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Forest  
Service

Southwestern  
Region

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# Environmental Assessment

## Akers, Curtis Canyon, Miller Flats, Prather and Smith Grazing Allotment Management

**Sacramento Ranger District, Lincoln National Forest  
Otero County, New Mexico**

All or portions of:

Township 16 South, Range 13 East, Sections 24-26, 35, 36  
Township 16 South, Range 14 East, Sections 19-22, 25-36  
Township 16 South, Range 15 East, Section 31  
Township 17 South, Range 13 East, Sections 1, 13, 24  
Township 17 South, Range 14 East, Sections 1-28  
Township 17 South, Range 15 East, Sections 5-9, 18, 19

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# CHAPTER 1 – PURPOSE OF & NEED FOR ACTION

## Introduction

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The Lincoln National Forest Interdisciplinary Range Analysis Team has conducted an environmental analysis and prepared this Environmental Assessment (EA) documentation in order to describe alternatives considered for management of five grazing allotments on the Sacramento Ranger District and the potential effects associated with each alternative. The document is provided for public review and comment and for review and consideration by the Decision Maker when making her decision. The analysis has been conducted in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations.

The EA is based upon background information about the allotments including current and past surveys and monitoring data, the desired future condition of resources on the allotments derived from direction and guidelines in the Lincoln NF Land and Resource Management Plan (Forest Plan) as well as from Resource Specialist's knowledge of the allotments. This information, provided in Chapter 1, forms the basis for the Forest Service's Proposed Action and the current analysis. Chapter 2 provides detailed descriptions of the Forest Service's Proposed Action Alternative for management of the allotments and the Continue Current Management and No Action (No Permit Issued/No Grazing) Alternatives. Chapter 3 includes descriptions of the current condition of the range allotments being analyzed, and of the direct, indirect and cumulative effects of applying each of the alternatives on the allotments and on the resources present. Chapter 4 lists the members of the Interdisciplinary Analysis Team and others consulted with before and during the analysis. Supporting documents, including Resource Specialists' Reports containing details of the existing condition and resource effects, are listed in the References section and are included in the Project Record maintained in the Supervisor's Office, Lincoln National Forest, Alamogordo, New Mexico. Appendices contain maps as well as background range data, range monitoring results and lists of existing structural improvements.

## Background

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The Lincoln Forest Plan (1986, as amended) has determined that Management Areas 4I, 4N and 4U which contain the Akers, Curtis Canyon, Miller Flats, Prather and Smith Allotments, are suitable for livestock grazing. Authority to manage rangeland resources is derived from laws enacted by Congress that authorize the Secretary of Agriculture to administer National Forest System (NFS) lands and issue necessary regulations<sup>1</sup>. Where consistent with the goals, objectives, standards and guidelines of Forest Plans, federal regulations<sup>2</sup> direct the Forest Service to manage forage-producing lands for livestock grazing.

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<sup>1</sup> Summaries of these laws and regulations are found in the Forest Service Manual (FSM) 2201. Forest Service objectives and policies for rangeland management are found in FSM 2202 and FSM 2203.

<sup>2</sup> 36 CFR 222.2 [c]

The Akers, Curtis Canyon, Miller Flats, Prather and Smith Grazing Allotments are located on the Sacramento Ranger District of the Lincoln National Forest. The allotments lay in the east-central part of the District, 10 to 15 miles southeast of Cloudcroft, NM. New Mexico Highways 130 and 24 in the vicinity of Mayhill and Weed run through the allotments (See Vicinity map in Chapter 2 and Allotment Maps in Appendix 1). The allotments range in elevation from approximately 6,600 feet to 8,000 feet with vegetation following typical elevational bands with pinyon/juniper woodlands and blue grama-dominated grasslands at the lower elevations, ponderosa pine with grassy openings at mid-elevations, and limited mixed-conifer forest with Kentucky bluegrass occurring on northern exposures at the highest elevations.

Together, the five allotments total 20,534 acres and represent the analysis area for this environmental analysis. The existing permits for these allotments provide for the use of a total of 3,178 animal-unit-months (AUMs) of forage on the five allotments.<sup>3</sup> Specific information on livestock stocking levels on each allotment is provided in Chapter 3.

Management at the currently permitted livestock numbers over the last 10- to 20-years on these allotments has provided for improving range conditions with upward apparent trends<sup>4</sup> in both range vegetation and soil conditions, based on monitoring conducted in 2007 and compared with results for the same monitoring conducted over the last 30 to 50 years. See Chapter 3 and Appendix 2 for actual use tables and range monitoring results.

## Purpose of and Need for Action

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The **purpose and need** for the actions being proposed by the Sacramento District Ranger are to continue to authorize livestock grazing on these allotments in a manner consistent with federal laws and regulations and Forest Plan direction and objectives while ensuring that grazing management practices, as administered through a Forest Service Term Grazing Permit, provide for movement toward or maintenance of desired resource conditions.

The need for action at this time is to formally establish management and administration for these allotments that is effective and responsive to changing

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<sup>3</sup> The Lincoln NF has chosen to describe the amount of forage to be permitted for use each year on an allotment in Animal Unit Months (AUMs); one AUM reflects the amount of forage used by one mature cow and her calf in one month. To calculate this yearly allocation, the number of mature cattle is multiplied by the number of months they are present on the allotment giving head months (HMs), a figure representing the actual use for a year for the allotment. (See Appendix 2 for actual use tables for each allotment). This actual use figure is then multiplied by a factor of 1.32 to calculate the AUMs. The 1.32 factor is being used on the Lincoln in order to remain consistent with current Forest Service statistical reporting methods.

<sup>4</sup> **Range Condition**, as evaluated and ranked by the Forest Service, is a subjective expression of the status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community. Soundness and stability are evaluated relative to a standard that encompasses the composition, density, and vigor of the vegetation and the physical characteristics of the soil. **Trend** expresses the direction of change, if any, in condition in response to past and existing livestock management practices and land use activities combined with other environmental factors. The trend of a rangeland area may be judged by noting changes in vegetation attributes such as species composition, density, cover, production, and frequency. *USDA/USDI, Interagency Technical Reference, 1996.* **Apparent trend** is an interpretation of trend based on observation and professional judgment at a particular point in time. *Forest Service Handbook R3 2209.21 Chapter 40.*

resource conditions such as drought or wildfire. The National Environmental Policy Act (NEPA) calls for the analysis of alternatives for management, and the need to do so at this time was established by Congress in section 504 of the Emergency Supplemental Appropriations and Rescissions Act of 1995, as amended (Public Law 104-19, 109 Stat. 212).

Action is needed on these allotments for several additional specific reasons:

- There is a need to improve the distribution of livestock in the Akers, Prather and Miller Flats Allotments and to increase management flexibility. The opportunity exists to accomplish these objectives through the construction of water system improvements with the financial assistance of the USDA Natural Resources Conservation Service Environmental Quality Incentive Program (EQIP). These improvements will contribute to maintenance of or movement toward desired conditions.
- Effective and timely response to changing environmental conditions, such as drought, fire, or seasonal fluctuations in forage production, is essential to managing for maintenance and improvement in desired rangeland conditions. Therefore, there is also a need to incorporate formally into the administration and management of these allotments the adaptive management principles established in 2004 as Forest Service Policy in Chapter 90 of Forest Service Handbook (FSH) 2209.13.
- The proposed action also addresses the need, as recognized in the Forest Plan (page 35), to facilitate the management and administration of smaller allotments by combining the Akers and Prather Allotments into one allotment.

These five allotments are being analyzed together because of their geographic proximity, the shared management of the Miller Flats Allotment under two permit holders who are also the individual permittees on the other four allotments, their similar management needs, and their common pinyon/juniper vegetation type over most of the acreage.

## **Desired Future Condition & Forest Plan Direction**

The desired future conditions for range resources and infrastructure on these five grazing allotments provide for:

- management of the grazing operations on NFS lands using a system that is responsive to changing climatic or environmental conditions;
- management for good or better range condition ratings with stable or upward indicators of long-term trend in range vegetation and soil stability;
- eradication of noxious weed infestations;
- the installation and maintenance of structural improvements, such as water-supply systems, that enhance management control and flexibility and allow for effective distribution of forage use; and

- the most efficient allotment configuration that facilitates both management by permittees and administration by the Forest Service.

The desired future conditions for other resources on these five grazing allotments provide for:

- the maintenance of stable soils to provide for stable or upward trends in soil condition and to protect archaeological resources.
- the maintenance of upland watershed conditions that minimize sedimentation to the Rio Penasco.
- the maintenance of quality habitat for a diversity of plant and animal species.

The Lincoln Forest Plan provides the following guidance, management direction and standards and guidelines for management activities:

- manage and enhance the vegetation resource and bring permitted grazing use in balance with the forage allocated for use by domestic livestock; place all allotments under appropriate levels of management. (pg. 12)
- produce livestock forage consistent with other resources and uses. (pg. 12)
- allotments will be combined into efficient, effective units whenever opportunity arises. (pg. 35)
- provide opportunities to satisfy local demand for Forest resources. (pg. 13)
- manage for a favorable flow of water for users by improving or maintaining all watersheds to a satisfactory or higher condition. (pg. 13)
- maintain water quality to meet or exceed appropriate standards. (pg. 13)
- maintain on-site soil loss within established tolerance levels. (pg. 13)
- manage riparian areas to provide optimum vegetation and ecological diversity. (pg. 13)
- provide for protection of wildlife values in livestock and wildlife water developments. (pg. 33)
- provide escape and entrance ramps on water developments as developed or maintained. (pg. 33)
- remove fences and loose wire as abandoned or replaced. (pg. 33)
- provide for a diversity of plant and animal species through improved habitat management. (pg. 11)
- manage habitat for wildlife populations consistent with goals outlined in the New Mexico Comprehensive Plan and consistent with other resource values. (pg. 11)

- manage for wildlife management indicator species (MIS) where key vegetation occurs. (pg. 31)
- provide for the improvement of habitat for threatened and endangered species to meet the goals and intent of the Endangered Species Act of 1973. (pg. 11)
- forage use by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species. (replacement page 35, amendment 9)
- provide for management of sensitive species in accordance with Regional requirements. (pg. 12)
- conduct cultural resources inventories for proposed ground-disturbing projects. (pg. 28)
- comply with the National Historic Preservation Act (NHPA) and Executive Order 11593, Protection and Enhancement of the Cultural Environment. (pg. 28)
- Identify key ungulate forage monitoring areas. These key areas will normally be 1/4 to 1 mile from water, located on productive soils on level to intermediate slopes, and be readily accessible for grazing. Size of the key forage monitoring areas could be 20 to 500 acres. In some situations, such as high mountain meadows with perennial streams, key areas may be closer than 1/4 mile from water and less than 20 acres. Within key forage monitoring areas, select appropriate key species to monitor average allowable use. (replacement page 35, amendment 9)

The Lincoln Forest Plan provides the following Range Management Prescriptions for Management Areas 4I, 4N and 4U which contain these allotments:

- Existing range improvements will be maintained and new water storages constructed. (pg. 129)
- Primary emphasis is on range management [Management Area 4N]. The large numbers of existing structures will be maintained and additional fences and water storages developed to distribute and control livestock. (pg. 144)

## **Public Involvement**

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Notice of the intention to initiate analysis of the proposed action for these allotments has been provided in the Schedule of Proposed Actions (SOPA) as of 1/1/07 at <http://www.fs.fed.us/sopa/> . A letter dated 5/21/07 was sent to the permit holders of the allotments under consideration, to adjacent allotment permit holders, to members of the public and non-profit groups and livestock-interest entities who have expressed interest in livestock grazing activities and to state, county and local governmental entities describing the proposed action for management of these allotments and inviting them to provide any

comments regarding concerns or opportunities related to the proposal. On 5/22/07 a legal notice was published in the *Alamogordo Daily News*, newspaper of record for the Sacramento Ranger District, notifying any other interested parties of the opportunity to receive and provide comments on the proposal.

## **Scoping Response / Issue Identification**

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Four scoping response letters were received during the scoping period, one from one of the permit holders on two of the allotments being analyzed, one from the Hopi Tribe, one from the State of New Mexico Environment Department and one from the NM Department of Agriculture.

Concern was expressed for the invasion of woody species of pinyon, juniper and oak-brush that have invaded over the last 90 years and the possible need to return traditional fire or to control the invading species through harvest management. This concern is acknowledged and recognized as a legitimate concern; however, the proposed action and this analysis pertain to actions to be accomplished through the authorization and management of livestock grazing. Control of pinyon and juniper density is not accomplished through livestock management; therefore, address of this concern is outside of the scope of this action and analysis.

