



United States
Department of
Agriculture

Forest
Service

Southwestern
Region



Livestock Grazing Management on the San Antone Allotment

Tres Piedras Ranger District Carson National Forest



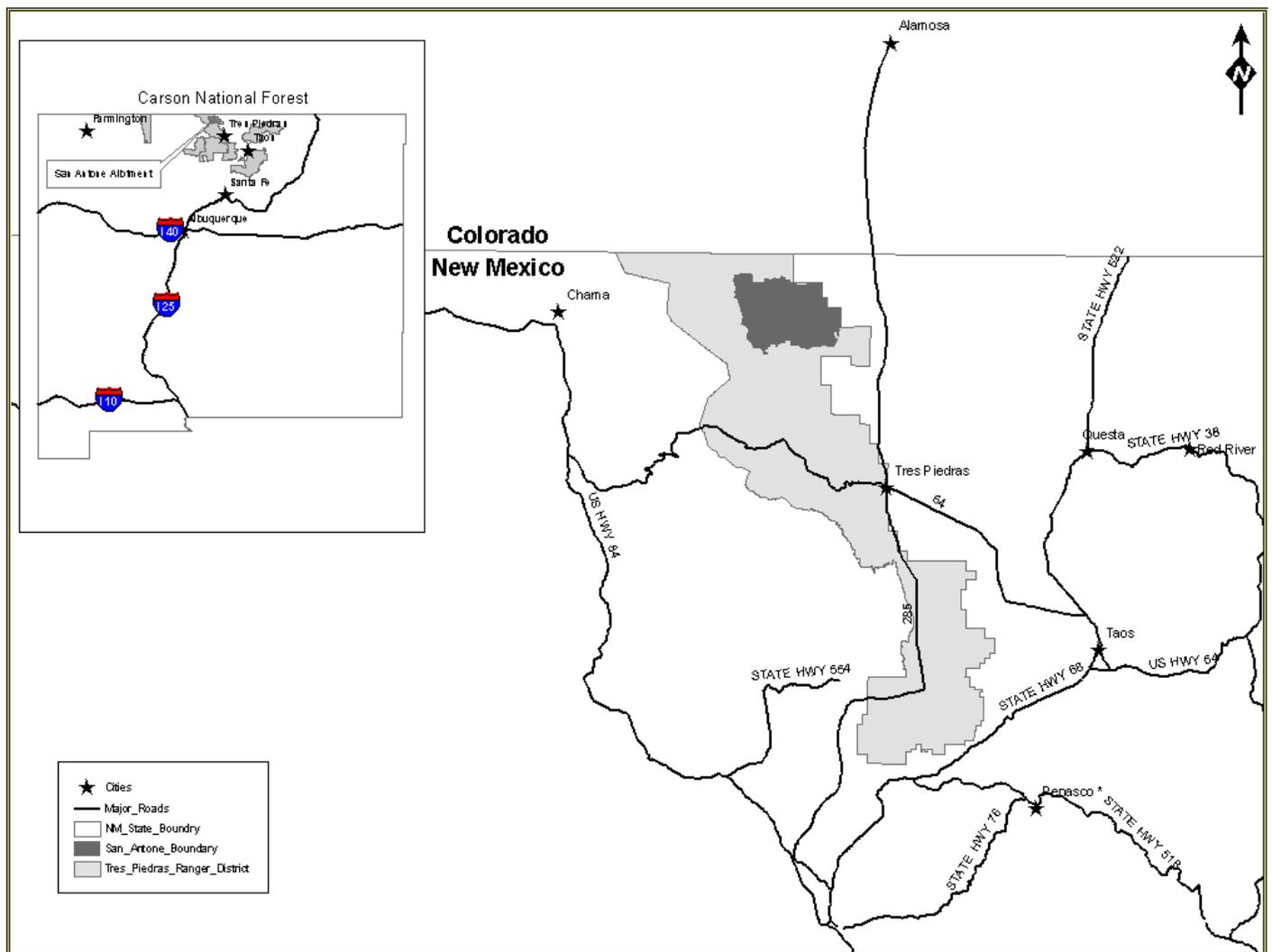


Figure 1. Project Vicinity Map

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Chapter 1 – Purpose and Need

This environmental assessment (EA) is being prepared to analyze the effects of reauthorizing livestock grazing on the San Antone Allotment, on the Tres Piedras Ranger District, Carson National Forest. An interdisciplinary analysis on the proposed action is documented in a project record. An index for the project record is presented in appendix A. Source documents from the project record are referenced throughout this environmental assessment by showing the document number in brackets [#]. This analysis is consistent with the Carson National Forest Land and Resource Management Plan (hereby forest plan), as amended and was developed in consideration of the best available science. [4]

Background

The San Antone Grazing allotment (41,281 acres) is located approximately 14 miles northwest of the community of Tres Piedras in northern New Mexico. A primary access is from State Highway 285 to Forest Road 87 (see figure 1). The elevation ranges from 8,600 to over 10,000 feet and topography varies from gentle to moderately steep slopes. The allotment has seven pastures: Ursulo, Wheatgrass, Chino, Oso, Hondo, Tanques and Nutritas.

Allotment grazing capacity was reviewed and updated and indicates that of the total acreage, approximately 84 percent or 34,923 acres has grazable (full and potential¹) acres. Currently, the allotment is managed for a total of 861 cows/calves and 29 bulls. The grazing season is approximately 5 months (153 days). Each year, livestock are allowed to use up to 40 percent of the available forage beginning May 17, depending on the soil and forage conditions. All livestock are removed from the allotment on or before October 16, depending on climatic conditions or if utilization guidelines have been reached.

Overall, the seven pastures are in fair condition. Some factors influencing condition and trend is a decrease in cool season grass productivity and vigor in all pastures, fluctuations in annual and seasonal precipitation, unauthorized (not permitted) livestock use from private land and poor livestock distribution. Poor livestock distribution is due to cattle concentrating in riparian areas and canyon bottoms, intermittent drainages and upland meadow openings. Since 1996, permittees have implemented voluntary permit reductions to respond to resource conditions (less precipitation and lower forage production). From 1996 to 2000, AUM reductions ranged from 18 to 31 percent and in 2001 to 2006 reductions ranged from 23 to 69 percent. Although these reductions occurred, allotment condition and trend have not yet improved to the desired “good condition and stable to upward trend.”

Purpose and Need for Action

Livestock grazing on National Forest System lands has contributed to the local economy and the stability of southern Colorado and northern New Mexico communities for decades. On the San Antone allotment, there is a need for forage availability to support domestic livestock and

¹ Full capacity grazable acres means the forage is on slopes ranging from 0 to 15 percent and 15 to 40 percent (accessible by livestock), there is available water, sufficient ground cover and soil stability. Potential capacity acres means there may be steep slopes (40 to 80 percent), impaired soil stability, a lack of water, a lack of access, or insufficient ground cover. If the vegetation is treated or managed, it may (in the future) provide full capacity forage (USDA Forest Service, Southwestern Region, 1997, Rangeland Analysis and Mgmt. Training Guide, Chapter 2, pp. 9-10).

contribute to the economic diversity and social well being of surrounding communities that depend on range resources for their livelihood.

The allotment's riparian vegetation is found along perennial streams and intermittent creeks and drainages (e.g., Cañada del Oso and Lola Creek). Riparian vegetation provides a key habitat component for wildlife species. The Rio San Antonio, a perennial stream running through the allotment, supports populations of Rio Grande cutthroat trout, a Forest Service sensitive species. To support these species, the desired condition is to have properly functioning stream habitat (e.g., suitable temperature, sediment and streambank conditions). The desired conditions for riparian habitats is to have a mix of native woody and herbaceous plants that provide shade, stabilize the streambanks and limit the amount of sediment that reaches the stream. Regeneration of riparian shrubs, such as willows, is also an important component of these systems.

Healthy plants of various age classes, good to excellent range condition and conservative grazing utilization (20 to 40 percent) provides forage and cover for prey base species of the (federally listed) Mexican spotted owl and northern goshawk (Forest Service sensitive species). Along the Rio San Antonio and other drainages on the San Antone allotment, there is need for more vegetation diversity, less soil compaction and better riparian function. Low elevation grasslands and upland meadows provide key forage for both livestock and wildlife. In these foraging areas there is a need for a mix of palatable native cool season grasses (e.g., Thurber fescue, Arizona fescue) and forbs, increased plant diversity and increased plant density. Vegetation that has both diversity and density helps maintain soil stability and provides more reliable forage for both livestock and wildlife.

Information Corrections and Clarifications

After the request for comments was originally sent out in May 2008, errors were found in the original proposed action. After further analysis, Canada de Tio Grande does not have riparian issues associated with the Hondo Pasture; therefore it has been removed from the riparian section of the adaptive management table.

In both the scoping letter and the follow-up request for comments (30-day notice and comment period), the term AUM (animal unit month) in addition to numbers of cow/calf units was consistently used to describe livestock allocations. The use of the AUM term was causing confusion; therefore, this term has been removed from the EA (with one exception) and only the numbers of permitted livestock (expressed as cow/calf and bulls) is used. Grazing capacity, existing and proposed livestock numbers remain unchanged from this change in terminology. The AUM term is still used in the “Alternatives Considered but Eliminated from Detailed Study” section.

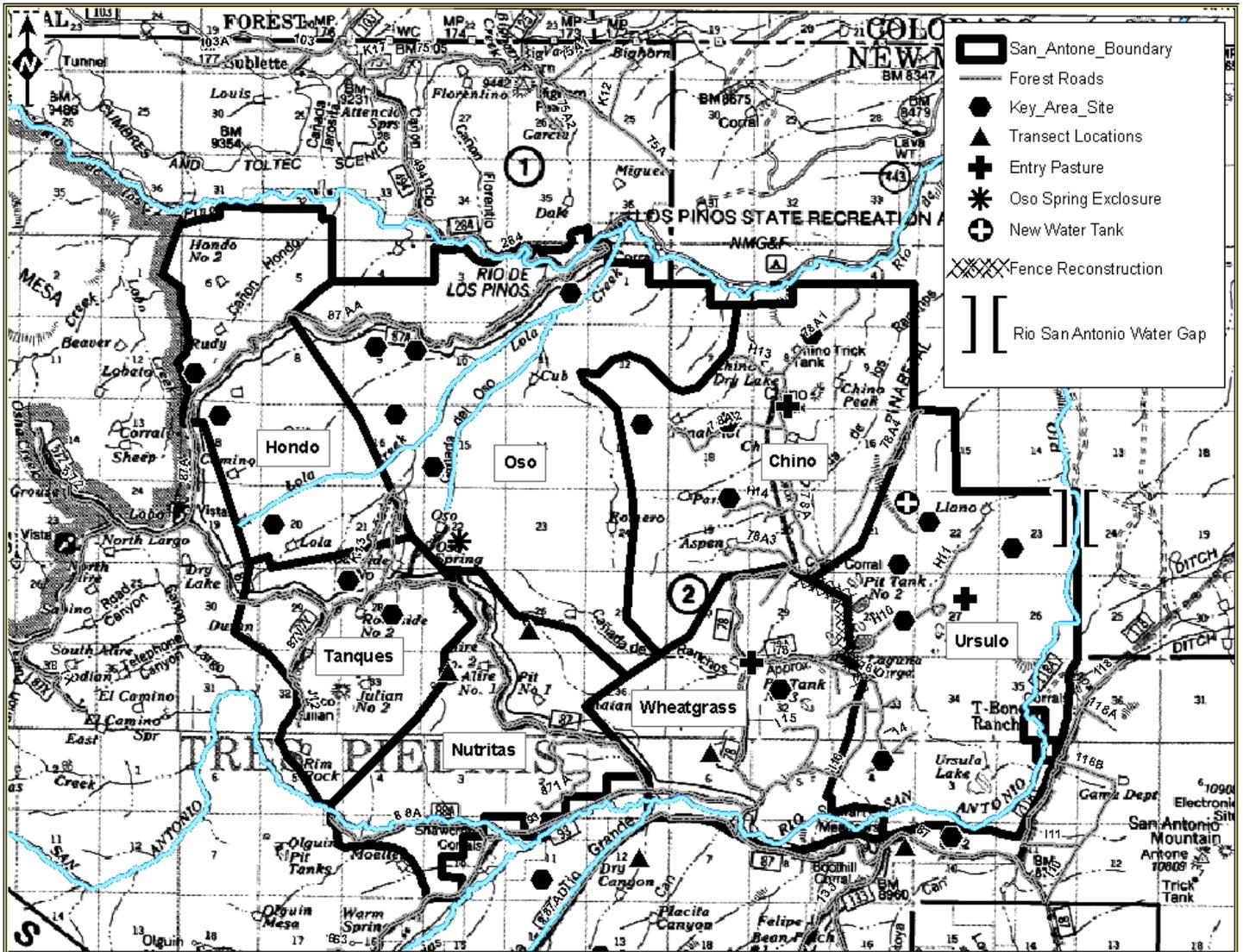


Figure 2. San Antonio Allotment Proposed Action

Proposed Action

The Forest Service proposes to authorize continued livestock grazing on the San Antone allotment (41,281 acres) with some modifications. The proposed action is designed to maintain or improve resource conditions in rangeland health, riparian vegetation, soil and water conditions relative to livestock grazing. Some grazing practices would be changed to resolve resource issues.² The proposed action also includes alternate adaptive management actions (see table 1) to be taken if resource conditions do not move toward desired conditions in an acceptable timeframe.

Components of the proposed action are to authorize 552 cow/calf and 18 bulls up to 861 cow/calf and 29 bulls. The lower number represents the livestock number that has been authorized during past drought periods. The maximum livestock number is the number that can be supported once the desired conditions for vegetation, soils and water resources have been reached. It is likely that current conditions would not support this level of grazing. Through the annual operating instructions (AOI), livestock numbers would be authorized at a lower level until such time as conditions improve. The grazing period would be up to 153 days. The entry date would range from May 17 to June 1 and the range of exit dates would be from September 15 to October 16. The grazing period within each pasture would be based on climate conditions, current growing conditions and the need for plant re-growth following grazing by all ungulates. Grazing management would be a rotation system that includes deferred or rest. Trailing may be used as needed. Three pastures, Ursulo, Chino and Wheatgrass would be available for allotment entry to provide increased options for cool season grass growth and recovery. One pasture would be rested each year. Depending on vegetation and current range conditions, a conservative grazing intensity with an allowable utilization range of 20 to 40 percent would be used.

The following improvements would be constructed within 3 to 5 years for better livestock distribution and less potential for excessive forage utilization: (1) A new water tank in the northwestern portion of the Ursulo pasture, and the (2) Reconstruction of approximately 3 miles of fence between the Ursulo and Wheatgrass pastures. Once surveys for Forest Service sensitive plant species *Astragalus ripleyi* (milkvetch) are completed and the extent of the population is known, the timing of livestock use may be adjusted if needed to maintain plant composition and diversity. For clarification, adaptive management actions for riparian, grasslands and upland meadows with the exception of new exclosures or fence reconstruction would be implemented through the AOI beginning in year one.

² Grazing management for the San Antone allotment is administered through annual operation instructions (AOI). Annual operation instructions are made part of the term grazing permit. The AOI is the instrument for the implementation of specific management actions on an annual basis to achieve resource management objectives.

Table 1. Adaptive Management Plan

Pasture / Location	Desired Condition	Monitoring Measure	Trigger Indicating Additional Action Is Needed	Possible Grazing Management Actions, If Trigger Indicates Need
<p>Key Riparian Areas Ursulo Pasture – Along Rio San Antonio (2.3 mi) Oso, & Tanques pastures – Along intermittent creeks (e.g., (Canada del Oso & Lola Creek)</p>	<p>All riparian areas: Diverse riparian plant communities (60% of woody plant composition in 3 or more riparian species) provide overhanging vegetation and effective ground cover (not more than 10% bare ground within the riparian area) to help trap sediment and dissipate energy during peak flows, protect soils from erosion processes, maintain stream bank stability and provide wildlife habitat. Plant species include sedges, rushes, desirable riparian grasses (e.g., timothy, brome), woody shrubs (e.g., willows, elderberry) and trees (e.g., aspen, alder). At least 60% of the woody plant composition includes 3 or more riparian species (Forest Plan, MA 14) On the Rio San Antonio new shrubs are establishing and are increasing in size and cover. Woody plants consist of 3 or more age classes (Forest Plan, MA 14). Age class structure in woody plant communities are at least 10% plant cover in sprouts, seedlings,</p>	<p>1) Diversity of grassland plant community-% of plant composition in cool season grasses within a timeframe</p>	<p>1) Given adequate (near normal) climate conditions, cannot meet at least 75% of plant composition in cool season grasses by year 4 and 5</p>	<p>*Add riders to control the amount of time livestock spend in riparian areas while trailing or grazing in the pasture *Move livestock out of riparian areas on a daily basis to control the amount of time spent in these areas *Salt livestock away from riparian areas to improve distribution in less used areas of the pasture *Reduce livestock numbers within riparian areas *Install enclosure fence(s) along affected riparian areas to control or exclude livestock *Construct a 10 -20 acre Oso spring enclosure</p>
		<p>2) % woody species within a time frame.</p>	<p>2) <15% woody species in 5 years</p>	
		<p>3) % bare ground</p>	<p>3) > 10 to 15% bare ground in year 3</p>	
		<p>4) 20% to 40% utilization at the end of the summer from wildlife and livestock</p>	<p>4) >40% utilization for 2 consecutive years, within a 5-year period. Range utilization occurs throughout the grazing period</p>	
		<p>5) % of fine sediment</p>	<p>5) % of sediment is moving towards</p>	

Pasture / Location	Desired Condition	Monitoring Measure	Trigger Indicating Additional Action Is Needed	Possible Grazing Management Actions, If Trigger Indicates Need
	<p>& saplings. It is likely there would be one size class for approximately 5 years.</p> <p>Stream bank cover is increasing (as new shrubs are established) and improving desired riparian conditions. Desired riparian conditions provide quality aquatic habitat for other resident trout and aquatic macroinvertebrates (forest management indicator species). Quality riparian habitat for Mexican spotted owl (federally listed species), southwestern willow flycatcher, northern goshawk, northern leopard frog, water shrew, spotted bat, Townsends big ear bat, long-tailed vole, mink, ermine(Forest Service sensitive species) is present.</p>	in riffle habitat	exceeding 20% measured at 2 year intervals (2 nd , 4 th , 6 th and 8 th year)	
		6) Stream temperature	6) Temperature is increasing and does not comply with State of NM standard for cold water fisheries measured in 2 year intervals (2 nd , 4 th , 6 th , 8 th year)	
		7) Streambank condition	% of unstable banks is moving toward exceeding 10% estimated in 2 year intervals (2 nd , 4 th , 6 th and 8 th).	

Pasture / Location	Desired Condition	Monitoring Measure	Trigger Indicating Additional Action Is Needed	Possible Grazing Management Actions, If Trigger Indicates Need
<p>Grasslands and upland meadows that provide key MSO habitat (Tanques, Nutritas, Hondo and Oso pastures)</p>	<p>Diverse grassland communities provide abundant forage for wildlife and livestock, especially in the late-spring and early summer. A mix of palatable cool season grasses (e.g., western wheatgrass, Arizona fescue, junegrass) and forbs dominate the plant community, with little evidence (< 15%) of woody species (e.g., sagebrush, broom snakeweed, piñon pine and juniper). Healthy, reproducing, cool season grasses emerge in the spring and offer nutritious forage for wildlife and livestock early in the growing season.</p>	<p>1) Diversity of grassland plant community-70% plant composition in cool season grasses in Hondo (TEU 131E) within a timeframe</p>	<p>1) Cannot meet at least 70% of plant composition in cool season grasses in Hondo (TEU 131E) by year 3, 4 and 5</p>	<p>*Delay livestock entry to allow cool season grasses additional time for root growth, formation of basal buds and production of seed and food storage *Reduce livestock numbers in low elevation grasslands to allow for growth *Remove livestock from the allotment at an earlier exit date to maintain native food and cover for wildlife species that depend on grasses and forbs for the winter *Install new water sources to improve livestock distribution (<i>additional environmental analysis is required for new proposals</i>) *Reconstruct fences between pastures to improve livestock distribution *Use prescribed fire to reduce woody plant species. <i>Additional environmental analysis is required to implement this action</i></p>
	<p>Low elevation grasslands provide effective ground cover (not more than 5% to 15% bare ground depending on soil type) to maintain soil stability and provide quality wildlife habitat, especially for elk (a forest management indicator species) during the winter and spring.</p>	<p>2) % woody species in Hondo (TEU 131E) within a time frame</p>	<p>2) >15% woody species in Hondo (TEU 131E) by year 3, 4 and 5</p>	
	<p>Low elevation grasslands provide effective ground cover (not more than 5% to 15% bare ground depending on soil type) to maintain soil stability and provide quality wildlife habitat, especially for elk (a forest management indicator species) during the winter and spring.</p>	<p>3) % bare ground in Hondo (TEU 131E) within a timeframe</p>	<p>3) >15% bare ground in Hondo (TEU 131E) by year 3, 4 and 5</p>	
	<p>Low elevation grasslands provide effective ground cover (not more than 5% to 15% bare ground depending on soil type) to maintain soil stability and provide quality wildlife habitat, especially for elk (a forest management indicator species) during the winter and spring.</p>	<p>4) % utilization at the end of the summer from wildlife and livestock.</p>	<p>4) >40% utilization in 2 consecutive years, within a 5-year period. Monitor utilization throughout the grazing period</p>	

Monitoring

An adaptive management plan (table 1) would be used to move toward achieving both short and long term goals. Short-term monitoring would use grazing intensity and utilization guidelines to assess key area (upland meadow and riparian) use. Long term monitoring would consist of photographs, vegetation sampling, Parker 3-Step transects and cover frequency. To gauge changes in long term trend (vigor and productivity), cover frequency baseline conditions would be established in year one. Cover frequency would be read between year three and year five to gauge changes. When using Parkers transects, existing key areas would be monitored between years three and five to gauge changes in long term trend (vigor and productivity). In MSO habitat, to gauge improvement in plant composition, the same methods would be used in upland meadow key areas in these pastures: Tanques, Nutritas, Hondo and Oso. If monitoring indicates conditions are not being achieved, the adaptive strategy would provide options for adjusting management decisions and actions throughout the life of the permit to meet desired conditions. For aquatics, the Rio San Antonio stream habitat inventory and report would be completed in 2010 and the stream habitat inventory and report for Los Pinos would be completed in 2016.

Forest Plan Consistency

The analysis area is within several forest plan management areas (MA) which includes MA 1-12, 14 and 16. The purpose and need for the proposed action focuses on moving towards the desired conditions for three key management areas, Riparian (MA 14), High Elevation Grasslands (MA 9) and Low Elevation Grasslands (MA 10). For riparian, the purpose and need was developed from forest plan direction (Forest Plan, pp. MA 14, pp. 1-2). The desired condition is to have properly functioning stream habitat (e.g., suitable temperature, sediment and streambank conditions). For riparian habitats, the desired condition is to have a mix of native woody and herbaceous plants that provide shade, stabilize the streambanks and limit the amount of sediment that reaches the stream. Regeneration of riparian shrubs, such as willows, is also an important component of these systems. The proposed action includes measures to move towards these desired conditions (Scoping Letter, pp. 1-5, 7). [25] For both High Elevation Grasslands (MA 9) and Low Elevation Grasslands (MA 10), the proposed action addresses the need for modifying grazing management in order to move the allotment towards good condition and a stable to upward long-term trend. There is a need to provide quality forage for all ungulates and increased cover for prey base species such as small mammals and birds (Scoping Letter, pp. 1-8). [25] This proposal is in concert with the goals and objectives outlined in the Carson Forest Plan and would help move the analysis area towards desired conditions described in the plan. [4]

Decision Framework

Given the purpose and need, the District Ranger (Responsible Official) for the Tres Piedras Ranger District will: (1) Determine whether livestock grazing will be authorized on all, part, or none of the San Antone Allotment and, (2) If the decision is to authorize some level of livestock grazing, identify what management criteria will be applied (including standards, guidelines, grazing management system and monitoring) and incorporated in the allotment management plan to ensure desired condition objectives are met, or movement occurs toward those objectives in an acceptable timeframe.

