



United States
Department of
Agriculture

Forest
Service

**Southwestern
Region**



Environmental Assessment

**Jakes, Laurel Canyon, North Reef, South Reef,
Goodwin and Kane Springs Allotments**

Safford Ranger District, Coronado National Forest

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Chapter 1 - Purpose and Need

Background

The Jakes, Laurel Canyon, South Reef, North Reef, Goodwin and Kane Springs Allotments comprise lands identified in the Coronado National Forest Land and Resource Management Plan (LRMP) as suitable for grazing. Where consistent with other multiple use goals and objectives, there is congressional intent to allow grazing on suitable lands. (*Multiple Use and Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Management and Policy Act of 1976, National Forest Management Act of 1976*). Where consistent with the goals, objectives, standards and guidelines of LRMPs, it is Forest Service policy to make forage from lands suitable for grazing available to qualified livestock operators (*FSM 2202.1, FSM 2203.1, 36 CFR 222.2 (c)*).

Federal actions such as the authorization of grazing and approval of allotment management plans must be analyzed to determine potential environmental consequences (*National Environmental Policy Act of 1969, NEPA; Rescission Act of 1995 (P.L.104-19)*). The Forest Service has prepared this Environmental Assessment in compliance with these laws and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Coronado National Forest Supervisor's Office in Tucson, Arizona. Throughout this EA, references to supporting documentation in the planning record are shown in parentheses. For example, a reference "(Doc. 23)" would mean that a specific passage in the EA is linked to information contained in Document 23 of the planning record.

Purpose and Need for Action

The purpose and need of the proposed action is to authorize livestock grazing in a manner consistent with the Coronado National Forest LRMP and to provide long-term management direction on grazing through allotment management plans (AMPs). Rangeland monitoring data indicate that conditions on the allotments are currently meeting LRMP goals and standards; however, the allotments currently lack sufficient environmental analysis to comply with Section 504 of the Rescissions Act of 1995 (*P.L. 104-19*).

Existing Condition

All six allotments are located within the Santa Teresa Ecosystem Management Area (EMA). Elevations range from approximately 4,000 feet in the southwest corner of the analysis area to over 7,000 feet on Cobre Grande Mountain in the north end of the EMA. Mean annual precipitation is 20 inches. The allotments are steep, brushy and remote. Portions of all of the allotments are included in the Santa Teresa Wilderness. The project area falls within two Natural Resource Conservation Service land resource units. Portions of the allotments are characteristic of the Mogollon Mixed Woodland-Grassland resource unit (39-4AZ), and portions are characteristic of the Arizona Interior Chaparral (38-1AZ). Range sites tend to be characteristic of the Granitic Hills, 12-16 PZ range site.

Soil, watershed, riparian and range condition on all allotments were updated in 1998 and annually since 2001 (Project Record Docs. 2, 3, 6-12). Overall, range condition on the allotments was determined to be satisfactory or better. Sites identified as being in unsatisfactory soil condition in the 1990 General Ecosystem Survey were re-evaluated in 2001 and were determined to be in satisfactory or impaired condition. Trend for the sites was determined to be stable or upward. Key areas have been established on all of the allotments and are monitored annually.

Range capability and suitability

Determination of rangeland capability and suitability is a two-step process. The first step determines which lands are capable of being grazed. Rangeland capability represents the determination of those areas of land that can sustain domestic livestock grazing. On the Coronado National Forest, capable rangelands are defined as rangelands under 40% slope and capable of producing 100 pounds per acre of dry forage. The second step identifies which capable rangelands are suitable for grazing. Suitability refers to the appropriateness of livestock grazing in an area when considered with all resource values and management objectives and is a determination made during the Forest planning process. Suitability is determined on those acres classified as capable.

In the project area, 13,987 acres (50% of the project area) are considered not capable of supporting grazing because of steep slopes (see Table 1). No grazing capacity is assigned to these areas. Two small areas comprising 606 acres are identified as both unsuited and not capable for grazing in the LRMP (see below). Of the areas considered capable, none have been classified as unsuitable in the LRMP. The number of capable acres on each allotment is shown in Table 1.

Management Direction

The project area includes three Management Areas as delineated in the Coronado National Forest LRMP.

Management Area (MA) 1 includes steep rugged lands that are managed for visual resources and semi-primitive dispersed recreation (LRMP, p. 47). Slopes are generally in excess of 40% and sites identified as MA1 are largely located in areas considered incapable and unsuitable for grazing. Approximately 2% of the project area (606 acres) falls within MA1.

Management Area 4 comprises the majority of the analysis area (17,496 acres, 63%). These lands include a variety of vegetation types on lands under 40% slope. They are considered generally capable and suitable for livestock grazing. Management emphasis is on a “sustained harvest of livestock forage and fuelwood while maintaining or improving game animal habitat” (LRMP, p. 62)

Management Area 9 includes vegetative and land form types that have been determined suitable for wilderness designation. Emphasis is to manage for wilderness values while providing livestock grazing and recreation opportunities that are compatible with maintaining wilderness values and protecting resources. Approximately 35% (9759 acres) falls within MA9.

Current Grazing Management

Allotment management plans for the Kane Springs, Laurel Canyon, North Reef and South Reef allotments were developed in the 1980’s. Plans for the Jakes and Goodwin allotments were written in 1990 and 1993 respectively. All plans are over 10 years old and need to be updated. Recent management on all of the allotments has been implemented through annual operating instructions. The number of permitted livestock, season of use and stocking levels over the past five years for each allotment are displayed in Table 1. Recent management on each of the allotments is described below.

Jakes: Located on the southwest side of the Santa Teresa Mountains, the Jakes Allotment contains 3,670 acres, of which 2,470 are considered capable for livestock grazing. Although the allotment is permitted for use year round, it is grazed only during the winter (generally December 1 to February 28) and receives growing season rest each year. The allotment is grazed in conjunction with adjacent state and private land and the Jakes Allotment comprises a portion of larger pastures on State and private land off the Forest. There is no fence along the Forest boundary and cattle move into and out of the allotment in response to forage and water availability. Because of the lack of a boundary fence, the stocking numbers in Table 1 may not reflect actual use. Since 1999, measured utilization has ranged from 0-20% in key areas. There are 3 pastures.

Laurel Canyon and South Reef: Located north of the Jakes Allotment on the southwest face of the Santa Teresa Mountains, the Laurel Canyon Allotment consists of 2,799 acres, of which 751 are considered capable for grazing. The South Reef Allotment consists of 5,198 acres, of which 2,572 are classified as capable for grazing. The allotments are managed in combination, with winter seasonal use occurring on each allotment in alternate years (Table 1). Each allotment is grazed for three months during the winter and rested each summer growing season. Range condition is considered good and utilization is 35% or less in key areas.

North Reef: Located adjacent to the South Reef Allotment on the north face of the Santa Teresa Mountains, the North Reef Allotment consists of 6,762 acres, about 3,555 of which are classified as capable for livestock grazing. Grazing occurs in the winter and the allotment is rested every growing season. The allotment is poorly watered and has not been stocked for the past two years. Since 1999, utilization has not exceeded 20% when the allotment is grazed.

Goodwin: The Goodwin Allotment is located at the North end of the Santa Teresa Mountains and is bounded on the North by the San Carlos Indian Reservation. The allotment comprises 8,737 acres of which 3,975 are considered capable. Prior to 1993, the Goodwin allotment was two separate allotments with a combined grazing preference for 108 head yearlong. In 1993 the allotments were combined and the permit was reduced to the current 54 head. This is the only allotment in the analysis area permitted for year-round grazing. The allotment is managed under a two-pasture deferred rotation that allows growing season rest for each pasture every other year. The combination of the allotments has provided additional management flexibility and has resulted in improving conditions. Since 1999, utilization in key areas has ranged from 0-25%.

Kane Springs: The Kane Springs Allotment is located in the northeast corner of the Santa Teresa EMA. It is a small allotment (698 acres, 394 capable acres). Grazing occurs during the dormant season (11/1-4/30 each year). Because the Forest boundary fence is not secure, cattle often drift down off of the Forest during the grazing season. As a consequence, use is generally light, estimated at 10% or less since 1999.

Table 1. Season of use, permitted numbers and stocking levels for the past 5 years on allotments in the analysis area.

	Jakes	Laurel Canyon	South Reef	North Reef	Goodwin	Kane Springs
Capable Acres	2,740	751	2,572	3,555	3,975	394
Permitted #	31	50	50	100	54	14
Season of use	3/1-2/28 (yearlong)	10/1-3/31 (6 months)	10/1-3/31 (6 months)	11/1-3/31 (5 months)	3/1-2/28 (yearlong)	11/1-4/30 (6 months)
(Head Months ¹)	372	300	300	500	648	84
2003-2004 (HM)	360	Rested	300	Not used	648	84
2002-2003 (HM)	360	300	Rested	Not used	648	84
2001-2002 (HM)	360	Rested	300	350	648	84
2000-2001 (HM)	503	300	Rested	500	648	84
1999-2000 (HM)	503	Rested	300	500	648	84
Maximum Stocking (Acres/HM)	7.4	2.5	8.6	7.1	6.1	4.7

Desired Condition

The Coronado LRMP (page 10) contains the following goals for the range and wildlife programs on the Forest.

¹ Head months is calculated by multiplying the number of livestock grazed by the number of months grazing occurs.

- To restore rangeland to at least moderately high ecological condition (70% to 75% of potential production, fair range condition) with stable soil and a static to upward trend.
- Produce livestock products consistent with other resources and uses.
- Eliminate grazing from areas not capable of supporting livestock without significant detriment to range or other resources.
- Balance permitted grazing use with grazing capacity.
- Provide habitat for wildlife populations consistent with the goals outlined in the Arizona and New Mexico Department of Game and Fish Comprehensive Plans and consistent with other resource values.
- Provide for ecosystem diversity by at least maintaining viable populations of all native and desirable nonnative wildlife, fish and plant species through improved habitat management.
- Improve the habitat of and the protection for local populations of Threatened and Endangered species to meet the goals of the Endangered Species Act of 1973.

Grazing management strategies have been proposed that support these goals and contribute to the following specific objectives, which constitute the desired condition in the analysis area:

- Maintain or improve ecological condition as expressed by the number of acres in fair or better condition.
- Maintain or improve range forage production and move toward site potential for each soil/vegetation site.
- Maintain or improve riparian condition.

On all six allotments livestock distribution and utilization are consistent with LRMP goals, objectives, standards and guidelines. There appears to be little need for change from current management. No improvements are needed or proposed;² however, AMPs need to be updated to reflect current management.

Proposed Action

The Safford Ranger District, Coronado National Forest, proposes to authorize livestock grazing on the Jakes, Laurel Canyon, South Reef, North Reef, Goodwin and Kane Springs Allotments under the following terms and conditions:

- Forage utilization on the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs Allotments will be limited to 45% or less in designated key areas, with no more than 40% utilization on riparian trees and shrubs. Forage utilization in wilderness areas will be limited to 35% in accordance with LRMP direction.
- Forage utilization on the Goodwin Allotment will be limited to 35% or less, with no more than 30% utilization on riparian trees and shrubs.
- Season of use will be limited to the winter dormant season (October 1 to March 31³) on the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs Allotments in order to provide annual growing season rest. Season of use on the Goodwin Allotment will be year-round, but management will provide growing season rest on pastures every other year.
- Specific dates of use and numbers of livestock will be determined through annual operating instructions using an adaptive management process based on resource conditions and management objectives. The number of livestock grazed will not exceed what is authorized on the permit.

² The scoping report identified the need to build short fences in the jakes and North Reef Allotments. Subsequent analysis and discussion with the permittee indicates that these improvements are not needed.

³ The scoping report for this project identified the dormant grazing season as October 1-April 30. This period has been shortened by one month to reduce the duration of grazing.

A detailed description of the proposed action for each of the allotments is found in Chapter 2.

Decision Framework

The Safford District Ranger is the official responsible for the decision. Given the purpose and need, the District Ranger will review the environmental analysis of the proposed action and the other alternatives in order to make the following decisions:

- Whether to authorize grazing on the Jakes, Laurel Canyon, North Reef, South Reef, Goodwin and Kane Springs allotments.
- If grazing is authorized, which management practices and mitigation measures will be prescribed in each AMP, including permitted classes and numbers of livestock, seasons of use, range facilities to be constructed, allowable utilization levels, the term of the permit and monitoring actions to be conducted.

Decisions may be made separately for each allotment or collectively for all allotments combined. The decision(s) will also include a determination of consistency with the LRMP, National Forest Management Act, National Environmental Policy Act and other laws, regulations and executive orders.

Public Involvement

On May 9 & 10, 2000, a Coronado National Forest interdisciplinary (ID) team met with Safford District staff to discuss the six allotments. Information needs were identified and the District collected monitoring data during 2001 and 2002. The ID team met again on November 7, 2003 to develop a proposed action and identify preliminary issues and measures to carry forward into the analysis. On April 12, 2004, a scoping report was mailed to 37 potentially interested and affected individuals, groups and agencies and posted on the forest's internet site. Five responses were received. The proposal has appeared continually in the Coronado National Forest Schedule of Proposed Actions since September 2003. A summary of comments received during scoping is included as Appendix 1.

Issues

Using comments from the public and other agencies, the Forest developed a list of issues to address. Issues are defined as a concern or debate about the effects of the proposed action. The issues were used to identify alternatives to the proposed action and to develop mitigation measures intended to reduce or avoid effects. Copies of the comments received and an analysis of the issues raised can be found in the project record (Docs. 14-19).

Several comments identified issues previously raised by the IDT. No new issues were developed as a result of scoping. As for significant issues, the Forest Service identified 3 topics raised during scoping. The following issues and measures will be used in the analysis of impacts of the proposed action. Impacts will be quantified to the extent practicable. When measures cannot be quantified, a qualitative narrative based on the expertise of an appropriate resource specialist will be presented.

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

- **Grazing effects on riparian area condition:** Grazing may prevent the attainment of satisfactory riparian conditions within the allotments.

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

Chapter 2 – Alternatives Including the Proposed Action

Alternative 1: No Action (No Grazing)

Forest Service Policy (Forest Service Handbook 2209.13, Chapter 90) requires the Forest Service to identify no grazing as the No Action alternative. Under this alternative, grazing would not be authorized and use of the allotments by domestic livestock would be discontinued. Existing structural improvements would remain in place but would not be maintained. Improvements contributing to resource protection or enhancement, such as water developments important for wildlife, would be maintained where feasible using other program funds. Periodic inspection of structural improvements would be used to determine whether maintenance or removal is needed. Removal or maintenance of improvements would be authorized by a separate decision. Where necessary, maintenance of allotment boundary fences would be reassigned to adjacent permittees with the understanding that livestock are to be kept off of the allotments.

Alternative 2: The Proposed Action

Under this alternative, the Safford Ranger District, Coronado National Forest, proposes to authorize livestock grazing on the Jakes, Laurel Canyon, South Reef, North Reef, Goodwin and Kane Springs Allotments under the following terms and conditions:

- Forage utilization on the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs Allotments will be limited to 45% or less in designated key areas, with no more than 40% utilization on riparian trees and shrubs. Forage utilization in wilderness areas will be limited to 35% in accordance with LRMP direction.
- Forage utilization on the Goodwin Allotment will be limited to 35% or less, with no more than 30% utilization on riparian trees and shrubs.
- Season of use will be limited to the winter dormant season (October 1 to March 31) on the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs Allotments in order to provide annual growing season rest. Season of use on the Goodwin Allotment will be year-round, but management will provide growing season rest on pastures every other year.
- Specific dates of use and numbers of livestock will be determined through annual operating instructions using an adaptive management process based on resource conditions and management objectives. The number of livestock grazed will not exceed what is authorized on the permit.
- New allotment management plans (AMPs) would be prepared for all allotments

Minor modifications would include reducing authorized use from 50% to 45% of key species in key areas on five of the six allotments that receive winter use only. The proposed actions recognize the need to be adaptive in order to respond to changing resource conditions. Therefore, the numbers of livestock identified represent the level of stocking that has been shown to be sustainable over time. Specific numbers of livestock and specific on and off dates will be identified in annual operating instructions, based on utilization levels, water and forage conditions and management goals. Specific proposed actions for each allotment follow below.