A second concern was expressed regarding “wildlife invasion” by elk and their potential to create negative impacts for livestock grazing on the allotments. The person submitting the comment encourages the monitoring of the herd size and control of their impacts by the NM Game and Fish Department so that elk can co-exist with livestock grazing. This concern is acknowledged by the Interdisciplinary Team. Management and control of the local elk herd is the responsibility of the NM Department of Game and Fish and is therefore outside the scope of this action and analysis.

The same letter expressed concern for the loss of Mexican spotted owl habitat to past wildfires in the area and provided encouragement for working toward healthy ecosystems that would allow natural fire to work but not destroy “every tree for miles”, probably allowing the return of the owls over time. This comment is acknowledged and was considered during this analysis. Because the reintroduction of natural fire is outside the scope of this proposal, and because no effects are anticipated for the Mexican spotted owl due to the current absence of suitable mixed-conifer habitat because of the wildfires, this comment does not represent an issue or create the need for an additional action alternative.

The Hopi Tribe expressed their desire to be informed of any projects that adversely affect prehistoric cultural resources and of the actions to be taken to protect such sites. The Interdisciplinary Team conducting this analysis includes a professional Archaeologist who has conducted a review and surveys of the allotments and prepared the Archaeological Report for submission to the State Historic Preservation Office in compliance with the National Historic Preservation Act of 1966. The report makes a finding of no adverse effects on cultural resources. The Project Record contains the records and report documenting the review and surveys and the clearance process. No known

grazing-sensitive sites are present. If any are located at a future date that could be adversely affected, the Tribe will be provided copies of the survey reports and protective measures to be applied. The State Historic Preservation Office has concurred with the finding of no adverse effect for the actions under consideration in this analysis.

The NM Environment Department noted that there are numerous small springs but no other perennial waters present on these allotments; that the allotments are located in the uplands associated with the Rio Penasco and Agua Chiquita Creek, a tributary to the Rio Penasco. They see no indication, based on the information provided, that grazing plans will have a negative impact on the watershed. The Soil and Watershed Report, part of the Project Record for this analysis, provides further site-specific information on the effects of the alternatives considered in detail.

The NM Department of Agriculture responded that they do not currently have any specific issues, concerns or opportunities for consideration.

Issues are defined as concerns about the effects of a proposed action that are not addressed by the project design or alternatives to the proposed action. The subject of an issue must be within the scope of the proposed action and relevant to the decision to be made, not already decided by law, regulation or higher-level decisions, and it must be supported by scientific or factual evidence. Concerns or issues that meet these criteria, and that also reach a geographic extent, duration or intensity of concern, may be determined to be key or significant issues and may drive the development of alternative actions for analysis if they have not been resolved or addressed in an alternative already.

The comments received during scoping for this analysis have been found to be outside the scope of this analysis or had been addressed through the design of the proposed action and during the course of the analysis. No “significant issues” that would lead to the need for the development of additional alternatives have been identified.

## **Permit and Consultation Requirements**

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Consultation with the New Mexico State Historic Preservation Office, in compliance with the National Historic Preservation Act of 1966, has been completed.

Consultation with the US Fish and Wildlife Service, NM Ecological Services Field Office (FWS), is not required because findings of no effects were made by the professional Biologist assigned to the Interdisciplinary Team for all of the federally listed or proposed Threatened or Endangered plant or animal species that could occur in the analysis area, and their critical habitats, through the implementation of the selected alternative, as documented in the Biological Assessment. A further review of effects findings will be conducted if new species are proposed or listed for this area, or if unanticipated effects are found. This review could result in the initiation of consultation with the FWS at a future date if effects findings so indicate.

The selected alternative for management of the five allotments will be implemented through Allotment Management Plans (AMPs) and Annual Operating Instructions (AOIs), issued by the District Ranger, under a Term Grazing Permit issued for up to 10 years. Additional permits may be issued as long as desirable resource conditions continue to be maintained or are moving toward desired future conditions.

State of New Mexico permits, if required for the new water system structures, will be acquired prior to construction.

## **Decision to be Made**

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The Sacramento District Ranger is the responsible official who will decide, based on the information provided in this EA, the project record and other considerations, whether to continue livestock grazing on one, several or all of these allotments; if so, under what conditions; whether water system improvements will be constructed on the Akers, Prather and Miller Flats allotments; and whether the Akers and Prather Allotments shall be merged into one allotment. The decision will also include a determination of consistency with the Forest Plan, National Forest Management Act, National Environmental Policy Act and applicable laws, regulations and executive orders.

In addition to this decision, the Ranger will also make a finding on the significance of the environmental effects anticipated from the implementation of the selected action and whether an environmental impact statement (EIS) needs to be prepared.

## **Future Review of the Decision**

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Adaptive management, as described in this document, is based on the cycle of implementation of a course of action, monitoring of conditions and results, and adjustment of management as needed to continue to steer a stated course. Monitoring of adaptive management is designed to answer the question “Is acceptable progress being made towards attainment of resource management objectives and thus desired conditions?” Changes in management actions are considered and implemented as appropriate when monitoring indicates that current actions are not being effective in reaching defined objectives. Through the implementation of a NEPA decision that includes adaptive management principles and which identifies an array of possible management practices, the grazing permit, AMP and/or AOI may be administratively modified or re-issued over time, based on monitoring, as long as the modified permit, AMP and/or AOI are within the bounds of the original adaptive management decision and supporting NEPA analysis and documentation. (FSH 2209.13, Section 92.23b)

A project-level, NEPA-based decision, such as the decision to be made based upon this analysis, remains valid as long as the authorized activity complies with laws, regulations and the Forest Plan, and is within the scope of the decision. Reviews of existing project-level decisions must be conducted on an interval of at least 3-5 years to determine if the grazing activity, permit(s), AMP and AOIs are consistent and within the bounds of the existing NEPA documentation, if that analysis and documentation continue to remain valid, or if new information exists that requires some further analysis and potential

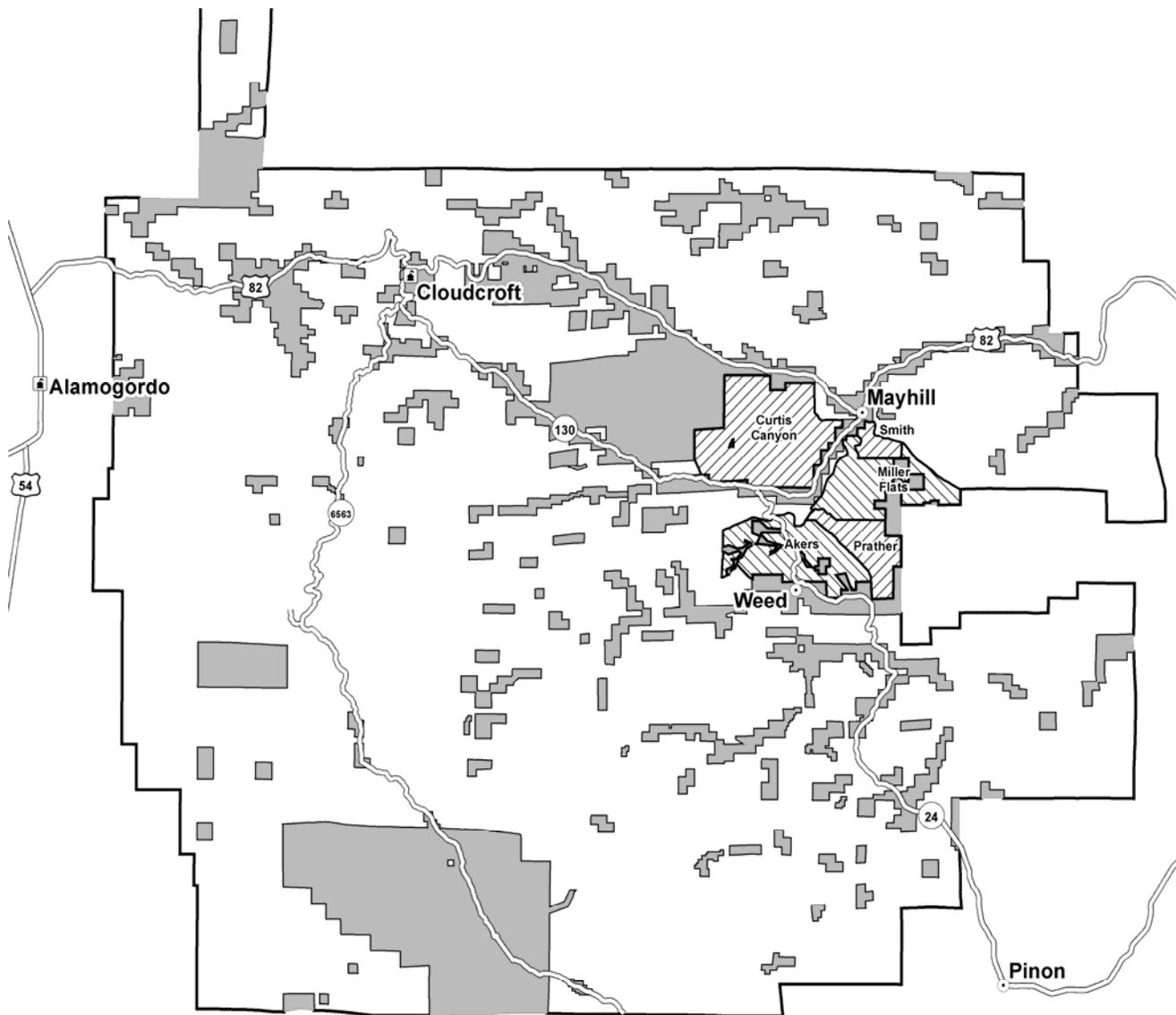
modification of the activity. If the authorized officer determines that correction, supplementation, or revision is not necessary, implementation of existing decisions shall continue. The findings of the review shall be documented in the program or project file. (FSH 1909.15, Section 18 and FSH 2209.13, Sec. 96)

## CHAPTER 2 – Proposed Action and Alternatives

This chapter describes the alternatives considered for the management of the Akers, Curtis Canyon, Miller Flats, Prather and Smith Allotments. The alternative descriptions provide the basis for a comparison of alternatives and define the differences between actions which would be taken with each alternative. Monitoring to be conducted is also described.

A map of the general location of the allotments is provided here. Detailed maps of each allotment showing proposed improvements are provided in Appendix 1.

**Figure 1 – Vicinity Map for Allotments**



The following features are common to both of the action alternatives, the Proposed Action and the Continue Current Action Alternatives.

- New Term Grazing Permits may be issued for the allotments authorizing continued grazing for 10 years.
- Stocking levels will be expressed on the Term Grazing Permits as livestock numbers based on the number of Animal Unit Months (AUMs) analyzed here.
- Pasture moves will be determined annually based on current conditions and will be outlined in the Annual Operating Instructions (AOIs).
- A management objective of light to moderate grazing intensity on blue grama-dominated rangelands and light to conservative grazing intensity on Kentucky bluegrass-dominated rangelands will be established.
- Existing structural range improvements will be maintained and reconstructed as needed to serve their intended purposes.
- An adaptive management strategy will continue to be implemented. Based on annual monitoring and with consideration of criteria established in the selected alternative, future AOIs may alter the authorized number of livestock, season of use, grazing system<sup>5</sup> or intensity. These actions may be taken, individually or in combination, to provide sufficient growing-season production and reproduction in forage plant species to maintain plant vigor over time and to continue progress toward desired conditions. Such changes would generally be determined in advance and included in the AOI describing authorized management actions for the upcoming grazing season. These changes will not exceed the limits for timing, intensity and duration defined in the selected alternative. Additional NEPA analysis will not be required to implement these changes which may include the following:

Modification of pasture rotation system: modification of the order of pasture rotation, growing-season deferment or season-long rest of specific areas.

Modification of time in pastures: change of the grazing season dates such as delayed or accelerated entry into or departure from seasonal pastures or grazing units.

Change of livestock numbers: change in authorized livestock numbers for a period of time.

Modification of grazing intensity: change of the grazing intensity guideline for a pasture or allotment for a period of time.

Temporary suspension of grazing: suspension of grazing on an allotment needed for protection of key resource values when the measures above are not sufficient.

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<sup>5</sup> **Grazing system** – a method of grazing management which defines systematically recurring periods of grazing and deferment for two or more pastures or management units including intermittent grazing, deferred grazing, deferred-rotation and short-rotation grazing. USDA Forest Service R3 Rangeland Analysis and Management Training Guide. 1997.

## Alternative 1 – Proposed Action

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### Proposed Action

The following Proposed Action has been developed to meet the project's purpose and need. The Proposed Action consists of five components: authorization, new improvements, maintenance of existing improvements, adaptive management, and monitoring. The proposed action follows current guidance from Forest Service Handbook 2209.13, Chapter 90 (Grazing Permit Administration; Rangeland Management Decision-making).