Public Involvement

The proposed action has been listed in the quarterly Carson National Forest NEPA Schedule of Proposed Actions since October 2006. As part of rangeland management consultation requirements (FSH 2209.13, chapter 90, pp. 7, 8, 14, 23, 28), the district and the permittees met on February 14, 2008, to discuss draft proposals and the permittees provided suggestions prior to the scoping period (San Antone Livestock Association, 2008). On May 21, 2008, the proposal was provided to the public, permit holders and other agencies. Three letters responding to the scoping proposal were received. [23, 32, 33]

The range of comments (includes permittee comments) includes the following concerns and opinions:

- The proposal should use a grazing rotation system and increased management instead of reducing AUMs to address resource objectives (that includes increasing cool season productivity).
- The proposal which requires moving livestock daily out of upland meadows is not feasible.
- The proposal which includes using 70 percent as the desired condition for plant composition is not feasible. The trigger should be when there is an increase in cool season grass composition.
- The proposal which sets a 20 to 40 percent utilization threshold should only apply to livestock and not (include) wildlife.
- The proposal will not improve resources by reducing AUMs without improving management.
- The proposal should document if baseline (monitoring data) information was established in order to verify changes in condition.
- The size of livestock has increased. This affects the amount of forage utilized. The size/class of livestock is a component in range management and needs to be built into a preferred alternative.
- The proposal needs to include an on date of June 1st for regrowth and seed production of native cool season grasses. Earlier entry may affect cool season grasses which is one of the main nutritional needs for mule deer, elk and black bear during the early part of the growing season.
- The proposal needs to include actions to increase forest health and provide for wildlife habitat. The proposal should include aspen treatment.
- The proposal should include more management for riparian. The riparian condition above and below Stewart Meadows Complex is not improving.
- Management actions such as reducing AUMs, adding riders and moving livestock out of riparian areas need to be part of the preferred alternative for reauthorization.
- The proposal should establish monitoring sites for cover frequency readings within these identified key areas as opposed to using established Parker transects.
- Implement a preferred alternative to begin restoration of riparian ecosystems on year one.

- If managers do not strictly enforce compliance with the AOIs, range objectives/goals cannot be met.
- The proposal should use a seven pasture deferred rotation system and rest one pasture per year.

Forest Service 30-day Notice and Comment Period on Proposed Action

On July 9, 2008, a request for comments was mailed to 61 individuals, organizations, permit holders and other agencies. Information included the purpose and need for action, public involvement (including issues that resulted from scoping) and alternatives. A legal notice regarding the 30-day notice and comment period was published in *The Taos News* on July 10, 2008. Five letters and one response submitted via email were received. Western Watershed requested clarification on how utilization is measured (see Chapter 3, page 21), how many years of monitoring data is used for this analysis (see Chapter 3, page 21) and where are key areas located (see figure 1). The Bureau of Land Management (BLM) noted that major changes in the season of use on the allotment could affect management on the adjacent BLM allotments since there are permittees who use both BLM and Forest Service allotments. The BLM also noted that the use of fire may be needed to improve vegetation conditions (see Chapter 2, page 13). The New Mexico Environment Department stated that riparian areas need to be protected along the Rio San Antonio which is listed as impaired for temperature (see Chapter 3, pp. 34-40). The Navajo Nation stated the project would not impact traditional cultural properties or historical properties. No concern or comment resulted in the development of a new alternative. Most concerns and requests for clarification have been addressed in Chapter 1 and in Chapter 3. However, all public comments and our responses to these comments can be viewed on the forest website at: www.fs.fed.us/r3/carson/plans/nepa/sanantone_allotment.

Issues

Comments received during scoping were examined for significant issues. The Forest Service separates the issues into two groups: significant issues 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 the following 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)..." A list of issues from scoping comments and reasons regarding their categorization as non-significant may be found in the project record.

Among the topics raised during scoping, the Forest Service identified the following significant issues:

Significant Issue #1: Cool Season Grass Recovery for Mule Deer, Elk and Black Bear. Use an entry date of June 1st for the Ursulo, Chino and Wheatgrass pastures to assure recovery of cool season grasses which are one of the main nutritional needs for mule deer, elk and black bear.

Response: Alternative 2 addresses this suggestion by including a range of entry dates (from May 17th to June 1st). Rangeland grazing policy allows for grazing during the cool season growth

period as long as range readiness criteria are met. If range readiness criteria are met (which means that grazing occurs after the plant is headed out to seed set for most cool season grasses), the need for big game nutritional values is met. Impacts to cool season grasses will be an indicator used in the rangeland vegetation report. The indicator for the impacts to wildlife will be pasture condition and trend in terms of impact to plants during the cool season growth period. The economic analysis will include the effects from entering (early) on May 17th and (later) on June 1st.

Significant Issue #2: Rio San Antonio Riparian Condition. The riparian condition above and below Stewart Meadows Complex is not improving. More management is needed.

Response: Alternative 2 addresses riparian conditions along the Rio San Antonio (Stewart Meadows Complex area). Impacts to riparian habitat (in terms of percent plant community diversity, percent woody species, percent bare ground and percent utilization) along the Rio San Antonio will be an indicator used in the soils and water report. Impacts to aquatic habitat and fisheries (percent sediment, stream temperature, percent streambank stability) will be used in the fisheries report.

Significant Issue #3: Riparian Management (allotment-wide). Management actions such as reducing AUMs, adding riders and moving livestock out of riparian areas need to be part of the preferred alternative for reauthorization.

Response: Alternative 2 addresses this issue. The proposal has been modified to clarify that these adaptive management actions would be in place in year one. Impacts to riparian habitat (in terms of percent plant community diversity, percent woody species, percent bare ground and percent utilization) will be an indicator of this effect and will be used in the soils and water report.

Chapter 2 – Alternatives

This section describes and compares the alternatives that will be considered for livestock grazing management on the San Antone Allotment.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by the National Environmental Policy Act (NEPA) to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the need for maintaining or improving resource conditions in rangeland health, riparian vegetation, soil and water conditions relative to livestock grazing. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

An Alternative to Manage Utilization Between 40 and 60 percent

This alternative was considered but eliminated because it is not consistent with the goal of managing for conservative use (FSM 2209.13, chapter 90, p. 12). Both BLM and the Forest Service did use this reference in the past. Managing for light to conservative utilization translates into light being between 0 and 30 percent and conservative being between 31 and 40 percent. Managing for conservative utilization provides forage and cover for prey base species of the (Federally listed) Mexican spotted owl and Northern Goshawk (Forest Service sensitive species). Vegetation that has been conservatively utilized also helps maintain soil stability and provides more reliable forage for both livestock and wildlife.

An Alternative to Use a Rest Rotation Grazing System

The interdisciplinary team considered using only a rest rotation grazing system to allow each pasture a complete period of recovery and growth. It was eliminated in favor of giving the district the maximum flexibility (include a combination of deferred, rest and trailing only) while improving resources conditions. In the existing term permit, one pasture (Ursulo) had been used repeatedly as the entry pastures in 9 of 12 years. The proposal increases the number of entry pastures from one to three. Although the grazing system is “deferred”, it does provide each entry pasture a period when cool season grasses are rested one out of three years. The proposal has also been modified to include the ability to rest one pasture per year in addition to the deferred and trailing options.

An Alternative to Improve Forest Health and Wildlife Habitat, Regenerate Aspen

This suggestion was considered but eliminated from further detail because insufficient vegetation stand data was available. In addition, we did not have 2 years of survey data for Mexican spotted owl and northern goshawk. However in the future, we do foresee large, landscape type treatments to improve forest health. In addition, a forest plan amendment for fire use is scheduled for this coming year. Once this in place, it may provide an opportunity (the term may is used because we need to evaluate where allowing natural ignitions to burn is appropriate and where suppression is the most appropriate management response) for improving habitat and regenerating aspen.

An Alternative that Reduces Base Stocking Rates to Reflect Size/Class of Livestock Currently Raised by Permittees

The definition of an AUM that we have used is consistent with rangeland management policy (FSH 2209.15) and is the term used by the Society for Range Management and other rangeland management agencies, universities and professionals. The Forest Service’s Washington Office recently addressed the stocking rate issue and concluded that when an allowable use level is reached on a key species or key area, the livestock are to be moved or removed. The response (to an inquiry) states, “With this type of management, i.e. specifying allowable use on key species or key areas, the size of the livestock is not highly relevant. With larger animals and presumably a corresponding greater consumption rate, the allowable use level might be met sooner and the livestock moved off the pasture sooner than would occur with smaller animals. The stocking rate in this case becomes self regulating because management is based on meeting plant and other resource needs by meeting design criteria. There are other criteria being applied as well including seasonal restrictions, etc., all of which are designed to meet or move toward desired conditions (Forest Service, 2008)”. In order to be consistent with policy and the Carson Forest Plan FEIS (which includes the definition of an AUM (FEIS, p. 100)), we did not further address the stocking rate. However, specific monitoring measures were developed for both riparian and grasslands (e.g. percent of plant composition in cool season grasses, percent woody species, percent bare ground, percent utilization) in addition to thresholds that will indicate when additional management is needed.

Alternatives Considered in Detail

Alternatives are used to evaluate different ways to resolve significant issues brought forth by the public during scoping (see previous section) and to satisfy the purpose and need for action. For this analysis, two alternatives have been considered in detail – the no action and the proposed action. The purpose and need for the proposed action, along with the significant issues serve as the objectives and framework around which alternatives are developed. In this analysis, the three significant issues identified at the end of the purpose and need section can be addressed by analyzing the effects in the proposed action and by making some minor additions and clarifications to the proposed action.

Alternative 1 – No Action Alternative

This alternative is the “no action” alternative and is required by the Council on Environmental Quality for the implementation of NEPA (40 CFR Part 1502.14d). The no action alternative is the point of reference for evaluating action alternatives. Under the no action alternative, domestic livestock grazing would no longer be authorized on the San Antone Allotment. The grazing permittee would be required to remove all cattle from the allotment and their permit would be cancelled. All maintenance of range facilities would revert to the Forest Service, where they would be evaluated for wildlife, watershed and soil protection needs. Allotment fences would not be removed, as they would be needed to prevent use by livestock from adjacent active allotments (Sublette, San Antonio Mountain, Lagunitas and Tio Grande) or private property. Under the no action alternative, the forest plan would continue to guide the management of the area.

Alternative 2 – Proposed Action

This alternative is the proposed action as described in the purpose and need section with some additions that include use limitations for three pastures and including salting in the AOI (and AMP). This alternative would:

Authorize a range of 552 cow/calf and 18 bulls up to 861 cow/calf and 29 bulls for a period up to 153 days. Entry dates would range from May 17 to June 1 and exit dates would range from September 15 to October 16. The grazing period within each pasture would be based on climate conditions, current growing conditions and the need for plant re-growth following grazing by all ungulates.

- Manage grazing through a rotation system that includes deferred or rest. Trailing would be used as needed. Three pastures, Ursulo, Chino and Wheatgrass would be available for allotment entry to provide increased options for cool season grass growth and recovery. One pasture could be rested each year.
- Require a maximum use limit on some pastures: (1) Oso – 20 to 28 days, (2) Tanques – 12 to 15 days and, (3) Nutritas – 20 to 23 days.
- Use a conservative grazing intensity (depending on vegetation type and current range conditions) with an allowable utilization range of 20 to 40 percent would be used.
- Include the following improvements within 3 to 5 years: a new water tank installed in the northwestern portion of the Ursulo pasture, the construction of a riparian enclosure with a water gap along the Rio San Antonio (below Stewart Meadows Complex) and include the reconstruction of approximately 3 miles of fence between the Ursulo and Wheatgrass pastures.
- Include management actions such as reducing livestock numbers, adding riders, salting at least 0.5 to 1.0 miles from water sources and moving livestock out of riparian areas would become part of the annual operating instructions (AOI) and allotment management plan (AMP). See table 1 for the adaptive management plan that is part of this alternative beginning in year 1.

Mitigation Measures for Alternative 2

To reduce the potential for trespass livestock within Stewart Meadows Complex to affect southwestern willow flycatcher (by disturbance and degraded riparian habitat), (1) Range riders will be instructed through the AOI to herd trespass livestock out of Stewart Meadows Complex and, (2) While livestock are present on pastures adjacent to the Stewart Meadow Complex, Forest Service and New Mexico Department of Game and Fish personnel will monitor the area to validate livestock exclusion.

Table 2. Comparison of Alternatives

Purpose and Need	Alternative 1	Alternative 2
Rangeland Condition and Trend	Improves to good condition and stable to upwards trend	Improved – With adequate precipitation (SPI) moves toward good condition and stable/upwards trend within 5 to 10 years If annual SPI is moderately dry may take twice as long to reach desired conditions even with AOI adjustments
Cool season grass diversity and density	Improves – moves towards desired conditons in 10 years	Improved – moves towards desired conditons in both short and long term
Stream habitat condition	Improves but other activities that affect sediment continue	Improves in long term (up to 10 years)
Riparian habitat Condition	Improves in both short and long term as plant density and cover increases	Habitat is maintained and slightly improved as impacts to riparian woody and herbaceous plants are better managed
Watershed condition	Improves 17% of the watershed	Maintains current watershed condition
Forage availability	N/A	Imrpoved – forage production increases and vigor improves in all pastures
Economic and social benefits	Adverse effect to lifestyle and culture. Potential gross income eliminated.	Social benefits maintained Potential gross income likely to be reduced in years of poor SPI (or extended drought) and maximized in years of good SPI (and resource conditons)
Threatened and Endgangered species (Mexican spotted owl and southwestern willow flycatchers)	Increased density of shrubs, forbs, and grasses improves MSO prey base habitat and riparian condition within suitable southwestern willow flycatcher habitat improves	Improves the diversity and seasonal availability of forage (over time) to support a diversity of prey base species for MSO. There would be no change that would result in owls leaving the area. For the flycatcher, existing suitable habitat is maintained. Improved condition of the uplands improves riparian habitat and facilitates restoration of the habitat

Purpose and Need	Alternative 1	Alternative 2
Forest Service sensitive terrestrial and aquatic species	Improved terrestrial habitat for riparian, predatory, and upland species. And improved stream habitat conditions for aquatic species with no affect to individuals or their populations	Potentially impacts individual aquatic, riparian, predatory, and upland meadow species but no measurable negative effects to populations
Forest Service sensitive plant species	Any risks related to trampling or grazing would be eliminated	Potential impact to individuals with no measurable negative effect to populations
Forest Management Indicator Species (MIS) – elk/resident trout, aquatic macroinvertebrates	Forestwide habitat or populations trends maintained	Same as alternative 1
Mule deer and black bear	Increases forage and improves year-round habitat	Improved habitat conditions in the long term (increased cool season grass diversity)

Chapter 3 – Environmental Consequences

Chapter 3 summarizes the physical, biological, social and economic environments of the affected analysis area and the potential changes to these environments if the alternatives were implemented. Chapter 3 also presents the scientific and analytical basis for the comparison of alternatives, as presented in table 1, Effects Comparison by Alternative, in chapter 2. Chapter 3 complies with the implementing regulations (40 CFR 1500-1508) of the National Environmental Policy Act (NEPA) for analytic and concise environmental documents (40 CFR 1502.2). The project record (see Appendix A for the project record index) contains copies of the full reports for most of the resources analyzed.

Environmental resources could be affected in various ways during implementation of alternatives. The effect, or impact, is defined as any change or alteration in the environment's existing condition produced by the alternatives, either directly or indirectly. NEPA regulations (40 CFR 1508.27 (a)) refer to effects in terms of short and long term duration. For this analysis, short-term effects may be considered as occurring over a period of up to five years, while long-term effects are considered to be up to ten years. Chapter 3 analyzes the environmental consequences of the proposed action and any alternatives to the proposed action. The analysis of effects for alternative 2 (proposed action) under each resource is described with the assumption mitigation measures (see Chapter 2) will be applied.

Cumulative Effects

Cumulative impacts are assessed in terms of how the proposed action would add to the past, present and reasonably foreseeable activities. Activities within the allotment boundary are listed in table 3. Other pertinent activities outside the allotment are also included. Completing the cumulative effects analysis required each specialist to choose those activities from the list that overlaps in time and space and location with each alternative. The specialist then analyzed the incremental effect of the alternative when the proposed action was added to these activities.

Table 3. Past, Present and Reasonably Foreseeable Actions

No.	Project or Activity Name	Activity or Project Type	Status	Affected Area (or acres)
Past, Present and Reasonably Foreseeable Activities within San Antone Allotment				
1	Rio San Antonio and Rio Los Pinos	5 th code watersheds within the allotment	Existing	41,281 acres
2	Forest Road 88A	Adjacent to Rio San Antonio	Ongoing	3.9 miles
3	Private Land	Adjacent to Rio San Antonio	Ongoing	20 acres/0.8 stream miles
4	Forest Road 88A	Adjacent to Rio San Antonio	Foreseeable - Unrestricted use may be changed to land owner access only in 09/2009	2.0 miles
5	Forest Road 284	Adjacent to Rio de Los Pinos	Ongoing	2.4 miles
6	Private Land/NMDGF Ownership	Adjacent to Rio de Los Pinos	Ongoing	1,290 acres/6 stream miles
7	Livestock Trailing Use	Trailing from private property and BLM through Ursulo pasture along 600 ft. of the Rio San Antonio	Ongoing	Up to 1,300 head for less than 1 day in both spring and fall
8	Recreation Use along Forest Road 87, Rio de Los Pinos and Rio San Antonio	Day use, Dispersed camping and hunting	Ongoing	Un-quantified
9	Unauthorized motorized trails	ATV and 4WD	Ongoing	Wheatgrass, Chino and Tanques pastures
10	Stewart Meadows Complex	Grazing enclosure	Existing	556 acres
11	forest travel management	Potential changes in miles of open roads	Foreseeable	17.5 miles of road may be closed in 2009
12	Range improvement maintenance	Fences, cattleguards, corrals, pit tanks, earthen stock tanks, water catchment, springs	Annual maintenance of select improvements	51 miles of fences, 6 cattleguards, 2 corrals, 6 pit tanks, 27 earthen stock tanks, 1 water catchment and 2 springs

No.	Project or Activity Name	Activity or Project Type	Status	Affected Area (or acres)
13	Private land	Between the Tio Grande and Tecolote pastures	Ongoing	Approximately 600 acres
Past, Present and Reasonably Foreseeable Activities outside San Antone Allotment				
14	Private land	Sediment contribution from adjacent and upstream private land uses to the Rio Nutritas (Tio Grande allotment) and Rio San Antonio (San Antone allotment)	Existing – upstream	1,790 acres
15	Fire Use Forest Plan Amendment	Potentially could allow for fire use district-wide	Foreseeable – 2009 analysis	Potentially district-wide
16	Lagunitas Prescribed Burn	Prescribed burn on adjacent allotment	Foreseeable – 2008 to 2013	1,200 acres

Rangeland Vegetation [55]

Two methods were used to determine range condition and trend for the San Antone Allotment, the rapid assessment method (RAM) and Parker 3-step method. The 1958 Parker 3-step transects determined species composition (decreasers, increasers, and invaders); scored vegetation rangeland condition and apparent rangeland trend; scored soil condition and apparent soil trend; evaluated grass vigor and cool season grass production; and measured grass height and recorded cover. Long-term trend is obtained from comparing transect apparent trend, assessed at the same location over a period of time. RAM data collected in 2006 was also used to assess the vegetation condition and apparent trend. Data includes stubble height; species composition; cool season grass composition; desirable/undesirable grass/forbs/shrub composition (decreasers, increasers, and invaders); short, mid, and tall grass composition; cover; and production (pounds per acre). Actual use and utilization data has been collected since 1996. [55]

The need for change was evaluated by comparing the existing data to the desired conditions found in the forest plan. The condition and trend data was then used to develop criteria in pastures that contain suitable Mexican spotted owl (MSO) habitat and for the lower elevation entry pastures. The criteria focused on diversity of grassland plant community, % woody species, and % bare ground. Soil characteristics from the terrestrial ecosystem survey (TES) for the Carson National Forest was also used to classify soils throughout the allotment. Figure 3 displays the locations of the various soils units that are found in criteria table (Carson 1987). Percent utilization by ungulates (domestic livestock and wildlife) measured at the end of the growing season was summarized. Utilization data was used to evaluate compliance with Forest Service rangeland management policy guideline for conservative use. See the specialist report in the project record for more information on methodology. [55]

Affected Environment

Within the 7 pastures the existing condition is fair. In the Ursulo, Chino, Nutritas, and Oso pastures the long-term trend is stable. In the Hondo pasture, the long-term trend is stable to

upward. The Wheatgrass and Tanques pasture trend is stable to downward and are areas of concern for needing management adjustments. Range condition and apparent trend have been affected by several factors:

Precipitation: The 1996 to 2006 annual climate data reflects a dry weather pattern with 2002 being a drought year (1996-2006, Tres Piedras Station climatological data). During 1996 to 2006, the allotment's pastures' cool and warm growing season experienced varying patterns of precipitation and poor to good annual/seasonal growth.

Non permitted use and unauthorized use: Condition and trend is affected in the Ursulo and Wheatgrass pastures from unauthorized (non permitted) livestock (approximately 50 to 150 head for about 20 days) and unauthorized use from neighboring allotments (Lagunitas and Apache). This use has contributed to overall use. It is not possible to determine if this use actually resulted in utilization guidelines not being met.

Utilization: For utilization protocol, the Range Analysis Management Guide (1988) in addition to the *Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands* (2007) was used. In the Mexican spotted owl pastures, utilization levels in the Tanques, Nutritas, Hondo and Oso) have varied since 1996:

- Tanques is currently an area of concern because in 3 of 5 years (2002 to 2003, 2006) utilization guidelines have not been met. Contributing to this was the limited forage production in 2002 and 2003. In these years, limited forage production combined with cattle and elk grazing resulted in higher utilization levels.
- Although Nutritas and Hondo did not meet the utilization level in 2002 and 2003 (drought year and a moderately dry year), by applying AOI management prescriptions to the Hondo and Nutritas pastures from 2004 to 2006, the pastures met (and continue to meet) the utilization guidelines.
- From 1996 to 2006, the Oso pasture met the utilization level (20 to 40 percent) and there are no utilization concerns.
- In the grassland entry pastures from 2002 to 2006, the Ursulo pasture did not meet the utilization guideline 2 out of 5 years.

Improper Livestock Distribution: Grazing every year at the current maximum permitted livestock numbers (without regard to varying resource conditions), negatively impacts livestock distribution and pattern of use. However, current management prescriptions include AOI adjustments to the livestock numbers, entry and exit dates, number of days and grazing system. These adjustments reflect annual resource or climatic conditions and assist in trending towards meeting the desired condition of fair to good vegetation condition, satisfactory watershed and soil condition and stable to upward rangeland trend.