Jakes Allotment: Under the proposed action, the allotment would continue to be used in conjunction with adjacent state and private land. A new permit would be issued for grazing during the winter dormant season (October 1-March 31) to reflect recent actual use. Authorized use would not exceed 372 head months (HM). Recent actual use has averaged 90 cattle for 3 months (270 HM) and is expected to continue. The scoping report for the project identified a need for a short fence, but site-specific analysis indicates the fence is not necessary, so no new improvements are proposed.

Laurel Canyon/South Reef: Under the proposed action, the allotments would remain combined and managed as a single unit. The allotments would be grazed as a two pasture, one herd deferred rotation. The allotment would be grazed during the winter dormant season (October 1-March 31) and rested each summer growing season. Authorized use would not exceed 300 HM. Current management consists of grazing one of the allotments for 3 months (October-December) with 100 head while resting the other. This management is expected to continue. No new improvements are proposed.

North Reef: The proposed action would authorize grazing of up to 500 HM during the winter dormant season (November 1-March 31). The allotment would be rested every summer. Recent management has consisted of grazing from 0-100 head for five months and is expected to continue. No improvements are proposed.

Goodwin: The proposed management would consist of a two-pasture, one herd deferred rotation. The stocking level would not exceed 648 HM (54 cattle for 12 months). Current management consists of grazing one pasture for a full year (November-October) while resting the other. This management is expected to continue. No improvements are proposed.

Kane Springs: The proposed action would authorize grazing of up to 85 HM during the winter dormant season (November 1-March 31). Recent management has consisted of grazing up to 17 head for five months and is expected to continue. No improvements are proposed.

Monitoring Activities

Monitoring will be used to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions. Seasonal utilization will be measured on key species in key areas (see Appendix 2 for definition of terms). Key areas have been established (PR Docs. 5-12) and will be identified the Allotment Management Plans for each allotment, consistent with the management guidelines in the Coronado LRMP on page 22 (Doc. 1). Key species will be native perennial grasses that are palatable to livestock. These may include, but are not limited to, plains lovegrass (*Eragrostis intermedia*), sideoats grama (*Bouteloua curtipendula*), hairy grama (*B. hirsuta*), blue grama (*B. gracilis*), Texas bluestem (*Andropogon cirratus*), wolftail (*Lycurus phleoides*), cane beardgrass (*Bothriochloa barbinoides*), Tanglehead (*Heteropogon contortus*) and three awn (*Aristida sp.*). The Safford District Range Staff and the permittees will be responsible for monitoring livestock use to assure that use levels stay below 45%. When any single key area reaches the stated use objective, the livestock will be moved to next pasture or off the Forest. The Forest is required to monitor forage use at least every third year in compliance with the current USFWS biological opinion in effect for the allotments. In practice, monitoring has occurred yearly on the allotments for the past several years.

Long term trend monitoring will include measurements to track upland range condition and watershed condition (hydrologic function). Techniques may include, but are not limited to ground cover, dry weight rank, pace frequency transects, fetch, Parker 3-step, repeat photography, grazed plant count, and clipping and weighing. Permittees will be encouraged to participate in the monitoring activities. Records of livestock numbers, movements dates, shipping records, and rainfall dates and amounts will be kept by the permittee and will be provided to the USFS annually.

If monitoring indicates that desired conditions are not being achieved, changes in management may be proposed. Changes may include administrative decisions such as the specific number of livestock, specific dates for grazing, class of animal or modifications in pasture rotations, but will not exceed the limits for timing, intensity, duration and frequency defined for the proposed action and analyzed herein.

Mitigation Measures

Mitigation measures are incorporated into the proposed action in order to reduce or eliminate effects to resources that were identified during planning for the analysis.

Wildlife – the objective is to mitigate impacts to wildlife from livestock grazing and from disturbance associated with the location and construction of range facilities.

- All new or reconstructed water developments will include wildlife access and escape ramps.
- All new fencing will be built to LRMP standards (LRMP, page 35) to provide for wildlife passage through the fence. At a minimum, this will be a 4-strand fence with a smooth bottom wire 16 inches off the ground and a total fence height of 42 inches or less.
- Livestock will be removed from the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs allotments by March 31 each year in order to reduce the potential for livestock herbivory on flowering agave plants.
- Livestock utilization will be maintained at conservative levels (35% or less) on the Goodwin allotment in order to provide herbaceous cover for Mexican spotted owl prey.

Soils and Watershed – the object is to mitigate soil and watershed impacts from livestock grazing. Best Management Practices for soil and watershed protection (FSH 2509.22, Doc. 24) will apply to all action alternatives and will be incorporated into the allotment management plans. Practices include but are not limited to:

- annual preparation of an operating plan with the permittee to allow for consideration of current allotment conditions and management objectives;
- periodic field checks to identify needed adjustments in season of use and livestock numbers, including stock counts, forage utilization, assessment of rangeland to verify soil and vegetative condition and trend; and
- necessary techniques to achieve proper distribution or lessen the impact on areas which are sensitive or would naturally be overused. Practices include standard practices such as salting, herding and controlling access to waters to control distribution. Salt will be placed on good feed one quarter to one half mile from water and salting locations will be moved annually.

Future Review of the Decision

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

Alternatives Eliminated from Detailed Study

One response to scoping suggested an additional alternative that would reduce grazing use by 35-70% on the allotments. This alternative would not address any significant issues associated with the proposed action, so it was not carried forward for detailed analysis. No other alternatives were considered.

Comparison of the Alternatives

This section compares the attributes and effects of implementing each alternative. It summarizes the more detailed effects analysis contained in Chapter 3.

Table 2. Comparison of the Alternatives

Attribute Compared	Alternative 1 – No Grazing	Alternative 2 – Proposed Action
Number of livestock authorized (head months)	0	Jakes: 372 Laurel Canyon/South Reef: 300 North Reef: 500 Goodwin: 648 Kane Springs: 85
Season of use	No Use	Jakes, Laurel Canyon/S. Reef, N. Reef, Kane Springs: 10/1-3/31 Goodwin: Yearlong
Maximum grazing utilization	No Use	Jakes, Laurel Canyon/S. Reef, N. Reef, Kane Springs: 45% Goodwin: 35%
Economics of the proposal	No permittee income, permit revenue would be lost. Administrative costs would be slightly reduced, but FS maintenance costs would increase. No improvement costs.	Moderate permittee income but likely not sufficient to cover ranch expenses. Permit income for Forest and county, but administrative costs slightly higher.
Effects to TEPS species	No Effects	May affect, not likely to adversely affect Mexican Spotted owl and lesser long-nosed bat: Goodwin allotment. No effects on all other allotments.
Effects to Management Indicator Species	No Effects	Small reduction in herbaceous vegetation; viable populations maintained.
Range condition	Most rapid improvement	Stable or improving
Soil and watershed condition	Improvement in hydrological function and soil structure. Impaired soils move toward satisfactory condition.	Continued satisfactory conditions, and improvement in hydrological function. Small areas of impaired soils in livestock concentration areas.
Riparian condition	Increase in herbaceous vegetation; limited potential for riparian tree growth.	Herbaceous vegetation less than 1, but continued satisfactory condition. Limited potential for riparian tree growth.
Water quality	Less runoff and improved water quality.	Less runoff and improved water quality, but not as rapid as 1.
Heritage resources	No effect	Effects avoided or mitigated.

Chapter 3 – Environmental Consequences

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

Actions Considered for Cumulative Effects

Cumulative effects are the incremental and additive effects of other past, present and reasonably foreseeable future actions that add to the direct and indirect effects considered in this EA. The following activities have been identified as potentially contributing cumulative effects to the effects of the proposed action and alternative in the project area.

Livestock grazing has occurred within the analysis area for over 100 years. There is evidence that widespread heavy livestock grazing after about 1880 removed much of the herbaceous fine fuels necessary to support fires throughout much of southeastern Arizona. The reduction in fine fuels, combined with active fire suppression beginning in the early 1900's contributed to a decreased fire frequency and subsequent invasion of many grasslands by woody plants and reductions in herbaceous cover. The Santa Teresa Mountains supported significant goat ranching operations during the first half of the 20th century. The direct and indirect effects of these past actions have doubtless contributed to current soil, vegetation and wildlife habitat conditions. Livestock grazing occurs on State, Bureau of Land Management, San Carlos Tribal and private lands surrounding the project area and on adjacent Forest allotments within the EMA. This activity may influence vegetative and watershed conditions downstream from the analysis area.

The project area receives a low level of dispersed recreational use, primarily in the form of hunting, hiking and vehicle use of primitive roads. The area is remote and there are no developed recreation facilities. Public access to the project area is very limited as most access road cross private land that are closed to public entry. There are no plans for developing recreational facilities in the foreseeable future. Significant increases in the level recreational activity are not anticipated.

Foreseeable future actions would include those for which a proposed action has been approved or those proposed for NEPA analysis in the future. There are no future actions proposed in the project area. Other possible future actions were considered too speculative for consideration in the cumulative effects analysis.

Wildlife

Affected Environment

Broadleaf woodland, chaparral, coniferous forest and riparian vegetation types within the six allotments provide habitat for a variety of wildlife species. Game species include Mearns' quail, Gambel's quail, mourning dove, cottontail rabbit, white-tailed deer, mule deer, javelina, mountain lion and black bear. Of these, Mearns' quail, white-tailed deer and black bear are management indicator species for the Coronado Forest Plan. Predator/furbearer species that may occur within the project area include coyote, gray fox, bobcat, coati, striped, hooded and spotted skunks, raccoon, badger, and ringtail. The area may be used for foraging and roosting by a variety of bat species including cave myotis, Mexican free-tailed bat, pallid bat, Townsend's big-eared bat and several other species. The diversity of available habitats is expected to provide habitat for many species of songbirds.

Management Indicator Species

The primary issue related to Management Indicator Species (MIS) and general wildlife are the effects of grazing on upland vegetation, specifically as it relates to impacts on species requiring herbaceous cover. Thirty-three MIS and one group (primary and secondary cavity nesters) are identified in Appendix G of the LRMP (U.S. Forest Service 1986, pages 128-129). In general, LRMP direction for MIS is to maintain or improve occupied habitat for management indicator species. Of the 33 total MIS on the Forest, four species and one group (cavity nesters) were selected for analysis as management indicators at the project level based on their known occurrence within or near the project area or presence of suitable habitats (Table 3). The remaining 29 were eliminated from consideration in this analysis because their known distributions are well outside of the project area or the project area does not contain suitable habitats for those species (Doc. 22). Forest-wide trends of all MIS have been assessed and are reported in the Forest-wide Status Report for Management Indicator Species (Coronado National Forest 2002, Doc. 26). The background information and conclusions of that reported are incorporated by reference.

Table 3. Management Indicator Species potentially occurring in the project area.

Species	Evaluation for Analysis
Mearns quail	Potentially occurs in analysis area, potential habitat available
White-tailed deer	Occurs within the analysis area, widespread suitable habitat
Black Bear	Occurs within the analysis area, suitable habitat present.
Peregrine falcon	Eyrie near project area; potential foraging use by resident or wintering birds.
Primary and secondary cavity nesters	Occur within project area; suitable habitat present.

Threatened, Endangered and Sensitive Species

Habitats for listed or proposed threatened or endangered species are limited in the analysis area. Limited habitats for the **Mexican spotted owl** are found on the Goodwin allotment and the species has been observed on the Goodwin Allotment; however, no protected activity centers are located in the area. Suitable habitats⁴ for the **Chiricahua leopard frog** are found in the analysis area, but the species has never been documented in the project area. Surveys conducted in 1997 and 2002 did not detect the species. The project area supports high densities of agaves and is located at the northern edge of the distribution of the **lesser long-nosed bat**. However, the species has never been documented in or near the project area. Forest Service Sensitive species that potentially occur in the project area are shown in Table 4.

Table 4. Forest Service Sensitive species potentially occurring in the project area.

Common Name	Status	Comments
Birds		
American peregrine falcon <i>Falco peregrinus anatum</i>	Sensitive	Active eyrie near Black Rock. Possible foraging habitat.
Common black hawk <i>Buteogallus anthracinus</i>	Sensitive	Nests in Aravaipa Canyon downstream from project area
Amphibians		
Lowland leopard frog <i>Rana yavapaiensis</i>	Sensitive	1997 record from Black Rock Canyon and Laurel Canyon

⁴ As defined by the Regional Framework for Informal Consultation, suitable habitats include lakes, rivers, streams, springs, ponds and man-made structures such as reservoirs, stock tanks and acequias.

Common Name	Status	Comments
Reptiles		
Giant spotted whiptail <i>Cnemidophorus burti</i>	Sensitive	1981 record, Cottonwood Canyon, N. Reef
Plants		
<i>Heuchera glomerata</i> Arizona alum root	Sensitive	Suitable habitat present, within range of the species.
<i>Penstemon discolor</i> Catalina beardtongue	Sensitive	Suitable habitat present, within range of the species.
Invertebrates		
<i>Amblycheila baroni</i> A tiger beetle	Sensitive	Suitable habitat present; within range of the species.
<i>Agathymus aryxna</i> Arizona giant skipper	Sensitive	Suitable habitat present; within range of the species.
<i>Agathymus polingi</i> Poling's giant skipper	Sensitive	Suitable habitat present; within range of the species.
<i>Megathymus ursus ursus</i> Ursine giant skipper	Sensitive	Suitable habitat present; within range of the species.
<i>Calephelis arizonensis</i> Arizona metalmark	Sensitive	Suitable habitat present; within range of the species.

Environmental Consequences

General effects applicable to all species.

Direct effects to wildlife from grazing can include disturbance of nesting birds; trampling or consumption of fish and amphibians and their eggs or larvae; trampling of hibernating or otherwise immobile species, displacement of native species and direct competition for limited food or water resources. Indirect effects to wildlife from livestock grazing are generally related to changes in habitat structure or composition. Grazing removes herbaceous vegetation that provides security and thermal cover for species ranging from rodents and ground-nesting birds to white-tailed deer. The loss of herbaceous cover can also change natural fire and hydrologic regimes, leading to widespread changes in plant community composition and soil loss. Livestock will actively select for palatable forage species. Long term heavy grazing may lead to the loss or reduction of palatable species and their replacement with less palatable species like burrowweed, turpentine bush, annual weeds and non-native species like Lehmann lovegrass.

In riparian areas grazing can reduce vegetative diversity and species richness through the consumption of vegetation and trampling of stream banks. Consumption of seedlings can lead to reductions in tree recruitment and the loss of canopy cover. Livestock can impact riparian ecosystem functioning through changes in streamside vegetation, channel morphology, water temperature and quality and accelerated erosion. Changes in water chemistry and temperature in turn, render habitats unsuitable for native species. Riparian areas are particularly important to wildlife and most vulnerable because livestock tend to congregate in riparian areas for the same reasons wildlife do, i.e. water availability, forage availability, thermal cover, hiding cover, and as movement corridors.

Human activities and developments related to livestock management include the removal of livestock killing predators (mountain lion, coyote and bear) in some areas, fencing that disrupts or precludes wildlife movements and the development of artificial waters. Effects of water developments, both positive and negative, are often matter of season of use, dependability, and number of livestock utilizing the waters. Visual and sound disturbance associated with livestock operations and the presence of cattle may cause localized, relatively short-term effects, primarily the displacement of wildlife.

