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**ENVIRONMENTAL ASSESSMENT
ALLOTMENT MANAGEMENT PLAN
APACHE SPRINGS
FORT
ALLOTMENTS**

CHAPTER 1 - PROJECT SCOPE

Background

In September 1995, the Nogales Ranger District began an analysis of the livestock grazing program on eight contiguous allotments along the east slope of the Santa Rita mountains. Based on that analysis, six separate decisions are expected regarding revision or updating of allotment management plans. Decisions regarding Allotment Management Plans (AMPs) for the Apache Springs and Fort allotments are two of those six.

Purpose and Need for Action

The allotment management plans for these allotments are scheduled for revision or updating. If needed, new grazing strategies and associated improvements are to be developed to more effectively manage the grazing program.

Existing Conditions

A management plan (1981) exists for the Apache Springs allotment. However, sufficient National Environmental Policy Act (NEPA) documentation does not exist for the grazing management program on this allotment. There is no current management plan for the Fort allotment.

Desired Conditions

All administrative decisions and actions are in compliance with all applicable laws, regulations and direction. Any incidental non-compliance with laws, regulations and direction is corrected within a reasonable time frame. Permitted and authorized use levels for livestock grazing are within the capabilities of the resources available. Coordination is continuous between government agencies, publics and permittees. Conflicts between interest groups are resolved without confrontation.

Access to and through National Forest System lands has improved. Permanent public access has been gained. A cattleguard has been installed at the Forest Boundary in Adobe Canyon. Cattleguards have also been installed in Gardner Canyon near Tunnel Springs, and in Fish Canyon.

There has been a great deal of management flexibility developed as a result of ranches being sold, consolidation of allotments, and increased cooperation between State, private, and Forest forage managers. As a result numbers of cattle graze for a shorter period of time, or are moved more frequently, longer and more frequent rest is provided. Timely adjustments are made to cattle numbers or amount of time grazed as a result of reduced rainfall amounts and/or distribution; utilization standards are still being attained, but not exceeded. More and longer rest has increased forage production and improved species composition on drainage bottoms and ridgetops. Significantly greater amounts of residual vegetation and herbaceous litter are being retained, with resultant benefits to soil, water, and wildlife species that require herbaceous cover.

Ecologic conditions are generally good or better, with a static or upward trend. All areas with riparian potential (mapped and unmapped) are meeting or moving toward Coronado National Forest Land Management Plan (LMP) goals. The total acreage of riparian vegetation is expanding. Upland conditions are meeting or moving toward LMP goals. All known ecologically attainable conditions exist to promote increased populations of threatened and endangered species. Adequate forage is provided for livestock while maintaining good to excellent food and cover for game and non-game wildlife populations.

High quality habitat suitable for Mearns quail is found throughout the Apache Springs allotment. Agave stands have been maintained. Riparian habitat has been improved where feasible. Gullying has been controlled. Actions to manage woody vegetation have resulted in gains to soil/gully stabilization. Fire has been restored to the ecosystem as a tool. The range permittee and the District have developed the flexibility and cooperative spirit needed to provide the fuel necessary to carry fire and to provide for rest on the burned area. The distribution of permanent waters that are accessible and available to wildlife has been increased; access and escape ramps have been provided when necessary.

Proposed Action

The proposed action will authorize:

- * Modification of the existing allotment boundaries, as needed.
- * Livestock grazing on National Forest System (NFS) lands included within the Apache Springs and Fort allotment boundaries.
- * Issuance of new livestock grazing permits for the lands included within the Apache Springs and Fort allotments.
- * A maximum number of permitted and authorized livestock equal to the most recent estimated grazing capacity, as determined by the Forest Service.
- * Adjustments in the permitted and authorized livestock grazing numbers to reflect changes in the ecologic condition, trend and/or estimated carrying capacity, as determined by the Forest Service.
- * The season of use for livestock grazing within the allotment boundaries.
- * The season of use for specific pastures within the allotments.
- * Inclusion of all LMP standards and guidelines regarding livestock grazing as part of the grazing permits.
- * Inclusion of site specific standards and guidelines in the grazing permits, as needed.
- * Allotment specific improvement projects

Decision to be Made

The Nogales District Ranger is the official responsible for deciding whether or not an Allotment Management Plan will be implemented on each allotment. The District Ranger may decide to select any or none of the alternatives presented. If an alternative is selected, the District Ranger will decide the maximum permissible amount of grazing, the timing and duration (season) of the grazing, the standards and guidelines associated with the permit(s), and the type and amount of improvement work to be accomplished.