Table 4. Existing and Desired Conditions in Pastures with Mexican Spotted Owl (MSO) Habitat

Pasture	TEU/Acres	Applicable Criteria (No.)	Criteria Description	Existing Condition %	Desired Condition (DC) in %	Meets DC? Y(Yes)/N(No)
Tanques	560/251	1.1 – 1.3	Diversity of grassland community (% cool season grass composition)	75%	70% or greater within 3, 4, 5 years	Y
			Woody species composition	0%	Less than 15% by year 3,4,5	Y
			Bare ground	15%	Less than 15% by year 3, 4, 5	Y
		2	Utilization – measured at end of the growing season	Not Met	20% to 40% ³	N
	545/31 (referenced in soil/water report)	1.1-1.3	Diversity of grassland community (% cool season grass composition)	75%	50% or greater within 3, 4, 5 years	Y
			Woody species composition	0%	Less than 15% by year 3,4,5	Y
			Bare ground	15%	Less than 15% by year 3, 4, 5	Y
		2	Utilization measured at end of the growing season	Not Met	20% to 40%	N
Nutritas	560/617 – referenced in soil/water report	1.1 -1.3	Diversity of grassland community (% cool season grass composition)	46%	50% or greater with 3, 4, 5 years	N
			Woody species composition	2%	Less than 15% by year 3,4,5	Y
			Bare ground	38%	Less than 15% by year 3, 4, 5	N
		2	Utilization measured at end of	Met	20% – 40%	Y

³ 20-40% by ungulates measured at the end of the growing season

Pasture	TEU/Acres	Applicable Criteria (No.)	Criteria Description	Existing Condition %	Desired Condition (DC) in %	Meets DC? Y(Yes)/N(No)
			the growing season			
	545/352	1.1-1.3	Diversity of grassland community (% cool season grass composition)	46%	50% or greater within 3, 4, 5 years	N
Woody species composition			2%	Less than 15% by year 3,4,5	Y	
Bare ground			38%	Less than 15% by year 3, 4, 5	N	
2		Utilization measured at end of the growing season	Met	20% – 40%	Y	
Hondo	560/79 – also referenced in soil/water	1.1-1.3	Diversity of grassland community (% cool season grass composition)	80%	70% or greater within 3, 4, 5 years	Y
			Woody species composition	0%	Less than 15% by year 3,4,5	Y
			Bare ground	8%	Less than 15% by year 3, 4, 5	Y
		2	Utilization measured at end of the growing season	Met	20% – 40%	Y
	131E/515	1.1 -1.3	Diversity of grassland community (% cool season grass composition)	80%	70% or greater within 3, 4, 5 years	Y
			Woody species composition	0%	Less than 15% by year 3,4,5	Y
			Bare ground	8%	Less than 15% by year 3, 4, 5	
2		Utilization measured at end of the growing season	Met	20% to 40%	Y	
Oso	545/1,095	1.1 -1.3	Diversity of grassland community (% cool season grass composition)	50%	65% or greater within 3, 4, 5 years	N

Pasture	TEU/Acres	Applicable Criteria (No.)	Criteria Description	Existing Condition %	Desired Condition (DC) in %	Meets DC? Y(Yes)/N(No)
	560/280 – also referenced in soil/water		Woody species composition	2%	Less than 15% by year 3,4,5	Y
			Bare ground	37%	Less than 15% by year 3, 4, 5	N
		2	Utilization measured at end of the growing season	Met	20% to 40%	Y
		1.1 -1.3	Diversity of grassland community (% cool season grass composition)	50%	65% or greater within 3, 4, 5 years	N
			Woody species composition	2%	Less than 15% by year 3,4,5	Y
			Bare ground	37%	Less than 15% by year 3, 4, 5	N
		2	Utilization measured at end of the growing season	Met	20% – 40%	Y
		3	Bare ground	28%	Less than 15% by year 3, 4, 5	N
		4	Utilization measured at the end of the growing season	Met	20% to 40%	Y

Table 5. Existing and Desired Conditions in Grassland Entry Pastures

Pasture	TEU/Acres	Applicable Criteria (No.)	Criteria Description	Existing Condition %	Desired Condition (DC) in %	Meets DC? Y(Yes)/N(No)
Ursulo	512/2,099	1.1 – 1.3.	Diversity of grassland plant community (% cool season grass composition)	43%	70% or greater within 3,4,5 years	N
			Woody species composition	3%	Less than 15% by year 3, 4, 5	Y
			Bare ground	79%	Less than 15% by year 3, 4, 5	N
		2	Utilization measured at the end of the growing season	Not met in 2003 & 2006	20% to 40%	N
Chino	512/2,186	1.1 -1.3	Diversity of grassland plant community (% cool season grass composition)	87%	50% or greater within 3, 4, 5 years	Y
			Woody species composition	2%	Less than 15% by year 3, 4, 5	Y
			Bare ground	74%	Less than 15% by year 3, 4,5	N
		2	Utilization measured at the end of the growing season	Met	20% to 40%	Y
Wheatgrass	196/694	1.1 -1.3	Diversity of grassland plant community (% cool season grass composition)	20%	50% of greater within 3, 4, 5 years	N
			Woody species composition	4%	Less than 15% by year 3, 4, 5	Y
			Bare ground	28%	Less than 15% by year 3, 4, 5	N
		2	Utilization measured at the end of the growing season	Met	20% to 40%	Y

Tanques pasture summary: The RAM data collected at the key area site (TEU 560) indicates: all criteria are being met with the exception of utilization. However, the pounds per acre (forage production) and vigor is low.

Nutritas pasture summary: The desired condition (less than 15 percent) for bare ground is not being met. It is currently at 38 percent. The disparity between the existing percent of bare ground and the desired condition will influence the rate of recovery. The desired condition for diversity of grassland plant communities (50 percent) is not being met. It is currently at 48 percent. The desired condition for woody species (less than 15 percent) is currently being met. This means, in terms of condition and trend, there is a need to improve plant community diversity and reduce the amount of bare ground. In addition, forage production is considered to be low to moderate and vigor is moderate.

Hondo pasture summary: The desired condition (less than 15 percent) for bare ground is not being met. It is currently at 38 percent. The disparity between the existing percent of bare ground and the desired condition will influence the rate of recovery. The desired condition for diversity of grassland plant communities (50 percent) is not being met. It is currently at 48 percent. The desired condition for woody species (less than 15 percent) is currently being met. This means, in terms of condition trend, there is a need to improve plant community diversity and reduce the amount of bare ground. Forage production and vigor is considered moderate.

Oso pasture summary: The Oso pasture is currently meeting the desired conditions for woody species and utilization. However, there is excessive bare ground in TEU 545 and there is a need to increase the percentage of cool season grasses. In addition there is low production and low vigor. There is a large disparity between the existing percent of bare ground and the desired condition. This will influence the rate of recovery.

Ursulo pasture summary: Ursulo has been the actual entry pasture 9 of 11 years (1996 – 2006). Ursulo is a low elevation pasture and typically produces annual cool season forage earlier than the other six pastures. The Association usually requests to enter the first pasture that meets the range readiness criteria. The consecutive year entry into the same pasture affects the vigor by reducing the opportunity for cool season forage (western wheatgrass, Junegrass) to grow and by not providing complete rest during the cool season growth period. Cool season herbaceous plants may not be at high vigor, particularly during years of Near Normal to Moderately Dry precipitation (SPI). In the past, the 1996 to 2006 period experienced Near Normal to Moderately Dry SPI. Approximately 1,500 to 1,800 cattle use the Ursulo crossing permit trail route located at the eastern canyon rim of the Rio San Antonio, but do not enter the canyon to water or trail in the riparian. The designated trail route is fenced on the east side and borders the canyon rim on the west side. Association cattle typically do not graze the area east of the Rio San Antonio canyon because of the area's size, accessibility and topography.

The RAM data collected at the key area site (TEU 512) indicates a need to improve cool season grass diversity and the percent of bare ground. The disparity in the existing bare ground (79 percent) and the desired condition (less than 15 percent) is likely to influence the rate of recovery. In addition, forage production and vigor is low.

Chino pasture summary: In this pasture, the percent of bare ground is being exceeded. The disparity between the existing and desired condition is likely to influence the recovery rate. There

is also a need to improve cool grass diversity. Forage production is considered to be low to moderate and vigor is low.

Wheatgrass pasture summary: In this pasture the percent of bare ground and the percent of cool season grasses is not meeting desired conditions. In addition, forage production and vigor is considered to be low.

Environmental Consequences

The environmental consequences are based on implementing the proposed action and adaptive management actions such as additional actions in riparian areas (BMPs of herding, more riders, better salt placement, reduced livestock numbers), upland meadows (delayed entry, reduced livestock numbers, early exit) and the implementation of projects such as: a new pit tank in the Ursulo pasture, 3 miles of reconstructed boundary fences between Ursulo and Wheatgrass and the construction of a 0.7 miles watergap fence along the Rio San Antonio in the Ursulo pasture. Implementation of these adaptive actions occurs in the short term (year one to year five). Long term adaptive management actions include additional actions in riparian (exclosures) and upland meadows (similar to short term but with increased severity of livestock number reductions or reduced periods of use). Long term actions also consider prescribed burns or new water sources (dependent on additional NEPA).

Significant issues addressed in the vegetation analysis:

Significant Issue #1: Cool Season Grass Recovery for Mule Deer, Elk and Black Bear. Use an entry date of June 1st for the Ursulo, Chino and Wheatgrass pastures to assure recovery of cool season grasses which are one of the main nutritional needs for mule deer, elk and black bear.

Measure used to analyze environmental consequences: Cool season grass condition with a 5/17 entry and with a 6/1 entry.

Alternative 1

In alternative 1, there would be positive changes to the vegetative community, vegetative ground cover and desirable herbage. This would assist in establishing fair to good vegetation condition and stable to upward rangeland trend for vegetation and soils. Removing cattle grazing from the allotment would result in a substantial increase of herbage leaf and root volume being retained within the key area sites (in all pastures). This herbage volume would accumulate over time and would be reincorporated into the surface soil layer as humus or organic matter. This increased organic matter would increase the amount of ground cover, offer protection to the soil surface from erosion by water or wind and improve the soil surface, soil aggregation and structure. In terms meeting desired conditions, the diversity of species, percent of bare ground and percent woody species would move towards desired conditions.

Under alternative 1, there would be a limited short term (up to 5 years) effect on the current diversity of the vegetative resources in comparison to the long term because improvement occurs slowly over time. In the long term (up to 10 years), the frequency of occurrence of the desirable species and herbage cover would improve as reproduction and seedling establishment improves. In the Wheatgrass pasture, the grasses were once a community type that were seeded with crested wheatgrass. The grasses are currently reverting to native species and this would continue. This would change the current diversity from seeded wheatgrass to a more diverse native species

composition. Within the Nutritas pasture, the designated crossing permit trail route would continue to be authorized. However, it would minimally affect condition and trend. It is similar to the use that would be expected from wildlife (elk).

Alternative 2

Annual Operating Instructions (AOI): The AOI would provide flexibility in livestock numbers, entry/exit date and period of use. This would provide the potential to improve the condition/trend over the 10-year term permit. AOI flexibility combined with the deferred/rest-rotation system would provide cyclical cool and warm growing season rest and adjustments to the annual stocking rates. The pastures of concern (pastures noted in the affected environment section) would receive management prescriptions during the 10-year term permit to ensure that monitoring guidelines would be met.

Grazing System: Periodic scheduled annual rest for each pasture within the proposed seven pasture deferred/rest rotation system may be equivalent to 12 to 13 months of rest, depending on the watershed, vegetation and climate conditions. Plant vigor, composition and diversity would be improved by: providing partial to complete rest for all pastures during the cool growing season (as prescribed by range readiness criteria); providing partial or complete season of use (rest for alternating pastures during the cool and warm growing season); and improving distribution by following best management practices.

Climate: With different climate conditions such as near normal, the ability for moving to good condition and stable/upwards long term trend may fluctuate on an annual basis even with management adjustments such as reducing livestock numbers. It may take twice as long for progress toward desired conditions if the average annual standard precipitation index (SPI) is moderately dry. This is because when plants are stressed they are not producing the volume and mass (vigor is low). This then results in negative progress in terms of moving towards the desired conditions.

Grazing Capacity: The proposed action would continue to authorize livestock numbers levels below the estimated capacity that was estimated from the production data, entry/exit dates, forage allocation method and allowable use method (actual use/utilization summary). The estimated capacity enables the cooperators to obtain a functional livestock operation that would make progress towards the desired condition objectives, as well as, meet operational needs.

Livestock Distribution: The proposed action would assist in producing more available forage and in improving livestock distribution within the majority of the pasture. It would slightly to moderately affect the pattern of use and distribution within the pasture because of the existing vegetative diversity, community types, water availability sites and locations of key area sites. In the short term and long term, as cool season herbage increases due to entry pasture management and pasture rest (grazing system), livestock would be grazing slightly use areas more often than during previous periods (and heavy use areas less often). This would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use.

Best Management Practices (BMPs) would assist in improving livestock distribution where ungulate utilization is over 40 percent in some key areas but below 40 percent in other key areas of the pasture. BMPs would reduce areas of heavy use and increase areas of slight use. In the

past, the utilization may not have been met periodically due to climate, growing conditions, capacity, period of use, improper livestock distribution, pattern of use, water or forage availability, cover and vegetation species.

Expected change in conditions: With good weather conditions, all pastures would be expected to exhibit a positive change (2 to 7 percent) towards the desired conditions. This percentage range is based on a review of past transect data and the expected annual variation measured over a 5 year period.

Nutritas pasture summary: The rangeland vegetation condition and rangeland long term trend would improve in the short term with normal to above normal climate conditions (SPI – Moderately Wet). This effect reflects an annual Moderately Wet SPI. Production would increase moderately and vigor would be moderate to high. Overall, there would be movement towards desired conditions. The reasons why rangeland condition and trend would improve is because (also see environmental consequences common to all pastures): (1) The grazing system (deferred/rest rotation) provides for grazing Nutritas after approximately June 25 (in 2 of 6 years) and graze after Aug. 12 (in 4 of 6 years) but would be rested at least 1 in 7 years and, (2) Limiting the number of days grazed each year under a deferred rotation to 20 to 23 days would provide for conservative utilization or intensity, lower frequency of use and more opportunity to grow for cool season grass species Within Nutritas, the designated crossing permit trail route would continue to be authorized. However, it would minimally affect condition and trend. It is similar to the use that would be expected from wildlife (elk).

Tanques pasture summary: The expected movement towards desired conditions is the same as noted above in the Nutritas pasture. Even in periods of near normal SPI, this pasture has continued to move towards an upland long term trend. Therefore, existing *Fair* vegetation condition with stable to upward long term trend would be *Good* within 10 years. Other factors include (also see environmental consequences common to all pastures): (1) the grazing system (deferred/rest rotation) provides for grazing Tanques after approximately July 15 (4 of 6 years). In 2 of the 6 years, Tanques would be grazed after approximately June 25 (if range ready) and then in the 7th year Tanques would be rested and, (2) Limiting the number of days grazed each year under a deferred rotation to 12 to 15 days would provide for conservative utilization or intensity, lower frequency of use and more opportunity to grow for cool season grass species,

Hondo pasture summary: The expected movement towards desired conditions is the same as noted above in the Nutritas and Tanques pasture. The production would increase moderately and vigor would be moderate to high. Other factors include (also see environmental consequences common to all pastures): (1) The grazing system (deferred/rest rotation) provides for grazing Hondo after approximately July 15 (4 of 6 years), (2) In 2 of the 6 years, Hondo would be grazed after approximately June 25 (if range ready) and then in the 7th year, Hondo would be rested and, (3) Limiting the number of days grazed each year to 22 to 26 days would provide for conservative utilization or intensity, lower frequency of use and more opportunity to grow for cool season grass species.

Oso pasture summary: The existing *Fair* vegetation condition with stable long term trend would be *Good* within 10 years at annual average SPI of *Near Normal* because even in years of near normal the pasture has maintained its stable trend. Other factors that would allow for improvement include (also see environmental consequences common to all pastures): (1) The grazing system (deferred/rest rotation) provides for grazing Oso after approximately July 15 (5 of

6 years), (2) In 1 of the 6 years, Oso would be grazed after June 25 (if range ready) and then in the 7th year Oso would be rested, (3) Limiting the number of days grazed each year under a deferred rotation to 20 to 28 days would provide for conservative utilization or intensity, lower frequency of use and more opportunity to grow for cool season grass species and, (4) In 5 to 10 years, the Oso spring/Oso Creek enclosure (10 to 20 acres) construction may be necessary for this area to meet the desired condition by removing negative livestock impacts to the intermittent streambank stability, streambank cover and channel sediment production

Entry Pastures - Ursulo, Chino, Wheatgrass

Grazing System: By alternating the season's initial entry pastures, a complete rest period during cool season growth would occur for the other six pastures and the benefits would be measurably greater. The full process of reproduction and completion of growth functions would occur without livestock grazing impacts. Livestock grazing that occurs after seed development and seasonal production benefits the plant's vigor. Cool season seedling establishment may occur more frequently due to greater root development before livestock grazing (where possibly more seedlings may be uprooted during grazing). Similar benefits would occur during complete warm growing season rest. Rest periods (or the opportunity to grow) allows for plant recovery and time for plant growth functions to continue during the critical growing seasons.

By increasing the herbage ground cover (in the long term) the pasture's range condition may improve from fair to good and range trend would improve from stable to downward to stable to upward trend. In addition, increasing the herbage ground cover affects the watershed with positive benefits by reducing soil surface erosion, surface runoff, sediment production and negative soil impacts.

Range readiness may determine the entry date as between May 17 to June 1. Typically, the range readiness growth stage for many grass species is characterized as the growth stage between the initial stages of seed development to the growth stage of after seed development/seed ripe. Grasses would respond to additional cool growing season rest by increasing root and leaf volume, annual production, seedling establishment, reproduction and vigor.

Annual Operating Instructions – see above

Range Improvements: Range improvement project construction (fence reconstruction and pit tank construction) would increase livestock control and livestock restriction to authorized pastures; and increase pasture water availability to assist in properly distributing livestock throughout the pasture.

Ursulo pasture summary: The existing *Fair* vegetation condition with stable long term trend would be *Good* within 5 to 10 years at normal to above normal climate conditions (SPI – *Moderately Wet*). Factors that would allow for improvement include (also see effects common to all pastures): (1) An entry pasture rotation of 1 in 3 years that would allow increased annual cool season rest and a longer opportunity for cool season herbage to grow within the pastures that are not entered first, (2) A pasture rest of 1 in 7 years would allow complete annual production rest from cattle grazing when unauthorized and excess use does not occur and, (3) In 3 to 5 years, the Rio San Antonio watergap fence (0.7 miles) would be constructed to mitigate negative livestock impacts to streambank stability, streambank cover and channel sediment production.

Chino pasture: Expected improvements are the same as noted above for the Ursulo pasture. The production would increase moderately and vigor would be moderate to high. Factors that would allow for improvement include (also see effects common to all pastures): (1) Entry pasture rotation of 1 in 3 years. This would allow increased annual cool season rest and a longer opportunity for cool season herbage to grow within the pastures that are not entered first. However, because Chino is typically range ready May 22 to June 6, a later entry than May 17 would require the Association to prepare additional plans to feed or pasture, or lease pasture during the interim and, (2) A pasture rest of 1 in 7 years would allow complete annual production rest from cattle grazing when unauthorized and excess use does not occur in the pasture. Trailing thru the pasture by Association members (to enter/exit scheduled pasture) or by operators with crossing permits (spring/fall) would still occur.

Wheatgrass pasture: Expected improvements are the same as noted above for the Ursulo and Chino pasture. Production would increase moderately and vigor would be moderate to high. An entry pasture rotation of 1 in 3 years would allow increased annual cool season rest and a longer opportunity for cool season herbage to grow within the pastures that are not entered first. However, because Wheatgrass is typically range ready May 22 to June 6, a later entry than May 17 would require the Association to prepare additional livestock operation plans to feed or pasture, or lease pasture during the interim. A pasture rest of 1 in 7 years would allow complete annual production rest from cattle grazing when unauthorized and excess use does not occur in the pasture. The designated crossing permit trail route would continue to be authorized. However, there should be minimal effects to condition and trend as cattle do not stay overnight and they trail through in a short time (1 hour).

Cumulative Effects on Rangeland Condition and Trend

The cumulative effects of past and present activities, such as livestock trailing use from other allotments, climate conditions, the enclosure in the Stewart Meadows Complex, and range improvement maintenance, are reflected in the discussion of range condition and trend by alternative. Under both alternatives any proposed road closures would have a beneficial effect on range condition and trend due to vegetation growth in the road bed over time. The effects of prescribed burning or fire use within the allotment would also have a positive effect on range condition.

Soils and Watershed [45]

Significant issues addressed in this analysis:

Significant Issue #2: Rio San Antonio Riparian Condition. The riparian condition above and below Stewart Meadows Complex is not improving. More management is needed.

Indicator used to measure effects: The indicators used to evaluate impacts to riparian habitat are: percent plant community diversity, percent woody species, percent bare ground and percent utilization along the Rio San Antonio.

Significant Issue #3: Riparian Management (allotment-wide). Management actions such as reducing livestock numbers, adding riders and moving livestock out of riparian areas need to be part of the preferred alternative for reauthorization.

Indicator used to measure effects: A quantitative evaluation of applying adaptive management actions in year 1 (versus year 5) is used. In addition, the indicators used to evaluate impacts to riparian habitat are: percent plant community diversity, percent woody species, percent bare ground and percent utilization.

Soil Condition and Productivity

Soil condition is an evaluation of soil quality based on an interpretation of factors which affect three primary soil functions: soil hydrology, soil stability and nutrient cycling. Maintaining productive soils and a healthy watershed are recognized as the basic ecosystem indicators. Livestock grazing can affect these soil functions through alteration of the vegetative community, removal of plant material and organic matter inputs, physical compaction of the soil surface by trampling and other effects that are important to maintenance of long term soil productivity.

Data from the Carson National Forest Terrestrial Ecosystem Survey (hereafter referred to as TES) (Edwards et al 1987) was consulted and an initial determination of soil stability was made by comparing the soil loss values for Current Soil Loss (CSL) versus Tolerance Soil Loss (TSL). [5] Additional factors considered in evaluating soil stability are: sheet and rill erosion hazard if no vegetative cover; Modeled Soil Loss (the ratio of modeled current soil loss to modeled tolerable soil loss); percent slope and percent vegetative and litter ground cover (see figure 3 for allotment soil units (TEU). Based upon the evaluation of soil stability and assessment of rangeland health indicators, 82 percent or 33,774 acres is in satisfactory condition, 18 percent or 7,507 acres are in impaired condition and no acres are in unsatisfactory condition.

Water Resources

The San Antone analysis area is within the Rio San Antonio – Rio Los Pinos fifth-order watershed (HUC #5th order 1301000502). Of the 243,338 acres total, the San Antone analysis area is approximately 41,281 acres of National Forest System lands or 4.1 percent of the total watershed acreage.

Water Quality

The Rio San Antonio segment from the Montoya Canyon to the headwaters is considered impaired for water temperature with possible sources being a loss of riparian habitat, rangeland grazing and streambank modification and destabilization (State of New Mexico 2008).

Riparian

Riparian areas include: (1) Rio San Antonio in Ursulo and Nutritas pasture (the Stewart Meadows Complex is excluded from the allotment), (2) Wheatgrass watergaps at the Rio San Antonio culvert and at the Wheatgrass/private boundary and, (3) Rio Nutritas (Nutritas watergap only). Ephemeral and intermittent streams are Canada del Oso, Lola Creek; Hondo; Tanques.

Riparian conditions have been monitored since 2000 in several key areas. Whether the 4” stubble height guideline is met in riparian (measured at the end of the growing season) is documented. Riparian condition is evaluated against the desired future condition statements found in the forest plan for riparian (MA14). Refer to the soils and watershed report in the project record for more details. [45]

Riparian conditions were also determined by evaluating Riparian Area Survey and Evaluation System (RASES) transects conducted between 1988 and 1991. The transects document many stream channel, aquatic ecosystem and riparian community attributes as well as evaluate riparian condition against the desired future condition statements outlined in the forest plan for riparian (Management Area 14). Transects measure: (1) percent shade over water (desired condition (DC) is 80 percent), (2) percent bank protection (DC is 80 percent), (3) percent Substrate Free of Inorganic Sediment (DC is 85 percent), (4) percent Shade over Land Surface (DC is 60 percent) and (5) percent Woody Plant Composition in Riparian Species (DC is 60 percent).

The 10 2006 riparian assessments were located in reaches that included: Canada del Oso, Lola Creek, Rio San Antonio and Hondo and Tanques intermittent streams. Riparian vegetation (willows, rushes) is not typically present in the TEU 67 map unit areas within the intermittent streams in Hondo, Oso or Tanques at the wider drainages. However, in the steep narrow canyons, riparian vegetation such as willows, alders, sedges or rushes are present.

The 2006 data documented that percent shade over water and percent bank protection was met (or exceeded) in 3 of 10 locations, percent substrate free of inorganic sediment was met in 6 of 10 locations, percent shade over land surfaces was met in 7 of 10 locations and percent woody plant composition in riparian species was met in 2 of 10 locations. In comparing the original RASES data with the 2006 field assessments:

- The percent shade over water has possibly remained the same or changed in a positive direction for three of five locations.
- The percent bank protection has possibly changed in a positive direction for four of five locations.

The riparian field assessments determined that grazing activities and other uses (hunting, dispersed recreation use) are currently impacting riparian areas within the allotment analysis area. Impacts observed include: stream bank trampling and bank shearing which result in channel widening, sediment inputs, decreased streamside cover and increased solar exposure (increased water temperature), trailing along and across riparian areas and channels, grazing of woody riparian vegetation (notably remnant willows in small intermittent and interrupted perennial stream segments), the development of headcuts along stream channels and compaction of surface soil layers – as determined by the presence of platy soil structure

From the assessments of riparian areas within the analysis area, it is estimated that approximately 0.6 percent (3.5 acres) of the total land area within riparian corridors (623 acres) are being negatively impacted by current grazing management. There was limited field observation or assessments on 15.4 riparian acres or 2.5 percent of the 623 acres. Approximately 22.7 percent of the assessed riparian area (15.4 acres) is being negatively impacted by the current grazing management.

Watershed Condition

The San Antone analysis area is within the Rio San Antonio – Rio Los Pinos fifth-order watershed. The watershed condition for the analysis area is Class II. These watersheds exhibit moderate geomorphic, hydrologic and biotic integrity relative to their natural potential condition. Portions of the watershed may exhibit an unstable drainage network. Physical, chemical and biological conditions suggest that the soil, aquatic and riparian systems are at risk in being able to

support beneficial uses. This determination is based on a reduction in herbage to protect the soil surface and resist soil erosion, a reduction in surface organic matter, a reduction in vegetation cover negatively impacting infiltration and surface runoff and a reduction in soil surface stability in plant interspaces and in stabilizing agents. In addition, ground cover, litter and bare ground are not at the levels expected for the ecological sites.