Many of the effects described above are likely to have occurred in the project area over the past century or more of livestock grazing and may continue to contribute cumulative effects to the project area. Recent monitoring of rangeland condition and trend indicates that conditions are improving as a result of recent management.

Management Indicator Species.

Black Bear (*Ursus americanus*). Black bears are wide ranging habitat generalists that prefer areas of dense cover and high vegetative diversity. They are included in the Riparian Species, Species Needing Diversity and Game Species indicator groups in the Forest Plan. Black bears potentially occur throughout all of the six allotments. Grass has been shown to be a very important component of bear diets in the spring (April-June), which may force both bears and livestock to use the same areas to meet nutritional requirements. This may increase the potential for bear depredation on livestock during years of poor forage production. There are no records in the project files of black bear depredation being problematic on the allotments. No accurate method of censusing bear populations has been developed and no estimates of bear densities in the project area are available.

Suitable black bear habitat occurs throughout the project area, with highest densities expected in the steep, brushy canyons at upper elevations of the allotments that are little used by livestock. Lower elevation sites in the desert grassland and open woodlands may be used seasonally, but are not considered high quality habitats. Summer habitat use often is centered on riparian areas where water is available. The project area contains very few sources of permanent water, and this likely limits the bear population.

Under the **no action** alternative, grazing would be discontinued on the allotments. Over the long term, increased herbaceous cover would be expected to result in increased fine fuels and a more natural fire regime, leading to a presumed increase in diversity over a period of years. Under the **proposed action**, livestock would graze five of the six allotments only in winter when bears are in their dens. This reduces the potential for bear/livestock conflicts. Occupied habitats for black bears in the project area are expected to be maintained or improve under all alternatives. Bear populations are influenced by environmental factors such as rainfall and its effect on food availability and by anthropomorphic factors such as hunting. Population changes related to project effects would be difficult to detect, but are not expected to contribute significantly to changes in the forest-wide population of the species.

White-tailed deer (*Odocoileus virginianus couesi*) are included in the indicator groups of Species Needing Diversity and Game Species in the Forest Plan. White-tailed deer occur on all of the allotments. The species will use a variety of habitats but prefers areas of thicker cover. The presence of freestanding water is important for suitable whitetail habitat and they no doubt benefit from the presence of permanent livestock waters in the allotments. Heavy grazing prior to and during the fawning period reduces hiding cover and may reduce fawn survival and recruitment (Ockenfels et al. 1991). Shrubs comprise the majority of white-tailed deer diets, although forbs are seasonally important. Overgrazing by livestock will reduce available grass forage and lead to increased livestock use of browse plants and forbs used by deer. Steep slopes throughout much of the analysis area restrict the movement of livestock into many areas that are readily used by white-tailed deer.

White-tailed deer are surveyed annually by the Arizona Game and Fish Department. Data are collected and reported on the basis of Game Management Units (Doc. 22). The project area is included in Unit 31, which also includes the Pinaleno Mountains. For the period of 1998-2003, fawn recruitment averaged 28%, based on mid-winter surveys. This recruitment has been sufficient to support an average harvest of 244 deer per year from the Unit.

Because grazing occurs during the winter only on five of the six allotments, livestock utilization is not expected to significantly affect herbaceous cover necessary for fawning during the summer growing season.

On the Goodwin allotment, year-round grazing may result in some reduction of cover, but the conservative use expected on this allotment (<35% in key areas) is expected to result in very little use of herbaceous species in steeper slopes preferred by deer.

Occupied habitats for white-tailed deer are expected to be maintained or improve under both alternatives. Project-related effects on deer populations may be difficult to detect or quantify because deer populations are also influenced by other factors such as changes in precipitation patterns and predation.

Montezuma (Mearns') quail (*Cyrtonyx montezumae*) are an indicator for Species Needing Herbaceous Cover and Game Species in the Coronado Forest Plan. Overgrazing, especially during the growing season has been shown to be deleterious to Montezuma quail due to its effects on cover. The maintenance of grass height over 6" is necessary to provide sufficient cover for the birds to hide from predators (Heffelfinger and Olding 2000). No high density habitats are mapped in the Santa Teresa EMA. However, Montezuma quail potentially occur in low densities in broadleaf woodland plant communities on the allotments. No population trend data are available for the project area.

Montezuma quail survival is related to the presence of cover in the form of perennial warm season bunch grasses. Heavy grazing in Montezuma quail habitats has been shown to impact quail populations regardless of food availability. R. Brown (1978, 1982) found that 95% of the mated pairs counted during his study were located in areas averaging 45% grazing utilization or less for their entire home range. Grazing in excess of 55% by weight nearly eliminated local quail populations by removing available cover, even though production of preferred quail food plants was higher on heavily grazed pastures. Bristow and Ockenfels (2000), in their study of Mearns' quail elsewhere on the Forest found no difference in quail numbers between grazed and ungrazed sites and concluded that the Forest's grazing program as currently administered is not significantly affecting the quail population on the sites they studied. Grazing administration in the project area is conservative compared to the study sites monitored by these researchers, with utilization well below 45% in recent years.

Under the **proposed action**, the combination of growing season rest and moderate use levels should allow for the growth and retention of warm-season bunch grasses. Project impacts, both positive and negative, will be localized and are not expected to contribute to a Forest-wide change in the species' population. Current levels of occupied habitat for the species are not expected to change. Under the **no action** alternative, the amount of residual herbaceous cover retained throughout the year would be the greatest. Plant species diversity would be expected to increase in the absence of selective herbivory by livestock. However, quail population fluctuations are highly correlated with the amount and timing of summer precipitation. Like many small game species, populations can fluctuate dramatically from year to year, but are capable of rapid recovery during high summer rainfall periods.

Peregrine falcon (*Falco peregrinus anatum*) is included in the Threatened and Endangered Species group of the Forest MIS list. The species was delisted in 1999. The project area could be used throughout the year by birds wintering or migrating through the area as well as by birds from the nearby eyrie. The primary threat to the species is disturbance at nest sites, primarily by recreational rock climbers, but also through other ground-disturbing or loud activities that take place during the nesting season (March 1 to July 15). Grazing may affect peregrine falcons if grazing effects are sufficient to change plant species composition and vegetative structure. Changes in these parameters could change the habitat suitability for primary prey species (songbirds). Generally, reductions in plant species composition and structure would result in corresponding reductions in prey species diversity and abundance. Grazing effects that lead to a more heterogeneous plant community would, in general, result in a greater diversity and abundance of prey.

No potentially disturbing activities are planned in the vicinity of existing eyries, so no direct impacts to peregrine falcons are anticipated as a result of any of the project. Grazing intensity as currently practiced and proposed is not expected to result in effects sufficient to change habitat suitability for falcon prey.

Primary and secondary cavity nesters potentially occur in all plant communities in the project area. In general, cavity nesters require large, older age class trees and snags to provide a suitable substrate for cavities. Grazing-related activities that affect cavity nesters are those that change the rate of regeneration of cavity forming trees. In uplands, historic grazing management has resulted in an increase in woody plants. In riparian areas, grazing potentially reduces the recruitment of trees through trampling or consumption of small trees by livestock. Much of the project area is heavily wooded and it is unlikely that cavities are limited. Tree species recruitment data for riparian species in the project area indicate that recruitment is occurring (Table 9).

North American Breeding Bird survey data for 1980-1999 show significant downward trends for Gila woodpecker and American kestrel. For all other primary or secondary cavity nesters, trends were not significant or no data were available.

The proposed action could beneficially impact primary and secondary cavity nesters, primarily through a general increase in regeneration of riparian trees. Under both alternatives, woody upland vegetation is expected to continue to mature, providing potential cavity nest sites as trees grow. Project activities should comply the Forest Plan objective to retain 100% of occupied habitat for this group. Any impacts are not expected to contribute significantly to changes in Forest-wide populations of cavity nesters.

Forest Service Sensitive Species.

A biological evaluation of the proposed action (Doc. 22) found that the proposal will have no effect on the following species:

- American peregrine falcon
- Common black hawk
- Giant spotted whiptail
- Scudder's duskywing

These species do not occur in close enough proximity to be affected by the proposal or occur in habitats that are not affected by the proposed action.

For the following species, authorization of grazing may impact individuals, but will not result in a trend toward federal listing or a loss of viability.

- Lowland leopard frog (*Rana yavapaiensis*)
- Arizona Giant Skipper (*Agathymus aryxna*)
- Freeman's agave borer (*Agathymus baueri freemani*)
- Poling's giant skipper (*Agathymus polingi*)
- Ursine giant skipper (*Megathymus ursus ursus*)
- A tiger beetle (*Amblycheila baroni*)
- Arizona metalmark (*Calephelis arizonensis*)
- Chiricahua Mountain alumroot (*Huechera glomerata*)
- Catalina beardtongue (*Penstemon discolor*)

These species either occur on the allotments or have potential habitat on the allotments that could be affected by the proposed action. Detailed surveys and life history studies to determine specific habitat needs and distribution are, in many cases, lacking. In general, possible effects are confined to trampling of individuals or

herbivory by livestock. Impacts are expected to be short-term and minor, limited mainly to disturbance of or damage to individuals.

The proposed management includes measures that are intended to improve soil, watershed, vegetation and riparian conditions in the future. These include moderate utilization maxima (35% growing season, 45% dormant season) and growing season rest. Implementation of these measures should maintain or improve habitats for sensitive species.

Threatened, Endangered and Proposed Species

Effects of the ongoing grazing activities on the six allotments were evaluated in the 1998 Biological Assessment of Ongoing and Long-term Grazing on the Coronado National Forest (USFS 1998) and in the associated Biological Opinion from the U.S. Fish and Wildlife Service (Service) dated July 29, 1999. This BO expired on July 29, 2002 and the Forest reinitiated consultation in 2002. A supplemental BA was prepared and submitted to the Service on April 18, 2002. The BA incorporated changes in the grazing Guidance Criteria (USDA Forest Service, 2002) and includes an effects analysis for the Chiricahua leopard frog that was listed as Threatened on June 13, 2002 (67 FR 40790-40811). A new Biological Opinion and Conference Opinion was issued on October 25, 2002 (USDI 2002) with a term of ten years. Effects determinations found in the revised BA are shown in Table 5. In 2003, portions of the analysis area were identified as proposed critical habitat for Mexican Spotted Owl. A separate BA (USFS 2004) was prepared analyzing the effects of the proposed action on proposed critical habitat and submitted to the Service for conferencing on April 6, 2004. The BA determined that the proposed action would have no effect on proposed critical habitat for all allotments in the analysis area. The final rule designating critical habitat was published August 31, 2004. A final opinion has not been issued.

Table 5. Determinations of the 2002 consultation on ongoing livestock grazing.

	Jakes	Laurel Canyon/ South Reef	North Reef	Goodwin	Kane Springs
Lesser long-nosed bat	LAA	NLAA	NLAA	LAA	LAA
Mexican spotted owl				NLAA	
Chiricahua leopard frog	NLAA	NLAA	NLAA	NLAA	NLAA

LAA: Likely to adversely affect. NLAA: Not likely to adversely affect

Since 2002, the Forest has updated range, riparian and soil monitoring data to support the NEPA analysis in progress. A project-level biological assessment of effects has been prepared and is included in the project record (Doc. 21). The determinations of this assessment are shown in Table 6 and summarized below. The proposed actions remain similar to those consulted on previously; however, the Forest is proposing changes in the timing and duration of grazing that would reduce effects compared to those considered previously. In addition, project-level analysis of resource conditions and updated species survey information lead to effects determinations that differ from those anticipated in previous consultations. The Forest has reinitiated consultation (PR Dco. 21) and requested concurrence with the determinations displayed in Table 6.

Table 6. Determinations of the project-level biological assessment.

	Jakes	Laurel Canyon/ South Reef	North Reef	Goodwin	Kane Springs
Lesser long-nosed bat	NE	NE	NE	NLAA	NE
Mexican spotted owl	NE	NE	NE	NLAA	NE
MSO critical habitat	NE	NE	NE	NE	NE
Chiricahua leopard frog	NE	NE	NE	NE	NE

Summary of effects to Threatened and Endangered species.

Lesser long-nosed bat. The proposed action will have **no effect** on lesser long-nosed bat on the Jakes, Laurel Canyon, North Reef, South Reef and Kane Springs Allotments based on the following rationale.

- 1) Agaves will not be exposed to livestock herbivory during the flowering season because grazing will not occur after March 31 each year.
- 2) The project area is at the northern extreme of the species' range, approximately 60 miles from the closest known roost and 35 miles from the closest documented occurrence. The likelihood that foraging bats use the allotments is remote.
- 3) Livestock grazing occurs on the allotments between October 1 and March 31, a period of the year when long-nosed bats are typically absent from the state.

On the Goodwin Allotment, livestock management under the proposed action **may effect, but is not likely to adversely affect** the lesser long-nosed bat. Effects of the action are predicted to be insignificant or discountable based on the following.

- 1) Flowering agaves will be exposed to livestock herbivory on a portion of the allotment each year.
- 2) Exposure to grazing will be limited to approximately 7% of the project area and 25% of the allotment each year. Pastures grazed one year will receive growing season rest the following year.
- 3) Forage utilization is limited to 35%, but is predicted to be less, having averaged less than 25% since 1999.
- 4) No range construction projects are planned, so no destruction of agaves as a result of project implementation is anticipated.
- 5) The project area is at the northern extreme of the species' range, approximately 60 miles from the closest known roost and 35 miles from the closest documented occurrence. The likelihood that foraging bats use the allotment is remote, but cannot be entirely ruled out.

Chiricahua leopard frog. The proposed action will have **no effect** on the Chiricahua leopard frog on all allotments based on the following rationale.

The allotments are within the greater range of the species, but there are no records of the species ever occurring in the Santa Teresa Mountains.

- 1) Suitable or potential habitats exist on the allotments in the form of stock tanks and springs, but these are not likely to be occupied.
- 2) The closest occurrence of the species is 18 miles overland from suitable habitats within the project area and 13 miles overland from the project area boundary. No stock tank cleaning activities are anticipated or proposed on the allotments in the foreseeable future.
- 3) Surveys in 1997 and 2002 were adequate to determine the presence of leopard frogs within suitable or potential habitats, but Chiricahua leopard frogs were not detected.

Mexican Spotted Owl. Under the proposed action, limited livestock grazing may occur in MSO habitats, but grazing utilization will be maintained at conservative levels (35% or less). Therefore, the proposed action **may affect, but is not likely to adversely affect** Mexican spotted owl on the Goodwin allotment. On the other five allotments, the determination is **No Effect** because suitable habitats are not present.

Neotropical Migratory Birds and Important Bird Areas

Executive Order 13186, of January 10, 2001 directs Federal agencies to support migratory bird conservation and to "ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern". Birds of Conservation Concern are identified by the U.S. Fish and Wildlife

Service Office of Migratory Bird Management by Bird Conservation Region (USFWS 2002. Birds of Conservation Concern. Div. of Migratory Bird Management <http://migratorybirds.fws.gov/reports/bcc2002>). The Project area lies within the Sierra Madre Occidental Region. Thirty-nine birds of conservation concern are identified for this region. Effects to selected migratory bird species were analyzed in the Wildlife Specialist’s Reports (Doc. 22) by species and habitat type. No effects to migratory birds are anticipated.

The closest Important Bird Area (IBA) identified by the National Audubon Society is the lower San Pedro River, over 20 miles west of the project boundary. Any effects of activities within the project area will be localized to the vicinity of the allotments are not expected to affect the San Pedro River IBA.

Cumulative Effects – Wildlife

Actions considered for cumulative effects have been identified previously. The direct or indirect effects of the proposed action and alternative are expected to be minimal or reduced to insignificance as a result of implementation of mitigation measures. As such, they are not expected to contribute significant cumulative effects when combined with the effects of past and future actions. The management in place on the six allotments is contributing to improving conditions and would be expected to continue under both alternatives.