### Authorization

The Sacramento District Ranger, Lincoln National Forest, proposes to continue to authorize livestock grazing on five allotments under the following terms:

1. Akers and Prather Allotments – Continue authorization of livestock grazing for use of up to 1299 AUMs, permitted on a year-long basis on one allotment formed by combining these two allotments.
2. Curtis Canyon Allotment – Continue authorization of livestock grazing for use of up to 541 AUMs, permitted on a year-long basis.
3. Miller Flats Allotment – Continue authorization of livestock grazing for use of up to 1117 AUMs, permitted on a year-long basis<sup>6</sup>.
4. Smith Allotment – Continue authorization of livestock grazing for use of up to 224 AUMs, permitted for up to a 10-month period each year.

A management objective of light to moderate grazing intensity (as defined by Holechek & Galt, 2000<sup>7</sup>) on blue grama-dominated rangelands in pinyon/-juniper and ponderosa pine habitats, and light to conservative intensity<sup>1</sup> in mixed-conifer habitat, will be employed to maintain and/or improve rangeland vegetation, water quality and long-term soil productivity on the allotments. Grazing will continue to be managed with a deferred rotational system and with improvements that assist with livestock distribution.

The grazing intensity proposed is a continuation of current practices and is based on condition and trend studies completed in 2007, actual use data on each allotment from at least the past 20 years (see Appendix 2), and the effects of this use on resource conditions. It also reflects the annual forage production available for cattle on the allotments considering climate, forage use by wildlife, and the duration, timing and intensity of the proposed livestock grazing.

Term Grazing Permits will be issued for up to ten years, and additional permits may be issued as long as desirable resource conditions continue to be maintained or are moving further toward desired future conditions.

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<sup>6</sup> The Proposed Action called for authorization of 1114 AUMs. Subsequent review of the Permits for this allotment has revealed that the 1114 figure is in error and should have been stated as 1117 Animal Unit Months.

<sup>7</sup> Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22 (3):11-14.

## **New Range Improvements**

(See attached maps for locations of improvements)

The Proposed Action includes the following structural improvements:

Akers and Prather Allotments combined:

1. Install 6.0 miles of 1 ¼" polyethylene pipe.
2. Install eight livestock water troughs.
3. Clean out 4 existing earthen tanks.

Miller Flats Allotment:

1. Install 5.1 miles of 1 ¼" polyethylene pipe.
2. Install eight livestock water troughs.
3. Clean out 2 existing earthen tanks.
4. Install three 12,000-gallon water storage tanks.

Curtis Canyon and Smith Allotments have no new improvements proposed.

## **Maintenance of Existing Range Improvements**

The Term Grazing Permits will include a list of all improvements which the permittees will continue to maintain at a level that effectively serves their intended purposes. Range improvements will be inspected periodically during the term of the permit to document condition. Annual Operating Instructions (AOIs) will identify range improvements in need of maintenance or reconstruction.

## **Adaptive Management**

The Proposed Action includes the application of adaptive management principles. Adaptive management is designed to provide sufficient flexibility so that management can be adjusted in recognition of changing circumstances such as drought, fire, or seasonal fluctuations in forage production. If monitoring indicates that progress toward desired conditions is not being achieved on a particular allotment, management will be modified in cooperation with the permittee(s). Changes may include administrative decisions such as the specific number of livestock authorized annually, specific dates of grazing, class of animal (cow/calf pairs vs. steers or heifers, etc.) or livestock herd movement, but such changes will not exceed the limits for timing, intensity, and duration defined in this proposed action. Timing is the time of year the livestock are present in a pasture. Intensity is the degree to which herbage is removed through grazing and trampling by livestock. Duration is the length of time livestock are present in a given pasture.

When adjustments are needed, they are implemented through the Annual Operating Instructions, maintaining numbers and management in such a way that annual indicators of progress toward desired conditions, such as forage use, are consistent with achieving those desired conditions. This proposed action allows plant, soil, wildlife habitat, and watershed conditions to be maintained or improved.

Under the adaptive management approach incorporated into this proposed action, annual rangeland monitoring may indicate the need for administrative changes in livestock management within the scope of the proposed action. The need for these changes would be based on the magnitude of, or repeated

re-occurrence of deviations from guidelines provided, or because of indications of a lack of progress toward desired resource conditions. Annual Operating Instructions and Allotment Management Plans (AMPs) would be modified as appropriate to adapt management within the parameters of this proposed action. These changes may include such things as adjustments in the number of head stocked on an allotment in a particular year or season, or periods of rest, deferment or non-use of portions or all of an allotment for an appropriate period of time, as conditions warrant. The timing of such management changes would reflect the urgency of the need for adaptation. This approach to management would more proactively respond to the need for management changes and address of climatic conditions and other dynamic influences on the system in order to more effectively make progress toward or maintain desired conditions for rangeland resources.

Future proposals to use other resource management tools, such as prescribed fire for the control of juniper encroachment, will be subject to analysis under the National Environmental Policy Act. Adaptation of livestock management may be applied to accommodate use of these tools.

### **Monitoring**

The Proposed Action includes monitoring. The type and frequency for this monitoring will include:

Compliance Monitoring: This will involve scheduled and unscheduled inspections to ensure that all livestock and grazing management measures stipulated in permits, AMPs and AOs are being implemented (e.g. cattle numbers, on/off dates, rotation schedules, maintenance of improvements, mitigation measures).

Annual Rangeland Monitoring: Annual indicators of rangeland conditions such as forage utilization, stubble height, species composition and/or soil cover will be monitored on each allotment at key areas, and other areas may be monitored as necessary and feasible. In addition, other parameters such as soil moisture and pellet groups may be monitored as appropriate. Methods may include accepted range science protocols and/or the Rapid Assessment Methodology (RAM) developed by the NM Range Improvement Task Force (C.D. Allison, *et al*, 2007<sup>8</sup>).

The purpose of annual rangeland monitoring is to determine:

1. If individual plants have had an opportunity to recover, grow and reproduce following grazing impacts;
2. If sufficient residual forage remains across an allotment at the end of the growing season to provide for other resource values or requirements such as soil stability, wildlife habitat, and dormant season use;
3. If maintenance or improvement of rangeland conditions are indicated;

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<sup>8</sup> Allison, Christopher D., *et al*. 2007. Rapid Assessment Methodology for Proactive Rangeland Management. *Rangelands* 29 (2): 45-50.

4. If management adjustments are warranted for the following season to provide for the physiological needs of the primary forage species.

Holechek and Galt (2000, 2004<sup>9</sup>) provide appropriate residual forage guidelines as indicators of grazing intensity for common forage species and growth forms. These guidelines are used as a tool to assist in maintaining or improving range conditions. Under this Proposed Action, grazing intensity, as measured at the end of the growing season, will be managed for light to moderate levels in pinyon-juniper and ponderosa pine habitats, and light to conservative levels in mixed-conifer habitat.

Meeting or exceeding guidelines established for annual indicators is not in and of itself a management objective, as point-in-time measurements do not provide conclusive information about resource condition and trend. When and where residual forage conditions on an allotment are obviously better than that called for under these guidelines, actual measurements may or may not be recorded every year for all key areas; however, at a minimum, observed general forage conditions at the end of each growing season will be documented by rangeland managers in each allotment file. The level of forage use may be revised as conditions warrant and as monitoring indicates the status of progress toward desired future conditions.

The key forage species to be monitored on these allotments in blue grama-dominated grasslands will be blue grama (*Bouteloua gracilis*), and sideoats grama (*Bouteloua curtipendula*); and blue grass (*Poa pratensis*) in mixed-conifer stands. As an annual indicator, residual forage conditions will be determined by ocular estimates (where conditions are obvious), or by measuring forage stubble height (residual leaf length of key forage species) using generally accepted sampling methods such as those called for in the Rapid Assessment Methodology.

Effectiveness Monitoring: Scheduled and unscheduled monitoring of the effectiveness of management activities in maintaining or achieving the desired conditions listed above will occur. This will involve monitoring of range condition and trend, including soil and watershed condition indicators, at established sites using accepted range science protocols.

## **Alternative 2 – Continue Current Management Alternative**\_\_\_\_\_

Alternative 2 continues current management and the same numbers of livestock as currently permitted on the five allotments.

### **Authorization**

The Sacramento District Ranger, Lincoln National Forest, would continue to authorize livestock grazing on five allotments under the following terms:

1. Akers Allotment – Continue authorization of livestock grazing for use of up to 792 AUMs permitted on a year-long basis.

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<sup>9</sup> Holechek, J. and D. Galt. 2004. More on Stubble Height Guidelines. *Rangelands* 26 (4):3-7.

2. Curtis Canyon Allotment – Continue authorization of livestock grazing for use of up to 238 AUMs permitted on a year-long basis, and up to 303 AUMs permitted from May 1 through October 31.
3. Miller Flats Allotment – Continue authorization of livestock grazing for use of up to 839 AUMs permitted on a year-long basis, and 277 AUMs from November 1 through April 30.
4. Prather Allotment – Continue authorization of livestock grazing for use of up to 507 AUMs permitted on a year-long basis.
5. Smith Allotment – Continue authorization of livestock grazing for use of up to 224 AUMs permitted from September 1 through June 30 each year.

The Akers and Prather Allotments will not be combined under this alternative.

A management objective of light to moderate grazing intensity (as defined by Holechek & Galt, 2000<sup>10</sup>) on blue grama-dominated rangelands in pinyon/-juniper and ponderosa pine habitats, and light to conservative intensity in mixed-conifer habitat, will be employed to maintain and/or improve rangeland vegetation, water quality and long-term soil productivity on the allotments. Grazing will continue to be managed with a deferred rotational system and with improvements that assist with livestock distribution.

The grazing intensity proposed is a continuation of current practices and is based on condition and trend studies completed in 2007, actual use data on each allotment from at least the past 20 years (see Appendix 2), and the effects of this use on resource conditions. It also reflects the annual forage production available for cattle on the allotments considering climate, forage use by wildlife, and the duration, timing and intensity of the proposed livestock grazing.

Term Grazing Permits will be issued for up to ten years, and additional permits may be issued as long as desirable resource conditions continue to be maintained or are moving further toward desired future conditions.

### **New Range Improvements**

Under this alternative, **no** improvements to the water supply and storage systems will be constructed.

### **Maintenance of Existing Range Improvements**

The Term Grazing Permit(s) will include a list of all improvements which the permittee(s) will continue to maintain at a level that effectively serves their intended purposes. Range improvements will be inspected periodically during the term of the permit to document condition. Annual Operating Instructions (AOIs) will identify range improvements in need of maintenance or reconstruction.

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<sup>10</sup> Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22 (3):11-14.

### **Adaptive Management**

Adaptive management, as described for Alternative 1 above, will continue to be applied under this alternative.

### **Monitoring**

Monitoring, as described for Alternative 1 above, will be applied to management under this alternative.

## **Alternative 3 – No Action/No Grazing Alternative**

Alternative 3 is the No Action Alternative required by regulations implementing the National Environmental Policy Act found at 40 CFR 1502.14(d) and by FSH 2209.13 Chapter 90. Under Alternative 3, livestock grazing on the Akers, Prather, Miller Flats, Curtis Canyon and Smith Allotments will be phased out over a 2-year period and the Term Grazing permits will be cancelled.

### **Authorization**

The Sacramento District Ranger, Lincoln National Forest, would authorize livestock grazing **for two years only** on the Akers, Curtis Canyon, Miller Flats, Prather and Smith Allotments under the following terms:

1. Akers Allotment – Continue authorization of livestock grazing for use of up to 792 AUMs permitted on a year-long basis.
2. Curtis Canyon Allotment – Continue authorization of livestock grazing for use of up to 238 AUMs permitted on a year-long basis, and up to 303 AUMs permitted from May 1 through October 31.
3. Miller Flats Allotment – Continue authorization of livestock grazing for use of up to 839 AUMs permitted on a year-long basis, and 277 AUMs from November 1 through April 30.
4. Prather Allotment – Continue authorization of livestock grazing for use of up to 507 AUMs permitted on a year-long basis.
5. Smith Allotment – Continue authorization of livestock grazing for use of up to 224 AUMs permitted from September 1 through June 30 each year.

The allotments would be managed as independent units during a 2-year phase-out period. A management objective of light to moderate grazing intensity (as defined by Holechek & Galt, 2000<sup>11</sup>) on blue grama-dominated rangelands in pinyon/juniper and ponderosa pine habitats, and light to conservative intensity in mixed-conifer habitat, will be employed to maintain and/or improve rangeland vegetation, water quality and long-term soil productivity on the allotments. Grazing will continue to be managed with a deferred rotational system and with the existing improvements that assist with livestock distribution.

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<sup>11</sup> Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22 (3):11-14.