Floodplains and Municipal Watersheds

Only base floodplains occur in the analysis area. The analysis area is located on the Federal Emergency Management Agency (FEMA) Flood Maps for Rio Arriba County, New Mexico, Taos county community, (Panel Numbers 3500490150B, 3500490325B; Effective Date January 5, 1989; available on file at the Carson National Forest Supervisor's Office). As viewed on the FEMA Flood Maps, the analysis area is completely within the proclaimed forest boundary and is designated as Zone X (unmapped) by FEMA on the Flood Maps. Executive Order 11988 requires federal agencies to "...reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare and restore and preserve the beneficial values served by floodplains..." The floodplain area has not been reduced due to adjacent development or occupation within the national forest system portion of the analysis area. There are no management activities in the proposed action that relate to the development or occupation of the floodplains. The 1986 EIS for the forest plan (Carson EIS 1986) did not identify any municipal watersheds on the Forest. Floodplains and municipal watersheds will not be discussed further. [2]

Wetlands

Within the analysis area, wetlands, in the form of intermittent wet meadows, are associated with the drainage network and may be found in areas of TEU map unit 12, 67 and 68 (see figure 3), but these areas typically do not have the soil and water characteristics necessary to be classified as wetlands. In addition, the low precipitation that the area receives does not make the soils conducive for creating a wetland. The riparian section references these TEUs.

Environmental Consequences

Alternative 1

Soil Condition and Productivity

Without livestock grazing, there would be positive changes to the vegetative community, ground cover, and desirable vegetation (see rangeland vegetation section). This would affect soil and watershed conditions in a positive manner by: 1) the retention of existing vegetative biomass onsite; 2) increasing the amount of reincorporation of this biomass into surface litter and soil organic matter; 3) providing for increased levels of surface soil cover; 4) improving surface soil aggregation and structure from increased organic inputs; 5) increasing protection from water and wind erosion and; 6) increasing levels of fine fuel loads over the allotment areas. The increased biomass would also result in maintaining the amount of nutrients returned to the soil. This would enhance the productivity, fertility and water holding and release functions of the soil resource. Surface water yields may show a decrease, due to more groundcover accumulation and surface water runoff events may show an increased length-of-duration as the increase in groundcover, trees and shrubs occurs.

Water Quality

Water quality would be maintained or improved because of the greater amounts of ground cover or organic matter. The ground cover assists in reducing wind and water erosion or surface water velocity, as well as, improving the soil's water holding capacity. Increases in vegetation growth, standing matter and groundcover would also improve soil productivity. The current status of water quality and full attainment of State of New Mexico designated uses of surface water would be expected to continue in the following watershed areas: Rio San Antonio (Colorado border to Montoya Canyon with some uses not assessed).

The assessed areas not in full attainment of the designated uses of surface water and would be expected to move towards the objective of full attainment in the next ten years. The Rio San Antonio segment from the Montoya Canyon to the headwaters is considered impaired for water temperature with possible sources being a loss of riparian habitat, rangeland grazing and streambank modification and destabilization (State of New Mexico 2008). Private land uses (agriculture, irrigation and livestock grazing) adjacent to the watershed areas directly impacts impairment status. Within the analysis area, there are no proposed projects that would directly impact the watersheds and increase the production of sediment and silt.

Riparian

Riparian vegetation condition would be expected to improve, both short and long term, as the authorized grazing from livestock was removed and as woody/herbaceous plants increased in density and cover. Within the various intermittent streams that contain segments of herbage vegetation, stream channel shading may not measurably increase or lower surface water temperatures during the summer season. Within the intermittent channel's localized riparian areas of woody species, the limited increase in woody riparian vegetation would also provide deep root mass to adjacent bank areas. The ability of these infrequent riparian areas to mitigate flood flows, filter sediment and store and release stream flow may also be enhanced. This may result in a localized improvement to the watershed condition and water quality as sediment generated by other existing land uses and topographic features may be more effectively processed, filtered and reduced in these limited riparian areas. Riparian would continue to be impacted by wildlife trampling, trailing and wildlife utilization; and various other activities or uses such as dispersed camping, recreation, fishing or hunting.

Watershed Condition

Watershed condition within the allotment analysis area would be expected to improve in areas of the minimal livestock use as impacts currently occurring (trampling of intermittent stream banks, bank shearing and associated sediment inputs) would be reduced in the short term and as recovery progressed over the long term. Watershed condition within the entire 5th code watershed area would not be expected to change from the current condition. This alternative would only directly affect approximately 17 percent (San Antone) of the total watershed area. Continuing livestock grazing and other vegetation altering impacts within the remainder of the watershed is not affected by this decision.

Alternative 2

The effects of this alternative to vegetation are described in the rangeland vegetation section. This analysis also describes in detail the assumption of how climate influences reaching or making progress towards meeting the desired condition within the short or long term. The desired

condition may not be met within ten years when *Near Normal to Moderately Dry* SPI conditions occur during the majority of the period. This would directly affect soil and water resources.

Soil Condition and Productivity

Periodic scheduled annual rest for each pasture within the proposed 7 pasture deferred/rest rotation system combined with keeping livestock numbers levels below the capacity (that was estimated from the production data) would maintain or improve current levels of existing vegetative biomass onsite. It would maintain the reincorporation of this biomass into surface litter and soil organic matter. This would result in maintaining current surface soil cover, organic inputs and protection from water and wind erosion, provided the flexible adaptive approach is utilized and permittee compliance with the AOI is accomplished. Utilization levels of forage species would continue and the presence of desirable decreaser species within riparian areas would continue to be maintained or slightly improved in these areas.

Within the next 10 years, the acreage assigned impaired/unsatisfactory ratings would make progress towards the desired condition, nutrient cycling and soil condition rating by the improvement of the percent of ground cover, bare ground, litter and desirable herbage (see the soils, watershed and air report in the project record for additional details on how specific TEU's would change or be affected).

Watershed Condition

Applying BMPs would cause a slight increase in watershed conditions within the allotment. The deferred pasture/rest rotation systems would continue to be employed with rested or nonuse pastures showing improvements in vegetative composition and density. Watershed condition within the allotment analysis area would be expected to remain in its current condition as the limited impacts currently occurring (trampling of intermittent stream banks, bank shearing and sediment inputs) would continue to affect these areas in the short term. In the long term, similar limited impacts would continue to occur. Watershed condition within the entire 5th code watershed area would not be expected to change from the current condition as this alternative would only directly affect approximately 17 percent (San Antone) of the total watershed area.

Water Quality

The status of water quality and full attainment of the State of NM designated uses of surface water would be expected to continue (see water quality section above). However, private land uses adjacent to the various reaches within the rivers (Rio de Los Pinos and Rio San Antonio) directly impacts impairment status in addition to FS authorized grazing. Additional measures to decrease impacts to the riparian vegetation and intermittent stream channels within the analysis area include various management actions (proper stocking levels, adherence to the AOI, on the ground oversight and management by the permittees).

Riparian

The riparian vegetation condition would be expected to be maintained or slightly improve over the long term, as grazing continues and measurable impacts to the riparian woody and herbaceous plants are adaptively managed. The ability of these riparian areas to store and release stream flow, as well as filter sediment from sediment generating activities and features (roads, OHV use, gathering forest products and recreational use), would continue to slightly improve in the long term.

Cumulative Effects on Soils and Watershed

The cumulative effects analysis area for soils and watershed is the fifth code Rio San Antonio-Rio Los Pinos Watershed, which overlaps the allotment. Past, current, and reasonably foreseeable future activities within the fifth-code watersheds include livestock grazing on adjacent allotments and private lands, earthen stock tank developments, water developments, prescribed burning, fuelwood gathering and sales, timber stand improvement, thinning, pile burning, gravel pits, utility corridors, regional landfill site, forest road maintenance, mechanical vegetation treatments, hunting and recreational pursuits. These activities would result in greater long-term positive effects to the watershed condition (table 3).

Future range improvement projects (that would occur under the adaptive management plan (see table 1) would contribute to an improved condition within the watershed. However, negative effects to the soil resource from trailing across the allotment or congregation of animals at or near water sources would continue under either alternative. Although naturally occurring erosion and woody species encroachment would continue, considering the past, present and foreseeable actions, there would be no significant cumulative actions.

Cumulative effects on water quality would show immeasurable change from current levels. Surface water runoff duration would remain at around current levels. Ground cover would be maintained or improved from current levels. Permitted grazing outside of the analysis area would still continue.

Within the watersheds that contain the designation of not supporting uses and are impaired, under alternative 2, as a result of adaptive management implementation, the direct and indirect negative impacts to the watersheds from livestock grazing are minimal. Within the analysis area, there are no proposed projects that would directly impact the watersheds and measurably increase the production of sediment and silt. The ongoing activities occurring on private land within the watershed areas (Rio de Los Pinos and Rio San Antonio) directly impacts the total maximum daily load. Private activities such as agriculture, irrigation and livestock grazing, directly causes sedimentation and siltation that resulted in the assessment designation of not supporting coldwater and warmwater aquatic life. Under alternative 2, cumulative effects would be dependant on the success of the adaptive management approach outlined for grazing management activities.

OHV and dispersed recreation uses would continue, resulting in a minor level of cumulative effect as this use is typically associated with or in near proximity to surface water flows. District-wide forest product uses would continue within the watersheds, mostly in the form of viga, latilla and personal use fire wood gathering. These activities are small in size, located in coniferous forest or aspen cover types (where livestock grazing is minimal) and associated with roads that provide access to the products. The effects of this type of activity ranges from none to minor in extent and do provide limited increases in herbaceous vegetation if forest canopy is opened. The travel management policy would prescribe the locations for harvested products since the designated roads (map) would limit area accessibility (see table 3).

Ongoing management activities such as road maintenance are not expected to cumulatively impact water quality as most of the road system is established and maintenance activities are focused on routine activities which are typically minor in their extent. Existing roads that are not within the open road system designated by the travel Management map would not be maintained and would be obliterated (see table 3).

In the long term, forage would be reduced due to woody species encroachment and the reduced ground cover may decrease soil stability. In the long term, a combination of watershed health treatments (not proposed) would be required to reduce woody species canopy and shrub understory, as well as, to increase openings and create community types that produce desirable grass and forbs cover. Forage consumption by wildlife would also continue and may increase in utilization levels. Water yields would remain near existing levels. Water runoff timing and duration would increase from its existing level, as TES map unit ground cover percentages would decrease from their current percentage. Water quality may be affected and change from its current level towards higher sedimentation, as the amount and duration of surface water runoff would show change of an increase as herbage or ground cover decreases.

Future wildfire activity would alter vegetative conditions on moderate and high burn severity areas. Within the low burn severity or unburned areas, positive response of understory vegetation is expected to occur. Increased levels of soil erosion, sediment delivery and water yield may be expected in drainage portions of the watershed area, depending upon success of rehabilitation prescribed treatments and the number and intensity of runoff producing storms. As vegetative recovery occurs, these additional areas of forage may also be utilized to improve livestock distribution across that specific allotment area.

Without wildfire, tree stands would deteriorate in health from bark beetle and mistletoe infestation. Please note, general locations of insect and disease are known but acres are not quantified. In the short term, the increase of available forage that would benefit the improvement of distribution and pattern of use or utilization levels in key areas within various pastures would not occur. Adjustments to livestock numbers, period of use and pasture scheduling would be required as the annual climate conditions varies from favorable to unfavorable forage production. In the long term, as overstory dies off and openings with grasses and forbs would increase. Suitable best management practices would be applied to the varying existing forage conditions that would change as the overstory decreases. Range condition and trend would improve in relation to the specific areas and acres of openings. Desirable production would increase and percent frequency and cover of key species would be substantially higher. The increasing forage availability in under utilized areas would cause livestock to lower utilization levels in key areas, watering areas and favorite drainage areas or existing openings. At current livestock numbers, distribution would improve and the pattern of use would be more uniform. Wildfire effects would be dependent upon variability in stand structure, fuels, topography and weather elements.

Air Quality [45]

Currently, the annual management instructions for the allotment include livestock trailing, livestock herding within pastures, or livestock gathering for movement between pastures and allotment exit (as required by the pasture rotation schedule). These activities (along with the permittee periodically driving along the native and fill surfaced roadways) are activities that could result in effects to air quality, either from vehicular emissions or dust production. These effects are typically short term and localized in their nature.

Comparison of Alternatives

Under both alternatives, air quality would remain static. Dust and particulates originating from vehicle/trailer use, herding, and other activities generated by grazing permittees would either cease (alternative 1) or occur within the local area of impact (alternative 2). Other localized

impacts to air quality would continue however, as the remaining dust generating activities (road use for recreational and other forest product uses) would continue.

Wildlife (Terrestrial and Aquatic) and Plants [51]

Federally Listed Threatened and Endangered Species

Threatened and endangered species are managed under the authority of the Endangered Species Act (ESA), (PL 93-205, as amended in 1973) and the National Forest Management Act (PL 94-588). The ESA requires federal agencies to ensure all actions, which they “authorize, fund, or carry out,” are not likely to jeopardize the continued existence of any threatened or endangered species. The black-footed ferret, interior least tern, and Rio Grande silvery minnow did not warrant further analysis, because habitat was not present or the forest was not within the range of the species (see wildlife and fisheries report for additional information). [50, 51] The evaluation of effects to federally listed species focuses on the Mexican spotted owl and southwestern willow flycatcher.

Significant Issues addressed in this analysis:

Significant Issue #4: Loss of critical habitat for sensitive and federally protected species (Mexican spotted owl, northern goshawk, Rio Grande cutthroat trout). The proposal may result in a loss of critical habitat.

Measure used to evaluate effects: Impacts to habitat and sensitive and federally protected species will be evaluated in the wildlife and fisheries report. Foraging and nesting habitat affected and effect to individuals and/or populations will be the indicator for terrestrial wildlife. For fisheries, the indicator is the effect to individuals and or populations.

Mexican spotted owl – (*Strix occidentalis lucida*) – Threatened

There are no critical habitat units for Mexican spotted owl (MSO) on the Tres Piedras Ranger District. Within the analysis area there is no PAC (Protected Activity Centers) or administratively reserved lands. There are approximately 1,966 acres of protected habitat within the allotment. The majority of the most suitable protected habitat is located on the Nutritas, Tanques, Hondo and Oso pastures. There are approximately 6,519 acres of restricted habitat for this species within the allotment (see appendix B in the wildlife report, project record #51). The majority of the most suitable restricted habitat is located on the Nutritas, Tanques, Hondo and Oso pastures.

Upland meadows and riparian areas adjacent to restricted habitat and protected habitat within Nutritas, Tanques, Hondo and Oso pastures provide habitat for Mexican spotted owl (hereafter referred to as MSO) prey base species. Riparian habitat corresponds with Terrestrial Ecosystem Unit (TEU) 66, (TEU) 67 and (TEU) 12 (USDA, 1987). Within the Oso, Tanques, Nutritas and Hondo pastures the MSO suitable riparian habitat is found in TEU 66, 67 and 12. See figure 3 for TEU locations.

Formal surveys following Regional protocol methodologies for the presence of this species have occurred on large portions of the forest since 1989. No MSO have been documented on the Tres Piedras Ranger District. No recent protocol MSO surveys have been conducted within the San Antone grazing allotment. The closest and most recent formal surveys were conducted in 2002 and 2003 for the Maquinita Ecosystem Health project. At Maquinita, approximately 7,867 acres

of protocol surveys were conducted and yielded negative results for MSO. There is no overlap between the Maquinita project boundary and the allotment boundary. Even though no MSO have not been located within or adjacent to the allotment, for this analysis the assumption is made that MSO occupy the allotment based on the presence of suitable habitat since the area has not been surveyed.

Due to the availability, quantity and quality of suitable habitat present within the Nutritas, Hondo, Tanques and Oso pastures, these pastures may provide habitat for up two breeding pairs of owls.

Criteria Used to Measure Effects

To meet the needs of the owl and its prey, the following range/forage criteria was used to evaluate effects to MSO on the Tanques, Hondo, Oso and Nutritas pastures. The purpose of establishing these criteria to ensure allowable use of plant species to maintain or improve plant diversity, density, vigor and regeneration over time to support MSO prey species.

Criterion 1: Upland meadow/grasslands

- 1.1. Diversity of grassland plant community equal to 70 percent plant composition in cool season grasses within 5 years
- 1.2. Less than 15 percent woody species in upland meadows by year three, four and five.
- 1.3. Less than 15 percent bare ground in upland meadow by year three, four and five.
- 1.4. Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Criterion 2: Vegetation long term trend of good to excellent range conditions in upland meadows and riparian areas adjacent to restricted and protected habitat.

Criterion 3: Promote natural and healthy riparian plant communities

- 1.1. More than 15 percent woody species where potential exists within 5 years .
- 1.2. Less than 10 to 15 percent bare ground by year three.
- 1.3. Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Environmental Consequences:

Alternative 1

It is anticipated that there would be an increase in density of the vegetative species such as shrubs, forbs and grasses. The increased growth of these various vegetative species would result in plant diversity, cover and a variety of plant heights that equates to good to excellent range conditions, thus improve the habitat for prey base species for the Mexican spotted owl. Under this alternative, criterion 1 through 3 would be met in 10 years.

Alternative 2

The AOI would include adjustments to livestock numbers, entry and exit dates, number of days and grazing system. These adjustments would reflect annual resource or climatic conditions and assist in making progress towards meeting criterion 1 through 3. Desired conditions include

maintaining forage utilization at conservative use levels and managing for good to excellent range condition within key areas.

The grazing activities in the proposed action would not directly remove nesting or roosting structural habitat characteristics required for the MSO. The overall canopy cover and forest structure would not change due to grazing, since livestock would not affect tree composition. However, indirectly livestock grazing may reduce the herbaceous ground cover and increases shrubs and small trees. This can decrease the potential for beneficial low intensity ground fires while increasing the potential for destructive high intensity vertical fires that can negatively affect nesting and roosting habitat (USDI 1995). The grazing activities are not anticipated to reduce the herbaceous ground cover to the point where there is a decreased potential of a low intensity ground fire. Therefore, it decreases the potential for a destructive high intensity vertical fire that would negatively affect MSO nesting and roosting habitat

The proposed grazing is not anticipated to limit the diversity and seasonal availability of forage to support a diversity of prey species. There would be no change that would result in owls leaving the area. The proposed grazing is anticipated to assist in increasing the current forage diversity and season availability over time.

To accommodate the needs of the owl and its prey species, “key grazing areas” are to be maintained in good to excellent range conditions in the long term. The implementation of the proposed activities and monitoring plan would assist in meeting adequate range conditions. Ensuring adequate residual cover during the growing season provides cover for MSO prey base. Again, it would be a goal to maintain forage utilization at conservative use levels within the open meadows and riparian habitat found on the allotment pastures. This monitoring would be especially important in pastures that are grazed during the late spring and early summer months when avian species are rearing young and require a higher level of prey species.

The Oso pasture would be rested one out of seven years. In the long term, criterion 1.1 would be met and result in improved vegetation recovery and provide better forage diversity for prey species.

Range readiness to determine the entry dates on the Ursulo, Chino and Wheatgrass pastures would translate to later entries of livestock to the MSO pastures (Tanques, Hondo, Oso and Nutritas). Later entry dates in these pastures would allow a higher percentage of cool season grasses to seed out. Grasses would respond to additional cool growing season rest by increasing root and leaf volume, annual production, seedling establishment, reproduction and vigor. Criterion 1.1 would be met. Overall, this would allow for greater forage diversity and cool season seed sources in the long and short term for MSO prey base species.

In the short and long term, as cool season herbage increases due to entry pasture management and pasture get rest (grazing system), livestock would be grazing slight use areas more often than during previous periods, as well as, heavy use areas less often and would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use. In the long term, conservative livestock grazing of 30 to 40 percent allowable utilization on the Tanques, Hondo, Oso and Nutritas pastures would expedite attaining good to excellent range conditions. Criterion 1.4 would be met for upland meadows. In riparian areas (Oso and Lola Creek), Criteria 3 is

currently being met. With conservative utilization and installation of the Oso enclosure fence, riparian desired conditions would be maintained and/or improved and this would support prey base species diversity for owls.

The adaptive management actions (see chapter 2, alternative 2) that would be implemented in both the short and long term are expected to improve livestock utilization and distribution in the Oso and Tanques pasture riparian areas and within the upland meadows of the Tanques, Nutritas, Oso and Hondo pastures. In the long term, this would contribute to greater diversity of grass species and less percentages of bare ground in these areas. These conditions would be favorable for MSO prey base species. Criterion 1 through 3 would be met.

Southwestern willow flycatcher (*Empidonax traillii extimus*) – Endangered

There are no critical habitat units for southwestern willow flycatcher on the Tres Piedras Ranger District. No formal protocol surveys for the flycatcher have been conducted within or adjacent to the San Antone grazing allotment. However, in the Wheatgrass pasture, the 2006 Stewart Meadows Complex Bird survey detected one Southwestern willow flycatcher (Besser 2006). No breeding pairs have been confirmed within the Stewart Meadows Complex. Suitable habitat for the Southwestern willow flycatcher is also present on the Upper Rio San Antonio in the Nutritas pasture. No formal protocol surveys have been conducted within this habitat. Even though no protocol survey have been conducted on or adjacent to the allotment, for this analysis the assumption is made that Southwestern willow flycatchers occupy the Stewart Meadows Complex and Upper Rio San Antonio based on the present of suitable habitat.

Riparian habitat includes the Rio de Los Pinos, Rio San Antonio, Lola, Hondo and Canada del Oso drainages. Suitable habitat for the flycatcher is found within the Stewart Meadows Complex (Rio San Antonio) and on the Upper Rio San Antonio. There are approximately 87 acres of suitable habitat within Stewart Meadows Complex (Wheatgrass pasture) which mostly consists of willow and alder (see Appendix D of the wildlife report, project record #51 for more information). Over the last 12 years, after the installation of an enclosure and management to exclude livestock from the riparian in Stewart Meadows Complex, there has been an overall improvement of the riparian habitat. Currently, this habitat consists of dense riparian vegetation needed for flycatcher nesting. The percent of woody species and percent of bare ground are currently being met. No permitted livestock grazing occurs within the Stewart Meadows Complex; therefore, the utilization of palatable perennial grasses and streambank criteria is being met.

There are approximately 78 acres of suitable habitat along a 3.0 mile stretch of the upper Rio San Antonio (Nutritas pasture) mostly consists of willow and alder. Riparian conditions are very good. Multiple species with multiple canopy layers are present. The canopy cover is nearly continuous. Within this section there is currently very light livestock grazing occurring. Current livestock grazing is not attributing to the degradation of this habitat.

Within the uplands and watersheds, or portions of the watersheds of the Tanques, Oso and Nutritas pastures that are associated with the suitable habitat on the upper Rio San Antonio, livestock utilization levels have varied throughout the last 10 years. There are currently 2 pastures of concern. Tanques is currently an area of concern because 3 of the 5 years utilization guidelines have not been met. Because of the limited forage production in 2002 and 2003, cattle and elk grazing resulted in higher utilization levels. In 2003 and 2006, utilization was also not met in the

Ursulo pasture. AOI management resolved Nutritas utilization issues and the Oso pasture has only exceeded utilization 1 in 10 years.

Criteria Used to Measure Effects

To meet the needs of the southwestern willow flycatcher, the goal is to maintain existing southwestern willow flycatcher habitats and attempt to rehabilitate and maintain uplands and watersheds in conditions that will facilitate restoration of southwestern willow flycatcher riparian habitat. The follow criteria were developed to facilitate this management direction. These management criteria are consistent with Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Final Recovery Plan (USDI 2002) and the March 15, 2005 guidance criteria for streamlining informal consultation under.

Criterion 1: No grazing in occupied restorable or regenerating habitat during growing season and non-growing season. This criterion applies to the Stewart Meadow Complex on the Wheatgrass pasture. No livestock grazing during the growing and non growing season to allow plants to recover on their own.

Criterion 2: In areas of unoccupied suitable habitat: Conservative grazing with average utilization not to exceed 35 percent of palatable, perennial grasses and grasslike plants in uplands and riparian habitats and extent of alterable stream banks showing damage from livestock use not to exceed 10 percent. Woody utilization in this habitat does not to exceed 40 percent on average. This criterion applies to approximately 3 miles of suitable habitat found at the Upper Rio San Antonio on the Nutritas pasture.