Soils

Affected Environment

The geology underlying the allotments is diverse. In general, the central portions of the mountainous areas are granites while the majority of the mountain flanks are metamorphic rocks with minor areas of alluvium and sedimentary rocks. As a consequence, the soils are diverse as well. In general, the soils in the mountainous areas are shallow cobbly sandy loams with numerous rock outcrops and the mountain flanks are moderately deep gravelly sandy loams.

Soil condition field monitoring has been ongoing for years and the latest information was collected in 2001. All six allotments were evaluated using protocols from Forest Service Handbook 2509.18-99-1 R3 Supplement titled Soil Management Handbook. Soil condition was evaluated by using a combination of field inspections, Digital Elevation Models (DEM’s), aerial photo interpretation, and topographic maps. The soil condition rating procedure evaluates soil quality based on an interpretation of factors that affect three interrelated soil functions: soil stability, soil hydrology and nutrient cycling. The physical condition of the surface soil, a zone of maximum biological activity, has an essential role in nutrient cycling, vegetative productivity and diversity, water storage and movement, and geomorphic stability. Soil condition ratings categories are shown in Appendix 2.

The satisfactory soil condition class covers about 96% of the six allotments. These soils are functioning properly and retain their inherent productivity. The impaired soil condition class covers the remaining 4% of all the allotments. The impaired soil condition areas are generally from historic compaction and the lack of vegetation groundcover that has reduced the nutrient cycling. These impaired soils appear to have a static or slight upward trend. No evidence of declining conditions has been noted (PR Doc. 24).

Table 7. Soil Condition Rating Acres by Allotment

ALLOTMENT	Satisfactory Soil Condition		Impaired Soil Condition		Unsatisfactory Soil Condition		TOTAL Acres
	Acres	Percent	Acres	Percent	Acres	Percent	
Kane Springs	698	100%	0	0%	0	0%	698

ALLOTMENT	Satisfactory Soil Condition		Impaired Soil Condition		Unsatisfactory Soil Condition		TOTAL
Jakes	3,279	89%	386	11%	0	0%	3,665
Laurel Canyon	2,799	100%	0	0%	0	0%	2,799
South Reef	5,045	97%	154	3%	0	0%	5,199
North Reef	6,308	93%	454	7%	0	0%	6,762
Goodwin	8,500	97%	239	3%	0	0%	8,739
TOTAL	26,629	96%	1,233	4%	0	0%	27,862

Note: Percents are rounded and may not add up to 100%

Environmental Consequences

It is important to note that the actual soil condition class is not expected to change within the ten-year analysis period, even under Alternative 1. Improved change in soil condition class is a long-term process with many influences. This analysis does, however, reflect the direction that is expected under each of the alternatives and provides a way to compare alternatives.

Alternative 1. There will be no direct or indirect effects from livestock grazing. In satisfactory soil condition areas, the adequate diversity and vegetation groundcover would contribute to maintaining a satisfactory nutrient cycling and soil structure. The hydrologic function and runoff would continue to be satisfactory. In the impaired soil condition areas, the potential increase of vegetation groundcover (VGC) and loss of potential livestock compaction would contribute to an improved nutrient cycling and improved soil structure. The improved soil structure would contribute to the functional hydrologic condition.

Alternative 2. Allowable use levels of 35-45% are expected to provide sufficient residual biomass to protect soils and not contribute to any decline in soil conditions. The rest-rotation system will allow the vegetation to not be impacted by grazing for a complete growing season potentially causing positive gains in plant vigor, forage plant frequency, recruitment and watershed stability. Flexible stocking rates built into the proposed action should allow management to respond proactively to changing resource conditions before problems occur. The continued use of Best Management Practices (BMPs) is expected to minimize or mitigate any potential negative effects from this alternative.

Cumulative Effects – Soils

Past, present and foreseeable future actions that could contribute cumulative effects were described at the beginning of this chapter. Best Management Practices to mitigate grazing effects on soils have been and will continue to be implemented in the project area, resulting in a general improvement in soil condition. Soil loss, however, is likely irretrievable in human time frames (100+ years). The direct or indirect effects of the proposed action and alternative are expected to be insignificant as a result of implementation of mitigation measures. As such, they are not expected to contribute significant cumulative effects when combined with the effects of past and future actions. The management in place on the six allotments is contributing to improving conditions and would be expected to continue under both alternatives.

Riparian Areas and Stream Channels

Affected Environment

Numerous named canyons and washes dissect the analysis area (Table 8). These areas have surface water flowing only after rains or intermittently for short durations. None of the streams are perennial. Within drainages, subsurface flow sustains small areas of riparian vegetation such as

sycamore (*Platanus wrightii*), Cottonwood (*Populus fremontii*), willow (*Salix sp.*) and Arizona walnut (*Juglans major*) in the overstory and deergrass in the understory. Fluctuations in the subflow may cause the depth of free flowing water, or capillary moisture, to not be within reach of roots for undefined periods of time. Drought conditions are the primary causes for a reduction in subflow as no groundwater pumping occurs in the area. The project area does not include any mapped wetlands.

Table 8. Named drainages in the project area.

ALLOTMENT	NAMED DRAINAGE	GENERAL DIRECTION OF FLOW
Kane Springs	Beauchamp Canyon	North
Jakes	Buford Canyon	Southwest
Laurel Canyon	Klondike Wash	Southwest
	Waterfall Canyon	West
South Reef	Laurel Canyon	Southwest
	Holdout Creek	East
North Reef	Black Rock Canyon	East
	Cottonwood Canyon	South-Southeast
	Goat Canyon	South-Southeast
	Stowe Gulch	West
	Copper Canyon	West
	Tule Canyon	Southwest
Goodwin	South Fork Goodwin Canyon	East-Southeast
	Jerky Basin	Northeast
	Middle Fork Goodwin Canyon	Northeast

Table 9 presents data collected using Riparian Area Survey and Evaluation System (RASES) in select streams bottoms in the project area. The stream reaches within the project area are not true riparian areas and they are not mapped as such. However, the use of the RASES data collection technique is a way to monitor changes to these canyon bottom vegetation communities over time. Riparian areas in the Santa Teresa Mountains were evaluated in 1998 and 2003 (Doc. 3). In general all areas were determined to be functioning properly with stable or upward trend at all sites. Only Black Rock Canyon is mapped as riparian in the LRMP.

These areas appear to be meeting LRMP goals and objectives for vegetation. Generally, recruitment is good and vigor is fair to excellent.

Table 9. Existing condition of riparian stream channels and riparian vegetation in the Santa Teresas Mountains.

Allotment	Stream Name	Year Data Collected	Tree Species Recruitment*	Tree and Shrub Canopy (Percent Shade)	Bank Protection**	Channel Condition	Vigor
Jakes	Buford Canyon	1998	Not Available	N/A	87%	Satisfactory	Not Available

Allotment	Stream Name	Year Data Collected	Tree Species Recruitment*	Tree and Shrub Canopy (Percent Shade)	Bank Protection**	Channel Condition	Vigor
Laurel Canyon	Klondike Wash	2003	Not Available	30	45%	Satisfactory	Fair
South Reef	Laurel Canyon	2003	Not Available	20	Not Available	Satisfactory	Fair
North Reef	Black Rock Canyon	2003	5 of 6	11	42%	Satisfactory	Excellent
Goodwin	South Fork Goodwin Canyon	2003	4 of 5	25	32%	Satisfactory	Fair

*Recruitment: species represented in young or seedling age class compared to total number of species found.

** Percent of bank not occupied by bedrock, boulders, stones, or cobbles

Environmental Consequences

Alternative 1. (No livestock grazing). No direct or indirect effects from livestock grazing on canyon bottom vegetation and stream channels. The potential increase of vegetation groundcover (VGC) on the banks, loss of livestock bank alteration and compaction and reduction in browse in the riparian areas would contribute to an improved riparian function and stream channel stability.

Alternative 2. (Proposed Action). Allowable use levels of 35-45% are expected to provide sufficient residual biomass to protect stream channels and riparian areas over time. Maintain the existing conditions of the vegetation in the canyon bottoms and riparian areas. The rest-rotation system will allow the vegetation to not be impacted by grazing for a complete growing season potentially causing positive gains in plant vigor, recruitment and bank stability. Flexible stocking rates built into the proposed action should allow management to respond proactively to changing resource conditions before problems occur.

The order of desirability of the two alternatives to meet or maintain LRMP goals and objectives, as it relates to riparian and stream channels, are as follows: Alternative 1 (most desirable due to least impact to riparian areas and stream channels), then Alternative 2 (more impact to riparian areas and stream channels than alternative 1).

Cumulative Effects – Riparian

Past, present and foreseeable future actions that could contribute cumulative effects were described at the beginning of this chapter. The direct or indirect effects of the proposed action and alternative are expected to be insignificant as a result of project design and implementation of mitigation measures. As such, they are not expected to contribute significant cumulative effects when combined with the effects of past and future actions. The management in place on the six allotments is contributing to improving conditions and would be expected to continue under both alternatives.

Water Quality and Quantity

Affected Environment

The project analysis area is located within four Fifth Code Watersheds (Table 10). All six allotments are at or near the top of their respective watersheds. The four fifth-code watersheds are large in overall size totaling approximately 865,668 acres and the six allotments make up approximately only 3% of the total acres of the four watersheds.

Generally, the Santa Teresa Mountain can be divided up into two general watersheds, the east side which flows to the Gila River and the west side which flows to Aravaipa Creek. Over 90% of the Kane Springs and Goodwin Allotments flows to the Gila River side while over 90% of Jakes and Laurel Canyon flows to the Aravaipa Creek side. South Reef and North Reef Allotments are divided more equally between the Gila River and Aravaipa Creek.

Table 10. Allotments Acres by 5th Code Watersheds

ALLOTMENT	Gila River - Black Rock Wash (HUC 1504000506)		Gila River - Goodwin Wash (HUC 1504000507)		Upper Aravaipa Creek (HUC 1505020305)		Lower Aravaipa Creek (HUC 1505020306)		TOTAL
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres
Kane Springs	699	100%	0	0%	0	0%	0	0%	699
Jakes	15	0%	0	0%	2585	71%	1064	29%	3,664
Laurel Canyon	189	7%	0	0%	10	0%	2598	93%	2,797
South Reef	2,939	57%	0	0%	0	0%	2252	43%	5,191
North Reef	3,546	52%	199	3%	0	0%	3010	45%	6,755
Goodwin	450	5%	7886	90%	0	0%	398	5%	8,734
TOTAL	7,838	28%	8085	29%	2595	9%	9322	33%	27,840

Note: Percents are rounded and may not add up to 100%

Table 11. 5th Code Watersheds Acres

5TH CODE WATERSHEDS	Six Allotments in this analysis		Area outside of the 6 Allotments		TOTAL
	Acres	Percent	Acres	Percent	Acres
Gila River - Black Rock Wash (HUC 1504000506)	7,838	3%	245,975	97%	253,813
Gila River - Goodwin Wash (HUC 1504000507)	8,085	3%	246,786	97%	254,871
Upper Aravaipa Creek (HUC 1505020305)	2,595	2%	167,715	98%	170,310
Lower Aravaipa Creek (HUC 1505020306)	9,322	5%	177,352	95%	186,674
TOTAL	27,840	3%	837,828	97%	865,668

Note: Percents are rounded and may not add up to 100%

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 Arizona Department of Environmental Quality (ADEQ) is the regulating authority for water quality in Arizona. Water quality has not been assessed within the project area to determine water quality parameters that may be affected by watershed condition.

Water quality has been assessed on Aravaipa Creek, downstream from the Forest (ADEQ 2002: Status of Water Quality in Arizona: The Integrated 305(b) Assessment and 303(d) Listings Report). The surface water near the confluence of Stowe Gulch along Aravaipa Creek is described as attaining all uses and is not considered impaired. Stowe Gulch originates on the Forest in the North Reef Allotment. On the Gila River side of the mountain range, no assessments have been done that are in relatively close proximity to the contributing drainages from the analysis area.

Land use may impact the water quality in a watershed. Historic uses on public lands were grazing, recreation, wood cutting and historic mining. Current use is predominantly grazing and minor use from recreation. Land uses on private land are those associated with grazing, rural development, agriculture and recreational mining.

Environmental Consequences

Alternative 1. In the satisfactory soil condition areas, the adequate diversity and VGC would contribute to maintaining a satisfactory hydrological function and runoff would continue to be satisfactory. Water quality and water quantity would continue to be satisfactory. In the impaired soil condition areas (4% of the analysis area), the potential increase of vegetation groundcover (VGC) and loss of potential livestock compaction would contribute to an incremental improvement in hydrological function resulting in less runoff, better infiltration and an improvement in water quantity. Water quality would improve due to less sediment moving in the system and less turbidity.

Alternative 2. Current management practices are not contributing to adverse negative effects, therefore, the proposed action should not contribute to adverse negative effects. Allowable use levels of 35-45% are expected to provide sufficient residual biomass to protect upland areas and drainage systems over time. Water quality appears to be satisfactory with current management, and that should continue. The rest-rotation system will allow the vegetation to not be impacted by grazing for a complete growing season potentially causing positive gains in plant vigor, recruitment and maintain overall stability. Stability contributes to satisfactory hydrologic functions and in turn good water quantity. Flexible stocking rates built into the proposed action should allow management to respond proactively to changing resource conditions before problems occur. Because there will be no direct or indirect effects, no cumulative effects are expected.

Upland Vegetation

Affected Environment

Within the Santa Teresa EMA there are 32,705 acres of Chaparral. Common plant species include turbinella or toumey oak, mountain mahogany, desert ceanothus, manzanita, emory oak and silver leaf oak. Forbs, grasses and cacti are present in the understory. This vegetation type is found mostly on limestone soils ranging from 4,200 feet to 7,200 feet, often on slopes over or near 40%. There are 14,764 acres of Broadleaf Woodland. Common plant species found are Emory oak, Arizona white oak, juniper species and pinyon pine. Canopy cover ranges from an open density (southern aspects), to a more closed canopy on northern aspects. Many species of forbs, grasses and cacti are present. Broadleaf Woodland is mostly found below 5,200 feet elevation and on slopes over 15%. Pockets of coniferous forest vegetation are found at higher elevations. Common plant species include pinyon pine, alligator juniper, Arizona white oak and Emory oak. Canopy

cover ranges from an open density (southern aspects), to a more closed canopy on northern aspects. Many species of forbs, grasses and cacti are present. This vegetation type occurs at elevations above 6,200 feet and with slopes over 15%.

Grazing by domestic livestock can impact vegetation by changing the mix of species in the plant community being grazed (vegetation composition), by changing the density and frequency of perennial herbaceous plants (plant frequency), and by changing the vigor of grazed plants. The combined effects of composition, density and plant vigor can be used to measure the condition and trend of rangeland plant communities. Range condition is evaluated in terms of its ecological status, which is an evaluation of the existing species composition, ground cover and soil condition relative to the potential natural community and soil condition for the site. Range condition classifications are defined in Appendix 2. The Coronado National Forest LRMP calls for rangelands to be brought into satisfactory range condition. Satisfactory range condition is defined in the LRMP as fair or better range condition with a stable or upward trend and stable soil (USFS 1986).

Vegetation condition on the six allotments was evaluated in 1998 and has been monitored annually since 2001. Current range condition classes for capable acres in the allotments are shown in Table 12.

Table 12. Rangeland condition on allotments in the analysis area.