Issues

Although the proposal was designed specifically to achieve the goals and objectives of the LMP, the proposal would have some disadvantages and probably create some resource and social effects that need to be considered.

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| Issue #1 | Livestock grazing must be in compliance with the Clean Water Act. |
| Issue #2 | Livestock grazing in riparian areas must be in compliance with the LMP standards and guidelines, including existing riparian area management plans. |
| Issue #3 | Livestock grazing must be in compliance with the Clean Air Act |
| Issue #4 | Cultural resources must be protected in compliance with the appropriate laws and regulations. |
| Issue #5 | Potential Natural Communities must be described. |
| Issue #6 | A wildlife emphasis alternative must be developed. Arizona Game and Fish has identified potential pronghorn antelope and Mearn's quail habitat in portions of this area. |
| Issue #7 | All threatened, endangered or sensitive species must be considered. |
| Issue #8 | Natural diversity, forest health and long term productivity should be maintained. |
| Issue #9 | Watershed conditions in Adobe Canyon are less than acceptable. |
| Issue #10 | Structural improvements throughout both allotments are poorly maintained. |
| Issue #11 | The Santa Cruz County Board of Supervisors requests to be advised on any changes in the use of federal lands management in the county which would have the effect of impacting private land use, property tax rates, assessed valuation and/or the economy in Santa Cruz County or any of its incorporated cities. |

Measures

The following units of measure were selected to evaluate issue resolution, evaluate attainment of objectives and describe environmental impacts. In most cases, the measures are quantified and interpreted for each detail alternative. The units of measure are:

Social/Economic Environment

- a. Direct and Indirect Jobs - 1.14/1200 head months
- b. Payments to Counties - dollars without PILT offset
- c. Contributions to Range Betterment Fund - dollars available for project work
- d. Recreation/Wilderness - narrative
- e. Heritage Resources - narrative

Physical Environment

- a. Soil Conditions - percent in satisfactory/impaired/unsatisfactory condition
- b. Erosion Rating - total ground cover measurement
- c. Erosion Management Rating - total ground cover on manageable surface
- d. Air Quality - narrative
- e. Water Quality - narrative

Biological Environment

- a. Vegetation Condition - composition compared to Potential Natural Community
- b. Vegetation Trend - change in composition toward or away from Potential Natural Community.
- c. Riparian Areas - percent in satisfactory/unsatisfactory condition
- d. Threatened, Endangered and Sensitive Species - narrative

Project Location/Analysis Area (Figure 1)

This project area is located along the east slope of the Santa Rita mountains, on the Nogales Ranger District, and northwest of Sonoita, Arizona. The project area contains approximately 5,900 hectares of land with capacity for livestock grazing (Apache Springs, 3,917; Fort, 1,919) within 8,008 hectares of NFS lands (Apache Springs, 5,155; Fort, 2,853) and 64 hectares of land owned by private entities (Apache Springs).

Other past, present and foreseeable future projects that may contribute to cumulative effects are:

- Beck Land Exchange
- Sierra Grande Land Exchange
- Mineral Prospecting
- Off Highway Vehicle traffic
- Arizona Trail

Further NEPA Analysis

This environmental assessment (EA) will guide any subsequent project implementation. This EA may be amended to reflect changes in environmental conditions, or the state of knowledge regarding those conditions.

CHAPTER 2 - ALTERNATIVES

Alternative Development

An Interdisciplinary Team (IDT) of Nogales Ranger District and Coronado National Forest personnel, with Arizona Game and Fish and grazing permittee cooperation, conducted on-site reviews of the Apache Springs, Fort and six nearby allotments, beginning in October, 1995. Other agencies, groups and individuals were invited to participate in the analysis process. Four alternatives were developed for management of the Apache Springs and Fort allotments.

Alternatives Dropped from Detail Study

After a review of LMP standards and guidelines, existing conditions, and issues identified during the scoping process; the IDT, by consensus, dropped the "no grazing" alternative from detail study for the Apache Springs allotment. The LMP identifies the project area as being within Management Area 4 (Livestock Grazing, Level D), with inclusions of Management Area 7 (Riparian) and Management Area 9 (Wilderness). The "no grazing" alternative is not consistent with the stated management emphasis for Management Area 4. Wilderness Area lands with livestock grazing capacity are minimal and are located near the Wilderness Area Boundary. Existing conditions do not indicate any significant negative resource impacts, affecting one or more significant portions of the Apache Springs allotment, that can be mitigated through the total removal of livestock from the allotment. All members of the IDT agreed that all resource or other issues could be addressed through one or more of the remaining alternatives.