Criterion 3: In uplands (occupied & unoccupied) for any season of use: Average utilization of palatable, perennial grasses and grass-like plants not to exceed 30 to 40 percent. Use stubble height guidelines: 3 inches for short grass, 6 inches for midgrass and 12 inches for tall grass. Determine monitoring species prior to grazing. This criterion applies to upland meadows and watersheds associated with the Upper Rio San Antonio and Stewart Meadows Complex suitable habitats.

Environmental Consequences:

Alternative 1

It is anticipated that there would be an increase in density of shrub and herbaceous plant in the uplands to improve riparian condition within suitable southwestern willow flycatcher habitat. All management criteria would be met with the implementation of this alternative.

Alternative 2

The AOI would include adjustments to livestock numbers, entry and exit dates, number of days and grazing system. These adjustments would reflect annual resource or climatic conditions and assist in making progress towards meeting the desired conditions for the southwestern willow flycatcher.

Livestock grazing activities within suitable habitats on the Upper Rio San Antonio could directly affect southwestern willow flycatchers by physically disturbing or damaging the nest, or spilling contents of the nest as they walk by if nest sites are present (U.S. Fish and Wildlife Service 1993a). Within this area, these direct effects are already reduced. While livestock are on the

Nutritas pasture, where the Upper San Antonio is located, the livestock tend to frequent the upland meadows. The topography tends to keep livestock away from the stream, therefore minimally affecting flycatchers, if present. Permitted livestock are currently excluded from the Stewart Meadows Complex via a fence enclosure, therefore direct disturbance is reduced. Trespass livestock from the allotment do pose a threat to disturbing flycatchers in Stewart Meadows Complex.

Livestock grazing could indirectly affect the flycatchers within the Upper Rio San Antonio habitat by degrading and modifying of riparian areas by overusing the herbaceous vegetation (U.S. Fish and Wildlife Service 1993a). However, currently these areas have little to no livestock grazing occurring and the habitat is in good condition. Again, permitted livestock are currently excluded from the Stewart Meadows Complex via a fence enclosure, but trespass livestock from the same allotment pose a threat to degrading the riparian habitat for the flycatcher in Stewart Meadows Complex.

However, with mitigation to instruct the range riders through the AOI to herd livestock out of Stewart Meadows Complex, impacts to the flycatchers from disturbance and riparian habitat degradation should be reduced and/or eliminated. Also, while livestock are present on pastures adjacent to the Stewart Meadow Complex, Forest Service and New Mexico Department of Game and Fish personnel would monitor the area to validate livestock exclusion to reduce impacts to flycatchers. Within the upper Rio San Antonio, mitigation is also proposed to instruct range riders to herd livestock (if needed) from the riparian to reduce impacts to flycatchers. Forest Service personnel would also monitor this area to validate these actions.

Within the Upper Rio San Antonio and the Stewart Meadows Complex, the continued presence of livestock adjacent to Stewart Meadows Complex could facilitate brood parasitism by the brown-headed cowbirds (U.S. Fish and Wildlife Service 1995a). However, brown-headed cowbirds have already moved into this area and the removal of cattle from the allotment would likely not change the existence of brown headed cowbirds in the area.

In the short term and long term, permitted livestock grazing would not occur within Stewart Meadows Complex during the growing and non growing season. This would allow plants to recover on their own. This area would continue to provide suitable habitat for the southwestern willow flycatcher. Criterion 1 would be met with the continual exclusion of cattle within the Stewart Meadow Complex year round.

In the short term and long term, the proposed action would allow cool season herbage to increase due to entry pasture management and pasture rest rotation (grazing system). Livestock would be grazing slight use areas more often than during previous periods, as well as, heavy use areas less often and would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use. In the long term, conservative livestock grazing of 20 to 40 percent allowable utilization in the Wheatgrass, Ursulo, Tanques, Oso and Nutritas pastures. Criterion 3 would be met for upland meadows and watersheds associated with the Upper Rio San Antonio and Stewart Meadows Complex suitable habitats. Meeting Criterion 3 would rehabilitate and maintain uplands and improve watersheds conditions that would facilitate restoration of southwestern willow flycatcher riparian habitat.

In suitable riparian areas such as the ~ 3.0 mile section Upper San Antonio, Criterion 2 is currently being met. With the conservative grazing intensity with an allowable utilization range being proposed, Criterion 2 would be met. Within this section of habitat, alterable stream banks showing damage from livestock use would not to exceed 10 percent and woody utilization would not exceed 40 percent on average. Again, this would result in meeting criterion 2 by maintaining the key riparian habitat attributes needed by the southwestern willow flycatcher.

Proposed range improvements to be constructed within 3 to 5 years for better livestock distribution and reduced utilization include: the installation of a water tank in the northwestern portion of the Ursulo pasture and, the reconstruction of approximately 3 miles of fence between the Ursulo and Wheatgrass pastures. This would assist in rehabilitating the uplands and watersheds associated with suitable southwestern willow flycatcher habitats that would facilitate the restoration of riparian habitat. Criterion 3 would be met.

The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization on the Ursulo, Oso and Tanques riparian areas and in the upland meadows of the Tanques, Nutritas and Oso pastures. In the long term, this would contribute to desirable utilization levels to rehabilitate and maintain uplands and watersheds in conditions that will facilitate restoration of southwestern willow flycatcher riparian habitat. Criterion 3 would be met.

Forest Sensitive Species

There are 47 species on the Regional Forester's sensitive species list that potentially occur on the Carson National Forest. Reference was made to the Carson National Forest TEP&S list, dated 3/05/2008 was used to determine which species are located on the Tres Piedras Ranger District. [51] No further analysis was warranted on these species: American peregrine falcon, White-tailed ptarmigan, Sangre de Cristo pea-clam, small-head golden-weed, Arizona willow, western boreal toad, yellow-billed cuckoo, gray vireo, pika, snowshoe hare, yellow-bellied marmot, southern red-backed vole, Rocky Mountain bighorn sheep, tufted sand verbena, Pagosa milk-vetch, Pecos fleabane and Chama blazing star. Please refer to the wildlife specialist report in the project record for additional information. [51]

A review of the distribution for other sensitive aquatic species included bluehead sucker, flannelmouth sucker, roundtail chub and speckled dace. These species do not warrant further analysis due to a lack of habitat. Habitat ranges for these species include the San Juan (the closest habitat is within the San Juan drainage), Little Colorado River and Gila drainages (Biotic Information System of New Mexico 2007, Sublette and Hatch 1990). Refer to the aquatics specialist report for additional information. [50]

Significant Issues addressed in the aquatic Forest Sensitive Species analysis:

Significant Issue #2: Rio San Antonio Riparian Condition. The riparian condition above and below Stewart Meadows Complex is not improving. More management is needed.

Measures used to evaluate effects: The indicators are percent sediment, stream temperature and percent streambank stability.

Significant Issue #4: Loss of critical habitat for sensitive and federally protected species (Mexican spotted owl, northern goshawk, Rio Grande cutthroat trout). The proposal may result in a loss of critical habitat.

Measure used to evaluate effects: Foraging and nesting habitat affected and effect to individuals and/or populations will be the indicator for terrestrial wildlife. For fisheries, the indicator is the effect to individuals and or populations.

The following sensitive species may occur or have habitat present within and adjacent to the San Antone grazing allotment. Where appropriate, some forest sensitive species may be grouped with respects to sharing similar habitats and/or being affected in similar ways by the alternatives. Some species may be analyzed in separate sections if the species is associated with multiple habitats.

Aquatic Forest Sensitive Species

Criteria Used to Measure Effects

To meet the needs of the northern leopard frog, water shrew, Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker and their prey base, the goal is to maintain the following aquatic habitat criteria within suitable aquatic habitat:

Criterion 1: Percentage of fine sediment – Sediment does not exceed 20 percent to support northern leopard frog and water shrew prey base, Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker

The percent of sediment in Los Pinos is 16 percent which meets the criteria for properly functioning stream habitat. Cumulative sources of sediment are likely from adjacent roads and uses on private lands. Grazing from the allotment does not occur due to the topography of the canyon and the high recreational use. Sediment does not exceed 20 percent to support northern leopard frog and water shrew prey base, Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker

There is no quantified survey data available for the San Antonio. Based on field observations, most of the San Antonio (upper and within Stewart Meadows Complex) is meeting the sediment criteria and is considered properly functioning. However, there are sites of excessive sediment just below FR87 road crossing and within the 600 foot livestock trailway. Headcuts are evident from overuse in the uplands and also contributing sediment at several sites directly in to the stream. Cumulative sources of sediment are likely from roads and associated low water crossings and uses on private lands. Fines or suspended sediments can settle on trout eggs, suffocating that year's progeny. In addition, elevated delivery of sediment can fill in pools (over-wintering fish habitat) and fill in interstitial spaces in the substrate (aquatic macroinvertebrate habitat), leading to limited aquatic biota productivity. In the Canada de Tio Grande there is no survey data. From field observations, it is likely that sediment exceeds criteria in the 0.10 of a mile in the lower reach.

Criterion 2: Maintain and/or improve habitat for prey species for water shrew and northern leopard frog (macroinvertebrates)

Criterion 3: Streambank Condition – There is less than 10 percent unstable banks for both water shrew, northern leopard frog, Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker

In Los Pinos, there are less than one percent unstable banks based on a stream habitat inventory. In Rio San Antonio, there is no forest survey data. Field observations indicate that criteria are being met. Criteria are being exceeded in 600 feet where livestock trailing is concentrated in this site specific area. Stable streambanks and the generally associated riparian vegetation reduce the source of sediment to the stream which occurs when banks are trampled, sheared and sloughing. Stable banks, as they undercut, also function to provide valuable hiding cover for fish and reduce stream temperatures by narrowing and deepening the stream channel. Excessive streambank instability degrades fish habitat quality.

Criterion 4: Trampling – Reduce impacts to Northern leopard frog egg masses from April to July (Pagels et al 1998) by minimizing trampling.

Criterion 5: Stream temperature– Temperature does not exceed 20 degrees C one time or less than 20 degrees Centigrade for 4 consecutive hours over 4 consecutive days (USDA Forest Service 2003) for Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker

In Los Pinos, there is no Forest Service temperature data. However, the NMED lists this river as being impaired for temperature with rangeland grazing as a probable source of impairment. In the Rio San Antonio, there is no forest survey data available. However, NMED lists this river as being impaired for temperature and not supporting high quality aquatic life, with no probable cause of impairment listed. Excessive temperatures can result in poor growth and diminished fish health.

Northern leopard frog (*Rana pipiens*) and Water shrew (*Sorex palustris navigator*)

No surveys have been conducted for northern leopard frog. It is not know whether leopard frogs occur on the San Antone grazing allotment. Small mammal surveys were conducted in 2003 on the Carson National Forest (Frey 2003). This survey did not yield any water shrews in the areas surveyed with the allotment. It is not know whether water shrews occur on the San Antone grazing allotment. Suitable habitat for water shrew and northern leopard frog: 1.7 miles of Los Pinos and 10.8 miles of Rio San Antonio, 0.10 miles of Canada de Tio Grande (within the upper Stewart Meadows Complex), Laguna Larga, associated ephemeral wetlands and spring-fed stock tanks that holds water year round and have emergent vegetation.

Environmental Consequences:

Alternative 1

In the Rio San Antonio, there would be some improvement to criterion 1, 2, 3 and 4 from eliminating grazing in the Rio San Antonio. However, because of other contributing factors such as sedimentation into the creek from the location of roads and private land uses along the stream, there would continue to be an effect of sedimentation (criterion 1) which could lead to reduce taxa of macro invertebrates (criterion 2). Trailing impacts from private (and other allotment) livestock in the 600 foot section along the Rio San Antonio would continue and it is likely stream bank stabilization would not improve (criterion 3). There would still be an impact to individuals

in the form of trampling of egg masses from April to July (criterion 4) for the northern leopard frog. This would result in displacement (no reproduction, no residing in this area) inside of this 600 foot area. The number of individuals impacted is unknown. However, this is less than 1 percent of the stream length, and overall, the remainder of the stream appears to be properly functioning based on field observations.

In the Los Pinos, there currently is no grazing in this area. Therefore, there would be no change in the current condition by elimination of grazing on the allotment. However, effects include impacts from road location, recreational use, from private in-holdings, grazing from private lands adjacent to the river and from irrigation use. These past actions have contributed to the existing condition. For these reasons, the stream would likely continue to meet all criteria even with the continuation of these uses at current levels.

In Laguna Larga, associated ephemeral wetlands and spring-fed stock tanks there would result in improvements to criterion 1 and 2 due to livestock grazing no longer be permitted. Criterion 4 would be met since livestock would no longer have the potential for trampling egg mass if they occur in these areas.

Alternative 2

On the Rio San Antonio, trailing impacts from private, this allotment and other allotment livestock would be reduced to approximately 200 feet along the Rio San Antonio by the construction of an enclosure with a water gap. In the protected area (approximately 400 feet), it is likely that streambank stabilization (criterion 2) would improve over time. There would continue to be impacts to individuals in the form of trampling of leopard frog egg masses from April to July (criterion 4). This would cause the displacement of individuals outside of this 200 foot area. The number of individuals impacted is unknown. Sedimentation could also be elevated due to livestock, which could contribute to negatively affect macro-invertebrate prey species. However, this is less than 1 percent of the stream length, and overall, the remainder of the stream appears to be properly functioning based on field observations.

In the Los Pinos, there would be no effect from this alternative to northern leopard frog and water shrew because grazing does not occur in the Los Pinos. Within Laguna Larga, livestock could contribute to increases in sedimentation that could negatively affect macroinvertebrate prey species. Livestock could also negatively affect leopard frog by trampling. However, with the construction of a new water tank in the Ursula pasture and the reconstruction of the fence between Ursulo and the Wheatgrass pastures, livestock use would be reduced in Laguna Larga. This would reduce the negative affects on the leopard frog. While the new improvements are not implemented, livestock would continue to affect the leopard frog at current levels. Criterion 1, 2 and 4 would not be met.

The adaptive management actions for key riparian areas (see chapter 2, alternative 2) would not occur within the principle northern leopard frog and water shrew habitats mentioned above, therefore, these species would not be affected by these actions. The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization within the allotment riparian areas. In the long term, this would contribute to less sediment, greater bank stability and less trampling effects. These conditions would be favorable for the northern leopard frog and water shrew. Criterion 1 through 4 would be met. The improvement in sediment would also improve macro-invertebrate prey base. Criterion 2 would be

met. Overall, the implementation of alternative 2 has potential to impact individual leopard frogs and water shrews. However, would not have a measurable negative effect to their populations.

Rio Grande cutthroat trout, Rio Grande chub and Rio Grande sucker

Suitable habitat for Rio Grande cutthroat trout, Rio Grande chub and Rio Grande sucker is within 1.7 miles of the Rio Los Pinos and 10.8 miles of the Rio San Antonio. Multiple Pass Depletion Surveys for populations were completed in San Antonio (1995, 2003) and Los Pinos (1994, 1995, 1996, 1997, 1999, 2001 and 2003). Rio Grande chubs are found in the Los Pinos. Rio Grande chubs and Rio Grande cutthroat trout are found in the San Antonio. Although the Rio Grande sucker has not been found, suitable habitat is similar to the chub and trout and is included on that basis.

The population estimate of fish (trout species), in the Los Pinos, based on the surveys ranges from 105 fish/hectare to 758 fish/hectare, depending on the site and year. Population estimates are not calculated for non game species (chubs). The Los Pinos has a wild trout population, as well as, being stocked by NMDG&F. The population estimate of fish (trout species), in the San Antonio, based on the surveys ranges from 75 fish/hectare to 684 fish/hectare, depending on the site and year. Population estimates are not calculated for non game species (chubs).

Alternative 1

There would be some improvement in stream habitat condition (see criteria) from eliminating grazing along the Rio San Antonio because trampling and trailing along the stream that destabilizes banks would be reduced. In the uplands, over use which contributes sediment to the stream through contributions from headcutting and overland flow would be reduced. It would take several years (up to 10 years for upland range conditions to be in good condition and upward trend, see vegetation analysis) before destabilized streambanks are restored and sediment flow through headcuts is reduced. This is why effects are reduced but not eliminated. Other factors such as sedimentation into the creek from the location of roads, roads crossing and private land uses along the stream would (cumulatively) continue to be an effect to stream habitat. In the Rio San Antonio, individuals may be displaced out of areas having an excess of sediment. This would result in a loss of habitat and prey base species. Overall, the stream appears to be properly functioning. Therefore, populations would remain stable.

In the Los Pinos, livestock grazing does not occur. In addition to the 16 percent sediment that currently exists in the stream (see Stream Inventory Report, Rio de Los Pinos, Carson NF 2006), sediment would continue to be contributed to the stream (amounts cannot be quantified) from other activities such as road crossings, uses on private lands, recreational use and areas and roads adjacent to the stream. If existing levels of use does not change (increase) in the Los Pinos drainage, sediment levels should remain relatively unchanged. Overall, the stream is properly functioning for percent of sediment and percent of streambank stability. Therefore, populations would remain stable.

Alternative 2

Trailing impacts from this allotment would be reduced from 600 feet to approximately 200 feet along the Rio San Antonio by the construction of an enclosure with a water gap. In the protected area (approximately 400 feet), it is likely that streambank stabilization would improve. In the uplands, over use (which contributes sediment to the stream from headcutting and overland flow)

would continue until range condition and trend in the Ursulo pasture improves from new water developments and changes in grazing management. In the Wheatgrass pasture, although grazing management would be modified, unauthorized livestock use is likely to continue which would slow progress towards better range conditions. Range condition and trend may be maintained or improved within 10 years (see vegetation analysis). For these reasons, it may take 10 years before destabilized streambanks are restored and sediment flow through headcuts is reduced.

Trailing and grazing may displace individuals out of areas having an excess of sediment. This would result in a loss of habitat and prey base species but populations would likely remain stable. The effects for the Los Pinos are the same as alternative 1.

Riparian Forest Sensitive Species

Riparian includes the Rio de Los Pinos, Rio San Antonio, Lola, Hondo and Canada del Oso drainages on the Tanques, Hondo, Nutritas and Oso pastures. From field observation, the Lola and Oso confluence and the Oso Spring to Oso tank area have shown some limited localized impacts by livestock. According to field observations, the riparian from the Lola to Hondo drainage the upper Rio San Antonio has not had any impacts related to grazing. No livestock grazing occurs on the Rio del Los Pinos and Rio San Antonio and within the Steward Meadows Complex. The desired percentage of bare ground and woody species within these riparian areas is currently being met.

New Mexico meadow jumping mouse: Recreational development and range management activities in montane areas have the potential to affect isolated populations of the New Mexico meadow jumping mouse (Morrison 1992, Frey 2006). Removal of tall dense sedge habitat by ungulates removes habitat components for the mouse. Potential habitat is only located in the Stewart Meadows Complex within the area that is excluded from livestock grazing.

Cinereus (masked) shrew: Grazing by both livestock and wildlife can alter function and composition of moist areas through trampling and reduction in height and density of vegetation. Excessive grazing can reduce height and density of vegetation limiting the amount of cover for this species against predators and for their prey (insects) (DeLong 2000).

Spotted bat: Livestock grazing has been responsible for large-scale conversion of mesic riparian habitats to xeric uplands throughout the West. Conversion of wetlands, wet meadows, or spring overflow areas to xeric sites by draining these sites, lowering the water table, or overgrazing by livestock, all of which reduce the amount of clean, open water, has the potential to adversely impact spotted bats (Luce and Keinath 2007).

Pale Townsend's big-eared bat: Activities that reduce the productivity of wetlands likely impact local populations of the Townsend's big-eared bat by reducing the quality of important foraging and drinking sites. The alteration of surface and subsurface hydrology of wetlands and removal of shrub and overstory vegetation ultimately reduce the value of wetlands to this species (Gruver et al 2006).

Long-tailed vole: Grazing activities affect long-tailed voles by reducing herbaceous cover such as grasses, sedges and forbs within riparian and upland meadow/grasslands and at the edge of conifer stands.

Mink: Fire, modification to water ways, logging and livestock/wildlife grazing are the major threats to mink (Bison-M 2006). These activities (fire, logging and grazing) result in the reduction of cover near water ways (Sullivan 1996). The reduction of cover may also indirectly affect the availability of prey as well through loss of pools for aquatic prey and loss of vegetation cover for rodents.

Nokomis fritillary: Short-term negative impacts from grazing include reduced nectar availability and vegetation cover and long-term impacts include soil compaction and reduced water infiltration, which can lead to a loss of larval host plants and invasion of by nonnative grasses. While excessive grazing can be a serious threat to the butterfly, light or moderate grazing may in fact offer the violet a competitive advantage (Selby 2007).

Dwarf shrew: Management practices in Bison M 2006 note that dwarf shrews are tolerant to clear-cutting and grazing.

Western heather vole: Grazing activities affect western heather voles by reducing herbaceous cover such as grasses, sedges and forbs within riparian and upland meadow/grasslands and at the edge of conifer stands.

Ermine: Ermine are associated with upland meadows. Ermines are probably vulnerable to the effects of livestock grazing on vegetation which affect hiding cover; small mammal prey may be secondarily affected.

Survey Status: Small mammal surveys were conducted forest-wide within the Carson National Forest in 2003. The mammal survey included a survey of Stewart Meadows Complex within the allotment. No New Mexico meadow jumping mice, masked shrews, spotted bats, minks and dwarf shrews were documented in this area (Frey 2003). Long tailed voles were recorded at this location. Ermine are likely to occur in the area. No surveys for nokomis fritillary have been conducted within the allotment. It is not known whether they occur within the allotment. In addition, no surveys for both bat species have been conducted.

Northern goshawk: Important features such as nesting and foraging habitat are present within the Jawbone grazing allotment. Nesting and foraging habitat for the goshawk consists of approximately 18,469 acres. These areas consist of combined habitats such as ponderosa pine, high elevation grassland, aspen, mixed conifer and spruce-fir. See Appendix A in the specialist report for additional information. [51] Livestock grazing may affect northern goshawk by reducing herbaceous cover for prey species within riparian zones adjacent to forested habitat that is use for nesting. Formal surveys for the goshawks have been conducted throughout the Tres Piedras Ranger District for vegetation management projects and timber stand improvement projects. The surveys have yielded two nesting pairs outside the allotment. No recent surveys have been conducted with the allotment.

Criteria to Measure Effects:

To meet the needs of the riparian Forest Sensitive species, the goal is to maintain the following riparian condition criteria on the San Antone allotment. The purpose of establishing these criteria is to ensure allowable use of plant species to maintain or improve plant diversity, density, vigor and regeneration over time to support the riparian Forest Service Sensitive Species:

Criterion 1: Vegetation long term trend of good to excellent range conditions in riparian areas.

Criterion 2: Promote natural and healthy riparian plant communities

- 2.1 More than 15 percent woody species where potential exists within 5 years.
- 2.2. Less than 10 to 15 percent bare ground by year three.
- 2.3. Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Environmental Consequences:

Alternative 1

It is anticipated that there would be an increase in density of the vegetative species such as shrubs, forbs and grasses. The increased growth of these various vegetative species would result in plant diversity, cover and a variety of plant heights that equates to favorable riparian habitat conditions for the riparian forest sensitive species. More cover and foraging opportunities would exist for these species under this alternative. Criterion 1 and 2 would be met within 10 years.

Alternative 2

The AOI would include adjustments to livestock numbers, entry and exit dates, number of days and grazing system. These adjustments would reflect annual resource or climatic conditions and assist in making progress towards meeting the desired conditions for the riparian sensitive species. Desired conditions include maintaining or improving plant diversity, density, vigor and regeneration over time to support the riparian forest sensitive species. Implementation of the AOI would assist in maintaining forage utilization at conservative use levels and move the pasture key areas toward good to excellent range conditions on all the pastures of the allotment. The proposed livestock grazing is not anticipated to limit the diversity and seasonal availability of forage to support a diversity of riparian forest sensitive species. It is anticipated to assist in increasing forage diversity and seasonal availability of forage and cover over time. This includes, providing nectar producing plants for the Nokomis fritillary.

In riparian areas (Oso and Lola Creek), Criterion 2 is currently being met. With conservative utilization and installation of the Oso enclosure fence in 5 to 10 years, if needed to meet criteria, riparian desired conditions would be maintained and/or improved and this would support habitat for the riparian Forest sensitive species.

