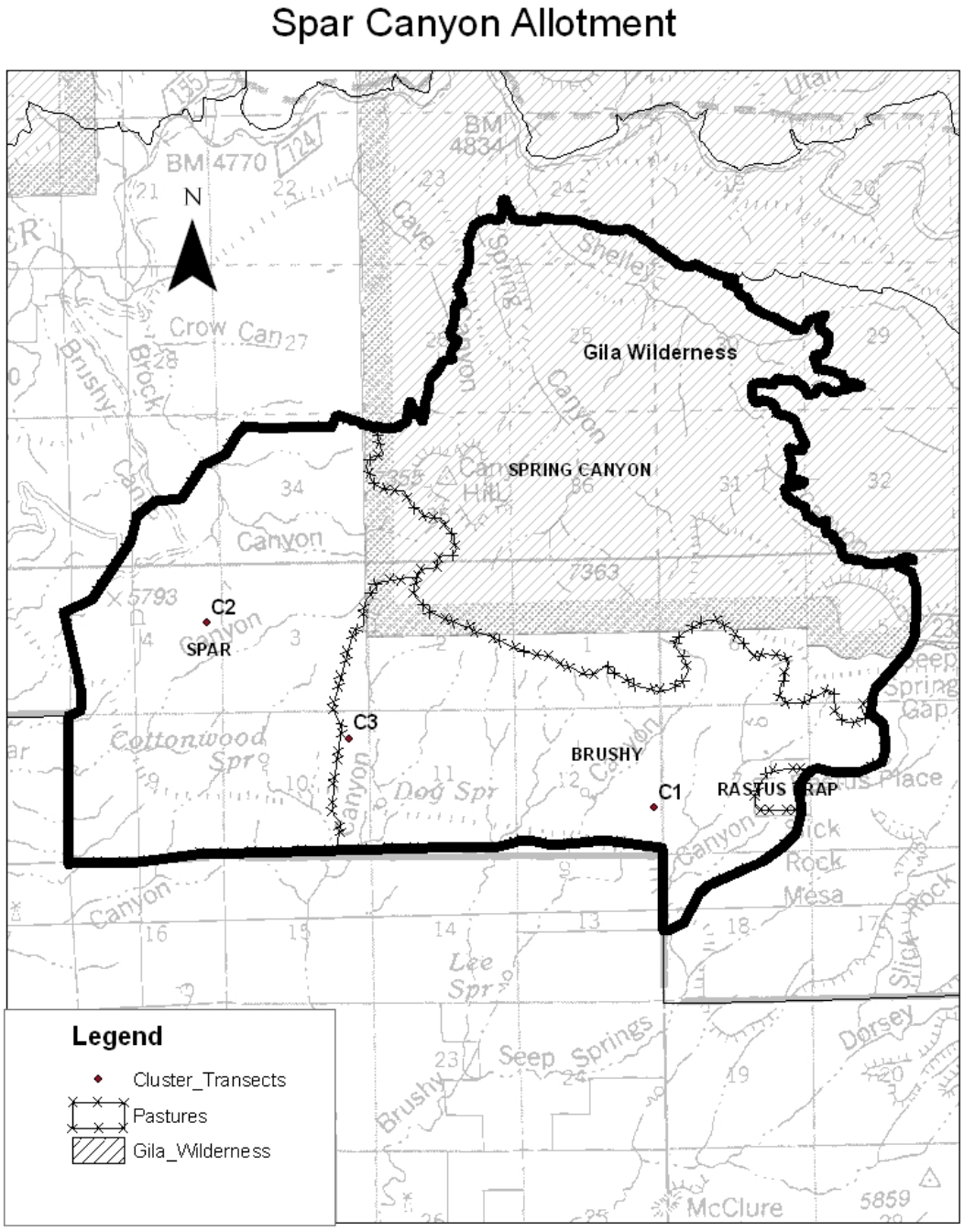
Quemado RD
Reserve RD
Black Range RD
Glenwood RD
Wilderness RD
Spar Canyon
Silver City RD
Silver City RD
Silver City RD
Legend
FS_Ranger_District_Boundary
Allotment



. Spar Canyon Allotment Map with Pastures and Monitoring Cluster Transects.