Alternatives Considered In Detail

Objectives Common to Alternatives

Each alternative will emphasize various facets of resource management and several issues can be adequately resolved under all alternatives. The remaining alternatives were analyzed against these common objectives.

1. Ensure the proper use of water resources.
2. Ensure compliance with the Endangered Species Act (ESA).
3. Ensure compliance with National Historic Preservation Act (NHPA).
4. Ensure compliance with the LMP.
5. Improved watershed conditions.
6. Sustainable vegetation conditions.

Alternative Mitigation

To minimize resource impacts, the mitigation measures in Table 1 will be followed for all alternatives. Potential mitigation measures peculiar to a specific alternative are disclosed in the Chapter 3 impact discussions. The mitigation measures here are limited to those for which the Forest Service (FS) has authority. Many of the mitigation measures will be the responsibility of the permittees and will become

part of the grazing permits. Many of the mitigation measures have been used on previous projects and are considered to be effective in reducing environmental impacts.

Table 1 - Mitigation Measures Common to All Alternatives

Mitigation Measure	Reason	Effectiveness
Site specific biologist review	Determine need for FWS consultation	Avoids non-compliance with ESA
Consultation with FWS	ESA compliance	Avoids negative impacts to endangered species
Site specific cultural resource surveys	Protect cultural resources	Avoids negative impacts to cultural resources
Regular allotment inspections with permittees	Permit compliance	Extremely effective
Best Management Practices (BMP's)	Air and water quality	Extremely effective
Provide for one year-long water source for wildlife per section *	LMP compliance **	Partially successful ***
Provide for wildlife escape ramps at all water developments *	LMP compliance **	Partially successful ***

* In sections with livestock related water developments.

** LMP = Coronado National Forest Land Management Plan.

*** Not all sections have livestock related water developments (existing or proposed) and not all water developments are livestock related.

Alternative Description

The alternatives include a "continue current management" alternative and two additional action alternatives. All alternatives include adjustments necessitated by changes in the Fort allotment boundary and necessitated by completion of the Beck Exchange, removing NFS lands.

Alternative A (Continue Current Management)

Apache Springs

- * Season of use for allotment is year-long
- * Individual pastures receive partial to total growing season deferment.
- * Pastures 1, 5 and 7 are used during winter months.
- * Number of permitted livestock: 140 head, cow/calf

- * Maximum utilization:
 - Forage growing season 35 percent
 - Forage dormant season 55 percent (45 percent - Mearn's quail habitat)
- * Salt and supplement will be placed away from water and low areas where cattle tend to congregate.
- * Salt and supplement areas will be moved to help move cattle and to protect soil integrity.
- * Key areas will be established and guidelines for use in these areas will be established annually during development of annual operating instructions.
- * There will be no improvement (re)construction.

Fort

- * Season of use for allotment is year-long.
- * Individual pastures receive partial to total growing season deferment.
- * Mountain Pasture is used during the winter only.
- * Number of permitted livestock: 64 head, cow/calf (36 head reduction)
- * Maximum utilization:
 - Forage growing season: 35 percent
 - Forage dormant season: 55 percent (45 percent - Mearn's quail habitat)
- * Salt and supplement will be placed away from water and low areas where cattle tend to congregate.
- * Salt and supplement areas will be moved to help move cattle and to protect soil integrity.
- * Key areas will be established and guidelines for use in these areas will be established annually during development of annual operating instructions.
- * There will be no improvement (re)construction.

Alternative B (Proposed Action)

Apache Springs

- * Season of use for allotment is year-long
- * Individual pastures receive partial to total growing season deferment.
- * Pastures 1, 5 and 7 are used during winter months.
- * Number of permitted livestock: 140 head, cow/calf
- * Maximum utilization:
 - Forage growing season 35 percent
 - Forage dormant season 55 percent (45 percent - Mearn's quail habitat)
- * Salt and supplement will be placed away from water and low areas where cattle tend to congregate.
- * Salt and supplement areas will be moved to help move cattle and to protect soil integrity.
- * Key areas will be established and guidelines for use in these areas will be established annually during development of annual operating instructions.
- * The Fish Canyon Well will be converted to solar power.
- * Pasture 6 Well will be converted to solar power.
- * Also Spring pipeline will be replaced.
- * A cattleguard will be installed on FR 163 at the Pasture 4/6 division fence.
- * A cattleguard will be installed on FR 4858 at the Pasture 4/6 division fence.
- * A cattleguard will be installed on FR 4858 at the Pasture 4/7 division fence.