The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization the riparian areas. In the long term, this would contribute to greater diversity of grass species and less percentages of bare ground in these areas. These conditions would be favorable for riparian forest sensitive species. For the small mammals, this would translate into better forage and cover. For the bats, this would translate into better conditions to support insect (moth) prey base. For the ermine, Northern goshawk and mink, this would translate into more prey base (small mammals) diversity. For the nokomis fritillary, this would translate into more nectar producing plants. Criterion 1 and 2 would be met. The implementation of alternative 2 has potential to impact individual Forest Sensitive riparian species. However, it would not have a measurable negative effect to their populations.

Predatory Forest Sensitive Species

American marten: There is approximately 327 acres of blue spruce and Engelmann spruce, with upland meadows intermixed. The forested habitat is the primary habitat for the pine marten that

provides den sites, as well as, primary foraging habitat. The edge habitat (forested edge/upland meadow interface) may provide secondary foraging habitat for the pine marten where it preys on a variety of prey species. See Appendix A of the specialist report (project record) for more information. [51] American marten surveys conducted on the CNF from 1997 to 2001 in close proximity to the allotment included the San Antonio Mountain survey (Long, 2001). These surveys yielded negative findings for marten. No surveys have been conducted within the allotment. Livestock grazing may affect marten by reducing herbaceous cover for prey species within upland meadows and at the edge of conifer stands.

Ermine: See details in “Riparian Forest Sensitive Species” section (above).

Northern goshawk: See details in “Riparian Forest Sensitive Species” section (above).

Boreal owl: Nesting and foraging areas for the boreal owl are limited to approximately 327 acres of potential habitat of combined habitats such as blue spruce and Engelmann spruce. Where upland meadows/grasslands are adjacent to mature or old spruce fir habitat for the boreal owl, these areas could be used for foraging during the spring and summer (see appendix A). No known population surveys for the boreal owl have been conducted within the allotment. Surveys were conducted approximately 15 miles northwest of the San Antone allotment and Boreal owls were found (Stahlecker 1987). Their status is not known on the allotment.

Criteria to Measure Effects

To meet the needs of the Predatory Forest Sensitive species, the goal is to maintain the following range/forage criteria on the upland meadows within the allotment:

Criterion 1: Upland meadow/grasslands

- 1.1. Diversity of grassland plant community equal to 70 percent plant composition in cool season grasses within 5 years.
- 1.2. Less than 15 percent woody species in upland meadows by year three, four and five.
- 1.3. Less than 15 percent bare ground in upland meadow by year three, four and five.
- 1.4. Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Criterion 2: Vegetation long term trend of good to excellent range conditions in upland meadows

Environmental Consequences

Alternative 1

It is anticipated that there would be an increase in density of the vegetative species such as shrubs, forbs and grasses. The increased growth of these various vegetative species would result in plant diversity, cover and a variety of plant heights that equates to good to excellent range conditions, thus improve the habitat for prey base species for the predatory Forest Sensitive Species. Criterion 1 and 2 would be met in 10 years.

Alternative 2

Grazing management would include annual operating instructions (AOI'S). The AOI would include adjustments to livestock numbers, entry and exit dates, number of days and grazing system. These adjustments would reflect annual resource or climatic conditions and assist in making progress towards meeting the desired conditions for the predatory Forest Sensitive Species to include the American marten, ermine, northern goshawk and boreal owl.

Implementation of this alternative could impact predator prey species diversity and abundance (for the same reasons as described under this alternative for Mexican spotted owl) for the above species. Although some of the prey species are different than MSO prey species; the prey species will utilize the same upland meadows that are described for the Mexican spotted owl.

Grazing would not directly remove the structural habitat characteristics required for the Predatory Forest Sensitive species within the allotment. For instance, the overall canopy cover and forest structure would not change due to grazing, since livestock would not affect tree composition. The marten, boreal owl and northern goshawk denning/nesting habitat would not be affected. However, indirectly livestock grazing may reduce the herbaceous ground cover and increases shrubs and small trees. This can decrease the potential for beneficial low-intensity ground fires while increasing the potential for destructive high-intensity vertical fires that can negatively affect denning/nesting and resting/roosting habitat (USDI 1995). Grazing activities are not anticipated to reduce the herbaceous ground cover to the point where there is a decreased potential of a low-intensity ground fire. Therefore, it decreases the potential for a destructive high-intensity, vertical fire that would negatively affect the structural habitat such trees, logs and snags that are used by these predator species.

The proposed livestock grazing is not anticipated to limit the diversity and seasonal availability of forage to support a diversity of prey species. The proposed grazing is anticipated to assist in increasing forage diversity and season availability over time.

Under the proposed action the Oso pasture would be rested one out of seven years. In the long term, Criterion 1.1 would be met and result in improved vegetation recovery and provide better forage diversity for prey species.

Range readiness to determine the entry dates on the Ursulo, Chino and Wheatgrass pastures would translate to later entries of livestock to the upper elevation pastures (Tanques, Hondo, Oso and Nutritas). Later entry dates in these pastures would allow a higher percentage of cool season grasses to seed out. Grasses would respond to additional cool growing season rest by increasing root and leaf volume, annual production, seedling establishment, reproduction and vigor. Criterion 1.1 would be met. Overall, this would allow for greater forage diversity and cool season seed sources in the long and short term for prey base species.

In the short and long term, as cool season herbage increases due to entry pasture management and pasture rest (grazing system), livestock would be grazing slight use areas more often than during previous periods, as well as, heavy use areas less often and would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use. In the long term, conservative livestock grazing of 20 to 40 percent allowable utilization on the all pastures would

expedite attaining good to excellent range conditions to improve habitat for the predatory Forest Sensitive Species prey base. Criterion 1.4 would be met in upland meadows.

The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization in the upland meadows. In the long term, this would contribute to greater diversity of grass species and less percentages of bare ground in these areas. These conditions would be favorable for ermine, northern goshawk, boreal owl and American marten prey species. Criterion 1 and 2 would be met. The implementation of alternative 2 has potential to impact individual Forest Sensitive predatory species. However, would not have a measurable negative effect to their populations.

Upland Meadow Forest Sensitive Species

There are approximately 21,169 acres of upland meadow or grassland that may provide habitat the upland meadow Forest Sensitive Species. See Appendix A of the wildlife specialist report for more detailed information. [51] Small mammal surveys were conducted forest wide within the Carson National Forest in 2003. The mammal survey included a survey of Stewart Meadows Complex within the allotment. No white-tailed jackrabbits or dwarf shrews were documented in this area (Frey 2003). Gunnison’s prairie dogs were recorded on districts located on the western side of the forest. It is believed they are present in small scattered colonies. Ermine are likely to occur in the area.

White-tailed jackrabbit: Livestock grazing may affect the white-tailed jackrabbit by competing for succulent plants.

Gunnison’s prairie dog: Despite the extensive grasslands on Carson National Forest, prairie dogs were very uncommon during the Carson Small Mammal Survey in 2003 (Frey 2003). All observations of prairie dogs were on the west side of the forest (including this allotment). Historic levels of livestock grazing impacted the prairie dog’s range by disrupting the ecosystem and drastically altering the landscape.

Burrowing owl: In New Mexico, burrowing owls are associated with Gunnison’s prairie dogs (*Cynomys gunnisoni*). Burrowing owls are known to occur in Taos County during the spring and summer (Stahlecker 1989). Moderate livestock grazing can benefit burrowing owls by keeping vegetation around burrows short (Gould 1985).

Ermine: See details in “Riparian Forest Sensitive Species” section (above).

Dwarf shrew: See details in “Riparian Forest Sensitive Species” section (above).

Criteria to Measure Effects

To meet the needs of the Upland Meadow Forest Sensitive species, the goal is to maintain the following range/forage criteria on the upland meadows within the allotment:

Criterion 1: Upland meadow/grasslands

1.1. Diversity of grassland plant community equal to 70 percent plant composition in cool season grasses within 5 years.

1.2 Less than 15 percent woody species in upland meadows by year three, four and five.

1.3 Less than 15 percent bare ground in upland meadow by year three, four and five.

1.4 Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Criterion: Vegetation long term trend of good to excellent range conditions in upland meadows

Currently all the pastures are in fair condition (not meeting criteria 2). The table below displays how criterions 1.1 through 1.4 are being met by pasture.

Table 6. Upland Meadow Habitat Condition

Pasture	Criteria Met	Criteria Not Met
Tanques	1.1, 1.2, 1.3	1.4
Nutritas	1.2, 1.4	1.1, 1.3
Hondo	1.1, 1.4	N/A
Oso	1.2, 1.4	1.1, 1.3
Ursulo	1.2	1.1, 1.3, 1.4
Chino	1.1, 1.2, 1.4	1.3
Wheatgrass	1.2, 1.4	1.1, 1.3

Environmental Consequences:

Alternative 1

It is anticipated that there would be an increase in density of the vegetative species such as shrubs, forbs and grasses. The increased growth of these various vegetative species would result in plant diversity, cover and a variety of plant heights that equates to good to excellent range conditions, thus improve the foraging habitat for the Gunnison prairie dog and white-tailed jackrabbit. The increase growth in herbaceous cover would benefit the dwarf shrew and ermine prey species. Conditions for the burrowing owl would remain the same. Under this alternative, Criterion 1 and 2 would be met in 10 years.

Alternative 2

The AOI would include adjustments to livestock numbers, entry and exit dates, number of days and grazing system. These adjustments would reflect annual resource or climatic conditions and assist in making progress towards meeting the desired conditions on the upland meadow within the allotment to support the white-tailed jackrabbit, Gunnison’s prairie dog, burrowing owl, ermine, and dwarf shrew.

Under the proposed action the Oso pasture would be rested 1 out of 7 years. In the long term, Criterion 1.1 would be met and result in improved vegetation recovery and provide better forage and diversity for upland meadow dependent species.

Range readiness to determine the entry dates on the Ursulo, Chino and Wheatgrass pastures would translate to later entries of livestock to the upper elevation pastures (Tanques, Hondo, Oso and Nutritas). Later entry dates in these pastures would allow a higher percentage of cool season

grasses to seed out. Grasses would respond to additional cool growing season rest by increasing root and leaf volume, annual production, seedling establishment, reproduction and vigor. Criterion 1.1 would be met. Overall, this would allow for greater forage diversity in the long and short term for white-tailed jackrabbit and Gunnison's prairie dog. Greater forage diversity would benefit ermine prey species.

In the short and long term, as cool season herbage increases due to entry pasture management and pasture are rested (grazing system), livestock would be grazing slight use areas more often than during previous periods, as well as, heavy use areas less often and would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use. In the long term, conservative livestock grazing of 20 to 40 percent allowable utilization on the all pastures would expedite attaining good to excellent range conditions to improve habitat for the upland meadow dependent species. Criterion 1.4 would be met for upland meadows.

The proposed range improvements to be constructed within 3 to 5 years for better livestock distribution and reduced utilization include the installation of a water tank in the northwestern portion of the Ursulo pasture and the reconstruction of approximately 3 miles of fence between the Ursulo and Wheatgrass pastures. This would assist in rehabilitating the uplands meadow. This would lead favorable foraging conditions for white-tailed jackrabbit and Gunnison's prairie dog. Criterion 2 would be met.

The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization the upland meadow. In the long term, this would contribute to greater diversity of grass species and less percentages of bare ground in these areas. These conditions would be favorable for white-tailed jackrabbit and Gunnison's prairie dog. A greater diversity of grass species would be beneficial to the ermine prey species. Criterion 1 and 2 would be met. The adaptive management actions would not affect the burrowing owl or the dwarf shrew. Overall, alternative 2 has potential to impact individual Forest Sensitive upland meadow species. However, would not have a measurable negative effect to their populations.

Forest Sensitive Plant Species

Ripley's Milkvech: Ripley's milkvech surveys were initiated within suitable habitat forest wide to include areas within the San Antone allotment. The results of this survey are not available at this time.

In the summer of 2007 to 2008, Ripley's milkvech was recorded on several sites on the forest during a vegetation mapping project. This included sites within the allotment (Cortez 2008). Where Ripley's milkvech was found, it almost exclusively was found on volcanic substrates associated with specific TEUs (650, 512, 531, 545 and 146). All seven pastures have potential to contain Ripley's milkvech based on the association with the TEUs. Once the extent of the population is known, the timing of livestock use may be adjusted, if needed, to maintain plant composition and diversity.

Recent field observations on the Nutritas pasture in early July, 2008, indicate that 25 percent of the Ripley's milkvech plants were at the flowing stage and the other 50 percent of the plants were at fruit stage and remaining 25 percent plants were at seed set. The plants observed did not indicate any grazing pressure by livestock or wildlife. It is unknown how long livestock had been

grazing this site at the time of this field visit. Livestock and wildlife were present on the pasture (Cortez 2008).

Robust larkspur: Approximately 593 acres of upland meadow/grassland qualifies as suitable habitat for robust larkspur. It is found in all of the pastures. The vegetation mapping project (discussed above) did not record any robust larkspur plants. It is not known whether robust larkspur occurs within the allotment. No surveys specific for robust larkspur have been conducted within the allotment.

Criteria to Measure Effects

To avoid detrimental effects to Ripley's milkvetch and robust larkspur plants, the goal is to manage for the long-term persistence of the plant by following these criteria:

Criterion 1 (Ripley's milkvetch): A rotation grazing system in which spring grazing occurs only one in three years appears to be compatible with the long-term persistence of *A. scaphoides* populations (Ladyman 2003). Deferring grazing until after seed has set (typically May through June) or even later in the year is also another option. In response to prolonged drought, a rest rotation of more than one in three years may be necessary. Individual plants die back to the ground each year. Therefore, care should be taken to avoid disturbing the soil too deeply to prevent damage to dormant root stock.

To avoid detrimental effects to Ripley's milkvetch and reduce trampling of robust larkspur plants, the goal is to manage for the long-term persistence of the plant by following these criteria:

Criterion 2: Within suitable robust larkspur habitat maintain 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Criterion 3: To reduce trampling effects to the robust larkspur, use a grazing system that provides partial or complete season rest during the growing season.

The purpose of establishing these criteria to ensure allowable use of Forest Sensitive plant species while maintaining or improving the long term persistence of these plants.

Environmental Consequences

Alternative 1

This alternative would eliminate any related risks to the Ripley's milkvetch caused by grazing or trampling by livestock. Trampling effects to the robust larkspur would be eliminated with this alternative.

Alternative 2

The implementation of the proposed activities would increase the probability that Ripley's milkvetch plants be grazed by livestock and selected over other forage species. However, the ability to adjust permitted numbers and duration based on production/utilization studies and maintaining 40 percent utilization guidelines throughout the allotments at the end of the growing season, would assure that the species would not be over utilized. Under alternative 2, grazing by livestock would be managed to allow use and maintain the plant's ability to continue to grow and reproduce. Criterion 2 would be met for Ripley's milkvetch.

The implementation of alternative 2 would increase the probability that robust larkspur plants be trampled by livestock. However, as a result of the proposed deferred/rest rotation grazing system, plant vigor would be improved by: providing partial to complete rest would reduce trampling during the growing season. Partial or complete growing season would benefit robust larkspur: reproduction; seedling establishment, herbage volume; leaf development; seed production; root growth; and food storage. Criterion 3 for the robust larkspur would be met. Since the robust larkspur may be poisonous to cattle, it is possible that this plant would not be selected over other forage species. Therefore, livestock grazing effects would be minimal to none under alternative 2. Criterion 2 would be met.

Out of the 7 pastures, 3 pastures (Chino, Wheatgrass and Ursulo) would be part of an alternating entry rotation system. Under this alternating entry rotation system, two of the three entry pastures would be entered after Ripley's milkvetch seed set each year. In the remaining 4 pastures (Oso, Nutritas, Tanques, Hondo), livestock entry would be after seed set. This would allow Ripley's milkvetch seeds to germinate to seedlings that would eventually grow to fruit/seed producing plants. Ripley's milkvetch plants would perpetuate and lead to the long term persistence of this plan within the allotment. Criterion 1 would be met.

Under the proposed action, each of the seven pastures would receive 1 out of 7 years of rest during a typical 7 year rest rotation grazing system. The Chino, Ursulo and Wheatgrass pastures would be grazed periodically before seed development. When including the 1 year of rest, Chino and Wheatgrass would not be grazed 3 out of 7 years before seed development. Ursulo would not be grazed 4 out of 7 years before seed development. Chino would have the majority (4 years) of the 7 years where cattle are allowed to graze before seed development. During the 4 of the 7 years, the population within Chino pasture may be reduced when cattle graze and prefer the plant over other forage in the area. This selective grazing before seed development may lower the localized population frequency of occurrence but populations in the other 4 pastures (Nutritas, Tanques, Oso and Hondo) would be maintained or improved under the proposed action. The AOI flexibility may also adjust the rotation system where the Chino pasture may be grazed more frequently during the latter period of use and the 4 of the 7 years (grazing before seed development) may change instead to a lower 2 to 3 of the 7 years where cattle graze the pasture before seed development. Also, the AOI would prescribe a conservative stocking rate for the allotment and Chino pasture, to prevent management practices that would lower the vigor, growth and survival of the individual plants. Based on proposed rest rotation system, Criterion 1 would be met for Ripley's milkvetch.

Overall, the implementation of alternative 2 has potential to impact individual Forest Sensitive plant species. However, would not have a measurable negative effect to their populations.

Management Indicator Species (MIS)

The Carson National Forest Plan (USDA 1986) identified 11 wildlife species as MIS to monitor the conditions of the forest's ecosystems. All 11 MIS were considered in the San Antone Grazing Allotment analysis; however because of limited habitat (vegetation) types found within the analysis area, only three species or groups of species were found to have the potential of being affected by implementation of continued grazing on the allotments and were evaluated in detail. The three species include: Elk, Resident Trout and aquatic macroinvertebrates. Refer to the specialist reports in the project record for rationale on why other species were not included in the

analysis. [51] For the more detailed Forestwide MIS Assessment see project record document. [16]

Significant Issues Addressed in the MIS Analysis:

Significant Issue #1: Cool Season Grass Recovery for Mule Deer, Elk and Black Bear. Use an entry date of June 1 for the Ursulo, Chino and Wheatgrass pastures to assure recovery of cool season grasses which are one of the main nutritional needs for mule deer, elk and black bear.

Indicator used to measure effects: The indicator for the impacts to wildlife will be pasture condition and trend in terms of impact to plants during the cool season growth period. The economic analysis will include the effects from entering (early) on May 17th and (later) on June 1st.

Rocky Mountain Elk – *Cervus canadensis nelsoni*

Elk: There are approximately 41,837 acres of suitable habitat for this species within the allotment. During the spring, summer and fall months, elk use the upland meadow/grasslands or forest openings near water sources. There are approximately 21,169 acres of upland meadow within the allotment. See Appendix A of the wildlife report for additional information. [51]

On the Carson, the majority of elk habitat is in a mid-seral condition with a lack of widely distributed understory forage in the forested types. This results in increased competition between numerous species of wildlife and livestock in key pastures. Most livestock allocations were made during the period of heavy timber harvest, which created transient range and provided for much higher levels of forage production for all ungulates. Increasing elk populations have contributed to higher utilization levels on important foraging areas such as upland meadows and riparian areas. The same sites are also key livestock grazing areas. With the decline in timber practices on the Forest and continued fire suppression, canopy closure and duff layers are increasing, thus reducing understory forage production in the forested types (Carson 2007).

Forestwide habitat trend for this species is based on acres of available quality or “occupied” habitat identified in the Carson Forest Plan EIS compared to an estimate of existing acres of similar habitat. Rocky Mountain elk habitat from 1986 to 2005 is estimated to have increased from 1,362,760 acres to 1,424,074 acres or an upward trend of about four percent (Carson 2007).

Throughout its range, the elk is listed as globally secure and common, widespread and abundant. Game Management Unit 52 (which includes San Antone Grazing Allotment) have shown in increase from 1999 to 2003 from 2,799 elk to 4,882 elk using sightability surveys (Carson 2007). The population of for the Rocky Mountain elk on the Carson National Forest is up from 1986 and is considered currently stable (Carson 2007; Kohlmann 2006).

Criteria to Measure Effects

To meet the needs of elk for their life necessities, the goal is to maintain the following range/forage criteria on the allotment:

Criterion 1: Upland meadow/grasslands

1.1. Diversity of grassland plant community equal to 70 percent plant composition in cool season grasses within 5 years.

1.2. Within 20 to 40 percent utilization at the end of the summer from wildlife and livestock.

Criterion 2: Vegetation long term trend of good to excellent range conditions in upland meadows and riparian areas.

The purpose of establishing these criteria to ensure allowable use of plant forage species to maintain or improve plant diversity, density, vigor and regeneration over time to support elk to maintain forestwide population and habitat trends.

Environmental Consequences:

Alternative 1

It is anticipated that there would be an increase in density of the vegetative species such as shrubs, forbs and grasses. Over time this alternative would increase forage for elk and improve year round habitat. Based on the probability of improving habitat, alternative 1 would maintain the forest trends.

In the long term, the existing levels of foraging and grazing by elk would remain static or decrease in accordance with the current long term elk management goals of the New Mexico Department of Game and Fish. However, the long term objectives for elk management may change, as elk/livestock grazing conflicts would diminish under this alternative. Alternative 1 would not propose a water tank on the northwestern portion of the Ursulo pasture for livestock and elk. Therefore, elk would not benefit from the improved water availability. However, there also would be no competition with permitted livestock for existing waters, which are not a limiting factor. Based on the above factors, alternative 1 would continue forestwide population and habitat trends.

Alternative 2

Under alternative 2, elk and livestock would compete for the available forage which may lead to elk/livestock grazing conflicts within the allotment. This alternative could especially affect the elk during years of drought, since there would be more competition with livestock for the available forage during these periods. Livestock and elk competition for forage would also continue to occur, since the distribution of forage is widely limited in forested types. Under alternative 2, livestock and elk forage competition would occur in upland meadow/grassland while livestock are present on the allotment. The greatest competition would be in the early spring, when cool season grasses are limited.

Range readiness to determine the entry dates on the Ursulo, Chino and Wheatgrass pastures would translate to later entries of livestock to higher elevation pastures. Later entry dates in these pastures would allow a higher percentage of cool season grasses to seed out. Grasses would respond to additional cool growing season rest by increasing root and leaf volume, annual production, seedling establishment, reproduction and vigor. Criterion 1.1 would be met. Overall, this would allow for greater forage diversity and cool season grass in the long and short term to be used as elk forage.

In the short and long term, as cool season herbage increases due to entry pasture management and pastures are rested (grazing system), livestock would be grazing slight use areas more often than during previous periods, as well as, heavy use areas less often and would generate a more uniform pattern of use that would make progress towards meeting the utilization objectives. Slight to

moderate positive impacts to the utilization level within the key areas would occur because of the flexible management grazing system, growing season rest and season of use. In the long term, conservative livestock grazing of 20 to 40 percent allowable utilization on the pastures of the allotment would expedite attaining good to excellent range conditions to improve foraging habitat for the upland meadow for elk. Criterion 1.4 and Criterion 2 would be met for upland meadows.

The proposed range improvements to be constructed within 3 to 5 years for better livestock distribution and reduced utilization include the installation of a water tank in the northwestern portion of the Ursulo pasture. This would provide elk with reliable water sources all year. The additional water would also improve livestock distribution throughout the allotment and lower utilization levels that would provide more forage for elk. Criterion 1.2 would be met for elk.

The adaptive management actions that would be implemented in the short and long term are expected to improve livestock utilization within riparian areas. In the long term, this would contribute to improved habitat conditions for elk. This would include calving habitat. Criteria 2 would be met. The actions that would be implemented in the short and long term are expected to improve livestock utilization and improve the diversity of cool season grasses on the upland meadows on the allotment. In the long term, this would contribute to desirable utilization levels and improve diversity of cool season forage to continue to provide favorable foraging conditions for elk. Criterion 1 and Criterion 2 would be met. Based on the above information, alternative 2 would not affect forestwide population and habitat trends for elk.

Resident Trout

Approximately 440 miles of perennial streams on the Carson National Forest (CNF) is known habitat for resident trout (Forest GIS Stream Inventory 2002). Overall, most areas of the CNF that are occupied by resident trout and may be supplemented by stocking appear to be in good or stable condition (habitat condition and trend). Given the nature of trout stocking on the forest, the population trend for resident trout species is stable (CNF MIS Assessment 2007). Although there is a population survey for portions of the Rio San Antonio, the only data that would apply occurred in 2003. This data is adequate for presence and absence but using only one data set is insufficient to estimate how many individuals would be displaced in a downstream reach. The population data that exists for upper reaches of the Rio San Antonio are not representative of the 600 feet that are analyzed in detail.