The grazing intensity proposed is a continuation of current practices and is based on condition and trend studies completed in 2007, actual use data on the allotment from the past 20 years (see Appendix 2), and the effects of this use on resource conditions. It also reflects the annual forage production available for cattle on the allotment considering climate, forage use by wildlife, and the duration, timing, and intensity of the proposed livestock grazing.

Authorized use will continue to be controlled during the phase-out period through annual operating instructions using an adaptive management strategy, as has been used during the current drought, and as described above in Alternative 1.

### **New Range Improvements**

Under this alternative, **no** improvements will be constructed on either allotment.

### **Maintenance of Existing Range Improvements**

The Grazing Permit(s) will include a list of all improvements which the permittee(s) will continue to maintain at a level that effectively serves their intended purposes during the two years that livestock are present.

### **Adaptive Management**

Adaptive management, as described for Alternative 1, will continue to be applied under this alternative during the two-year phase-out period.

### **Monitoring**

Monitoring, as described for Alternative 1 above, will be applied to management under this alternative during the two-year phase-out period.

### **Cancellation of the Grazing Permit**

After cancellation of the Term Grazing Permit, existing structural improvements that contribute to resource protection or that are important to other resources and functions, such as water sources for wildlife populations or fire control, will remain but will not be maintained unless this activity is picked up and funded under another resource area on the Lincoln NF, or by a cooperating partner. Removal of improvements losing their functionality will have to be authorized under a future NEPA decision if new ground disturbance is anticipated. Where allotment boundary fences are necessary, the maintenance of these fences may be reassigned to adjacent grazing permit holders in order to maintain the integrity of the boundaries of adjacent allotments.

The cancellation of the term permit(s) for these allotments under this alternative does not represent an official administrative closing of the allotments; rather, it would represent the suspension of grazing on the allotments for an undetermined amount of time, until or if a different decision is made. This alternative could be selected by the responsible official in situations of compelling resource concerns where higher resource values may be at risk and conflict directly with livestock grazing management.

## Comparison of Alternatives and Effects

Akers, Curtis Canyon, Miller Flats, Prather & Smith Allotments	Alternative 1	Alternative 2	Alternative 3
<p><b>Authorization (AUMs, Season of Use &amp; Term)</b></p>	<p><b>Year-long permits -</b>  <b>-Akers &amp; Prather -</b> 1299 AUMs combined  <b>-Curtis Canyon -</b> 541 AUMs  <b>-Miller Flats -</b> 1117 AUMs  <b>10-months/year permit</b>  <b>-Smith -</b> 224 AUMs  <b>All for 10-year terms</b></p>	<p><b>-Akers -</b> 792 AUMs year-long  <b>-Curtis Canyon -</b> 238 AUMs year-long plus 303 AUMs for 6 months  <b>-Miller Flats -</b> 1116 AUMs, portion year-long, portion 6 mo.  <b>-Prather -</b> 507 AUMs year-long  <b>-Smith -</b> 224 AUMs for 10 months/year  <b>All for 10-year terms</b></p>	<p>Same as Alternative 2 for two-year term</p>
<p><b>Grazing Intensity</b></p>	<p>Light to Moderate in P/J and pine            Light to Conservative in mixed-conifer</p>	<p>Light to Moderate in P/J and pine            Light to Conservative in mixed-conifer</p>	<p>Light to Moderate in P/J and pine            Light to Conservative in mixed-conifer for 2 years</p>
<p><b>New Improvements</b></p>	<p><b>In total:</b>            11.1 miles water pipe            16 stock water troughs            3 12,000-gallon water storage tanks            Clean out 6 existing earthen water tanks</p>	<p>None</p>	<p>None</p>
<p><b>Maintenance of Improvements</b></p>	<p>During term of Permit</p>	<p>During term of Permit</p>	<p>Discontinued after 2 years</p>
<p><b>Monitoring</b></p>	<p>Monitoring of implementation and effectiveness of Adaptive Management during term of permit</p>	<p>Monitoring of implementation and effectiveness of Adaptive Management during term of permit</p>	<p>Monitoring discontinued after 2 years</p>
<p><b>Range Effects</b></p>	<p>Enhanced management flexibility and livestock distribution due to improved water distribution and the combining of two allotments</p>	<p>Management flexibility and livestock distribution not enhanced through water system improvements and combining of allotments</p>	<p>Livestock use discontinued after 2 years</p>
<p><b>Watershed Effects</b></p>	<p>Minor effects to soils and water lessened through enhanced management flexibility due to improved water distribution</p>	<p>Minor soils and water effects remain unchanged without enhanced management provided by water system improvements.</p>	<p>Minor effects until livestock use is discontinued after 2 years</p>

<b>Akers, Curtis Canyon, Miller Flats, Prather &amp; Smith Allotments</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
<b>Wildlife/Plants Effects</b>	Enhanced water availability for wildlife	Continue present water availability for wildlife	Water availability decreased after 2 years
<b>Archaeological Effects</b>	No adverse effects on archaeological resources	No adverse effects on archaeological resources	No adverse effects on archaeological resources
<b>Compliance w/ Forest Plan and Federal Regulations 36 CFR 222.2 [c]</b>	Yes	Yes	No, does not comply with direction to manage forage-producing lands for livestock grazing

## CHAPTER 3 – Existing Environment & Environmental Effects

### Existing Environment

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The five allotments addressed in this document are being analyzed together because of their geographic proximity, their common pinyon/juniper woodland vegetation type, and their similar management needs. A description of the range resource on each allotment follows. Details regarding the other resource areas - soil and water, archaeological resources and wildlife and rare plants - are included in the Specialists' Reports for each resource area which are included in the Project Record.

#### Akers Allotment

The Akers Allotment consists of approximately 4,742 acres. The Akers allotment was combined with the McEwan Allotment in the early 1980's after a range vegetation analysis was done. The allotment is divided into two pastures, the East Pasture (2409 acres) and the West pasture (2333 acres), which are divided from each other by highway right-of-way fencing on Highway 24.

The Akers Allotment varies in elevation from 6900 feet to 7900 feet with the majority of the allotment lying between 7200 and 7300 feet. The topography consists of narrow ridges with U-shaped canyon bottoms which average about 100 yards wide. The vegetation on the allotment is predominately pinyon-juniper woodland with interspersed grasslands in the canyon bottoms and mixed-conifer forest stands on north-facing slopes. Some canyon bottoms at higher elevations on the west side of the allotment support mixed-conifer stands. In general, livestock forage species include blue grama (*Bouteloua gracilis*), wolftail (*Lycurus setosus*), squirreltail (*Elymus longifolius*), sideoats grama (*Bouteloua curtipendula*), mountain mahogany (*Cercocarpus montanus*), and wavy-leaf oak (*Quercus undulata*). Active growing season on the grama grasses and wolftail is usually from the mid-July and seed-head maturity is achieved about mid-September. The growing season for squirreltail and mountain mahogany begins in April with fruiting maturity reached around mid-September.

The major drainage located within the Akers Allotment is McEwan Canyon which drains into Agua Chiquita Canyon. There are no riparian areas, floodplains or wetlands present on the allotment.

Noxious weed occurrences are limited on the allotment. A few isolated occurrences of musk thistle are found along roads within the allotment. Treatment and monitoring of these populations is handled under the Lincoln NF Noxious Weed Control Program. No other noxious weed species are currently known on the allotment.

The current term grazing permit on the Akers Allotment authorizes yearlong grazing for 50 cow-calf pairs (600HM or 792 AUMs). The allotment has been

managed under seasonally-deferred grazing for the past several decades. Current and past management have been successful in achieving the current fair to good range conditions with upward apparent trends. Pasture moves have been based upon maintenance of a 2-inch average leaf length (representative of 45% forage use) during the grazing year on blue grama-dominated sites, and a 4-inch average leaf length (representative of 35% forage use) on Kentucky bluegrass-dominated sites. See Appendix 2 for Actual Use figures and Condition and Trend monitoring results for this allotment.

Opportunities exist to improve water availability in remote areas of the allotment which will aid in maintaining suitable conditions and in moving toward desired future conditions. While management prescriptions have been met in recent years, the development of additional water sources would contribute to increased management flexibility and an opportunity to distribute forage use more evenly. Increased water distribution would also contribute to the improved distribution of big game species.

An analysis conducted in 1978 found the old McEwan Allotment to be in fair condition with an upward apparent trend. The Akers Allotment was in fair condition with a downward apparent trend. The southern portions of both allotments were burned in the 1974 Spring Fire that resulted in forest-stand losses in the mixed-conifer and ponderosa pine zones. The recent 2007 analysis on the now combined Akers and McEwan Allotments found the combined allotment to be in fair to good condition with an upward apparent trend. Ground cover and species diversity both show improvement since the 1978 analysis.

The two pastures are similar in size but differ somewhat in regard to vegetation. The West pasture contains the majority of the mixed-conifer component at the higher elevations on the allotment. The East pasture contains the lower elevations of the allotment. This pasture is primarily dominated by pinyon-juniper stands on slopes and ponderosa pine in the bottoms.

A significant amount of un-fenced private land lies within the West pasture. These lands are not owned by the current grazing permittee and are not managed as a part of the allotment. The location of the private lands located along the bottom of upper McEwan Canyon create livestock management challenges as these lands continue to be divided and sold to various parties. New private ownership will likely result in additional fencing that will continue to affect logistics of livestock movement and current livestock distribution patterns. There is also some unfenced private land located in the East pasture; however it comprises fewer acres than that in the West pasture. The development of additional water sources will help manage livestock distribution and offset the impacts of future real estate development in McEwan Canyon.

### **Curtis Canyon Allotment**

Curtis Canyon Allotment consists of approximately 8,368 acres. Major drainages within the allotment are Curtis, Dollins, Graveyard, Lake and Myers Canyons. Dollins and Lake drain into Curtis Canyon, while Myers Canyon drains into James Canyon and Graveyard and Curtis Canyon drain into the Rio

Penasco. Ephemeral and intermittent surface water supporting some riparian vegetation is present. There are no wetlands or flood plains present.

Elevation on the allotment varies from 6800 to 8000 feet. The topography consists of both wide and narrow canyon bottoms, moderate to steep hillsides and gently sloping ridge tops. The vegetation is ponderosa pine woodland and some remnant mixed-conifer stands at the higher elevations and transitioning into pinyon-juniper woodland at the lower elevations. The herbaceous and browse component is made up of species such as pine dropseed (*Piptochaetium fimbriatum*), orchardgrass (*Dactylis glomerata*), mountain brome (*Bromus carinatus*), western wheatgrass (*Elymus smithii*), blue grama (*Bouteloua gracilis*), wolftail (*Lycurus setosus*), squirreltail (*Elymus longifolius*), Lehmann's lovegrass (*Eragrostis lehmanniana*), sideoats grama (*Bouteloua curtipendula*), mountain muhly (*Muhlenbergia montana*), mountain mahogany (*Cercocarpus montanus*), and wavy-leaf oak (*Quercus undulata*).

The Curtis Canyon Allotment has been extensively impacted by wildfires. The 1952 Allen Canyon Fire burned the majority of the east end of the allotment. The stand-replacing fire opened up the east end of the allotment significantly. The 2002 Penasco Fire burned the west end of the allotment. Intense fire activity removed most of the canopy cover. As a result, herbaceous forage and shrub species have increased substantially in the affected burned areas.

Populations of noxious weed species are an issue on the allotment. Musk thistle has significantly increased in the areas affected by the Penasco Fire. Isolated smaller populations of musk thistle also occur in other portions of the allotment. Aggressive treatment and monitoring of these populations is handled under the LNF Noxious Weed Control Program.

The current term grazing permit on the Curtis Canyon Allotment authorizes yearlong grazing for 15 cow-calf pairs (180 HMs or 238 AUMs) and 38 cow-calf pairs from May 1–October 31 (230 HMs or 303 AUMs). The allotment has been managed under a seasonally deferred rotation system for many years. The Penasco Fire in 2002 had major impacts on the vegetation and structural improvements on the allotment. Forage production has greatly increased since the fire, but pasture division fences were destroyed in the process. Most of the fences have been reconstructed as of this date. In addition to the fences, other range improvement projects destroyed by the 2002 fire have been reconstructed. Current grazing management has been effective in meeting utilization guidelines. Pasture moves are contingent on maintenance of a 2-inch average leaf length (representative of 45% forage use) on blue grama-dominated sites, and a 4-inch average leaf length (representative of 35% forage use) during the grazing year on Kentucky bluegrass-dominated sites. See Appendix 2 for Actual Use figures and Condition and Trend monitoring results for this allotment.