Allotment	Range condition class and trend (Percent of Capable Acres)
Jakes	100% moderately high, static trend
Laurel Canyon/ South Reef	100% moderately high, static trend
North Reef	100% moderately high, static trend
Goodwin	15% moderately high, static trend 85% moderately low, static trend
Kane Springs	100% moderately high, static trend

Processes other than grazing also affect rangeland vegetation condition. In particular, the regular occurrence of wildland fires would promote the retention of more open grasslands and reduce the cover of woody species that tend to shade out and reduce herbaceous grasses. Fire has not been a regular process in most of the project area for over a century and thick stands of chaparral are found throughout much of the project area.

Environmental Consequences

Under the **No Action (No Grazing)** alternative, there will be no direct or indirect effects from livestock grazing. Some light use by wildlife is expected, but in the absence of large wild grazers such as elk, use is expected to be negligible. Over the long term, the effects of this alternative would be increases in the frequency, density and vigor of herbaceous species in most areas. Woodland and chaparral sites with heavy canopy cover will not change much in the absence of fire.

Under the **Proposed Action**, livestock utilization will continue to occur, but use levels are not expected to change much from those documented in the past few years (0-35%). Allowable use levels of 35-45% are expected to provide sufficient residual biomass to protect soils and to contribute to a continuing trend of improving range conditions over time. The provision of growing season rest included in the proposed action would be expected to contribute to increases in forage plant frequency and vigor. Flexible stocking rates built into the proposed action should allow management to respond proactively to changing resource conditions before problems occur.

Scoping comments were received stating a concern that proposed 45% utilization limits exceed currently accepted standards for utilization (often citing studies and summaries such as Holechek 1999 and Galt 2000)

and that such standards are not sustainable. Utilization data cited in these summaries were derived from numerous studies using different methodologies, but generally refer to average utilization across a pasture and over time. As noted under Existing Conditions, *average annual* use in key areas ranges from 0-35%. Use averaged across entire pastures and over time would be even less than this. Maximum utilization of 45% of key species in key areas provides a threshold, but is not a target.

Cumulative Effects – Vegetation

The effect of past livestock grazing, in combination with fire suppression has been an increase in woody species and a corresponding loss of herbaceous vegetation. These conditions are not likely to change significantly in the absence of fire. Monitoring demonstrates that current management has resulted in improvements in rangeland condition. The combination of low utilization and growing season rest in combination with the mitigation features proposed is not expected to result in significant direct or indirect negative effects to vegetation. Over time, the proposed action would be expected to provide sufficient fine fuels to support wild fires and return the area to a more natural fire regime.

Economics

Affected Environment

Livestock grazing can impact local and regional economies, government receipts and expenses, and permittee income. It is therefore Forest Service policy to consider the economic efficiency and impacts of proposed actions (Forest Service Manual 1970.3). In keeping with the scope of the proposed action, the economic efficiency and impacts considered in the analysis were limited to the allotments being analyzed. Participants in the proposal (used to calculate costs and benefits) include:

- The permittees, who contribute funds for the construction of range improvements, pay grazing fees and receive economic returns on their investments in livestock grazing.
- The USDA-Forest Service, which collects grazing fees and expends grazing receipts and appropriated tax dollars to construct range and watershed improvements, and to administer the livestock allotments; and
- Graham County, which receives 25% of the grazing fees collected by the Federal Government.

The economic considerations of the proposed action and alternatives can be compared in terms of the costs of implementation, the costs and benefits to the permittees and the return to the Federal and local government through grazing permit receipts.

Environmental Consequences

Alternative 1 (No Action) would have the lowest implementation cost as only limited maintenance would occur. There would, however, still be costs associated with management of the allotments. Maintenance or removal of existing structural improvements may become necessary and costs would be borne by the Forest Service. Allotment boundary fence maintenance would be shifted from the permittees to the Forest Service or adjacent permittees.

Net ranch income under both alternatives is shown in Table 13. Net ranch income represents gross returns minus operating costs. Specific operating costs and revenue estimates were not available for each ranch, so the analysis is based on data developed by Gao (1996) and reported in Ruyle, et al (2000) who analyzed income and expenditure for ranches throughout Arizona using data for the years 1980-1993. The economic return considers total ranch revenue and costs of production per animal unit year (AUY), but does not

consider non-cash fixed assets such as depreciation and the opportunity cost of capital investments. Excluding non-cash fixed assets, the return to grazing permits, management and risk was calculated by Gao to be \$78.50 per AUY (1993 dollars). For the purposes of the analysis shown in Table 7, this return was recalculated to reflect the current Forest Service grazing fee of \$1.43 per animal unit month, resulting in an estimated return of \$108 per AUY. When non-cash fixed assets were included in the calculations, net ranch revenue showed a negative return, or loss, of -\$44.18 per AUY (1993 dollars) (Ruyle, et al, 2000). The data in the table are based on numerous assumptions about the “average” ranch in Arizona. Actual ranch income and expenditures will vary from year to year as a result of market fluctuations and management decisions. Nevertheless, the data provide a basis for a comparison of the relative costs and benefits of the alternatives.

Table 13. Estimated revenues before fixed non-cash expenses, by alternative.

Allotment	Alternative	Stocking (HM)	Animal Unit Years	Return/ AUY	Gross revenue	Grazing Fee	Net Annual Revenue
Jakes	1	0					0
	2	372	31	\$108	\$3,348	\$532	\$2,816
Laurel Can / S. Reef	1				0	0	0
	2	300	25		\$2,700	\$429	\$2,271
North Reef	1	0	0		0	0	0
	2	500	42		\$4,536	\$715	\$3,821
Goodwin	1	0	0		0	0	0
	2	648	54		\$5,832	\$927	\$4,905
Kane Springs	1	0	0		0	0	0
	2	85	7		\$756	\$122	\$634

Net revenue is the amount left after expenses available to provide for basic living expenses such as food, clothing and medical needs. Estimated net annual revenues vary from zero under the no action alternative to a maximum of \$4,905 on the Goodwin allotment at maximum stocking. Based on recent past stocking on the allotments, it is likely that net revenue will be less than the revenue shown. Weather, market conditions and management decisions will continue to affect net revenue on an annual basis. Estimates of ranch living expenses cited by Ruyle vary from \$11,500 to over \$20,000, depending on the size of the ranch. Based on this, it appears likely that the permittees will be dependant on outside sources of income in order to cover living expenses. Outside income is important, as on average Arizona ranches derive about half of their income from outside (non-ranching) sources. The permittees have not indicated that the action alternatives are not economically viable.

Estimated annual receipts to the Forest Service are displayed in the preceding table in the Grazing Fee column. Of this, 25% (approximately \$550) would go to Graham County. This would be a small positive source of income since the County does not incur any costs as a result of the action. Under No Action, this source of revenue would not pass to the County. The remaining 75% of grazing fees are returned to the Forest Service, but are unlikely to cover recurring administrative costs. Under No Action, the Forest would not receive grazing fees, but the administrative costs associated with the allotments would not be significantly reduced. Maintenance and inspections would need to continue to monitor improvements and livestock trespass. The currently vacant VJ allotment adjacent to the project area has required ongoing Forest efforts to exclude trespass livestock and maintain fences (C. Duncan, District Range Staff, Pers. comm., September 2004).

Individual allotments provide incremental contributions to the local economy, and changes in several allotments may have cumulative impacts. The analysis does not suggest that there will be significant

cumulative economic impacts to local communities and counties from adoption of any of the alternatives considered, and other reasonably foreseeable actions.

Other

Wilderness

Portions of the allotments are included in the Santa Teresa Wilderness. Scoping comments (Appendix 1) identified the need to analyze the effects on wilderness, but did not identify a specific conflict associated with the proposed action. Under the proposed action, utilization will be limited to 35% in wilderness in accordance with the Coronado LRMP. By and large, the portions of the allotments in wilderness are upper elevations considered not capable for grazing and that receive little if any use. It is unlikely that annual utilization will reach this level under the proposed management. No new developments are proposed within the wilderness. There are no quantifiable conflicts identified with either of the alternatives and therefore no direct, indirect or cumulative effects anticipated as a result of either alternative.

Recreation

The isolated location and restricted access of the Santa Teresa EMA offer limited opportunities for recreational use. Within the entire EMA, there are 18 miles of primitive (maintenance level 2) roads and 41 miles of trails. Recreational use is light, consisting primarily of hunting and hiking during the cooler months. Scoping comments (Appendix 1) identified the need to consider recreational and other uses, but did not identify a specific conflict associated with the proposed action. There are no reports of conflicts between livestock grazing and other uses in the allotment files. Under the proposed action, some minor conflicts may be predicted if hikers or backpackers camp in locations that are heavily used by cattle and have to tolerate smells, disturbance and other inconveniences associated with the presence of livestock. The limited seasonal use proposed on most of the allotments should provide opportunities for recreational users and others to use these public lands outside of the grazing season in order to avoid this conflict. Based on this, there are no unavoidable direct, indirect or cumulative impacts to recreation and other uses associated with the alternatives.

Air Quality

The Forest Plan Standards and Guidelines for air quality state: “All management practices will be planned so that air quality will meet local, State and Federal standards.” The project area is in a Class II air shed. Air quality in and around the area is high due to the relative isolation from urban centers, limited access, good vegetative ground cover, and the large scale of the analysis area. Currently, the air quality in the project area is within the standards and guidelines of the Forest Plan. Activities resulting from this grazing project will not significantly affect the factors contributing to a high quality air shed. Therefore, grazing will not have direct, indirect or cumulative effects on the air resources in this air shed.

Heritage Resources

[A Heritage/Archeology report for the project is in preparation. Tribal and State Historic Preservation Office consultations will be completed prior to any decision being made].

Environmental Justice

Executive Order 12892 requires federal agencies to address the effects of their action on low-income and minority populations. The analysis considers demographic, economic and human health risk factors.

Selection of the no action alternative would have economic effect on the permittees who derive at least a portion of their annual incomes from grazing on the allotments, but these effects would not disproportionately

affect minority or low income populations. Selection of the proposed action would not result in changes from existing conditions.

Chapter 4 – Consultation and Coordination

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

- Arizona Game and Fish Department, Tucson
- U.S. Fish and Wildlife Service, Tucson
- Arizona State Historic Preservation Office
- Arizona Department of Environmental Quality

List of Preparers

- Richard Gerhart, NEPA Team Leader/Biologist
- Salek Shafiqullah, Hydrologist/ Soil Scientist
- Chuck Duncan, Range Management Staff, Safford Ranger District
- Kathy Makansi, Archeologist, Coronado N.F.
- Anne Casey, Biologist, Safford Ranger District

Appendix 1. Scoping Comments and Responses.

Preliminary issues were developed by the Interdisciplinary Team (IDT) during meetings in 2000 and 2003. These issues were identified in a scoping report that was mailed to 37 individuals and organizations on April 12, 2004. A total of five comment letters were received. A summary of all comments received and the Forest Service responses follows below. In some cases, the comments have been summarized for the purposes of brevity. Comments of the entire documents are contained in the project record. References to document numbers (e.g. Doc. 14) refer to the location of the document in the project record.

Several comments requested clarification or identified components already identified by the IDT. No new issues were raised as a result of scoping. One commenter (Forest Guardians) suggested an additional alternative that would reduce grazing use by 35-70% on the allotments. This alternative would not address any significant issues associated with the proposed action, so it was not carried forward for detailed analysis.

Summary of Scoping Comments and Forest Service Responses

Forest Guardians (Doc. 14)

Comment: We wish to continue to be informed about these allotments, and to receive a copy of the draft Environmental Assessment and related documents—including the Biological Assessment. At that time, we will provide more detailed comments of our opinion on the proposed action. We feel strongly that despite new procedures that request additional comments before an EA is completed and distributed, the Forest Service has a legal obligation under NEPA to complete and distribute the analysis on this proposal in the form of an EA or EIS before additional comments are requested from the public.

Response: *An additional opportunity to comment will be provided as required by regulations at 36 CFR 215.*

Comment: We are very concerned about the continuation of grazing on these allotments. We applaud the Forest in not attempting to increase the livestock numbers on most of these allotments, and its focus on monitoring. Unfortunately, the proposal itself is somewhat confusing as it discusses continuing current management for the allotments, but in other places it could be read as continuing the same number of livestock but adding a month of use. This needs to be clarified.

Response: *No changes from current management are proposed; however, the Forest Service proposes to issue new grazing permits that reflect current management. Specifically, the season of use on the Jakes and Kane Springs allotments will be reduced to reflect current management. No increases in duration or numbers are proposed. With regard to the Kane Springs allotment, the proposed action has been modified somewhat from that described in the scoping summary. The proposed grazing season would be 11/1-3/31, rather than 11/1-4/30. This will be clarified in the EA.*

Comment: We are concerned that any continuation of livestock grazing is inconsistent with the broader public interest mandate of the Forest Service; and that the so-called “improvements” are enormously costly, to the benefit of a few. We are dismayed at the Forest Service’s longstanding policy of prioritizing the livestock grazing permittee’s economic benefit over all other concerns, including benefits to wildlife, riparian areas, watershed health, and the United States taxpayer. We would like to see the Forest Service begin to adjust this policy to reflect the growing interest of all Americans in conservation of our public lands; the Forest can begin doing so now by giving serious consideration to the No Grazing Alternative for these allotments.

Response: *No improvements are proposed. Short fences on the Jakes and North Reef Allotments were considered but not carried forward into the final proposal. The balance of this comment addresses a policy*

decision rather than the effects of the proposed action. Policy issues are beyond the scope of the analysis and cannot be resolved at the project level. The legal and regulatory basis for the proposed action will be described in the EA. The Forest Service is required to give equal treatment to the No Grazing alternative in the EA.

Comment: We feel strongly that the EA must look at a variety of options. Since the proposal is so close to current management, and the no-grazing alternative is required, we suggest an alternative that looks at how a 35-70% reduction in grazing would affect soil quality, vegetation, water quality, riparian areas, wildlife habitat and TES, MIS and sensitive species in the area, including but not limited to the Mexican spotted owl, flammulated owl, southwest willow flycatcher, bold eagle (*sic*), long-nosed bat, peregrine falcon, and sensitive plant species. Further, this proposal needs to clearly allot forage to wildlife.

Response: *The proposed action incorporates sufficient flexibility in stocking to allow for reductions in grazing should the need arise. Effects to Threatened, Endangered, Sensitive and Management Indicator Species will be part of the analysis in progress and will be included in the project record. The proposed action provides growing season rest on all allotments that will provide wildlife forage and cover.*

Comment: Further, we are very concerned (*sic*) with all water sources and ponds on these allotments, even if they are not officially classified as riparian areas. These areas are areas of special concern because of their vital importance to the health of wildlife and the overall well being of the watersheds and wildlife habitat. Accordingly, the Forest Service must not allow grazing activities or resource uses that adversely affect these resources. These areas are of further concern as the bulk of these allotments include some wilderness.

Response: *Effects of the proposed action and alternatives on riparian resources have been identified by the Forest as an issue in the analysis.*

Comment: We ask that at a minimum, the costs and benefits (economic, social and ecological) of continuing grazing on these allotments are analyzed in depth, as well as the full impacts of the proposed actions. This should include the costs of improvements and monitoring compared to the expected fees.

Response: *The economics of the proposal will be described in the EA.*

Comment: We also ask that the EA include summaries all available information regarding monitoring of and impacts to wildlife in the allotments, with special attention paid to MIS, regionally sensitive species, and any Threatened or Endangered species. The analysis should also include both the current status, and past and expected impacts, to any streams or riparian areas in the allotments, soils, vegetation (including invasive species), as well as impacts to any areas currently under or being considered for, special management by the Forest Service or any other government agency. In this case the effects on recreation use and Wilderness values and compatibility with 7A management areas will be a key issue.

Response: *Effects to wildlife, soils, vegetation and riparian resources have been identified by the Forest Service as issues and will be included in the EA. Effects to Wilderness will be considered in the EA.*

Jeff Burgess (Doc. 15)

Comment: The Forest defines the No Grazing alternative as “No Action”, when not issuing a permit would be an action compared to the current situation. The “No Action” alternative should be current management in order to avoid confusion in the EA.