Fort

- * Season of use for allotment:
03/01 - 08/31
12/01 - 02/28
- * Individual pastures receive partial to total growing season deferment.
- * Mountain Pasture is used during the winter only.
- * Number of permitted livestock: 85 head, cow/calf
- * Maximum utilization:
Forage growing season: 35 percent
Forage dormant season: 55 percent (45 percent - Mearn's quail habitat)
- * Salt and supplement will be placed away from water and low areas where cattle tend to congregate.
- * Salt and supplement areas will be moved to help move cattle and to protect soil integrity.
- * Key areas will be established and guidelines for use in these areas will be established annually during development of annual operating instructions.
- * Casa Blanca pipeline will be reconstructed.

Alternative C

Apache Springs

- * Season of use for allotment is year-long
- * Individual pastures receive partial to total growing season deferment.
- * Pastures 1, 5 and 7 are used during winter months.
- * Number of permitted livestock: 140 head, cow/calf
- * Maximum utilization:
Forage growing season 35 percent
Forage dormant season 55 percent (45 percent - Mearn's quail habitat)
- * Salt and supplement will be placed away from water and low areas where cattle tend to congregate.
- * Salt and supplement areas will be moved to help move cattle and to protect soil integrity.
- * Key areas will be established and guidelines for use in these areas will be established annually during development of annual operating instructions.
- * The Fish Canyon Well will be converted to solar power.
- * Pasture 6 Well will be converted to solar power.
- * Aliso Spring pipeline will be replaced.
- * A cattleguard will be installed on FR 163 at the Pasture 4/6 division fence.
- * A cattleguard will be installed on FR 4858 at the Pasture 4/6 division fence.
- * A cattleguard will be installed on FR 4858 at the Pasture 4/7 division fence.

Fort

- * Season of use for allotment: None
- * Number of permitted livestock: 0
- * Six earthen tanks will be removed.
- * Four pumps will be removed and the wells will be capped.
- * One water storage tank will be removed.
- * Seven troughs will be removed.
- * Six kilometers of internal fence will be removed.
- * All existing pipelines will be abandoned in place.

Table 2 - Comparison of Alternatives for Selected Criteria

Comparison Criteria	Alt. A	Alt. B	Alt. C
Livestock Grazing Continues on Both Allotments	YES	YES	NO
Allotment Grazing Management Changes	NO	YES	YES
Season of Use Changes - Allotment	NO	YES	YES
Season of Use Changes - Pastures	NO	YES	YES
Site Specific Standards and Guidelines in Permits as Result of This Decision	NO	YES	YES
Improvement Work Approved as Part of This Decision	NO	YES	YES

Preferred Alternative Identification

In this environmental assessment the agency's preferred alternative is Alternative B. Alternative B provides for changes in livestock management where progress toward meeting LMP standards and guidelines could be improved. This alternative provides an opportunity for continued economic benefit, from a renewable natural resource, to segments of the local communities relying on the livestock industry for their financial support.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter identifies the present condition (i.e., affected environment) within the project area and the changes that can be expected from implementing the alternatives.

All improvement work affecting livestock utilization patterns should be completed within three fiscal years of the decision to implement the proposed action (Alternative B).

The major issues (see Chapter 1) define the scope of environmental concern for this project. The environmental effects (changes from present base line condition) that are described in this chapter reflect the identified major issues. Issue numbers are shown in brackets after each sub-heading to cross reference issues with the impact discussions.

Soil [1, 2, 3, 8, 9]

All soils must be managed to maintain or improve long-term productivity. Best Management Practices (FSH 1509.22) should be implemented during regular activities, and during/after construction activities to minimize ground disturbance during construction activities and to protect soils from erosion.

Changes in forage utilization levels may alter the amount of live basal material and litter available for soil stabilization and nutrient cycling.

Affected Environment

Soil erosion is not a major problem, except where recreational vehicles (i.e., four wheel drive, ATV) are used on existing or to create new access routes. Some erosion is occurring as a result of recreational vehicle use.

Apache Springs

There is some gully erosion near Aliso Spring and in Cave Creek Canyon. These gullies represent an opportunity for soil and watershed restoration work, perhaps multi-funded by the range, wildlife, soil and water management programs.