The Curtis Canyon Allotment analysis conducted in 2007 shows the allotment to be in good to excellent condition with upward apparent trends. There has been an increase in desirable forage species and ground cover, probably in response to the 2002 wildfire. The forage species are productive and vigorous. A previous analysis from 1957 shows the allotment in poor to fair condition with

a downward apparent trend. Continuation of the livestock management system in use now is recommended for the Curtis Canyon Allotment.

Rehabilitation work subsequent to wildfires, involving soil stabilization structures, was conducted in the 1950's and early 1960's after the 1951 Allen Canyon Fire. After the 2002 Penasco Fire, soil stabilization projects were implemented in the intensely burned areas in Curtis and Dollins Canyons. The work was extremely successful in preventing head cutting and sheet erosion that can be common to burned areas.

The allotment is divided into five pastures: Dollins (1707 acres), Goat (1872 acres), Graveyard (2010 acres), Lightning (2109 acres), Myers (617 acres), and Lightning Trap (53 acres). Dollins pasture was impacted in its southern and western portions by the Penasco Fire. Canopy cover was significantly decreased in portions of the pasture which has resulted in increased forage production and vegetative cover. The eastern portion of the pasture was burned in the 1951 Allen Fire. The existing water developments are functional.

Goat pasture was also affected by the Penasco Fire. Prior to the fire, the pasture had little forage production capability due to a dense canopy of woody species. The pasture today is very productive and is a key component of the grazing system. The pasture is effectively watered by well-distributed natural water sources. Spring flow has increased in recent years. Incidences of outbreaks of noxious weed populations (musk thistle) are located primarily within this pasture. Graveyard, Myers, and Lightning pastures are very similar in topography and vegetation; all were impacted significantly in the 1951 fire, providing for increased herbaceous ground cover and forage production.

### **Miller Flats Allotment**

The Miller Flats Allotment consists of approximately 4,099 acres. Major drainages within the allotment are Bible, Bud Holland, Rock Tank, and Woodson Canyons. These drainages drain into the Agua Chiquita. There are no riparian areas, floodplains or wetlands present on the allotment.

The Miller Flats Allotment varies in elevation from 6500 to 7300 feet. The topography consists of wide canyon bottoms, moderately steep hillsides and gently sloping ridge tops. Vegetation type is pinyon-juniper woodland with grassy canyon bottoms and some ponderosa pine on north facing slopes and canyon bottoms. The herbaceous and browse component consists mostly of blue grama (*Bouteloua gracilis*), wolftail (*Lycurus phleoides*), squirreltail (*Elymus longifolius*), plains lovegrass (*Eragrostis intermedia*), sideoats grama (*Bouteloua curtipendula*), mountain mahogany (*Cercocarpus montanus*), and wavy-leaf oak (*Quercus undulata*).

Noxious weed presence is limited on the allotment. A few isolated occurrences of musk thistle are found along roads. No other noxious weed species are currently known on the allotment. Treatment and monitoring of these populations are handled through the LNF Noxious Weed Control Program.

The Miller Flats Allotment currently has two term grazing permits issued to two individual grazing permittees. One permit authorizes yearlong grazing for 16 cow-calf pairs plus an additional 35 cow-calf pairs from November 1– April 30 (402 HMs or 531 AUMs). The second permit authorizes yearlong grazing for 37 cow-calf pairs (444 HMs or 586 AUMs). The total forage use permitted on the allotment has been 1117 AUMs. The allotment has been managed under seasonally deferred grazing for the past several decades. Current and past management have been successful in achieving the current fair to good range conditions with upward apparent trends. Pasture moves are contingent upon maintenance of a 2-inch average leaf length (representative of 45% forage use) during the grazing year on blue grama-dominated sites. See Appendix 2 for Actual Use figures and Condition and Trend monitoring results for this allotment.

The allotment is divided into three pastures: Bible (1998 acres), Bud Holland (935 acres), and Woodson (1166 acres). Bible and Bud Holland are separated by a pasture division fence. Woodson is separated from Bible and Bud Holland by fenced private lands. An analysis in 1964 showed the Bible Canyon monitoring site to be in poor condition with an upward apparent trend and the Bud Holland monitoring site to be in fair condition with an upward apparent trend. The condition and trend monitoring scorecard for Bible Canyon noted that there were “No ecological factors, or past readings on transects to indicate trend – appears static. Soil trend is up because of healed wash, increased litter accumulation and absence of any erosion. Utilization appears fairly heavy (estimated to be 80%)”. The Bud Holland monitoring scorecard noted “No ecological factors or past readings on transect to indicate trend in vegetation. Soil trend up because of increased ground cover hits. Area is very dry and has had very little moisture in past year.” The 2007 monitoring analysis indicates Bible Canyon is in good condition with an upward apparent trend and Bud Holland is in fair condition with an upward apparent trend. The recent monitoring indicates there is an increase in desirable species and forage plants are productive and vigorous. There is excellent ground cover and erosion is minimal. Ground cover and species diversity both showed improvement when the 2007 data was compared to 1965 data.

The three pastures are very similar in topography and vegetation with no significant resource issues apparent in any of the pastures. Opportunities exist to improve water availability in remote areas of the allotment which will further aid in achieving resource objectives in the future. While management prescriptions have been met in recent years, the development of additional water sources would contribute to increased management flexibility and an opportunity to distribute forage use more evenly. Increased water development would also provide an opportunity to improve distribution of big game species.

### **Prather Allotment**

The Prather Allotment consists of approximately 2,538 acres. The allotment is divided into two pastures: the Northwest pasture (337 acres) and the Prather pasture (2201 acres). The major drainages located within the Prather Allotment are Graveyard and Prather Canyons. The allotment varies in elevation from 6800 to 7300 feet. The topography consists of narrow ridges and canyon

bottoms. The primary vegetation is pinyon-juniper woodlands with interspersed ponderosa pine on north slopes and in stringers along canyon bottoms. Small mixed-conifer stands are found on cool north slopes in the northern portions of the allotment. In general, the herbaceous and browse component on the allotment consists of blue grama (*Bouteloua gracilis*), wolftail (*Lycurus setosus*), squirreltail (*Elymus longifolius*), sideoats grama (*Bouteloua curtipendula*), mountain mahogany (*Cercocarpus montanus*), and wavy-leaf oak (*Quercus undulata*).

Infestations of noxious weed species are limited on the allotment. A few isolated occurrences of musk thistle are found along roads within the allotment. No other noxious weed species are currently known on the allotment. Treatment and monitoring of these populations are handled through the LNF Noxious Weed Control Program.

The current term grazing permit on the Prather Allotment authorizes yearlong grazing for 32 cow-calf pairs (384 HMs or 507 AUMs). The allotment has been managed under seasonally deferred grazing for the past several decades. Current and past management have been successful in achieving the current good range conditions with upward apparent trends. Pasture moves are contingent upon maintenance of a 2-inch average leaf length (representative of 45% forage use) during the grazing year on blue grama-dominated sites. See Appendix 2 for Actual Use figures and Condition and Trend monitoring results for this allotment.

Approximately three-quarters of the Prather Allotment was burned in the 1974 Spring Fire. Burned areas were reseeded with orchardgrass, intermediate, pubescent and western wheatgrasses as well as weeping lovegrass. A 2006 range condition analysis showed the Prather Allotment to be in good condition with an upward apparent trend. The grasses within the transect area were productive and vigorous. There was excellent ground cover and excellent production on grasses. The 1959 analysis showed the allotment to be in fair condition with a static apparent trend. Grass species along the transect line were blue grama (*Bouteloua gracilis*), gyp grama (*B. breviseta*), sideoats grama (*B. curtipendula*), mat muhly (*Muhlenbergia richardsonis*), Lehmann's lovegrass (*Eragrostis lehmanniana*), wolftail (*Lycurus setosus*), and vine mesquite (*Panicum obtusum*). Ground cover and species diversity both showed improvement in 2007 compared to 1959.

The two pastures are very similar in topography and vegetation with no significant resource issues apparent in either pasture. Opportunities exist to improve water availability in remote areas of the allotment which will further aid in achieving resource objectives in the future. While management prescriptions have been met in recent years, the development of additional water sources would contribute to increased management flexibility and an opportunity to distribute forage use more evenly. Increased water development would also provide the opportunity to improve distribution of big game species.

## Smith Allotment

The Smith Allotment is approximately 787 acres in size and consists of a single pasture. The allotment varies in elevation from 6900 to 7200 feet. The topography consists of narrow canyon bottoms, moderately steep slopes and gently sloping ridges. The vegetation is pinyon-juniper woodland with grassland canyon bottoms and some ponderosa pine on the north facing slopes. The herbaceous and browse component primarily consists of blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), wolftail (*Lycurus setosus*), squirreltail (*Elymus longifolius*), plains lovegrass (*Eragrostis intermedia*), mountain mahogany (*Cercocarpus montanus*), and wavy-leaf oak (*Quercus undulata*).

Populations of noxious weed species are very limited on the allotment. A few isolated occurrences of musk thistle are present. No other noxious weed species are currently known here. Treatment and monitoring of these populations are handled through the LNF Noxious Weed Control Program.

The current term grazing permit authorizes up to 17 cow-calf pairs for up to a 10-month season of use from September 1 thru June 30 (170 HMs or 224 AUMs). Grasses are productive and vigorous. There is very good ground cover and no active erosion. Past management has been effective in providing opportunities for improvement in range conditions. Range monitoring in 2007 shows good condition with an upward apparent trend. The vegetation management projects implemented in recent years have effectively reduced canopy cover, resulting in an increase in herbaceous vegetation. No previous analyses of forage and range conditions on this allotment are available. Little opportunity exists for additional range improvement development due to the small size of the allotment. See Appendix 2 for Actual Use figures and Condition and Trend monitoring results for this allotment.

## Environmental Effects

A summary of the environmental effects of each alternative on the range, soils, water and air, wildlife and rare plant, and archaeological resource areas is provided in this section. Each Resource Specialist has also considered past, present and future activities that may be affecting resources in the analysis area. Cumulative effects result from the addition of the effects of these past, present and reasonably foreseeable future actions to any effects resulting from the alternatives considered in this analysis. The summation of these effects is reviewed in order to determine if all the effects, when considered collectively, accumulate to a significant level. The Resource Specialists' Reports, included in the Project Record, contain details of these considerations. The following table summarizes the past, present and future activities that may affect or may be continuing to have effects on the resources:

Table 1 – Past, Present and Future Activities

Type of Activity	Past Activities	Present Activities	Future Activities	Allotments Affected
<b>Wildfires</b>	1951 – Allen Canyon Fire 1974 – Spring Canyon Fire 2002 – Penasco Fire	None	Unknown	Curtis Canyon Akers & Prather Curtis Canyon
<b>Wildfire Suppression</b>	Historic activity throughout forest	On-going	On-going for Wildland/- Urban Interface areas & human-caused ignitions	All
<b>Wildlife Habitat Improvement / Veg Treatment Projects / Timber Sales</b>	2001 – Vegetation Treatment – P/J overstory thinning	None	2008 – P/J overstory thinning	Miller Flats & Smith Akers
<b>Rx Burns</b>	2000 - Denny Hill Rx Burn	None	None	Akers
<b>Historic Grazing</b>	Early 1900's livestock stocking levels higher than present levels	N/A	N/A	All
<b>Water Supply Improvements</b>	Pipelines, troughs, dirt tanks, precipitation-collecting trick tanks	On-going	Extensions	All Akers, Prather & Miller Flats
<b>Noxious Weeds</b>	Mechanical & Chemical Treatments	Same	Same	All
<b>Recreational Activities &amp; Fuelwood Cutting</b>	Unauthorized off-road driving, dispersed camping, hunting, hiking	Same	Travel-management restrictions	All
<b>Roads, Utility ROWs &amp; Land Development</b>	Road maintenance & ROW hazard-tree falling; private land subdivision, fencing & development	Same	Same	All

## Effects on Range Resource

The Range Specialist's Report addresses the effects of each alternative analyzed by the Interdisciplinary Team. A summary of the effects is provided here. Further details are in the Report which is part of the Project Record for this analysis.

### Range Resource - Alternative 1 - Proposed Action

The proposed action does not change current management significantly. The merging of Akers and Prather Allotments will authorize the use of these two allotments as one unit under one term grazing permit and its associated allotment management plan, thereby facilitating administration by the Forest Service. The ability to use a pasture rotation system in the combined allotments will improve management capability. The proposed water developments will improve livestock distribution across both allotments into areas where grazing use has been low in the past. Improved control of livestock distribution also enhances management capability and flexibility, supporting the ultimate goal of meeting desired future conditions in a timely manner.

The capability for managing livestock on the Miller Flats Allotment will improve with the implementation of the proposed action. Construction of the proposed water system improvements will enhance the permittees' ability to more evenly spread the impacts of livestock grazing and avoid areas of heavier impact.

Management on the Smith and Curtis Canyon Allotments will remain the same. No new improvements are proposed for these two allotments.