Disposition: *In order to provide some consistency across the Forest Service, the Forest Service Handbook (FSH 2209.13, Chapter 90) requires the Forest Service to identify “no grazing” as the No Action alternative. This will be clarified in the EA.*

Comment: The scoping letter states that range conditions are at least satisfactory, with stable or upward trends. I hope you will provide more specific information in the upcoming EA.

Response: *Copies of recent rangeland monitoring data are included in the project record and will be summarized in the EA.*

Comment: NEPA regulations require a range of reasonable alternatives. There appears to be a discrepancy between the existing situation on the Jakes allotment where there is a yearlong permit and the proposed action to graze for 3 months during the winter. The Forest Service should be proposing an alternative that reflects this.

Response: *The proposed action would modify permits on both the Jakes and Kane Springs allotments to reflect current management practices and correct the discrepancy that exists between current management and what is described on the permits.*

Graham County Board of Supervisors (Doc. 16)

Comment: Graham County supports Alternative 2. We feel that livestock grazing is beneficial as it is currently being conducted and we would request that you continue to do so.

Response: *The comment expresses a position, but does not identify any new issues. The position of the County will be considered in the decision.*

National Wild Turkey Federation (Doc. 17).

Comment: We believe that National Forests should be managed to provide a variety of wildlife habitats...Rangeland management practices such as grazing, mechanical treatments, prescribed burning, water developments, herbicide treatment, seeding and other techniques are normally the best and most efficient means to accomplish these objectives.

Response: *The comment identifies activities that are both part of the proposed action and outside of the scope of the proposed action. Burning, herbicide treatments, mechanical treatments and seeding are not being considered.*

Comment: The plans should contain specific, achievable goals for wildlife habitat that can be easily identified and measured. Specific direction to provide a continuous supply of mature hard mast bearing plants, especially oaks, as well as mature soft mast producing trees, shrubs, forbs and vines should be considered. Manage for forest openings that provide a diversity of habitats. Grazing practices in openings should encourage a diverse mixture of legumes, forbs and grasses that enhance wildlife habitat.

Response: *Thank you for the comment. Achievement of the desired condition for the project area should accomplish these objectives. The project area provides very limited turkey habitat. To the extent possible, effects will be analyzed in the EA.*

Comment: Providing opportunities for high quality recreational hunting and wildlife viewing should be of top priority during the development of these AMPs (Doc. 17).

Response: *Effects to wildlife-related recreation are expected to be minor, but will be evaluated in the EA to the extent possible.*

Comment: Specifically, we would like to make the following comments in regard to the proposed action to authorize livestock grazing on the above referenced grazing allotments. The Santa Teresa Mountains have not been identified as suitable habitat for translocation of Gould's wild turkeys. However, the Pinaleno Mountains to the south and within the Safford Ranger District has been identified as suitable habitat and potential relocation of Gould's wild turkeys. Strategies to fence critical natural springs, seeps, and key stretches of riparian habitat that can be fenced should be encouraged. Grazing in each of the referenced allotments should be timed to retain herbaceous cover during spring (nesting and brood rearing) and leave adequate seed heads. This will benefit a variety of wildlife species such as the Mearns quail. The establishment of wet areas from natural seeps, springs, run-off, and artificial sources provides great potential for improving wildlife habitat in southeastern Arizona. Wet areas, with resulting vegetation, are much more beneficial than a cement-lined water source. Natural wet areas benefit a myriad of wildlife species.

Response: *We agree that the project area provides limited suitable habitat for turkey. The limited grazing utilization anticipated under the proposed action should continue to achieve Forest plan standards for species requiring herbaceous cover.*

Center for Biological Diversity (Doc. 19).

Comment: Current scientific literature recommends less utilization than in the proposed actions. Galt (2000) recommends a max 25% use for western rangelands. The levels proposed exceed the recommended levels.

Response: *Monitoring indicates that proposed use levels are sustainable on the allotments and have resulted in improving conditions. Complete growing season rest is provided on nearly all allotments. The effects of use levels on vegetation condition will be considered in the EA.*

Comment: Riparian areas should be carefully monitored to protect soils and vegetation.

Response: *See response to Forest guardians, above.*

Comment: The use areas, rotations, pastures and utilization levels should reflect the possibility that the area provides habitat for the willow flycatcher and should be listed as proposed critical habitat.

Response: *A biological assessment for the allotments has been completed and will be updated as necessary to comply with the Endangered Species Act. This species is not known to occur in the project area. The comment goes on to suggest criteria for designating critical habitat. Designation of critical habitat is the responsibility of the U.S. Fish and Wildlife Service and beyond the scope of this project.*

Comment: The allotment should be monitored as or more frequently than in the past to ensure meeting management objectives.

Response: *The proposed action will specify monitoring methods and frequency. The allotments have been monitored annually for the past several years. Monitoring information will be in the project record and summarized in the EA.*

Comment: The ESA imposes a statutory obligation on agencies to recover listed species, not merely avoid jeopardy. The Coronado NF should consider that current grazing prescriptions may not be sufficient to move the species towards recovery. Utilization and cattle numbers should be reduced. The allotments contain habitat for ferruginous pygmy owl, Gila topminnow, loach minnow, Spikedace southwest willow flycatcher and Mexican spotted owl.

Response: *See previous response regarding willow flycatcher. Most of these species are not known to occur in the project area.*

Comment: Beef production is not a scarce value and federal forage contributes little to the needs of the American people. Grazing is an incompatible use of federal lands that should be promptly terminated wherever practicable.

Response: *The comment addresses a policy issue that is beyond the scope of the analysis. The relevant statutory and regulatory authorities will be disclosed in the EA. A no grazing alternative will be included to analyze the site-specific effects of no grazing as compared to the proposed action.*

Comment: No consideration is given to the “lifestyle and culture” interests of recreationists and other users of public lands, including the Center’s 9000 members. The public interest in these lands goes well beyond interest in recreation, encompassing interest in threatened and endangered species, game and ecological integrity at the landscape level.

Response: *Impacts to recreation and other interests were not identified initially. These effects will be considered in the EA.*

Appendix 2. Glossary of Terms

Allotment Management Plan (AMP). A document that specifies the actions to be taken on individual allotments to manage and protect resources and meet stated management objectives. It is the long-term operating plan, jointly prepared by the agency and the permittee, that implements the decision made through the NEPA process and promotes progress toward desired future conditions.

Animal Month. A month's tenure on the range by one animal. With a cow/calf operation, one cow/calf pair equals one animal month, as the un-weaned calves do not directly consume range resources.

Animal Unit. Considered to be one mature (1,000 lb) cow or the equivalent based upon average daily forage consumption of 26 pounds of dry matter per day.

Animal Unit Month. The amount of feed or forage required by one animal unit for one month. AUMs are allocated as follows: Adult cow=1.0 AUM; a cow/calf pair=1.32 AUM; a bull =1.25 AUM; a yearling=0.8 AUM.

Best Management Practices (BMPs). Practices determined by the Arizona Department of Environmental Quality to be the most effective and practicable means of preventing or reducing pollution generated by non-point sources to a level compatible with water quality goals. In the case of grazing, these include preparation of annual operating plans, monitoring, techniques to achieve proper distribution, and other practices.

Capable Rangeland. Rangelands which are able to physically support livestock grazing. The conditions used on the Coronado are those areas which are less than 40% slope, produce at least 100 lbs of forage per year, and are accessible to livestock. Capable acres are used as the basis for setting grazing capacity. Areas over 40% slope are assigned no capacity because of the erosive nature of such sites and the tendency of livestock to avoid steep slopes.

Capability. The ability of an ecosystem to support grazing use on a sustained yield basis. Grazing capability is expressed as one of three grazing capability classes.

1. Full capacity – Areas that can be used by grazing livestock under proper management without long-term damage to soil resources or the plant community.
2. Potential capacity – Areas that could be used by grazing animals under proper management but where soil stability is impaired or range improvements are not adequate to obtain necessary animal distribution. Generally, this land has impaired soils, steep terrain, poor access and/or poor water distribution.
3. No capacity – Areas which cannot be used by grazing animals without long-term damage to soils or the plant community. No capacity is assigned to these areas even though light livestock use may occur.

Grazing capacity. The average number of livestock that can be sustained on a management unit over time. It is a function of plant production, percent allowable use, overall management objectives and management intensity on the management unit.

Grazing Suitability: A determination of whether livestock grazing is an appropriate use of capable rangeland, generally made during the Forest planning process.

Head-month. See animal month.

Key Area. A portion of rangeland selected because of its location, use or grazing value as a monitoring location for grazing use, range condition and trend. Key areas are usually ¼ to 1 mile from water, located on productive soils on level to intermediate slopes where prescribed use will occur first. They are 5 acres or more in size. Properly selected key areas will reflect the overall acceptability of current management.

Key Species. Plant forage species whose use serves as an indicator to the degree of use of associated species. Typically, these are native perennial grasses that are palatable to livestock.

Management Area. A land classification applied to various land units in the Coronado LRMP. For each management area, the LRMP describes groups of management practices and standards and guidelines that define the timing and intensity of planned activities necessary to achieve the goals and objectives of the LRMP.

Range Condition: a subjective expression of the 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. Range condition is expressed as low, moderately low, moderately high, or high based on the combined ratings for plant composition, forage frequency, and vigor. The condition classes are:

<u>Range Condition</u>	<u>Description of Condition</u>	<u>Rating</u>
Low	very poor/poor	0-40
Moderately low	fair	41-60
Moderately high	good	61-80
High	excellent	81-100

Riparian condition: defined in the Coronado National Forest Land and Resource Management Plan. The following standards must be met in order for the area to be rated as satisfactory:

- 80% of natural bank protection is present.
- 80% of natural shade over water in fish bearing streams present.
- Composition of sand, silt, and clay is within 20% of natural levels in fish bearing streams.
- 60% or more of the woody stems are in three or more riparian tree species
- At least 3 age classes of riparian woody plants are present with at least 10% of the woody plant cover in sprouts, seedlings, and saplings of riparian species.
- 60% of natural shrub and tree crown cover is present.
- 60% of natural shade over land surfaces is present.

Soil Condition: An evaluation and interpretation of soil quality in terms of factors which effect soil function. Categories of soil condition are satisfactory, impaired, unsatisfactory, and unsuited.

- Satisfactory - Soil condition indicates that the inherent productive capacity of the soil resource is being sustained with respect to soil function. Management practices do not reduce soil function. Proper soil function results in the ability of the soil to maintain resource values and sustain outputs.
- Impaired - Soil condition indicates a reduction of the soil's inherent productive capacity with respect to soil function. The ability of the soil to function properly has been reduced. An

impaired category should signal land managers that there is a need to evaluate existing management practices, take corrective actions where necessary and to further investigate the ecosystem to determine the degree and cause in decline in soil function.

- Unsatisfactory - Soil condition indicates that degradation exists. A loss of the soil's inherent productivity capacity has occurred. Soil productivity is not being sustained with respect to soil function. A reduction of soil function results in the inability of the soil to maintain resource values and sustain outputs. Soils rated in the unsatisfactory category are a high priority for land managers to evaluate and change management practices.
- Unsuitable - Soil condition indicates that soils are inherently unproductive and/or unstable. Examples of those soils identified in the unsuitable category are unstable soils occurring on very steep slopes, badlands, and other miscellaneous areas.

Soil Quality: The capacity of the soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health.

Soil Function (behavior): Natural processes which occur within the soil resulting from the combined interactions of soil chemical, physical and biological properties.

Soil Productivity: The inherent capacity of a soil to support the growth of specified plants, plant communities, or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight/unit area/year, percent plant cover, or other measures of biomass accumulation.

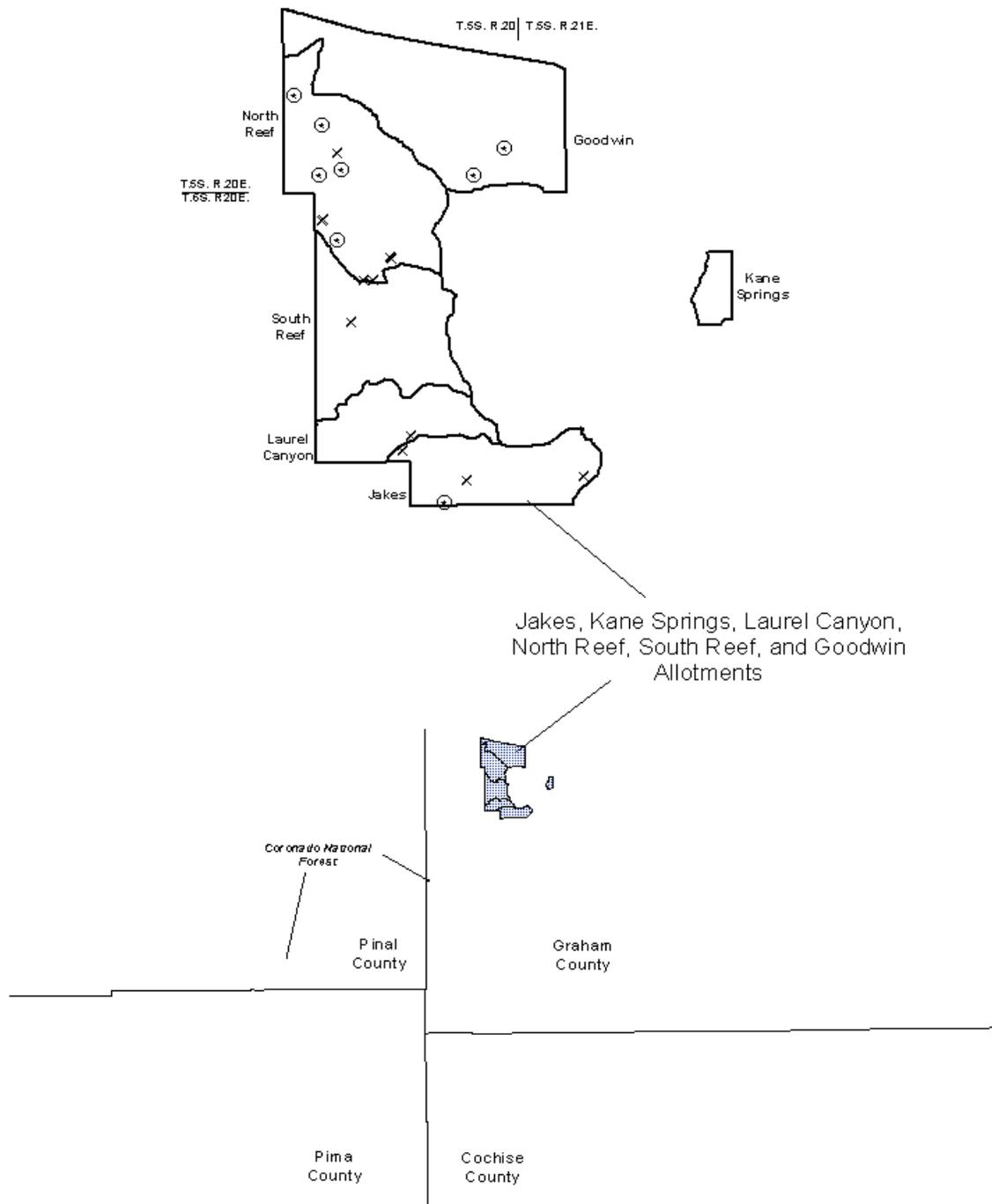
Soil Hydrologic Function: The inherent capacity of a soil to intake, retain and transmit water, both vertically and horizontally.