This allotment is within General Ecosystem Survey (GES) Units 370, 476 and 490.

Approximately ten percent of this allotment is in Unit 370. Unit 370 at this elevation and slope is identified as satisfactory.

Approximately 29 percent of this allotment is in Unit 476. Unit 476 at this elevation and slope is generally satisfactory. Abundant tree cover provides adequate litter. Approximately 60 percent of this unit is too steep and is considered unsuited. The remainder is satisfactory.

Approximately 61 percent of this allotment is in Unit 490. Unit 490 at this elevation and slope is generally satisfactory, depending upon litter component and surface rock. This unit is lacking litter on only the most gentle country. It is 75 percent satisfactory and 25 percent impaired.

Ground cover is at the highest potential level on 59 percent of this allotment. The trend in watershed condition on 26 percent of this area (10 percent of allotment) is down. This downward trend is in response to drainage patterns along FR 165, FR 4040, FR 4041 and FR 4043 in the vicinity of the

electronic site and the fuelwood sale area. Ground cover is within an acceptable range on 28 percent of this allotment. Approximately 13 percent of this allotment does not have sufficient ground cover for erosion protection. The 13 percent with insufficient ground cover has/is being managed at a level providing the highest potential ground cover for the manageable surface.

Fort

Road maintenance and proper drainage is lacking on this allotment. Major flood damage and scouring occurred in Adobe Canyon in 1983. There is some gully erosion in Wood Canyon. This may have been caused by or aggravated by flooding during the winter of 1992-93. These gullies represent an opportunity for soil and watershed restoration work, perhaps multi-funded by the range, wildlife, soil and water management programs.

This allotment is within GES Units 475, 476 and 490.

Approximately 17 percent of this allotment is within Unit 475. Unit 475 at this elevation and slope is generally satisfactory, depending upon litter component, gradient, and rock outcrop. Approximately 25 percent of the area identified as Unit 475 is on south and west facing slopes and lacks sufficient tree canopy to provide litter. It is classified as half satisfactory and half impaired. Of the remaining 75 percent of the unit, soils are generally satisfactory because of litter present in the form of leaf fall.

Approximately 35 percent of this allotment is within Unit 476. Unit 476 at this elevation and slope is generally satisfactory. Abundant tree canopy provides adequate litter. Approximately two-thirds of this unit is too steep, and is considered unsuited. The remainder is satisfactory.

Approximately 48 percent of this allotment is within Unit 490. Unit 490 at this elevation and slope is either satisfactory or unsatisfactory, depending upon the litter component and surface rock. The unit is lacking litter in all south facing aspects. It is one-half satisfactory, one-fourth impaired, and one-fourth unsatisfactory.

Ground cover is at the highest potential level on 66 percent of this allotment. Ground cover is within an acceptable range on 13 percent of the allotment. Twenty-one percent of the allotment does not have sufficient ground cover for erosion protection. The 21 percent with insufficient ground cover has a downward trend in watershed condition in response primarily to dispersed recreation activities (camping and vehicle travel) in the bottom of Adobe Canyon. These activities are occurring in any bottom location with minimal brush and/or trees. Conditions progressively improve as distance from the Forest boundary and the number of impediments to travel (i.e., rough channel crossings or fences) increase. The impacts from livestock grazing appear to be uniform throughout the entire allotment.

Environmental Consequences

Apache Springs

The areas in this allotment that have unsatisfactory soil conditions are missing organic matter. Meeting Forest Plan utilization standards throughout the allotment will result in more organic matter available for incorporation into the soil.

Table 3 - Comparison of Expected Soil Conditions (% of Allotment) - Apache Springs

Condition Class	Existing	Alt. A	Alt. B	Alt. C
Satisfactory	82	85	85	85
Impaired	18	15	15	15

* Unsuitable soils are not included in the soil condition table. All percentages are based on the percentage of lands considered suitable for grazing, and having capacity assigned.

Fort

Impaired and unsatisfactory soil conditions are indicated by a lack of organic matter on this allotment. Continued current management will not result in any more area becoming impaired or unsatisfactory. Implementing changes in management in Alternative B will improve the organic matter situation, mostly in impaired areas. Unsatisfactory areas will be improved as well, but to a lesser extent, because there are fewer plants to work with. Closing the allotment will have similar effects.