A management objective of light to moderate grazing intensity on blue grama-dominated rangelands in pinyon/juniper and ponderosa pine habitats, and light to conservative intensity in mixed-conifer habitat, will be employed to maintain and/or improve rangeland vegetation, water quality and long-term soil productivity on the allotments. In general, light to moderate grazing intensities provide a greater opportunity for increased average annual forage production in both wet and dry years and for upward trends in range condition than do heavier grazing intensities. Grazing will continue to be managed with a deferred rotational system with proposed improvements that assist in improving livestock distribution. The effects on the rangeland vegetation resource from the proposed action are beneficial. Deferred rotation allows key forage species the opportunity to store carbohydrates and set seed during periods of seasonal rest. Periodic rest provides additional opportunities for improved plant vigor and enhanced reproductive capability on key forage species. Uneven use of rangeland, even under light to moderate grazing intensity, can be problematic in site-specific areas where livestock tend to congregate. Poor water distribution is the primary cause of poor livestock distribution. The proposed action proposes additional water developments in areas where current needs exist.

The proposed action will improve conditions slightly from an economic standpoint due to increased management capability resulting from combining two allotments and through construction of the proposed improvements. The conservative to moderate grazing intensity proposed will continue to provide the opportunity for higher calf-birthing rates and increased calf-weaning weights than would be expected under higher grazing intensities.

Noxious weeds populations will continue to be monitored and treated as needed on all the allotments. The primary focus is on Curtis Canyon where musk thistle is a significant resource issue in the Penasco Fire area. This action is ongoing under all alternatives.

### **Range Resource - Alternative 2 – Continue Current Management Alternative**

Alternative 2 proposes no change in management on any of the five allotments. The Akers and Prather Allotments would remain separate and would be managed individually, failing to take advantage of improved management control and simplified permit administration. No additional water system improvements would be constructed in Akers, Prather or Miller Flats Allotments.

The use of approximately 3,181 Animal Unit Months of forage between the five allotments would continue. Range vegetation on these allotments is currently fair or better condition with upward apparent trends. This has been achieved with the current improvements and would likely continue in future years, but with a lower potential for improvement than the proposed action would provide with the enhanced water distribution systems on the Akers, Prather and Miller Flats Allotments. As permits expire, new permits would be issued for the classes and numbers of livestock currently permitted.

A management objective of light to moderate grazing intensity on blue grama-dominated rangelands in pinyon/juniper and ponderosa pine habitats, and light to conservative intensity in mixed-conifer habitat, would be employed to maintain and/or improve rangeland vegetation, water quality and long-term soil productivity on the allotments. In general, light to moderate grazing intensities provide a greater opportunity for increased average annual forage production in both wet and dry years and for upward trends in range condition than do heavier grazing intensities. Grazing would continue to be managed with a deferred rotational system with existing improvements that assist in managing livestock distribution. The effects on the rangeland vegetation resource from the Alternative 2 are beneficial. Deferred rotation allows key forage species the opportunity to store carbohydrates and set seed during periods of seasonal rest. Periodic rest provides additional opportunity for improved plant vigor and enhanced reproductive capability on key forage species. The opportunity to improve livestock distribution through improved water distribution would not be available under this alternative.

Monitoring of grazing intensity and of compliance with the AMP and AOIs will be conducted as described in Alternative 1. Existing structural improvements will be maintained at a level that effectively serves their intended purposes. Range improvements will be inspected periodically during the term of the

permit to document condition. Annual Operating Instructions (AOIs) will identify range improvements in need of maintenance.

This alternative would not provide for an enhanced economic status, and could potentially cause a decline economically for the permit holders if stocking levels should need to be decreased in the future due to a lack of sufficient water supply points on the three allotments, particularly under conditions of ongoing drought.

### **Range - Alternative 3 – No Action/No Grazing Alternative**

Under the No-Action Alternative, all cattle grazing within the Akers, Prather, Miller Flats, Smith, and Curtis Canyon Allotments would be phased out over a 2-year period. As a result, livestock impacts on vegetation and soil conditions would be removed. This alternative would likely result in the most rapid progress toward desired future conditions in the short-term, but over the long term may result in downward trend in range vegetation condition due to non-use which allows grasses to decrease in vigor and become coarse and unpalatable to grazing ungulates.

The cancellation of the grazing permits would create an absence of maintenance of structural improvements. Existing structural improvements that contribute to resource protection or that are important to other resources and functions, such as water sources for wildlife populations or fire control, will remain but will not be maintained unless this activity is picked up and funded under another resource area on the Lincoln NF or by a cooperating partner. Removal of improvements losing their functionality will have to be authorized under a future NEPA decision if new ground disturbance is anticipated. Where allotment boundary fences are necessary, the maintenance of these fences may have to be reassigned to adjacent grazing permit holders in order maintain the integrity of the boundaries of adjacent allotments, creating an economic burden on them. The loss of water system improvements may have adverse impacts on the use of the area by wildlife.

There would likely be significant economic impact to the grazing permit holder(s) upon cancellation of the permit(s) due to a loss of part or all of their livestock operations and subsequently a slight impact on the local community and economy.

### **Range Resource – Cumulative Effects**

The past, present and future activities listed in Table 1 each affect livestock management and range vegetation in different ways depending on the location and extent of the activities.

In general, vegetative treatments are beneficial for grazing ungulates. Projects that reduce canopy cover, whether by mechanical or prescribed fire methods, benefit herbaceous forage by increasing production potential and plant vigor. Some negative effects, though very temporary, from these types of projects may result as well. Prescribed burning projects require a certain period of

grazing deferment to allow for vegetative recovery. Adaptive management and its inherent flexibility allow for options to manage around these effects.

Habitat improvement projects on the Miller Flats and Smith Allotments implemented in the past 10 years have resulted in benefits to range vegetation. Habitat improvement projects planned on the Akers Allotment in the near future are expected to benefit range vegetation as well. Reductions in canopy cover will benefit herbaceous and woody browse species through improved forage production, increased species diversity and improved plant vigor and soil cover. Range condition and trend, and subsequently, overall watershed health are expected to improve following these vegetation treatment projects. Implementation of the proposed range improvements on the Akers, Prather, and Miller Flats Allotment will redistribute grazing pressure and increase management flexibility, allowing more even utilization of forage resources across the allotments. Improved livestock distribution lessens the effects of grazing on sites preferred by livestock.

Wildfire has played a significant role in affecting vegetative conditions on the Curtis Canyon Allotment. Major fires in the 1952 and 2002 have resulted in significant changes in vegetation on that allotment. The Akers and Prather Allotments also received major impacts from the 1974 Spring Canyon Wildfire. In general, stand-replacing fires produce increased herbaceous cover and may renew vegetative growth on shrubs, benefiting grazing activities locally and increasing vegetative diversity and plant successional stages on a larger scale. The effects of wildfire are long lasting in southwestern mountain ranges, from both visual and ecological standpoints.

Wildfire suppression and historic grazing practices dating back to the turn of the century have contributed cumulatively to the composition of the vegetative component currently found on the allotments. Gradual closing of the canopy by woody species is both directly and indirectly related to the removal of fire from the ecosystem and the historic grazing practices that occurred in the early 1900's.

The spread of noxious weeds is a concern on the allotments. Disturbance to vegetation associated with wildfires, roads, recreational activities, fuelwood cutting and utility rights-of-way all contribute cumulatively to the potential spread of noxious weed species.

Private land subdivisions, newly constructed fencing and future development on uncontrolled private lands within allotment boundaries may result in management challenges regarding changes in grazing utilization patterns and the ability to move livestock through the allotments.

The impacts created through livestock grazing and the adaptive management described for the alternatives analyzed here, when added to the other past, present and future activities included in Table 1, do not together accumulate to levels that are considered to be significant for the range or vegetative resources.

## **Effects on Soil, Riparian, Water and Air Resources**

The Soil, Water and Air Specialist's Report addresses the existing condition of the resources on the allotments and the effects of each alternative on the soil, water and air resources. Summarizations of the effects of each alternative on the soils, riparian areas and stream channels, water quantity and quality, wild and scenic rivers and air quality, including any cumulative effects, are provided here. Details of this analysis are contained in the Specialist's Report in the Project Record.

### **Soils Resource - Alternatives 1 & 2 - Proposed Action & Continue Current Management**

Soils on the allotments have been analyzed based on Terrestrial Ecosystem Surveys conducted in 1996 and 1998, as well as on field inspections, and corporate Geographic Information System databases and aerial photo interpretation. The allotments contain a total of 20,534 acres of which less than 10% is considered steep, above 40%-slope, and 94% of the acreage has only slight erosion hazard potential. The soil condition for 100% of the map units found within the allotments is satisfactory, signifying that the soils are functioning properly and normally and are being maintained in that state under current management. The ability of the soils to maintain resource values and sustain outputs is high. Very localized areas of compacted, impaired soils, particularly around water sources, have reduced nutrient-cycling ability and contribute to decreased soils stability as these limited locations. The grazing intensity levels proposed for both alternatives, light to moderate in pinon/juniper and pine woodlands and light to conservative in mixed-conifer stands, are expected to provide sufficient residual biomass to protect soils and are not expected to contribute to any decline in soil conditions. The deferred rotation system will allow the vegetation to rest for a time each growing season and the flexible stocking rates will allow management to respond proactively to changing resource conditions before problems occur. Current and past management have been successful in achieving positive gains in plant vigor and frequency and in watershed stability. The continued use of Soil and Water Conservation Practices is expected to minimize any potential negative effects from these alternatives. The soil condition is expected to remain satisfactory.

### **Soils Resource - Alternative 3 – No Action/No Grazing Alternative**

After two years, there will no longer be any effects from livestock grazing. In the limited compacted-soil areas, the potential increase of vegetative ground cover and decrease in livestock compaction would contribute to improved nutrient cycling, improved soil structure and improved hydrologic condition. The removal of livestock from the allotments is expected to contribute to accelerated recovery of the localized impaired soil areas. Soil condition may improve, however this is a long-term process with many influences.

### **Riparian Areas & Stream Channels - Alternatives 1 & 2 - Proposed Action & Continue Current Management**

The analysis for the riparian and stream resources is based on field observations, aerial photo interpretation and corporate Geographic Information System databases. There is no surface water flowing within the allotments. Water is present only after rains for short durations as ephemeral or intermittent flow. There are no riparian areas mapped on any of the allotments, and there is very limited opportunity for riparian area development due to generally deep soils and a corresponding great depth to groundwater in the channels. Two streams that are not accessible from any of the allotments that generally do have surface flow year-round are the Rio Penasco and the Agua Chiquita. These two streams lie on lands under private ownership in the vicinity of the allotments.

The grazing intensity to be managed for under both of these alternatives is expected to provide sufficient residual biomass to protect stream channels and to maintain the existing conditions of the vegetation in the canyon bottoms. The adaptive management system and flexible stocking rates are expected to allow management to respond proactively to changing resource conditions before problems occur and to provide for positive gains in plant vigor, forage plant frequency and watershed stability. The use of Soil and Water Conservation Practices (FSH 2509.22 R3) to protect soil and water conditions will help protect the stream channels and vegetation.

### **Riparian Areas & Stream Channels - Alternative 3 – No Action/No Grazing Alternative**

The cessation of livestock after two years is expected to contribute further to stream channel stability and the maintenance of vegetative cover.

### **Water Quantity & Quality - Alternatives 1 & 2 - Proposed Action & Continue Current Management**

Surface water quality and water quantity at peak flow are affected by hydrologic function which is the ability of soil to capture, hold and release water. Hydrologic function is strongly influenced by soil condition. The effects of soil condition on water quality and quantity, however, are generally manifested at a landscape scale and are not related to individual Terrestrial Ecosystem Survey map units. For this reason, water quality and quantity are generally addressed at the landscape level and not at the allotment level. No change in hydrologic function at a landscape scale is expected under either alternative.

Regarding water quantity, there are three surface water flow-gauging stations known in the vicinity of the allotments being analyzed here. All are located downstream of the allotments. Data for the larger landscape-area covered by these gauging stations do not allow interpretation of the impacts of grazing and management on the quantity of water at the allotment-scale. The effects of either action alternative are expected to be so small as to be immeasurable at the landscape scale.

Water quality is assessed by comparing existing conditions with desired conditions that are set by the States under the authority of the Clean Water Act. The New Mexico Environment Department (NMED) is the regulating authority for water quality in New Mexico. The general classifications used by NMED for surface water quality in drainages that have been assessed are attaining or impaired for designated uses.