Stream condition (proper functioning condition):

- Functional: riparian-wetland areas where there is adequate vegetation, landform, or large woody debris to:
 - dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality;
 - filter sediment, capture bedload, and aid floodplain development;
 - improve flood-water retention and ground-water recharge;
 - develop root masses that stabilize streambanks against cutting action;
 - develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
 - support greater biodiversity.
- Functional-at risk: riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation
- Nonfunctional: riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to meet the criteria listed for functional.

Watershed Condition: A description of the health of a watershed or a portion thereof in terms of the factors which affect hydrologic function and soil productivity.

Figure 1. Project Vicinity Map



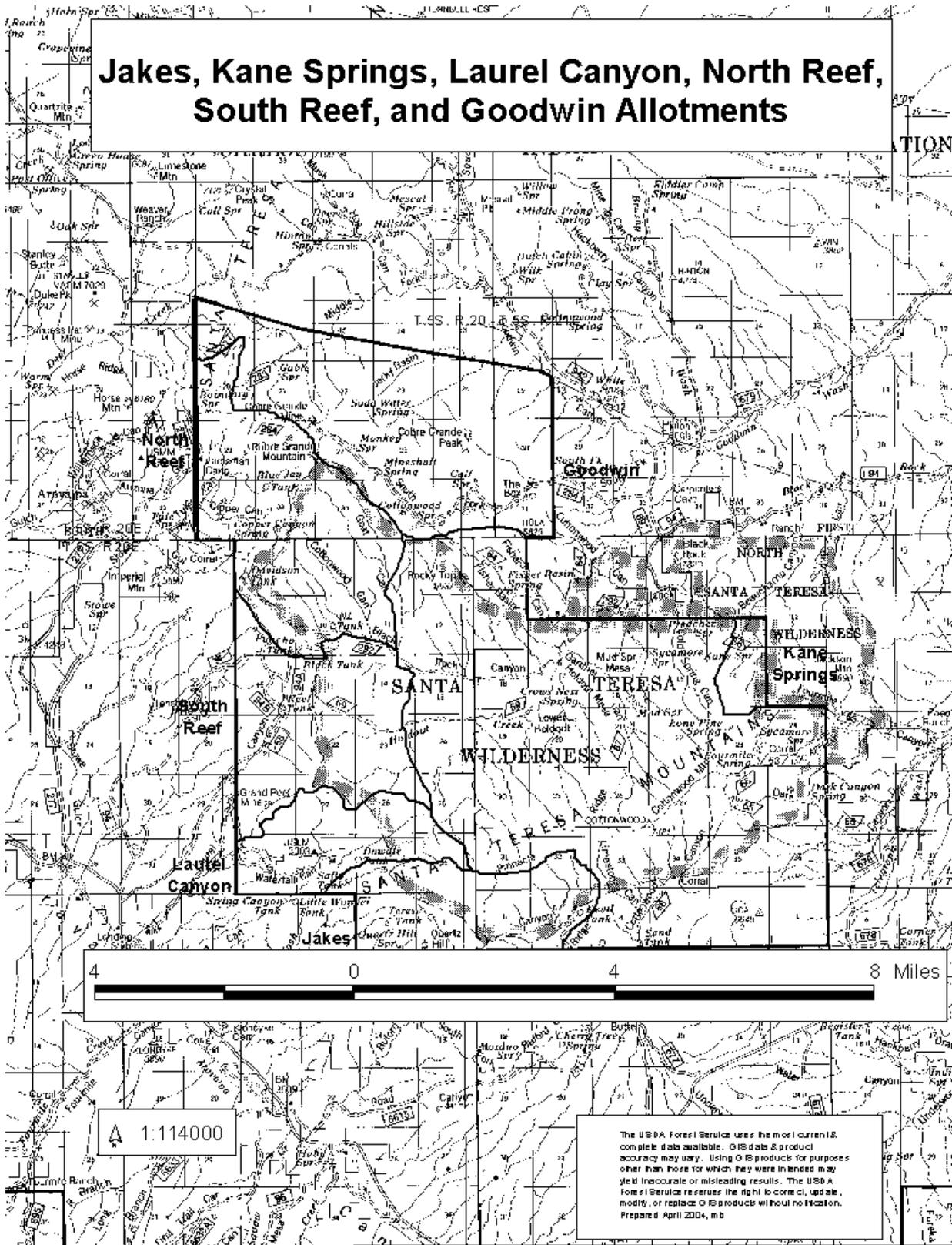


Figure 3.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments Slope

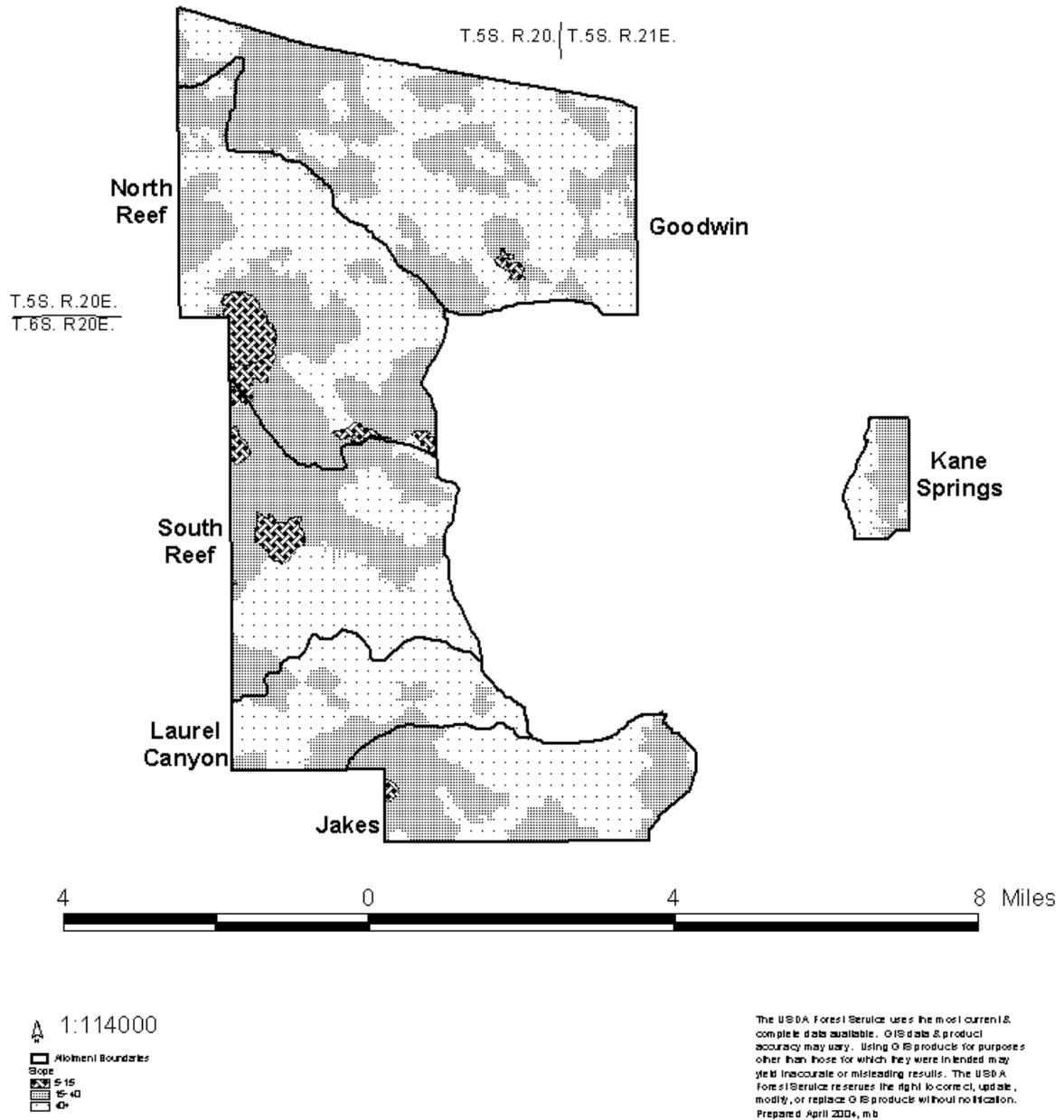


Figure 4.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments Vegetation

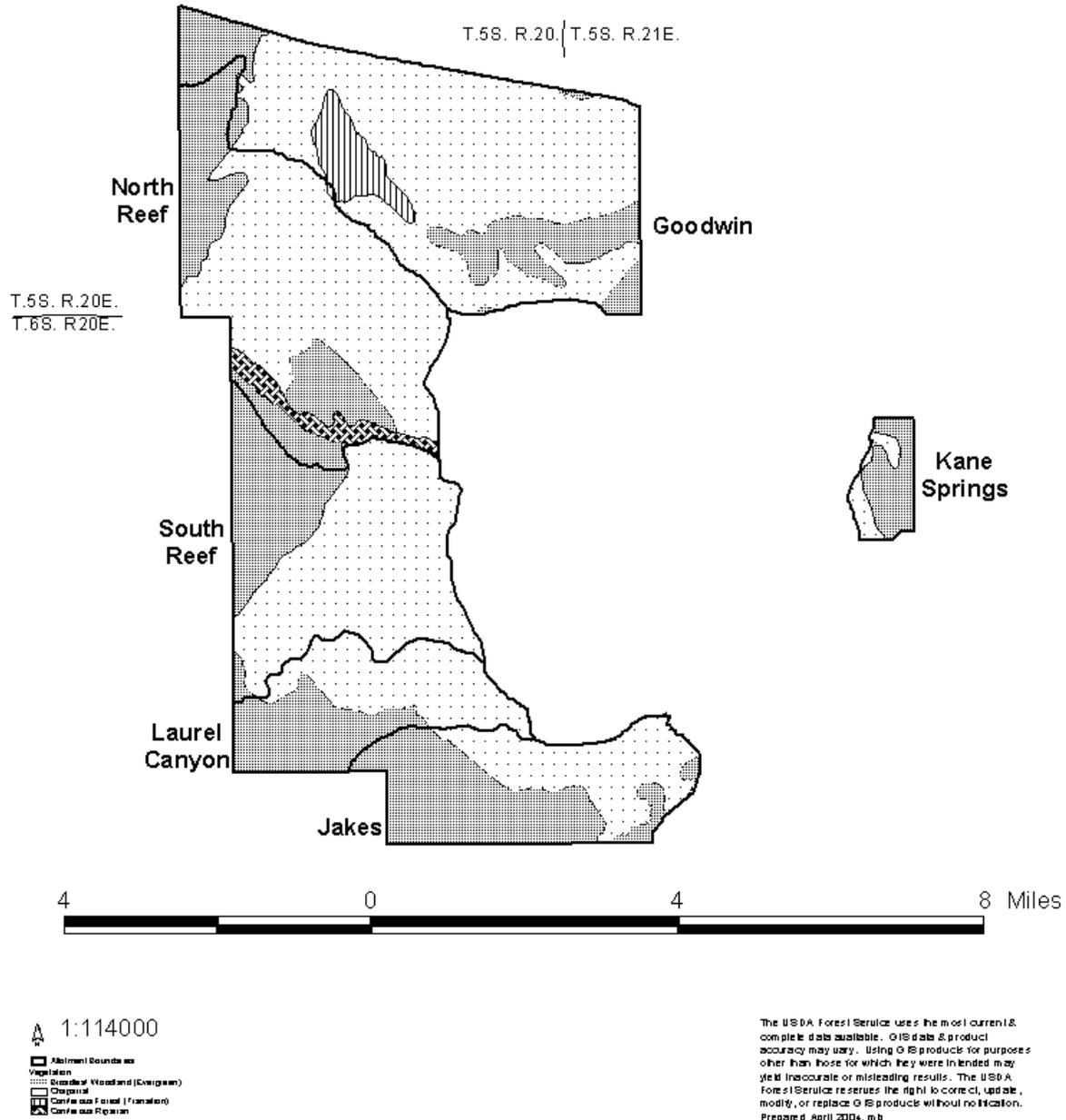
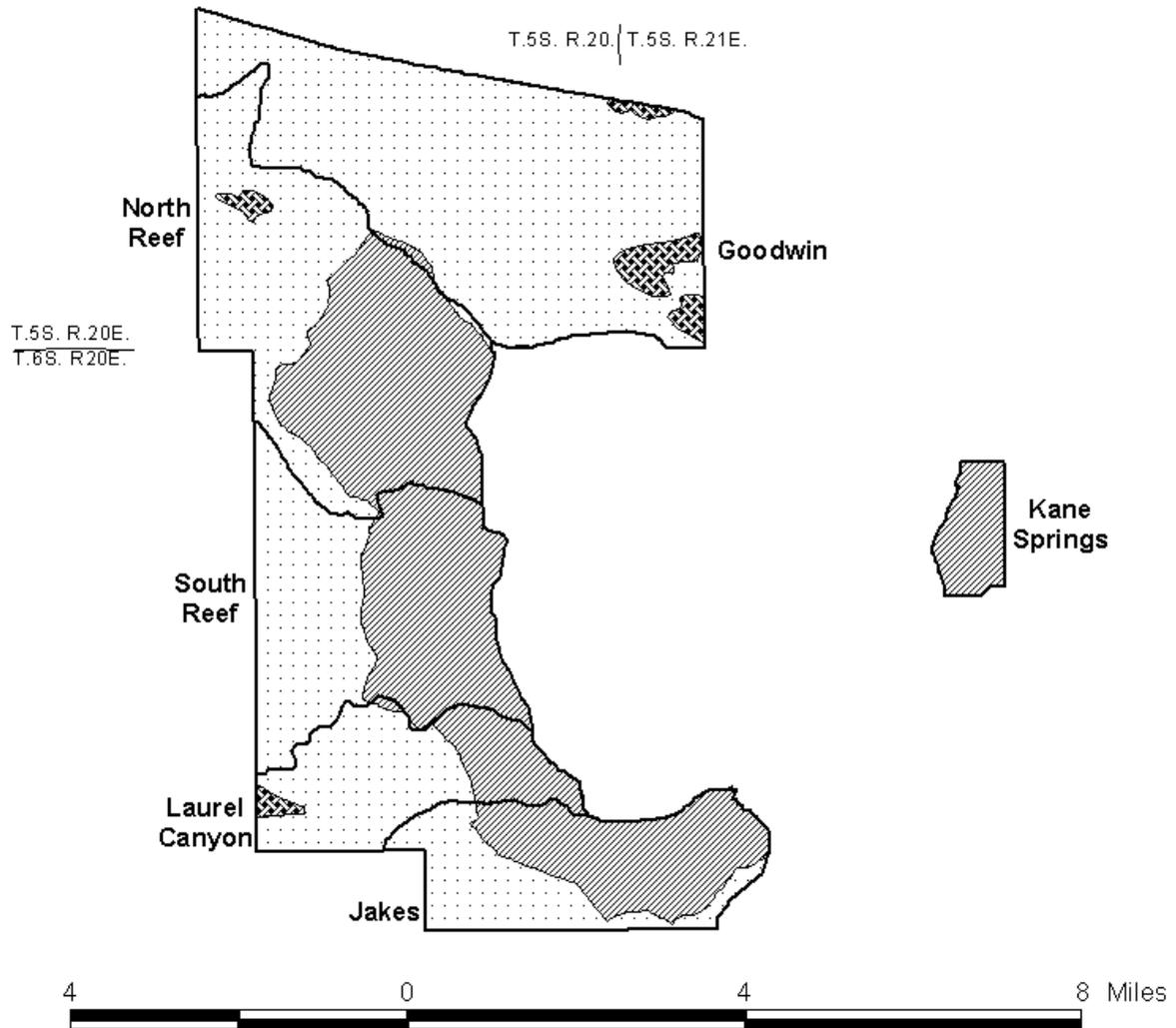


Figure 5.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments Forest Plan Management Areas