The Los Pinos is considered impaired by the State of NM for temperature. Thermographs were installed to measure temperature. However, this Forest Service data was lost. Other spot samples taken during the 2006 stream habitat survey indicated that temperature was properly functioning for state standard. There are some habitat components that are lacking and limiting the suitability of the habitat for resident trout. This includes large woody debris, pool development and pool quality. This is both a stocked and reproducing fishery (cite population survey). Currently, there is no grazing along the Los Pinos due to the presence of heavy recreation use combined with topography which precludes livestock use along the river. Sediment and streambank criteria for this analysis were selected because they are relevant to the impacts from grazing.

Aquatic Macroinvertebrates

Approximately 440 miles of perennial streams on the forest is known habitat for aquatic macroinvertebrates (Forest GIS Stream Inventory, 2002). Based on the available data, the trend and available habitat is stable. Populations for aquatic macroinvertebrates on the forest appear to

be stable although additional time is necessary to determine a more reliable indication of trend (CNF MIS Assessment 2007).

Aquatic invertebrate monitoring reports completed in 2004 exist for Los Pinos and Rio San Antonio. This monitoring data was used to determine habitat and population trends in the 2007 MIS Report. In Rio San Antonio, 2 sites were evaluated. In the first site (above the corral), the report findings do not indicate a lack of taxa diversity. In site 2, there is less taxa. This is likely due to the location of the site which is below the road crossing to Stewart Meadows Complex. The low numbers are a reflection of the sampling site which is subject to sedimentation from the road. There were two sites evaluated for Los Pinos. The report does not indicate a lack of taxa diversity.

There is no data available for the 1/10 of a mile of Tio Grande. The monitoring data for Tio Grande is specific to the upper reaches of the stream. Although there is a lack of inventory and monitoring on the lower portion of the Tio Grande River, from field observations, it is likely that sediment exceeds criteria in the 1/10 of a mile in the lower reach. This has likely reduced the number and taxa diversity of macroinvertebrates in this segment.

Environmental Consequences

Alternative 1

There would be no effect to resident trout in the 1/10 of a mile of the Tio Grande because population surveys indicate they are absent (Multiple Pass Depletion Surveys, Tio Grande 2003). The (probable) reduced taxa numbers and taxa diversity of macroinvertebrates in this segment is likely to continue based the existing sediment levels and continuing sediment contributions from other sources.

In the Rio San Antonio, there would be some improvement in stream habitat condition (see criteria) from eliminating grazing. However, because of other contributing factors such as sedimentation into the creek from the location of roads, private land uses along the stream, cumulatively, there would continue to be an effect to stream habitat. Trailing impacts from private (and other allotment) livestock in the 600 foot section along the Rio San Antonio would continue and it is likely stream bank stabilization would not improve. There would be impact to individuals in the form of displacement (no reproduction, no residing in this area) outside of this 600 foot area. The number of individuals impacted is unknown. However, this is less than 1 percent of the stream length. Overall, the remainder of the stream appears to be properly functioning based on field observations. The population of both resident trout and macroinvertebrates would remain stable although individuals would be impacted (displaced or removed) because the Rio San Antonio would continue to meet the criteria.

In the Los Pinos, there would be no effect because grazing does not occur in the Los Pinos and the criteria most likely impacted by grazing (sediment and streambank condition) would continue to be met. Cumulative effects include impacts from road location and uses associated with private inholdings. These past actions have contributed to the existing condition. For these reasons, the stream would likely continue to meet criteria even with the continuation of these uses at current levels. There would be no change in resident trout and macroinvertebrate habitat trend and forest wide population trends. Since there would be no direct or indirect effects to fisheries as a result of

no grazing, there would be no cumulative impacts along the Rios de Los Pinos and San Antonio. Other factors noted above would continue to impact stream habitat condition.

Alternative 2

Since no authorized grazing along the Los Pinos would occur under this alternative, there would be no direct, indirect, or cumulative effects to fisheries. Other factors noted above would continue to impact stream habitat condition. There would be no change in resident trout and macroinvertebrate habitat trend and forestwide population trends.

In this alternative, authorized livestock in addition to livestock trailing (see existing condition) would continue to impact the Rio San Antonio. The area of impact would be reduced to 200 feet with the construction of a water gap and would be minimal, as it represents less than 1 percent of the stream length. In addition, use would be for a maximum of 20 days. Although there would be impacts from authorized grazing combined with livestock crossing permits and other factors such as road locations and private land uses (see Introduction), criteria for stream habitat condition (measured by sediment, temperature and streambank stability) would continue to be met and habitat condition minimally improved with more intensive grazing management, allowing riparian vegetation to improve (in both short- and long-term). Infrastructure improvements along the Rio San Antonio, such as the watergap (constructed within 3 to 5 years), would mitigate grazing impacts. Site specific areas within the stream would still affect stream habitat condition, through excess sediment and unstable banks, as well as, other contributing factors (such as the location of roads and private land mentioned above).

Overall, the effects of alternative 2, along with the effects of past, present and reasonably foreseeable activities, would have minimal improvements to stream habitat condition in the long-term (up to 10 years) on the Rio San Antonio. There would be no change in habitat trend and forest wide population trends. They would remain stable.

Other Species of Concern – Mule deer and Black bear

Significant Issues Addressed in this Analysis:

Significant Issue #1: Cool Season Grass Recovery for Mule Deer, Elk and Black Bear. Use an entry date of June 1 for the Ursulo, Chino and Wheatgrass pastures to assure recovery of cool season grasses which are one of the main nutritional needs for mule deer, elk and black bear.

Indicator used to measure effects: The indicator for the impacts to wildlife will be pasture condition and trend in terms of impact to plants during the cool season growth period. The economic analysis will include the effects from entering (early) on May 17th and (later) on June 1st.

Mule deer and Black bear: Within the San Antone grazing allotment, there are approximately 21,169 acres of upland meadow and grasslands that may be used for foraging. While mule deer may use the upland meadow grasslands, they desire to forage on browse over grass species. Browse is found in the more open forested areas, open ridges, as well as, meadows and riparian areas. Black bear make extensive use of riparian zones and small meadow complexes (Hoover and Willis, 1987). Cool season grasses are important to black bear as forage during the early spring.

Criteria to Measure Effects:

To meet the needs of mule deer and black bear for their life necessities, the goal is to follow the same range/forage criteria listed for elk (see the Criteria to Measure Effects section for elk).

Environmental Consequences

Alternatives 1 and alternative 2 would have similar affects on mule deer and black bear that are described in the environmental consequence section for elk.

Migratory Birds

Migratory birds have often been referred to as neotropical migratory birds (NTMB). On January 10, 2001 President Clinton issued Executive Order 13186 “Responsibilities of Federal Agencies to Protect Migratory Birds” directing Federal agencies to comply with MBTA. The focus of the assessment is on habitat and ecosystem processes, not species management.

Partners In Flight (PIF) has identified physiographic areas and high priority species by broad habitat types. The US Fish and Wildlife Service released its Birds of Conservation Concern 2002 report (webpage – <http://migratorybirds.fws.gov/reports/bcc2002.pdf>). The environmental assessment for this project uses information from both the New Mexico PIF website (<http://www.hawksaloft.org/pif.shtml>) and the Birds of Conservation Concern Report for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR) #16 for the migratory bird analysis. The New Mexico PIF highest priority list of species of concern by vegetation type and the BCR #16 species list will be used to determine which species will be analyzed in this analysis.

The following describe habitats found on the allotment and the migratory birds that are typically found in these habitats. All species described have not been located within the project area, but have the potential of occurring.

Ponderosa Pine Forest

There are approximately 8,472 acres of ponderosa pine within the San Antone grazing allotment. Highest priority species include northern goshawk, Mexican spotted owl, flammulated owl, greater pewee, olive warbler, Virginia's warbler and Grace's warbler. The Mexican spotted owl is not found in ponderosa pine habitat on the forest. The greater pewee and the olive warbler are not found on the forest (Carson 2001).

Species recorded in the ponderosa pine on the west zone districts (including the Canjilon, Tres Piedras and El Rito Ranger Districts) in the 2003, 2004 and 2005 Breeding Bird Survey include the grace's warbler, broad-tailed hummingbird, Williamson's sapsucker, hairy woodpecker, northern flicker, western wood-pewee, Hammond's flycatcher, plumbeous vireo, warbling vireo, steller's jay, clark's nutcracker, common raven, violet-green swallow, mountain chickadee, white-breasted nuthatch, pygmy nuthatch, house wren, ruby crowned kinglet, western bluebird, Townsend's solitaire, yellow-rumped warbler, grace's warbler, western tanager, spotted towhee, chipping sparrow, vesper sparrow, dark-eyed junco, black-headed grosbeak, brewer's blackbird, brown-headed cowbird and pine siskin. [51] Because neither alternative would affect the flammulated owl and Grace's warbler, they are not discussed further. For more information on species and habitat see the wildlife report. [51]

Environmental Consequences – Alternatives 1 and 2

Northern goshawk – see sensitive species section

Virginia’s warbler – Alternative 1 would benefit this species by providing more grass for concealing nest sites. It would be more beneficial for the species. Alternative 2 would have a negative affect on nesting habitat by providing less grass for ground nesting sites. This would not have a measurable negative effect to Virginia’s warbler populations.

Mixed Conifer Forest

There are approximately 6,519 acres of mixed conifer within the allotment. Highest priority species include northern goshawk, Mexican spotted owl, Williamson's sapsucker, olive-sided flycatcher, dusky flycatcher and red-faced warbler. The red-faced warbler is not found on Carson National Forest (Carson 2001). Species recorded in the mixed conifer on the west zone districts (including the Canjilon, Tres Piedras and El Rito Ranger Districts) in the 2003, 2004 and 2005 breeding bird survey include Williamson’s sapsucker, olive-sided flycatcher and dusky flycatcher. Because neither alternative would affect the Williamson’s Sapsucker, olive-sided flycatcher and dusky Flycatcher they are not discussed further. See the specialist report for additional information. [51] See the sensitive species section for effects to northern goshawk and Mexican spotted owl.

Spruce-Fir (Subalpine)

There are approximately 327 acres of spruce-fir within the allotment. Highest priority species include blue grouse and boreal owl (Carson 2001). Species recorded in the spruce-fir on the west zone districts (Canjilon, Tres Piedras and El Rito Ranger Districts) in the 2003, 2004 and 2005 Breeding Bird Survey include blue grouse. For more information on species and habitat see the wildlife report. [51]

Environmental Consequences – Alternatives 1 and 2

Boreal owl – See sensitive species section

Blue grouse – Alternative 1 would benefit this species by providing more grass for concealing ground nest sites and would not affect grouse by trampling. It would be more beneficial for the species. Alternative 2 would have a negative affect upon nesting habitat. There is the potential of livestock trampling nest and killing young. This would not have a measurable negative effect to the grouse population.

Wet Meadow (High Elevation Grassland)

There are approximately 21,169 acres of high elevation grasslands within the San Antone grazing allotment. Highest priority species include the Wilson’s phalarope and bobolink (Carson 2001). To date no breeding bird surveys have been conducted in the wet meadow habitat within the westzone districts (including the Canjilon, Tres Piedras and El Rito Ranger Districts). For more information on species and habitat see the wildlife report. [51]

Wilson’s Phalarope – Alternative 1 would benefit the species by decreasing the risk of livestock trampling ground nests in wet meadows. Alternative 2 would affect the species during nesting season when livestock is utilizing the wet meadow habitat. This would not have a measurable negative effect to populations.

Bobolink – Alternative 1 would benefit the bobolink by decreasing the risk of livestock interrupting the breeding success for the species. Alternative 2 would affect the species during breeding season when livestock is utilizing the wet meadow habitat. This would not have a measurable negative effect to bobolink populations.

High Elevation Riparian Woodland

Approximately 623 acres of riparian habitat base on TEU is found on the allotment (see Appendix G in the wildlife report). [51] Highest priority species include the black swift, red-naped sapsucker, Hammond’s flycatcher, American dipper, veery, painted redstart and MacGillivray’s warbler. The painted redstart and black swift does not occur on the forest (Carson 2001). To date no breeding bird surveys have been conducted in the high elevation woodland riparian habitat within the west zone districts (including the Canjilon, Tres Piedras and El Rito Ranger Districts). Because the black swift’s habitat is not found in the area, either alternative would affect this species. It is not discussed further. In addition, neither alternative would affect the red-naped sapsucker or Hammond’s flycatcher. These species are not discussed further. Please see the specialist report in the project record for additional species and habitat information. [51]

American Dipper – Alternative 1 would benefit the American dipper by decreasing the risk of livestock grazing attributing to stream erosion. Alternative 2 may attribute to erosion in Rio San Antonio that would contribute to siltation that affects aquatic invertebrate prey. However, it would be anticipated that this alternative would not have a measurable negative effect to American dipper populations.

Veery – Alternative 1 would benefit the veery by decreasing the risk of livestock impacting alder, willow and shrub cover along streams. Alternative 2 could impact this species by reducing the amount of willows and shrubs along the riparian. However, it would be anticipated that this alternative would not have a measurable negative effects to veery populations.

MacGilliv-ray’s Warbler – Alternative 1 would benefit this species by providing grassier component for concealing nest sites along creeks. Alternative 2 could impact species by reducing the grass component near creeks that is used for nesting. However, it would be anticipated that this alternative would not have a measurable negative effect to MacGilliv-ray’s warbler populations.

Summary of Effects – All Species

The implementation of any of the alternatives, would not significantly impact or impair wildlife resources or values that are necessary to fulfill the specific purposes identified in the “Purpose and Need” for the San Antone grazing allotment grazing analysis.

As a result of this effects analysis, it is determined that management activities associated with livestock grazing may affect wildlife species by affecting prey base habitat, cover, nesting habitat and/or competing with other wildlife species for available forage and water. The implementation of the alternatives within the allotment would not cause population changes of TE&P, Forest Sensitive Species, management indicator species, migratory birds and other wildlife.

Wildlife – Cumulative Effects (fish and macroinvertebrates not included)

Some animals are much more mobile than others. Therefore, it is important to recognize the entire range of an animal’s habitat as its affected environment, instead of just the pastures of the

San Antone grazing allotment. This analysis discusses the past, present and reasonably foreseeable future activities. These activities were analyzed when determining cumulative effects for each species.

The past, present and reasonably foreseeable future activities were analyzed when determining cumulative effects on species discussed in this analysis. These activities include livestock grazing, livestock trailing, roads and recreation, prescribed burns, fire use, Stewart Meadows Complex wetland improvement and range improvement maintenance. These projects have incrementally contributed, are contributing, or will contribute to the current condition of the area.

The upland meadows and riparian habitats have been affected by historical and ongoing grazing activities on federal lands and private lands. This area has historically been grazed for several hundred years. Heavy grazing in the past (before grazing management by the Forest Service) has caused a change in plant species composition and has reduced the amount of riparian habitat available. Historical grazing had had a negative effect on the Mexican spotted owl, boreal owl, northern goshawk, American marten, ermine, mink and some migratory bird species due to the loss of prey species (by changing timber stand structures and removing fine fuels for natural wildfires).

These affects have been improving since the Forest Service began the administration of this grazing allotment. Current ongoing grazing on the allotment has shown that the grazing activities overall are maintaining range conditions in the upland meadows and riparian areas. These improvements are beneficial to prey species for the Mexican spotted owl, northern goshawk, boreal owl, American marten, ermine, mink and some migratory birds due to more grass and shrub species are now available and more forage is available for the white-tailed jackrabbit, Gunnison's prairie dog, western heather vole, elk and other big game species. Habitat condition would also be beneficial to the burrowing owl. However, due to changes in plant species composition there is still a negative affect to these species. Changes in the riparian habitat affected the northern leopard frog, nokomis fritillary, cinereus shrew, water shrew, spotted bat, pale Townsend's big-eared bat, long-tailed vole, ermine, mink and riparian dependent migratory bird species. As the habitat has recovered, it has improved the habitat for these species. The New Mexico meadow jumping mouse, cinereus shrew, dwarf shrew, water shrew, western heather vole, long-tailed vole are negatively affected due to changes in plant composition especially those required for dense and diverse cover. Plant species such as Ripley's milkvetch and robust larkspur are negatively affected due to ongoing grazing by these plants being grazed, trampled, or by changing their habitat.

Historical grazing and ongoing grazing, as well as roads and recreation activities, have increased sediments and have affected water quality on the Rio San Antonio. The increase in sediments could have negatively affected the northern leopard frog, water shrew, spotted bat, pale Townsend's big-eared bat and mink. Excessive sediments, if not flushed through the stream system, will degrade these species habitat and their prey base species (macro invertebrate, insects, and fish) habitat. These impacts, if not managed, may magnify minor impacts to riparian areas that may be caused by livestock grazing.

Past activities and future activities, such as fire use and the Lagunitas prescribed burn project, have and would reduce fuel loading in the area. However, there is still a chance that the area could experience a stand replacing wildfire Prescribed burning and fire use would provide

benefits to elk, white-tailed jackrabbit, Gunnison’s prairie dog, burrowing owl, western heather vole and other big game such as mule deer and black bear by providing foraging habitat for them.

Alternative 1

Alternative 1 would incrementally reduce the cumulative impacts on the Mexican spotted owl, northern goshawk, boreal owl, ermine, American marten, mink and some high priority migratory bird species. There would be more cover for prey species in grass and shrub species in the upland meadow/grasslands, riparian areas and in timbered stands. In areas treated, there would be a greater diversity of herbaceous cover. Incrementally, riparian habitat would likely to improve at a quicker rate without livestock grazing within the wet meadows and riparian vegetation due to an increase in plant diversity and density and by the reduced amount of sediment that is introduced into the drainages. This would benefit New Mexico jumping mouse, northern leopard frog, nokomis fritillary, cinereus shrew, dwarf shrew, water shrew, spotted bat, pale Townsend’s big-eared bat, long-tailed vole, ermine, mink and riparian dependent migratory bird species. By removing livestock, this alternative would eliminate competition between white-tailed jackrabbit, Gunnison’s prairie dog, elk, mule deer and black bear. Without livestock in the allotment, more forage for elk, mule deer and black bear would be available. Alternative 1 would also reduce cumulative direct impacts to Gunnison’s prairie dogs and to plants such as the Ripley’s milkvetch and robust larkspur. With this alternative there would be less trampling impacts to these species and less chance of livestock foraging these plants or altering the plants habitat. This alternative, cumulative with past, present and foreseeable activities, would not have any affect the burrowing owl.

Alternative 2

The livestock grazing in alternative 2, when cumulatively added to past, present and foreseeable activities, would not incrementally reduce the availability of structural habitat (such as trees and snags) that are used by Mexican spotted owls, northern goshawks, boreal owls, martens, spotted bats and pale Townsend’s big-eared bats for roosting/denning and nesting/denning sites. However, the proposed livestock grazing when added to the past, present and foreseeable livestock grazing on other allotments, private lands and livestock trailing, could incrementally affect the woody vegetation structure in suitable riparian habitats for the southwestern willow flycatcher (and when livestock utilize the herbaceous vegetation and begin to utilize the woody species). Permitted livestock from the allotment combined with private on 1,790 acres combined with up to 1,300 head of trailing livestock could cumulatively result in southwestern willow flycatcher brood parasitism by brown-headed cowbird which can negatively affect the flycatcher.

These same activities could incrementally affect the southwestern willow flycatcher directly through disturbance and indirectly through degrading the riparian habitat at Stewart Meadows and the upper Rio San Antonio. The riparian species to include the New Mexico jumping mouse, northern leopard frog, nokomis fritillary, cinereus shrew, dwarf shrew, water shrew, spotted bat, pale Townsend’s big-eared bat, long-tailed vole, ermine, mink and riparian dependent migratory bird species would also be affected.

The proposed livestock grazing in alternative 2 combined with the present existence of Forest Roads 88A and 87 (along the Rio San Antonio) and the recreation use that occurs adjacent to these roads, would incrementally contribute to poor riparian and watershed conditions. Poor riparian and watershed conditions can result from these activities by increasing runoff to contribute to increased silt loads, increased turbidity, decrease water quality, increased scouring

during high flows and altered pH levels. All of these impacts can have an indirect adverse effect to riparian species such as the southwestern willow flycatcher, New Mexico jumping mouse, northern leopard frog, nokomis fritillary, cinereus shrew, dwarf shrew, water shrew, spotted bat, pale Townsend's big-eared bat, long-tailed vole, ermine, mink and riparian dependent migratory bird species

Present and foreseeable range improvements would improve livestock distribution within the allotment. This would improve prey base habitat on the allotment for the Mexican spotted owl, northern goshawk, boreal owl, ermine, American marten, mink and some migratory birds by improving/decreasing the utilization of forage. The improvement in livestock distribution to improve utilization would also improve watershed conditions to facilitate the restoration of riparian habitat within the Stewart Meadows Complex and the upper Rio San Antonio. Likewise, the ongoing and foreseeable 325 acres of wetland improvement projects proposed within the 556 acres Stewart Meadows Complex, combined with these range improvement projects would cumulatively improve riparian habitat for riparian species. The additional water would incrementally improve elk and big game habitat by providing reliable year around water sources.

Foreseeable actions on or adjacent to the allotment include fire use within the allotment and the 1,200 prescribed burn near Lagunitas. When combined with the proposed conservative forage use by livestock, this would improve range conditions by providing more forage in the upland meadow and riparian. The increase in forage would improve habitat for Mexican spotted owl, northern goshawk, boreal owl, ermine, American marten and mink and some migratory birds prey base in the short term and long term. An improvement of forage would also benefit elk, white-tailed jackrabbit, western heather vole, Gunnison's prairie dog and other big game such as mule deer and black bear. Improving range conditions in the upland meadows and riparian areas would contribute to improving the watershed conditions associated with Southwestern willow flycatcher, northern leopard frog, nokomis fritillary, cinereus shrew, dwarf shrew, water shrew, spotted bat, pale Townsend's big-eared bat, long-tailed vole, ermine, mink and riparian dependent migratory bird species riparian habitat. Alternative 2 combined with fire use and prescribed burning would not affect burrowing owls.

The past, present and foreseeable actions when combine with the proposed adaptive management actions to be implemented as part of alternative 2, would incrementally improve range conditions in riparian areas and upland meadow. Therefore, those species dependent on these habitats would benefit from these actions.

Cumulative Effects – Rio Grande cutthroat, Rio Grande chub, Rio Grande sucker, Resident Trout and Aquatic Macroinvertebrates

Based on a stream habitat inventory (USDA Forest Service 2006) (Rio de los Pinos Unpublished Report, Level I and II Stream Inventory Version 3.0. Carson National Forest Files), the Rio de Los Pinos is meeting sediment and streambank stability criteria (there is no FS temperature data). The NM Environment Department lists the Rio de Los Pinos (NM reaches) as Not Supporting High Quality Aquatic Life with the probable cause being temperature and the source rangeland grazing (2006 to 2008 State of New Mexico Integrated Clean Water Act 303(d)/305(b) Report). The report also lists the Rio San Antonio (CO border to Montoya Canyon) as Fully Supporting High Quality Aquatic Life and the Rio San Antonio (Montoya Canyon to headwaters) as Not Supporting High Quality Aquatic Life with the probable cause being temperature and the source loss of riparian habitat, rangeland grazing and streambank modification/destabilization. For both

the Rio de Los Pinos and Rio San Antonio (based on field observations), most criteria are being met even though several roads are located adjacent to the streams. There are approximately 3.9 miles of FR 88A, 3.5 miles of FR 87 and 2.4 miles of FR 284 located adjacent to the streams. The road crossings, maintenance and surfacing associated with these roads contribute sediment to the streams, particularly during high rainfall events and spring runoff.

Currently, there is no authorized grazing along the Rio de Los Pinos. Trailing of livestock from other allotments and from other livestock crossing permits occurs along approximately 600 feet of the Rio San Antonio for a period of time that doesn't exceed 20 days. As a result, there is some streambank destabilization and associated sedimentation, but the area of impact is less than 1 percent of the stream length.

There are 20 acres of private lands (associated activities such as grazing and other uses within riparian zones occurs) adjacent to the Rio San Antonio. In addition, upstream sediment contributions from the Canada de Tio Grande and the Rio Nutritas occur. These factors have affected the existing stream habitat condition in terms of contributing sediment.

Positive benefits to stream habitat condition have occurred along the Rio San Antonio. The 556 acre Stewart Meadows Complex grazing enclosure has likely reduced streambank instability, temperature and sediment along the Rio San Antonio as evidenced from the existing riparian vegetation.