Currently, the Rio Penasco and the Agua Chiquita are on New Mexico's 303(d) list of impaired streams as indicated in the State of New Mexico Integrated Clean Water Act Report for the years 2006 – 2008. The Rio Penasco does not support designated use for warm and coldwater aquatic life, and the perennial portions of the Agua Chiquita do not support designated use for coldwater aquatic life. The probable source of impairment in the Rio Penasco is sedimentation/siltation from highway, road and bridge runoff, loss of riparian habitat, rangeland grazing, stream bank modifications/ destabilization, and above Highway 24, from runoff following forest fire. In the Agua Chiquita, the probable source of impairment could not be determined by the state with existing data. Ephemeral and intermittent drainages on the allotments, when they do run, are small tributaries to the two streams. The absence of surface waters limits or precludes the presence of riparian habitat and unstable stream banks, which, together with the generally gentle slopes present on the allotment, limit the effects of livestock on water quality. The good to excellent ratings and upward trends for soil condition and stability determined during monitoring on all of the allotments in 2007 indicate improving soil conditions that lessen the potential for impacts from the livestock management activities that have been on-going and that are being analyzed for continued implementation under the two action alternatives. The current conditions and the implementation of Soil and Water Conservation Practices will limit the effects on water quantity and quality to levels that are not measurable within the watershed or at the landscape scale.

### **Water Quantity & Quality- Alternative 3 – No Action/ No Grazing Alternative**

The cessation of livestock grazing after two years will remove the effects of livestock from these five allotments. This change represents a small diminution in the impacts from all ownerships and activities within the watershed. This decrease is expected to be at a level that cannot be measured in either water quantity or quality.

### **Wild and Scenic Rivers- All Alternatives**

The stream reaches of the Rio Penasco that are considered eligible for Wild and Scenic River classification are all located upstream from the five allotments being analyzed here. Therefore, there will be no effects from any of the alternatives on this resource value, nor will there be any cumulative effects.

### **Air Quality - All Alternatives**

The project area is in a Class II airshed representative of rural areas. Air quality in and around the analysis area is high due to the relative isolation from urban centers, limited access and good vegetative ground cover. Currently,

the air quality in the project area is within the standards and guidelines of the Forest Plan. Activities resulting from the grazing management under analysis here will not have an effect on the air resources in this Class II airshed and there will also be no cumulative effects.

### **Watershed & Air Resources - Cumulative Effects**

The past, present and future activities listed in Table 1 each may affect soil and water resources and have been considered during this analysis. The Soil, Water and Air Specialist's Report in the Project Record contains further details. Past, present and foreseeable future projects or actions that have affected or may affect the project area include historic heavy grazing, prescribed and natural fires, wildfire suppression, historic fuelwood harvesting, invasive exotic plants and water developments. These activities have contributed incrementally to effects that have changed ecological conditions of the area over time. The proposed action and alternative action, because they are designed to implement properly managed grazing, will not contribute additional effects that would adversely change the ecological conditions of the analysis area.

The 2002 Penasco wildfire burned some 15,000 acres, including 10,031 acres on National Forest System lands. This fire burned very little or none of the Akers, Miller Flats, Prather, and Smith Allotments. However, much of the western portion of the Curtis Canyon Allotment was burned. A large portion of the sediment generated by the burn in this allotment has been contained behind the Curtis Canyon Dam and up-stream check dams, reducing sediment loads that would have entered the Rio Penasco. This sedimentation continues to decrease over time with vegetative recovery.

The proposed actions will minimize grazing effects on soil, water and riparian conditions through the use of the best available information in grazing management and Soil and Water Conservation Practices and therefore, will not create significant cumulative effects.

## Effects on Wildlife and Rare Plant Resources

The Wildlife, Fish and Rare Plant Report addresses the following species groups – Federally-listed threatened or endangered plants and animals and any critical habitat present as well as species proposed for federal listing, Forest Service Sensitive plants and animals, fish, migratory birds, and habitat and population trends of Management Indicator Species (MIS) as indicators of the effects of land management activities. Details of the species considered and the analysis for these resources are contained in the Wildlife, Fish and Rare Plant Report in the Project Record. Following is a summary of the effects of each alternative, including any cumulative effects, on each of the groups of species:

**Federally-listed threatened or endangered plants and animals and any critical habitat present** – There are no effects on federally-listed T or E or proposed plants or animals or on critical habitat on any of the five allotments from any of the alternatives due to the absence of suitable critical habitat and individuals on allotments.

**Forest Service Sensitive Species** – The implementation of the alternatives considered in this analysis may impact individuals or habitat of the sensitive species present but will not affect the viability of those species on the Forest or result in a trend toward federal listing. Table 2 summarizes the effects findings for the sensitive species that are or may be present in the analysis area.

**Table 2. Summary of impact analysis determinations<sup>1</sup> made for FS Region 3 Sensitive Species analyzed on the 5 allotments. (Abbreviations for impact findings are defined below.)**

ALLOTMENT SPECIES	Northern Goshawk	Gray Vireo	<i>Astragalus altus</i>	<i>Cypripedium parviflorum var. pubescens</i>	<i>Microthelys rubrocallosa</i>
<b>Akers</b> Proposed Action Alternative 2 Alternative 3 <sup>2</sup>	MIH MIH MIH then NI	MIH MIH MIH then NI	MIH MIH MIH then NI	NI NI NI	MIH MIH MIH then NI
<b>Curtis Canyon</b> Proposed Action Alternative 2 Alternative 3 <sup>2</sup>	MIH MIH MIH then NI	MIH MIH MIH then NI	MIH MIH MIH then NI	MIH MIH MIH then NI	MIH MIH MIH then NI

**Table 2. Summary of impact analysis determinations<sup>1</sup> made for FS Region 3 Sensitive Species analyzed on the 5 allotments. (Abbreviations for impact findings are defined below.)**

<b>Miller Flats</b> Proposed Action Alternative 2 Alternative 3 <sup>2</sup>	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	NI NI NI	MIIH MIIH MIIH then NI
<b>Prather</b> Proposed Action Alternative 2 Alternative 3 <sup>2</sup>	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	NI NI NI	MIIH MIIH MIIH then NI
<b>Smith</b> Proposed Action Alternative 2 Alternative 3 <sup>2</sup>	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	MIIH MIIH MIIH then NI	NI NI NI	MIIH MIIH MIIH then NI

<sup>1</sup> **Abbreviations for Determinations:**

**NI** = No impact;

**MIIH** = May impact individuals or habitat but will not likely contribute to a trend toward federal listing or cause a loss of viability on the Forest.

<sup>2</sup> The impacts of Alternative 3, No Grazing, are similar to Alternative 2, the Continue Current Management Alternative, during the two-year grazing phase-out period, then there will be No Impact after grazing has ended.

**Fish** – There are no effects to fish under any of the alternatives due to the absence of perennial water and fish on the allotments. Fish within fisheries downstream in the Rio Penasco will not be affected due to the minimal level of sedimentation resulting from the activities under analysis here, and the limiting of effects to water quality as described above in the Soil and Water Resources section.

**Migratory Birds** – Implementation of any of the alternatives is expected to maintain or increase suitable habitat on the allotments for migratory birds listed on the Partner’s in Flight priority bird list that visit or use the Forest. Increases in habitat suitability can result from the construction of new water sources and from the insects attracted to areas of livestock use. Disturbances to or loss of birds or nests due to livestock presence, such as through trampling or dislodging of a nest, or from other activities resulting in unintentional take are expected to be infrequent and will not rise to a level that affects the total population size for any species. There are no Important Bird Areas or overwintering areas on the allotments that could be affected. The Wildlife, Fish and Rare Plant Report in the Project Record contains a full list of migratory birds addressed for this analysis, their habitat types, and the impacts and effects anticipated.

**Management Indicator Species** – The three Management Indicator Species (MIS) habitat types that may be affected by livestock grazing and management, and other past and present activities, within the analysis area are mixed-conifer, woodlands and grama-galleta grasslands. The indicator species for these vegetation types are elk, mule deer and eastern meadowlark respectively. The effects on the habitat for these species are displayed in Table 3. Details of the complete analysis and the forest-wide MIS analysis are included in the Project Record.

<b>Species</b>	<b>Proposed Action Alternative</b>	<b>Alternative 2 Continue Current Management</b>	<b>Alternative 3 No Action/No Grazing</b>
Elk (All 5 allotments)	Suitable habitat would be maintained or increased with construction of new water improvements. Competition with livestock for forage would continue, but will not be a limiting factor at the grazing intensity prescribed.	Conditions remain as they currently are. Suitable habitat would be maintained. Without the new water developments, some habitat improvement will be foregone. Competition with livestock for forage would continue, but will not be a limiting factor at the grazing intensity prescribed.	After only two years of livestock grazing, there would likely be an increase in quantity of forage with a decrease in competition. There would be less water available with no maintenance of existing water sources resulting in a decrease in usable habitat.
Mule deer (All 5 allotments)	Suitable habitat would be maintained or increased with construction of new water improvements. Competition with livestock for browse forage would exist but is not as large a factor as competition for the herbaceous forage used by elk. This will not be a limiting factor at the grazing intensity prescribed.	Conditions remain as they currently are. Suitable habitat would be maintained. Without the new water developments, some habitat improvement will be foregone. Competition with livestock for browse forage would continue, but will not be a limiting factor at the grazing intensity prescribed.	After only two years of livestock grazing, there would likely be an increase in quantity of forage with a decrease in competition. There would be less water available with no maintenance of existing water sources resulting in a decrease in usable habitat.
Eastern meadowlark (All 5 allotments)	Suitable habitat would be maintained with potential for increase in quality due to increased water availability.	Conditions remain as they currently are. No new water sources would be available.	No trampling of habitat would occur from livestock after two years. There would be less water available without maintenance of existing water sources.

## **Wildlife and Plant Resources - Cumulative Effects**

The past, present and future activities listed in Table 1 each affect species and their habitats in different ways. Some activities are beneficial to certain species while others may be detrimental. The removal of overstory trees through timber sales, wildfire or hazard-tree removal, some vegetation treatments and the removal of fuelwood may reduce the amount of nesting and roosting habitat for some species while at the same time providing better foraging habitat through the opening of the overstory which encourages herbaceous understory growth. These activities may also increase habitat suitability for ground nesting birds or other species that require a greater amount of edge or open habitat. Water developments may impact habitat during construction, but they increase the acreage of habitat close to water thereby increasing its suitability for various species overall. Subdivision and land development activities on private lands have a great potential to reduce suitable habitat for most species through increased disturbance and loss of vegetation needed for foraging and cover habitat. To the extent that these activities have occurred and will likely continue into the future, wildlife, plant and animal species and their habitats will continue to be impacted. The impacts created through livestock grazing and the adaptive management described for the alternatives analyzed here, when added to these other past, present and future activities do not together accumulate to levels that are considered to be significant for the wildlife, fish or rare plant resources.

## **Effects on Archaeological Resources**

The Archaeology Report addresses the effects on archaeological resources of each alternative analyzed by the Interdisciplinary Team. A summary of the effects is provided here. Further details are in the Report which is part of the Project Record for this analysis.

Surveys and a review of known archaeological sites on the five allotments have been completed. Intensive surveys of the locations identified for construction and installation of range structural improvements have been conducted. Routine maintenance of existing earthen tanks has been cleared and clean-out of tanks will be cleared as needed in the future. No known grazing-sensitive sites or priority heritage assets are present on any of the allotments. A finding of no adverse effects on archaeological resources has been made for each of the alternatives and has been concurred with by the New Mexico State Historic Preservation Office. Because there are no adverse effects from the alternatives considered in this EA, there are no cumulative effects to consider.

In the event of the discovery of unrecorded properties in the future, sites will be protected in the same manner as other eligible or unevaluated properties. If forest personnel determine that a project has adversely affected a property, project activities with the potential to further damage the property will be halted and the Lincoln National Forest will enter consultation with the NM State Historic Preservation Office and tribes (if applicable) to resolve adverse effects. This project complies with the National Historic Preservation Act of 1966, as amended and with Executive Order 11593.

## CHAPTER 4 – Consultation and Coordination

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

### Core ID Team Members

Mark Cadwallader	District Range Staff
Bob Dancker	Forest Soil Scientist
Rene Guaderrama	District Wildlife Biologist
Ryan Powell	Archeologist
Linda Barker	IDT Leader / Writer - Editor

### Extended Team Members

Neil Fairbanks	Forest GIS Specialist
Ralph Fink	Range Management Specialist
Anthony Madrid	Range Management Specialist
Mike McConnell	Forest Hydrologist
Frank R. Martinez	District Ranger (previous), Sacramento District
Donna Owens	District Ranger, Sacramento District
Amalia Montoya	Range Management Specialist
Gary Ziehe	Forest Natural Resources Staff Officer

### Allotment Permit Holders

Raye Paul Miller  
Ken Driscoll

### Federal and State Agencies

Range Resources Specialist, NM Department of Agriculture

NM State Historic Preservation Office

Environmental Impact Review Coordinator, NM Environment Department,  
Surface Water Quality Division

US Fish and Wildlife Service, NM Ecological Services Office

NM Game and Fish Department

USDA Natural Resources Conservation Service

NM State Historic Preservation Office

NM Range Improvement Task Force

## **Tribes**

The Mescalero Apache Tribe

The Hopi Tribe

The Zuni Tribe

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\* Only references cited in this Environmental Assessment are included here.