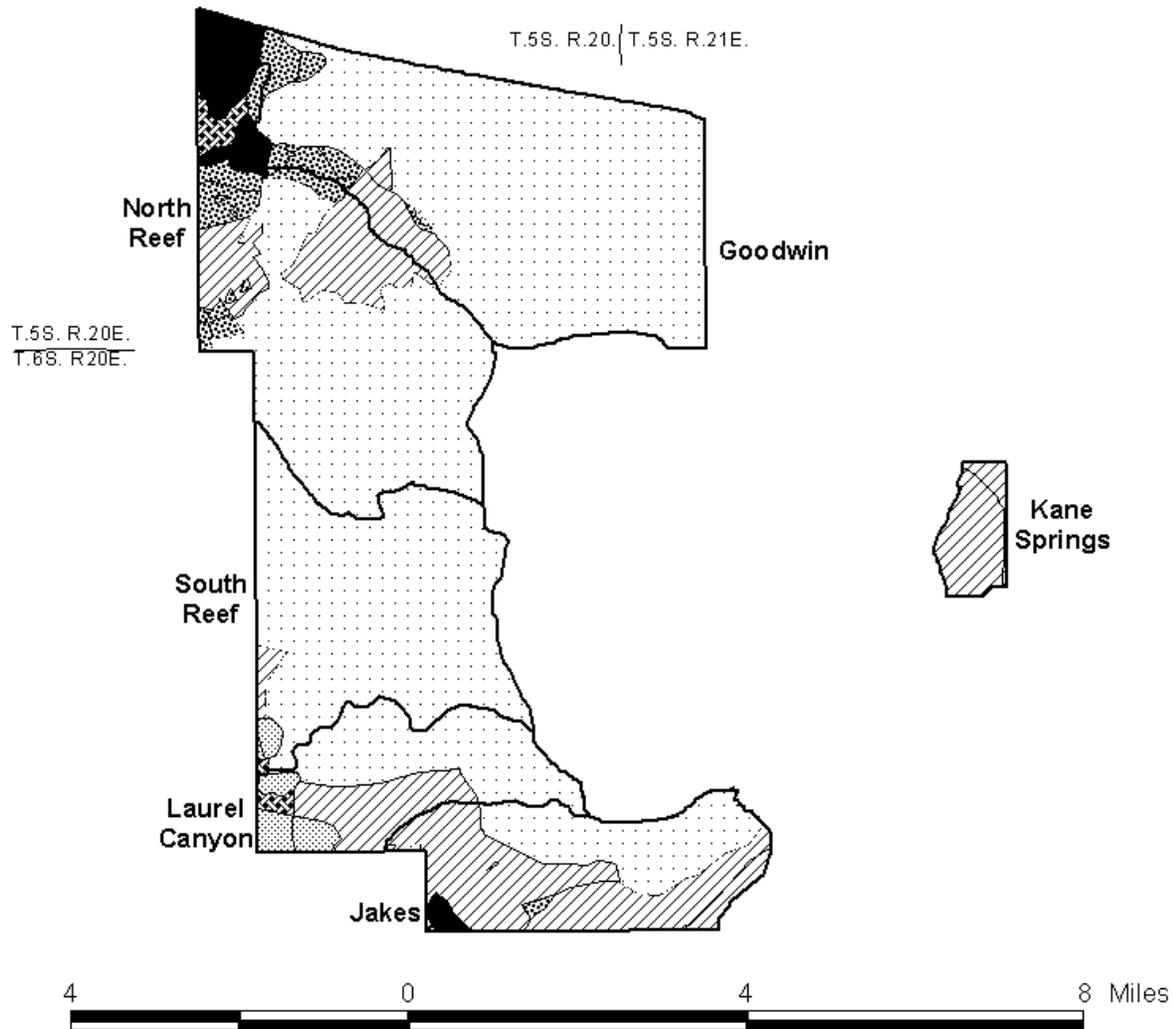
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- Allotment Boundaries
- Forest Plan Management Areas
- 1
- 4
- 5

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Figure 6.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments Geology



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Figure 7.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments
Safford Ranger District, Coronado National Forest

5th Code Watersheds

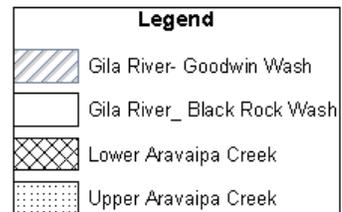
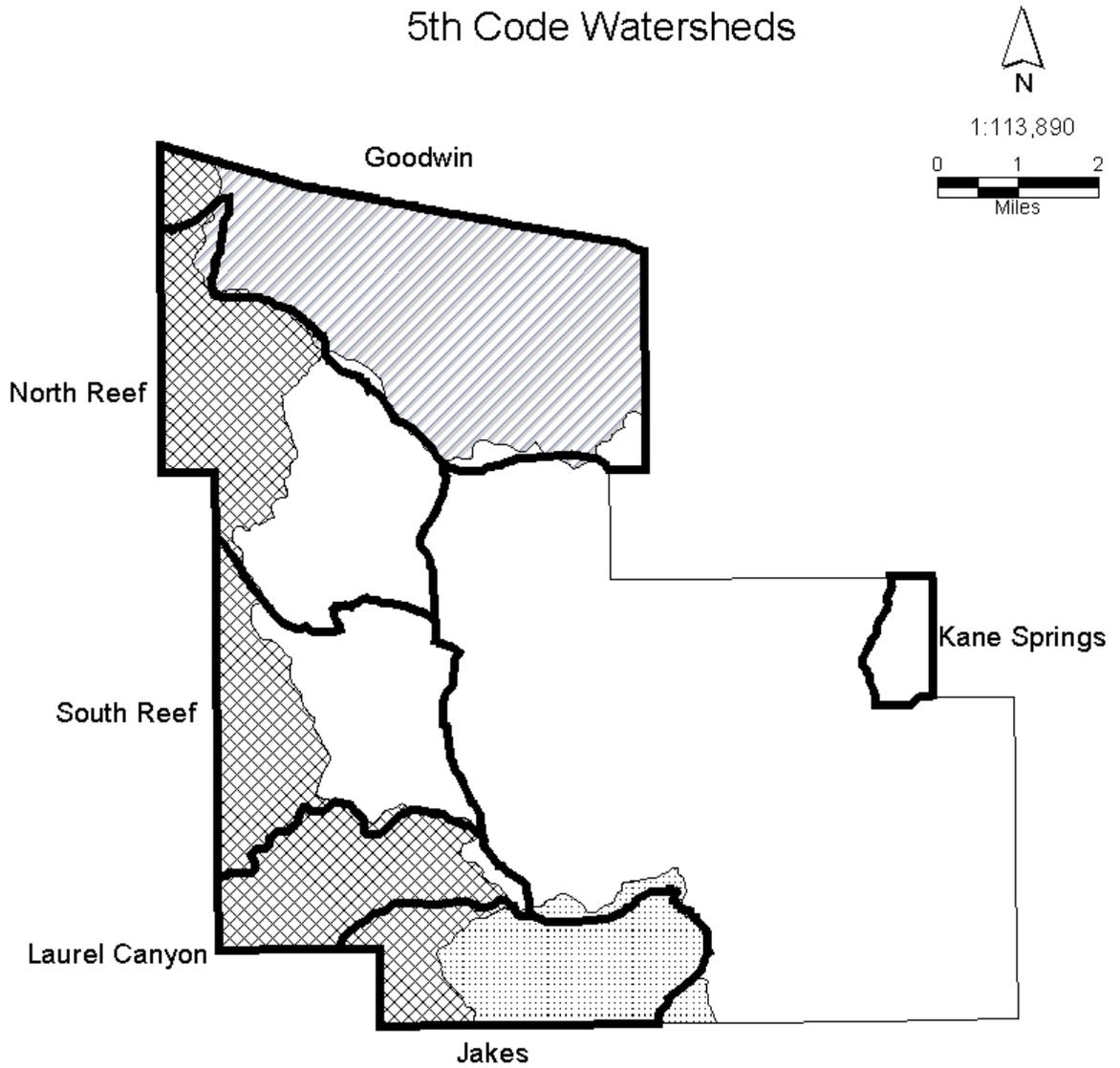


FIGURE 10

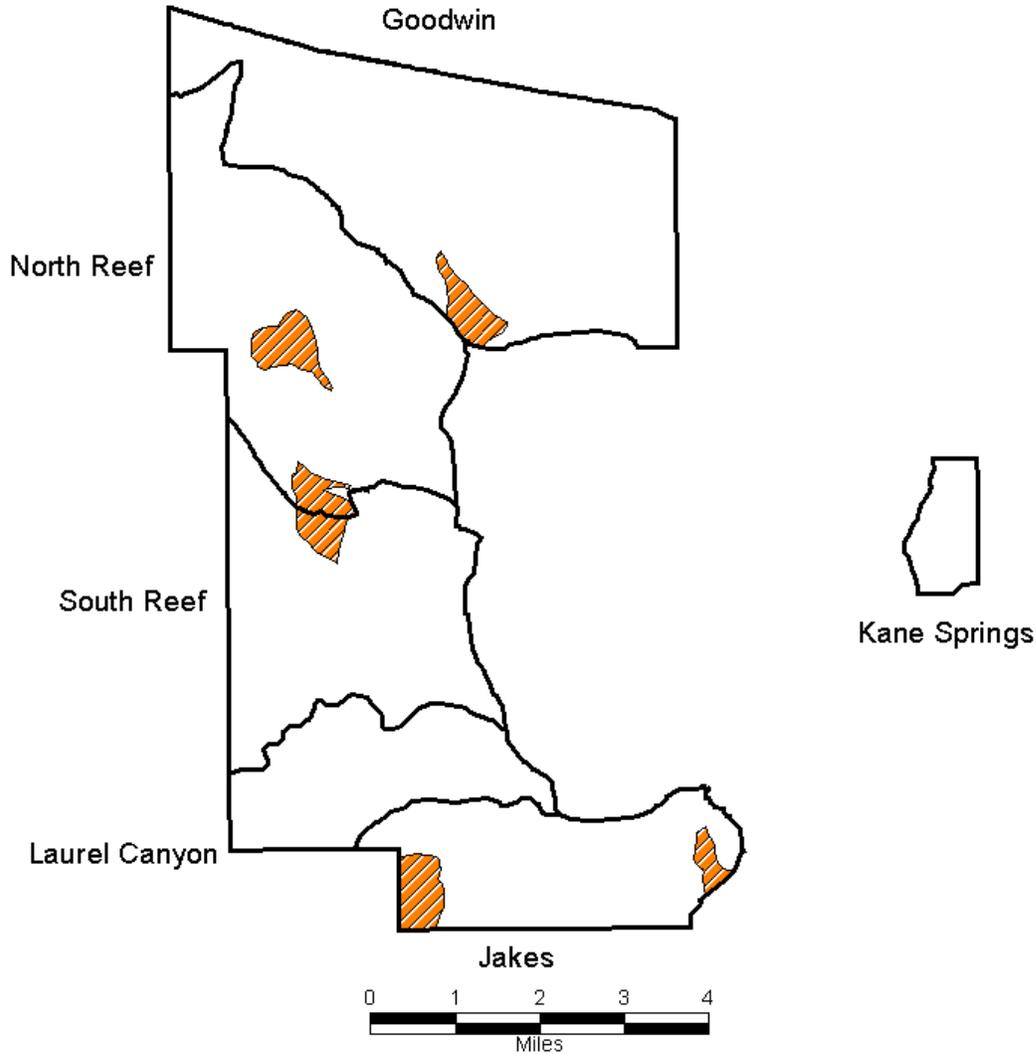
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Figure 8.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotment Soil Condition



1:113,890



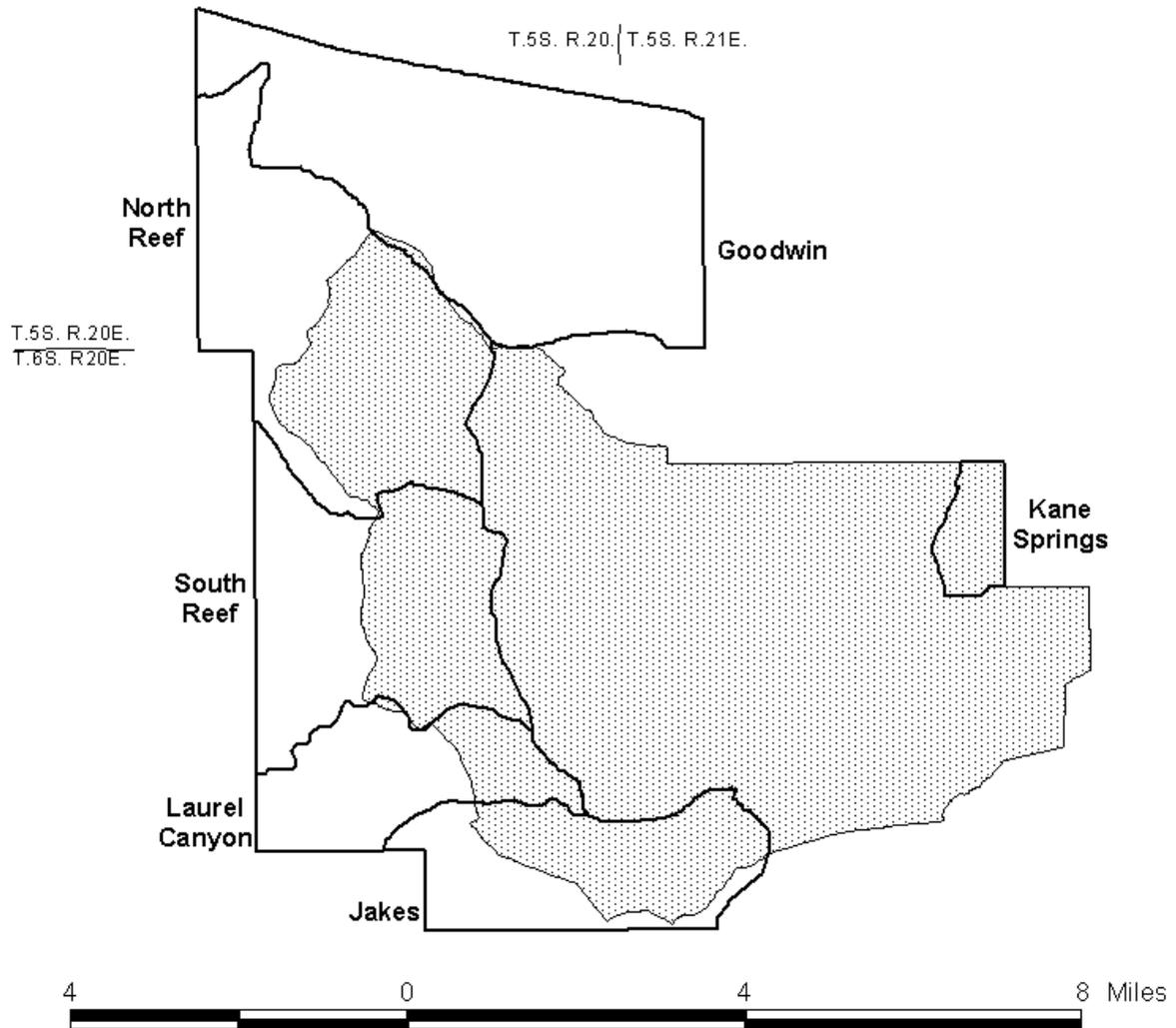
Legend

- Soil Condition
- Satisfactory
 - Impaired

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Prepared August 2004, ss

Figure 9.

Jakes, Kane Springs, Laurel Canyon, North Reef, South Reef, and Goodwin Allotments Santa Teresa Wilderness Area



▲ 1:114000

- Allotment Boundaries
- Santa Teresa Wilderness Area

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