Heritage Resources [43]

This effects analysis identifies the known heritage resources within the allotment and analyzes effects of the alternatives on heritage resources in accordance with the USFS Region 3 “Standard Consultation Protocol for Rangeland Management: First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities” (USFS 2005).

Approximately 15,000 acres, or 11 percent of the entire project area has been inventoried for heritage resources and a total of 237 archaeological sites are on record (please note that this includes three additional allotments, Jawbone, Tio Grande and Tusas). Two other heritage site types considered for effects are Traditional Cultural Properties (TCPs) and sites listed on the National Register of Historic Places. Neither of these site types is present within the project area.

Potential Effects to Historic Properties

Settings where cattle congregate consist of corrals, around earth tanks and drinkers, in stream bottoms and sometimes along fences, particularly in corners and at gates. Many of the corral locations in the allotments were inventoried prior to construction or prior to expansion and as a result heritage sites were identified, where present and avoided.

A number of stock drinking water sources were visited as a part of this analysis or for projects occurring in the allotments over the past 6 years, including, for example, earth tanks at Chino Dry Lake, Oso Springs and Laguna Larga. The features have been in place for varying lengths of time, some for nearly a century. Generally speaking, there appear to be one or two earth dams constructed within an allotment every decade or so. Most of these locations have well-worn cattle trails that fan out from the drinking features into the surrounding pastures. None of the trails have been identified as cutting through significant buried deposits.

Salt blocks are used to move livestock around in the pastures, attracting them to the more lightly used upland areas and out of the stream bottoms. With the abandonment of this practice (permanent salting locations), salting appears to have a minimal effect on the environment.

Tribal Consultation

A consultation letter was sent in January of 2007 listing all the proposed projects for each Ranger District with an enclosed project location map. The project was added to the SOPA calendar in 2006 and has remained on the calendar through the present. The SOPA calendar and a consultation letter are sent to the tribes on a quarterly basis. The tribes receiving the letter and SOPA calendar include: The Comanche Tribe of Oklahoma, The Jicarilla Apache Nation, The Navajo Nation, The Southern Ute Indian Tribe, The Ute Mountain Ute Tribe, The Hopi Tribe and the Pueblos of Jemez, Nambe, Ohkay Owingeh, Picuris, Pojoaque, San Ildefonso, Santa Clara, Taos, Tesuque and Zuni. An additional mailing providing the tribal governments with opportunity for comment was sent out July 9, 2008. The tribal governments have not identified any specific traditional or sacred places within the project area or other concerns regarding this project. [37, 44, 54]

Environmental Consequences

Alternative 1 and Alternative 2

Under alternative 1, grazing would not be allowed on the allotment. As erosion or other natural deterioration (not related to livestock grazing) of the landscape is not occurring, or is very limited and localized, there would have no effect (direct, indirect, cumulative) on heritage resources. Heritage resources would remain in their current condition.

Livestock grazing has been taking place on the allotments for over a century. Large-scale projects of any kind in the project area, other than timber harvest, were no longer being proposed by the 1970s (following passage of the National Environmental Policy Act and the National Historic Preservation Act). Since that time, the effects of grazing in the project area, such as erosion, trampling / compaction and overgrazing of palatable plant species are believed to have moderated and are expected to continue to do so under the proposed action. *No adverse effect* is expected from implementation of the proposed action. There would be no effect to Traditional Cultural Properties (TCPs) and sites listed on the National Register of Historic Places. Neither of these site types is present within the project area. NM SHPO concurred and the archeological clearance and IS&A for the allotment was signed on August 13, 2008. [47]

Wilderness, Wild and Scenic Rivers and Special Designations [52]

The allotment borders the eastern boundary of the Cruces Basin Wilderness but there is no designated wilderness or wilderness study areas within the allotment. There have been occasions when stray cattle have been reported⁴ to be within the wilderness. However, authorized grazing

⁴ Approximately one call per year has been received from the general public. However, these calls are not officially documented.

does occur within the Cruces Basin Wilderness from the Apache Allotment. In alternative 1, there would be no effect (direct, indirect or cumulative) to wilderness character, i.e. any change to the following indicators for wilderness character: (1) untrammeled, (2) natural, (3) undeveloped and, (4) outstanding opportunities for solitude and unconfined recreation. In alternative 2, the effects would be similar to alternative 1. Occasional strays from the San Antone allotment are not likely to diminish wilderness values given that Apache allotment livestock routinely graze there. Cumulatively, there would be an immeasurable effect.

Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers within or adjacent to the San Antone allotment. The allotment is at least 15 to 18 miles away from the closest designation, the Rio Grande. Therefore, this is not discussed further.

There are two eligible Wild and Scenic Rivers that occur on the allotment – portions of the Rio de los Pinos and portions of the Rio San Antonio (Carson 2001). A 9 mile segment of the Rio de los Pinos has scenic outstanding remarkable values (ORV). There are three eligible segments on the Rio San Antonio that are within the allotment. The ORV are recreation (segment 2) and scenic (segments 3 and 6). Of the seven segments of the Rio San Antonio that were evaluated, three occur on the San Antone allotment (segment 2, 3 and 6). The ORV for segment 2 is recreation and scenic for segment 3 and 6. Please see the recreation, wilderness and special designations report for additional information. [52]

Environmental Consequences

In both alternative 1 and 2, there would be no effect (direct, indirect or cumulative) to the Rio de los Pinos ORV. Topography (steep slopes) precludes San Antone livestock use. In alternative 1 (for all 3 segments), there would be no effect (direct, indirect or cumulative) to Rio San Antonio ORV because livestock grazing would cease. In alternative 2, of the three segments that are eligible, allotment livestock would only use approximately 200 feet (with the development of a water gap and exclosure) in Segment 3. This would reduce the amount of impact from 600 feet to 200 feet. The effect to the scenic values in this segment would be beneficial in terms of minimizing the impact of livestock (reduced trampling, reduced loss of vegetation, presence of manure, presence of livestock) to the riparian area along the river. The aesthetic values would be enhanced due to minimal area impacted by the exclosure fence and water gap. Eligibility would not be changed (directly or cumulatively).

Other Special Designations

There are no designated or proposed Research Natural Areas within the allotment (Forest Plan, MA 19). Therefore, this is not further discussed. There are no inventoried roadless areas (IRA) within the allotment. The closest IRA is adjacent to the allotment near the Cruces Basin Wilderness (see map in project record #52). There are no activities proposed within the allotment that would directly, indirectly or cumulatively affect the IRA. Therefore, inventoried roadless areas are not discussed further.

Social and Economic Environment [56]

Significant issues addressed in this analysis:

Significant Issue #1: Cool Season Grass Recovery for Mule Deer, Elk and Black Bear. Use an entry date of June 1 for the Ursulo, Chino and Wheatgrass pastures to assure recovery of cool season grasses which are one of the main nutritional needs for mule deer, elk and black bear. A reduced season of use may affect permittee viability.

Indicators used to measure effects: The indicator is the potential change in gross revenues from annual variations in livestock numbers and the season of use and the impact to permittee viability.

The current domestic livestock grazing operations for the San Antone allotment are managed by the San Antone Livestock Association which is comprised of several individuals who live in small communities (Antonito and La Jara) in southern Colorado. When not on the forest allotment, the permittees base their operations on their private lands and lease other lands. Some San Antone permittees are also permittees on adjacent Bureau of Land Management allotments. In northern New Mexico, contemporary ranching operations that have access to private grant lands use a combination of privately owned or leased lands, grant lands and public lands as their range. As private land sales occur, grazing areas become limited to many ranchers. More reliance is placed on forest grazing permits (Raish and McSweeney 2003). This analysis focused on the location of the allotment in relation to the community of Tres Piedras, New Mexico (Taos County), the relationship between the permittee addresses (two communities in Conejos County, Colorado) to the closest full service town of Alamosa, Colorado (Alamosa County).

On the San Antone allotment, permittees have had to adjust to several years of livestock number reductions in response to weather (poor precipitation) in the past 10 years. A rangeland management objective of providing reliable forage has, in some years, not been attainable. From 1996 to 2006, annual livestock reductions ranged from 18 percent (1999) to as high as 69 percent in 2002, a drought year (see Rangeland Vegetation Existing Condition Report, PR #17). The interconnection between operations on private lands and the national forest becomes clear when considering post-drought effects. On the Tres Piedras Ranger District, after the 2002 drought, a total of four permittees went out of business between 2003 and 2004. Two permittees were on the San Antone Allotment and two permittees were from the adjacent allotment, Tio Grande. Given that the existing association is made up of ten permittees, the loss equated to a 20 percent reduction in members.

On both allotments, the permittees sold their herds because they lacked the private land on which to keep the herd when forest forage was unavailable. Remaining permittees sold approximately 20 to 40 percent of their head. In terms of the viability of the San Antone Livestock Association, it has recovered those losses through new livestock purchases. However, it is estimated that it took the Association 5 years to recover from the 2002 event. The Association's ability to recover was based on having operational flexibility. When forest conditions are less than favorable, the options that allow a permittee to continue operating is often: the ability to sell hay, the ability (funds) to purchase hay and the ability to keep livestock on their private lands or leases for extended periods of time (Personal communication with Yonemoto 2008)

Environmental Consequences (Social and Economic)

Alternative 1

This alternative would not support the purpose and need which includes: (1) contributing to the local economy and the stability of southern Colorado and northern New Mexico communities and (2) providing forage for livestock in order to contribute to the economic diversity and social well being of surrounding communities that depend on range resources for their livelihood.

While the ranching lifestyle for ten families may be continued through private land or BLM operations, there would be an adverse effect to these families in terms of losing the connection to the national forest that had been place for several generations. Lifestyle changes could include decreasing their spending, diversifying operations to make them less dependent upon ranching and family members seeking more "outside" work to bring in more income (Aragon 2007).

Losses in estimated income would be greatest in this alternative. Based on a stocking rate of 861 cow/calf on the allotment for an entire season (153) days, the Association would lose approximately \$145,000 in estimated gross income. Indirect effects (and income losses) that may occur but are not quantified are the effects to BLM permittees and other forest allotment permittees who use a system that includes several allotments and private lands in order to have sustainable operations. There would be no impacts to those permittees who use the San Antone allotment as a critical travelway to private lands to other allotments. The crossing permits would be issued even if the allotment use was discontinued.

Whether permittees could continue livestock operations without the use of national forest would depend on how well they could adjust their operations. The permittees would need to find other sources of grazing land, reduce herd size, or provide for supplemental feeding. Available lands may be more readily available in southern Colorado than northern New Mexico for alternative grazing lands. Supplemental feeding or the acquisition of other grazing lands may be impractical and exceed any profit margin. For example, in the small community of Antonito, Colorado, real estate value has appreciated over 100 percent in the last 10 years (<http://www.neighborhoodscout.com>).

Alternative 2

In alternative 2, there would be no change in terms of lifestyle choice and the continuance of tradition. Because the grazing authorization would respond annually to resource conditions and weather, there may be years when permittees can maximize revenue generation. This assumes, that through adaptive management and the AOI, the quality and quantify of forage is at least maintained during years of poor precipitation and improved and increased during "good" years.

The estimated income for the Association with full numbers and a full season of use would be approximately \$145,000. Likewise, there may be years when revenue generation is reduced by as much as \$80,000 (worse case scenario), if both the livestock numbers and the grazing season is reduced (552 cow/calf and 18 bulls for 3.5 months) in response to weather or resource conditions (see cow/calf income sheet in the specialist report for additional information on calculations).

[56]

Whether individual members of the Association could stay viable could depend on their operational flexibility (see definition above). However, based on how the Association has

responded to poor forage conditions in the past, it has demonstrated it can modify management and recover from poor revenue periods. Since 1996, the majority of the members have been able to keep operating even though annual stocking rates have varied from 18 to 69 percent.

Please note: costs that are not included in this analysis are the other costs that permittees have in order to sustain livestock operations. Costs would include maintenance of fences, cattleguards, gates and stock tanks; hauling water where it is inadequate, hiring a herder if needed and grazing fees. Time and monies spent commuting would also be part of the costs. In addition, the recent but significant rise in fuel and transportation related costs adds additional burden. These costs would be offset by the income generated from the grazing operations. In general, many permittees do not maintain their grazing operations as commercial ventures, so much as, for a lifestyle choice and to maintain cultural traditions.

Cumulative Effects

Because the total number of permitted livestock (cattle and sheep) on National Forests in the Southwestern Region (Arizona and New Mexico) has dropped dramatically during the past century (from over 1,400,000 permitted head in 1909 to approximately 200,000 by 1997) (Aragon 2007), eliminating grazing on the allotment may contribute to the overall trend of fewer small livestock operations. Particularly for the small communities in northern New Mexico and southern Colorado, the reduced number of livestock operations combined with the emerging growth in population (such as Alamosa, CO) could contribute to a loss of traditional land uses and values. For example, in Alamosa, CO (Alamosa County) which is the closest full service town to the villages of Antonito and La Jara, in the first quarter of 2006 the median price for a house was approximately \$125,000. By the first quarter of 2008, the median price had risen to \$155,000 (http://www.city-data.com/county/Alamosa_County-CO.html). Based on observing how growth has affected other communities throughout the southwest (Taos, Santa Fe), the assumption is that lands that were once considered agricultural lands are sold and converted to residential development. Over time, as more permittees get out of the livestock business, those people who had connections to the national forest may be reduced.

In alternative 2, there would be no cumulative effects in terms of maintaining lifestyle choices and tradition through use of the national forest. Should there be extended periods of poor forage conditions, permittees may go out of business. The cumulative effect would be the same as described in alternative 1.

Environmental Justice

As required by law and Executive Order 12898 (1994), all Federal actions should consider potentially disproportionate effects on minority or low income communities. Potential impact or change to low income or minority communities within the study area due to the proposed action should be considered. Where possible, measures should be taken to avoid negative impacts to these communities or mitigate the adverse effects.

The rural community of Tres Piedras is located to the south of the San Antone allotment and numerous small, predominantly Spanish communities are located within the study area (see specialist report in project record). Native Americans have been present in the area for over 1,000 years and Spanish settlers arrived in the area around 1540 (Kyte 2008). Please see the heritage resources report for detailed information on the cultural history that is associated with the allotment. [43]

The permittees are from southern Colorado communities of La Jara and Antonito. While Tres Piedras is the nearest community to the allotment, impacts to this community would be extremely limited given that small businesses that offered fuel and restaurant services are no longer open (as of June, 2008). The disposable income of the permittees is used in their local communities (Antonito, CO and La Jara, CO). Economic impacts are more likely to be felt in the vicinity of the permittee's homes (particularly Alamosa, Colorado) which is a full service community rather than in Tres Piedras or Taos, New Mexico.

All the communities in the study area would fall under the minority and/or low income populations identified in the Environmental Justice Executive Order 12898. Generally, environmental justice is concerned with identifying these communities and ensuring that they are involved in and understand the potential effects of the proposed action. The people in the study area and local communities are interested in maintaining their historic and subsistence lifestyle, using the surrounding area to gather resources needed.

Environmental Consequences

Alternative 1

This alternative would negatively affect the lifestyle of the communities in the study area. This alternative could impact minority and low income populations. Eliminating the opportunity to graze cattle would adversely affect the permittees and their families by changing traditional use of the land and causing an economic hardship to those individuals who rely in part on the income generated from their long-term cattle operations. The cumulative impacts are the same as discussed in social and economics for alternative 1.

Alternative 2

Overall, this alternative should result in no change on low income or minority populations. There may be years when permittee revenues may be lower because of weather and resource conditions. However, forage availability (which translates into potential revenue) should be maintained or improved in the long term. There would be no change to the traditional use of the land and no change in economics related to the grazing authorization. There would be no displacement of minorities, changes of land use, or increases in taxes that would constitute an economic hardship. During consultation, the tribal governments have not identified any specific traditional or sacred places within the project area or other concerns regarding this project. There would be no cumulative impacts.

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:

Federal and State Agencies

New Mexico State Historical Preservation Office (NM SHPO)
State of New Mexico Department of Game and Fish
State of New Mexico Environment Department
US Department of the Interior, Fish and Wildlife Service
US Department of the Interior, Bureau of Land Management

Local Government

Rio Arriba County
Rio Arriba County Cooperative Extension Service

Tribes

Pueblo of Jemez	Pueblo of Taos
Jicarilla Apache Nation	Pueblo of Tesuque
Pueblo of Nambe	Pueblo of Zuni
Pueblo of Picuris	The Hopi Tribe
Pueblo of Pojoaque	The Navajo Nation
Pueblo of San Ildefonso	Southern Ute Tribe
Pueblo of Okay Owingeh	Ute Mountain Ute Tribe
Pueblo of Santa Clara	Comanche Tribe of Oklahoma

Organizations

WildEarth Guardians	Northern NM Stockman's Association
Wild Watershed	Carson Forest Watch
Western Watershed	New Mexico Trout
Sierra Club Rio Grande Chapter	NMSU Cooperative Extension Service
Forest Trust	San Antone Livestock Association
Center for Biological Diversity	

Individuals

Virgil Valdez	Maclovio Garcia
Jasper Casias	Ernest Garcia
Aniceto Lucero	Los Hermanos Lucero
Rudy Valdez	Stanley Garcia
Felix Gallegos	Gary Lee Gallegos
Donald Larsen	Scott Draney
Andrew Garcia	

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Chapter 6 – List of Preparers

USDA Forest Service, Carson National Forest, Supervisor’s Office and Tres Piedras Ranger District

Wayne Yonemoto	Tres Piedras District Rangeland Staff (Vegetation, Soils, Water, Air)
Greg Miller	Forest Watershed Program Manager (Soils, Water, Air)
Francisco Cortez	Tres Piedras District Wildlife Biologist (Wildlife)
Donna Storch	Forest Fisheries Biologist (Fisheries)
Ray Martinez	West Zone Recreation Staff District (Recreation, Wilderness)
Michael Kyte	Tres Piedras Archeologist (Heritage)
Paul Otero	Forest GIS Specialist (GIS)
Paula Cote’	Forest Planner (IDT Leader)
Audrey Kuykendall	Forest NEPA and Appeals Coordinator (NEPA)

Appendix A – Project Record Index

Project Record Index

DOC #	DATE	DOCUMENT	AUTHOR	RECIPIENT
1	03.06.72	Region 3 Policy on Managing National Forest Land in Northern New Mexico	USDA Forest Service, Southwestern Region, Regional Forester	Project Record
2	09.86	Environmental Impact Statement, Carson National Forest Plan	Carson National Forest	Project Record
3	10.31.86	Record of Decision Carson National Forest Land and Resource Management Plan	Carson National Forest	Project Record
4	10.31.86	Carson National Forest Plan, as amended	Carson National Forest	Project Record
5	08.00.87	Terrestrial Ecosystems Survey of the Carson National Forest	USDA Forest Service, Southwest Region	Project Record
6	12.03.90	FSH 2509.22 Soil and Water Conservation Practices Handbook	USDA Forest Service, Southwest Region	Project Record
7	07.27.95	Rescission Act of 1995, PL 104-19, Section 504		Project Record
8	1996-2006	Annual Precipitation on San Antone allotment 1996 to 2006	Greg Miller, Carson NF Soils and Watershed Program Manager	Project Record
9	06.97	Rangeland Analysis and Management Training Guide	USDA Forest Service, Southwestern Region	Project Record
10	1999	Utilization Studies and Residual Measurements	USDI, Bureau of Land Management, et. al.	Project Record
11	06.04.04	San Antone Livestock Grazing Association Term Grazing Permit	Tres Piedras Ranger District	Project Record
12	01.04.05 – 07.01.08	Schedule of Proposed Actions	Carson National Forest	Project Record
13	09.09.05	FSM 2238 Grazing Fees	USDA Forest Service	Project Record
14	03.19.07	Project Initiation Letter	Benjamin Romero, Tres Piedras District Ranger	IDT
15	05.30.07	Allotment analysis timeline	IDT	Project Record

DOC #	DATE	DOCUMENT	AUTHOR	RECIPIENT
16	06.07	Management Indicator Assessment	Carson National Forest	Project Record
17	07.06.07	San Antone allotment existing condition	Wayne Yonemoto, District Range Staff	Project Record
18	09.08.07	FSH 2209.13 Grazing Permit Administration Handbook, Chapter 90	USDA Forest Service, Southwestern Region	Project Record
19	10.15.07 to 10.18.07	IDT Meeting Notes	Cote, IDT Lead	Project Record
20	10.30.07	IDT Meeting Notes	Cote, IDT Lead	Project Record
21	10.31.07	E-Mail re: allotment precipitation	Greg Miller, forest soil and water program manager	IDT
22	2008	San Antone allotment GIS	Paul Otero, GIS analyst	Project Record
23	03.04.08	Recommendations for allotment management	San Antone Livestock Association	Tres Piedras District Ranger
24	03.20.08	Letter to FS from Western Watersheds Project, Inc. re: updating livestock weights and forage consumption, adjusting stocking rates	Western Watersheds Project, Inc.	Corbin Newman, Regional Forester
25	05.21.08	Scoping Letter with mailing list	Tres Piedras District Ranger	Interested parties
26	05.08	Returned scoping letters – undeliverable	Various	Project Record
27	06.06.08	IDT Field Trip	Cote, IDT Lead	Project Record
28	06.16.08	IDT Notes on assumptions and mitigation	Cote, IDT Lead	Project Record
29	06.18.08	USFS (Washington Office) response to Western Watersheds Project re: updating livestock weights and forage consumption, adjusting stocking rates	Janette Kaiser, USFS Director of Rangeland Management	John Marvel, Executive Director
30	06.19.08	Cumulative effects – travel management	Allan Lemley, forest GPS Coordinator	Project Record
31	06.19.08	IDT Notes – adaptive management and cumulative effects information	Cote, IDT Lead	Project Record
32	06.19.08	Response to scoping - New Mexico Department of Game and Fish (NMDGF)	Matthew Wunder, NMDGF Conservation Services Division	District Ranger
33	06.24.08	Response to scoping	Virgil Valdez	Tres Piedras Ranger District

DOC #	DATE	DOCUMENT	AUTHOR	RECIPIENT
34	06.27.08	Email: re clarification of scoping letter (part 1)	Scott Draney, NMDGF	Paula Cote, IDT Lead
35	06.27.08	Email: re clarification of scoping letter (part 2)	Scott Draney, NMDGF	Paula Cote, IDT Lead
36	06.30.08	Public comment content analysis and approval of issues and alternatives	IDT/District Ranger	Project Record
37	07.02.08	Response to scoping	The Navajo Nation	District Ranger
38	07.02.08	Response to scoping	Erik Ryberg for Western Watershed Project	District Ranger
39	07.03.08	Response to scoping	USDI, Bureau of Land Management	District Ranger
40	07.09.08	30 day notice and comment request for comments and mailing list	IDT	Interested parties
41	07.10.08	Legal notice in <i>The Taos News</i>	<i>The Taos News</i>	Project Record
42	07.14.08	Response to scoping – New Mexico Environment Department	Georgia Cleverly, Environmental Impact Review Coordinator	District Ranger
43	07.17.08	Heritage Resources Specialist Report	Michael Kyte, District Archaeologist	Project Record
44	05.21.07	Response to scoping	The Navajo Nation	District Ranger
45	08.08.08	Soil, Watershed, and Air Specialist Report	Wayne Yonemoto, District Rangeland Staff	Project Record
46	08.11.08	Response to scoping: E-mail and letter	Erik Ryberg for Western Watershed Project	District Ranger
47	08.13.08	Inventory Standards and Accounting Form – heritage concurrence	NM State Historic Preservation Office	Forest Supervisor
48	08.06.08	Biological Assessment to USFWS	Kendall Clark, Forest Supervisor	Wally Murphy, United States Fish and Wildlife Service
49	08.15.08	Final content analysis, issues and alternatives	District Ranger	Project Record
50	09.03.08	Fisheries Specialist Report	Donna Storch, Forest Fisheries Biologist	Project Record
51	09.12.08	Wildlife Specialist Report and Biological	Francisco Cortez, District	Project Record

DOC #	DATE	DOCUMENT	AUTHOR	RECIPIENT
		Assessment and Evaluation	Wildlife Biologist	
52	09.12.08	Special Designations Specialist Report	Ray Martinez, West Zone Recreation Staff	Project Record
53	09.15.08	E-mail: cow/calf numbers and BLM permits	Wayne Yonemoto	IDT Lead
54	09.18.08	Response to 30-day notice and comment	The Navajo Nation	District Ranger
55	09.19.08	Rangeland Vegetation Specialist Report	Wayne Yonemoto, District Rangeland Staff	Project Record
56	09.20.08	Social and Economics Specialist Report	Paula Cote, Forest Planner	Project Record