## **APPENDICES**

**Appendix 1** - Allotment Alternative Maps

**Appendix 2** - Actual Use Tables and Range Monitoring Results

**Appendix 3** - List of Existing Improvements

**Appendix 1 – Allotment Alternative Maps** (See following pages)



## Appendix 2 - Actual Use Tables and Range Monitoring Results

### Akers Allotment

#### Actual Use Table\*:

Year	Stocking: Head-months / AUMs (hm x 1.32 = AUMs)	Year	Stocking: Head- months/AUMs (hm x 1.32 = AUMs)
2007	264 / 348	1997	600 / 792
2006	264 / 348	1996	600 / 792
2005	264 / 348	1995	600 / 792
2004	264 / 348	1994	600 / 792
2003	600 / 792	1993	600 / 792
2002	600 / 792	1992	600 / 792
2001	600 / 792	1991	600 / 792
2000	600 / 792	1990	600 / 792
1999	600 / 792	1989	600 / 792
1998	600 / 792	1988	600 / 792

\* Authorized use and billing data are maintained in the 2200 Range Files on the Sacramento Ranger District and are hereby incorporated by reference.

#### Condition and Trend Monitoring Results: Transects read 3/15/07 & 3/27/07

Year	Range Vegetation Condition Rating Class / Score / Trend*	Soil Condition/Stability Condition – Rating / Score / Trend*
<b>2007</b>	Cluster 1 (Old Akers C1) – <b>Good / 64 / Upward</b> Cluster 1 (Old McEwan C1) – <b>Fair / 60 Upward</b> Cluster 3 (Old McEwan C3) – <b>Good / 74 / Upward</b>	Cluster 1 (Old Akers C1) – <b>Excellent / 93 / Upward</b> Cluster 1 (Old McEwan C1) – <b>Good / 80 / Upward</b> Cluster 3 (Old McEwan C3) – <b>Excellent / 95 / Upward</b>
<b>1978</b>	Cluster 1 (Old Akers C1) – <b>Fair** / Downward</b> Cluster 1 (Old McEwan C1) – <b>Fair / Upward</b> Cluster 3 (Old McEwan C3) – <b>Fair / Upward</b>	Cluster 1 (Old Akers C1) – <b>Good / Static</b> Cluster 1 (Old McEwan C1) – <b>Good / Upward</b> Cluster 3 (Old McEwan C3) – <b>Fair / Upward</b>

\*Condition rating for Vegetation and Soil: Very Poor = 0-20 Poor = 21-40  
Fair = 41-60 Good = 61-80 Excellent = 81-100

\*\* Older rating value **numbers** differ from the currently used numbers and are not provided here; the condition rating **terms** are comparable and are provided.

Condition and Trend monitoring data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

## Appendix 2 - Actual Use Tables and Range Monitoring Results

### Curtis Canyon Allotment

Actual Use Table\*:

Year	Stocking: Head-months / AUMs (hm x 1.32 = AUMs)	Year	Stocking: Head- months/AUMs (hm x 1.32 = AUMs)
2007	410 / 541	1997	410 / 541
2006	410 / 541	1996	410 / 541
2005	410 / 541	1995	410 / 541
2004	410 / 541	1994	410 / 541
2003	410 / 541	1993	410 / 541
2002	410 / 541	1992	410 / 541
2001	410 / 541	1991	410 / 541
2000	410 / 541	1990	410 / 541
1999	410 / 541	1989	410 / 541
1998	410 / 541	1988	410 / 541

\* Authorized use and billing data are maintained in the 2200 Range Files on the Sacramento Ranger District and are hereby incorporated by reference.

### Condition and Trend Monitoring Results: Transects read 3/22/07

Year	Range Vegetation Condition Rating Class / Score / Trend*	Soil Condition/Stability Condition – Rating / Score / Trend*
<b>2007</b>	Cluster 1 – Graveyard Canyon <b>Excellent / 87 / Upward</b> Cluster 2 – Lower Curtis Canyon <b>Excellent / 87 / Upward</b> Pace 1 – Upper Curtis Canyon <b>Good / 79 / Upward</b>	Cluster 1 – Graveyard Canyon <b>Good / 75 / Upward</b> Cluster 2 – Lower Curtis Canyon <b>Good / 80 / Upward</b> Pace 1– Upper Curtis Canyon <b>Good / 75 / Upward</b>
<b>1957</b>	Cluster 1 – Graveyard Canyon <b>Poor** / Downward</b> Cluster 2 – Lower Curtis Canyon <b>Fair / Downward</b>	Cluster 1 – Graveyard Canyon <b>Fair / Upward</b> Cluster 2 – Lower Curtis Canyon <b>Good / Upward</b>

\*Condition rating for Vegetation and Soil: Very Poor = 0-20 Poor = 21-40  
Fair = 41-60 Good = 61-80 Excellent = 81-100

\*\* Older rating value **numbers** differ from the currently used numbers and are not provided here; the condition rating **terms** are comparable and are provided.

Condition and Trend monitoring data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

## Appendix 2 - Actual Use Tables and Range Monitoring Results

### Miller Flats Allotment

Actual Use Table\*:

Year	Stocking: Head-months / AUMs (hm x 1.32 = AUMs)	Year	Stocking: Head- months/AUMs (hm x 1.32 = AUMs)
2007	844 / 1114	1997	844 / 1114
2006	664 / 876	1996	844 / 1114
2005	664 / 876	1995	844 / 1114
2004	664 / 876	1994	844 / 1114
2003	844 / 1114	1993	844 / 1114
2002	844 / 1114	1992	844 / 1114
2001	844 / 1114	1991	844 / 1114
2000	844 / 1114	1990	844 / 1114
1999	844 / 1114	1989	844 / 1114
1998	844 / 1114	1988	844 / 1114

\* Authorized use and billing data are maintained in the 2200 Range Files on the Sacramento Ranger District and are hereby incorporated by reference.

### Condition and Trend Monitoring Results: Transects read 3/1/07

Please Note: Historic data for Woodsen Pasture is not available.

Year	Range Vegetation Condition Rating Class / Score / Trend*	Soil Condition/Stability Condition – Rating / Score / Trend*
<b>2007</b>	Cluster 1 - Bible Pasture <b>Good / 67 / Upward</b> Cluster 2 - Bud Holland Pasture <b>Fair / 57 / Upward</b>	Cluster 1 - Bible Pasture <b>Excellent / 89 / Upward</b> Cluster 2 - Bud Holland Pasture <b>Excellent / 83 / Upward</b>
<b>1964</b>	Cluster 1 - Bible Pasture <b>Poor / 36 / Upward</b> Cluster 2 - Bud Holland Pasture <b>Fair / 56 / Upward</b>	Cluster 1 - Bible Pasture <b>Fair / 52 / Upward</b> Cluster 2 - Bud Holland Pasture <b>Fair / 61 / Upward</b>
<b>1961</b>	Cluster 1 - Bible Pasture <b>Good** / Upward</b> Cluster 2 - Bud Holland Pasture <b>Fair / Downward</b>	Cluster 1 - Bible Pasture <b>Good / Upward</b> Cluster 2 - Bud Holland Pasture <b>Good / Upward</b>
<b>1954</b>	Cluster 1 - Bible Pasture <b>Fair / Static</b> Cluster 2 - Bud Holland Pasture <b>Fair / Downward</b>	Cluster 1 - Bible Pasture <b>Fair / Static</b> Cluster 2 - Bud Holland Pasture <b>Fair / Downward</b>

\*Condition rating for Vegetation and Soil: Very Poor = 0-20 Poor = 21-40

Fair = 41-60 Good = 61-80 Excellent = 81-100

\*\* Older rating value **numbers** differ from the currently used numbers and are not provided here; the condition rating **terms** are comparable and are provided.

Condition and Trend monitoring data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

**Appendix 2 - Actual Use Tables and Range Monitoring Results**

**Prather Allotment**

Actual Use Table\*:

<b>Year</b>	<b>Stocking: Head-months / AUMs (hm x 1.32 = AUMs)</b>	<b>Year</b>	<b>Stocking: Head- months/AUMs (hm x 1.32 = AUMs)</b>
2007	144 / 190	1997	384 / 507
2006	144 / 190	1996	384 / 507
2005	144 / 190	1995	384 / 507
2004	384 / 507	1994	384 / 507
2003	384 / 507	1993	384 / 507
2002	384 / 507	1992	384 / 507
2001	384 / 507	1991	384 / 507
2000	384 / 507	1990	384 / 507
1999	384 / 507	1989	384 / 507
1998	384 / 507	1988	384 / 507

\* Authorized use and billing data are maintained in the 2200 Range Files on the Sacramento Ranger District and are hereby incorporated by reference.

**Condition and Trend Monitoring Results:** Transects read 3/2/07

<b>Year</b>	<b>Range Vegetation Condition Rating Class / Score / Trend*</b>	<b>Soil Condition/Stability Condition – Rating / Score / Trend*</b>
<b>2007</b>	Cluster 1 – Prather Canyon Good / 66 / Upward	Cluster 1 – Prather Canyon Excellent / 83 / Upward
<b>1959</b>	Cluster 1 – Prather Canyon Fair** / Static	Cluster 1 – Prather Canyon Fair / Static

\*Condition rating for Vegetation and Soil: Very Poor = 0-20 Poor = 21-40  
Fair = 41-60 Good = 61-80 Excellent = 81-100

\*\* Older rating value **numbers** differ from the currently used numbers and are not provided here; the condition rating **terms** are comparable and are provided.

Condition and Trend monitoring data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

## Appendix 2 - Actual Use Tables and Range Monitoring Results

### Smith Allotment

Actual Use Table\*:

Year	Stocking: Head-months / AUMs (hm x 1.32 = AUMs)	Year	Stocking: Head- months/AUMs (hm x 1.32 = AUMs)
2007	169 / 223	1995	169 / 223
2006	119 / 157	1994	169 / 223
2005	169 / 223	1993	169 / 223
2004	119 / 157	1992	169 / 223
2003	169 / 223	1991	68 / 90
2002	169 / 223	1990	34 / 45
2001	169 / 223	1989	0 / 0
2000	169 / 223	1988	0 / 0
1999	169 / 223	1987	0 / 0
1998	169 / 223	1986	136 / 180
1997	169 / 223	1985	119 / 157
1996	169 / 223		

\* Authorized use and billing data are maintained in the 2200 Range Files on the Sacramento Ranger District and are hereby incorporated by reference.

### Condition and Trend Monitoring Results: Transects read 3/2/07

Year	Range Vegetation Condition Rating Class / Score / Trend*	Soil Condition/Stability Condition – Rating / Score / Trend*
<b>2007</b>	C1 Smith Good / 65 / Upward	C1 Smith Good / 76 / Upward
<b>1960</b>	C1 Smith Good** / Upward	C1 Smith Good / Upward
<b>1952</b>	C1 Smith Fair / Upward	C1 Smith Fair / Upward

\*Condition rating for Vegetation and Soil: Very Poor = 0-20 Poor = 21-40  
Fair = 41-60 Good = 61-80 Excellent = 81-100

\*\* Older rating value **numbers** differ from the currently used numbers and are not provided here; the condition rating **terms** are comparable and are provided.

Condition and Trend monitoring data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

### **Appendix 3 List of Existing Improvements**

#### **Akers Allotment**

- 4.5 miles allotment boundary fence
- 4.2 miles allotment interior fence
- 4 earthen stock tanks
- 1 trick tank
- 5 water storage tanks
- 5 troughs
- 1 spring development
- 8.6 miles of pipeline

#### **Curtis Canyon Allotment**

- 3.8 miles allotment boundary fence
- 12.4 miles allotment interior fence
- 1 corral
- 6 earthen stock tanks
- 2 water storage tanks
- 10 troughs
- 10 spring developments
- 3.5 miles pipeline

#### **Miller Flats Allotment**

- 12.4 miles allotment boundary fence
- 3 miles allotment interior fence
- 4 earthen stock tanks
- 4 trick tank
- 4 water storage tanks

#### **Prather Allotment**

- 4.5 miles allotment boundary fence
- 0.8 miles allotment interior fence
- 7 earthen stock tanks
- 1 trick tank
- 2 storage tanks
- 3 troughs
- 1.5 miles pipeline

#### **Smith Allotment**

- 2 miles allotment boundary fence
- 1 earthen stock tank