Table 4 - Comparison of Expected Soil Conditions (% of Allotment) -

Fort Condition Class	Existing	Alt. A	Alt. B	Alt. C
Satisfactory	86	86	87	87
Impaired	14	14	13	13
Unsatisfactory	0	0	0	0

* Unsuitable soils are not included in the soil condition table. All percentages are based on the percentage of lands considered suitable for grazing, and having capacity assigned.

New livestock utilization patterns generally do not become established until three years after implementation of changes in management. Utilization patterns vary in "seasonal use only" pastures, in response to changing annual weather patterns. The livestock numbers considered for each alternative included a range from the lowest to highest of: estimated capacity; permitted use; expected actual use.

The erosion ratings and management sub-ratings are the expected results ten years after implementation of this decision. They are based on professional judgement, expected vegetation conditions and expected soil conditions at that time.

The primary cause of conditions in Adobe Canyon is dispersed recreation and vehicle activity. Changes in the livestock management program will have minimal effect in this canyon.

There will be minimal change in conditions on the Apache Springs allotment, and no change on the Fort allotment, from continuing the current livestock grazing management program (Alternative A).

This assumes a reduction of livestock numbers in the Fort allotment, in accordance with current FS regulations.

Table 6 - Summary of Erosion Ratings with Management Sub-Ratings (Alt. A)

Allotment Name	A	B	C		1	2	3
Apache Springs	61	27	12		100		
Fort	65	13	22		78		22

Note: Ratings

- A. Percent of allotment with maximum potential ground cover.
- B. Percent of allotment with more than minimum acceptable but less than maximum potential ground cover.
- C. Percent of allotment with less than minimal acceptable ground cover.

Sub Ratings

- 1. Percent of allotment with maximum ground potential ground cover on manageable (non rock) surface.
- 2. Percent of allotment with more than the minimum but less than maximum potential ground cover on manageable (non rock) surface.
- 3. Percent of allotment with less than minimum acceptable ground cover on manageable (non rock) surface.

All improvement work affecting livestock utilization patterns should be completed within three fiscal years of the decision to implement the proposed action (Alternative B). Conditions on both allotments improve from current conditions in response to improved soil and vegetation conditions.

Table 7 - Summary of Erosion Ratings with Management Sub-Ratings (Alt. B)

Allotment Name	A	B	C		1	2	3
Apache Springs	75	19	6		100		
Fort	73	13	14		73 5	8 4	10

Note: Rating criteria same as in Table 6.

All improvement work affecting livestock utilization patterns should be completed within three fiscal years of the decision to implement Alternative C. Conditions on both allotments improve from current conditions in response to improved soil and vegetation conditions. There will be an automatic two year delay in implementation of this alternative for the Fort allotment, in accordance with current FS regulations.

Table 8 - Summary of Erosion Ratings with Management Sub-Ratings (Alt. C)

Allotment Name	A	B	C		1	2	3
Apache Springs	75	19	6		100		
Fort	74	11	15		74 4	7 5	10

Note: Rating criteria same as in Table 6.

Water Quality [1, 2]

Affected Environment

Apache Springs

The Apache Springs allotment is within the Cienega Creek watershed. Cienega Creek watershed is 304,000 acres in size. Coronado National Forest System lands cover only 73,467 acres (24%) of this watershed. Other ownerships within this watershed are private, National Park Service, Bureau of Land Management, State of Arizona, and Pima County.

The Cienega Creek is classified as a Unique Water and water quality fully supports all designated uses.

Land uses on National Forest System, Bureau of Land Management, and State lands are similar, with grazing and and recreation the primary uses. Other ownerships have a variety of uses ranging from only recreation on National Park Service lands to urbanization on private lands.

There are 17 livestock grazing allotments within the Cienega Creek watershed on National Forest System Lands. Ranches operate on other ownerships within this watershed as well.

Other activities being conducted by the Forest Service in this watershed in addition to livestock grazing are recreation, fuelwood harvest, and wildlife management. Green as well as dead and down fuelwood harvest has been conducted on a limited basis over the past ten years. The fuelwood harvest plan indicates continued limited entries for fuelwood harvest in the Santa Rita Mountains within this watershed. Wildlife management over most of this watershed has been limited to influencing livestock grazing management to benefit or minimize alteration of wildlife habitat. Actions taken on the ground or in the channels for wildlife management purposes in this watersheds have been very limited.

Mining is currently a very minor activity, but proposals in the watershed may make it a major activity in the future.

Fort

The Fort allotment is within the Sonoita Creek watershed. Sonoita Creek watershed is 170,000 acres in size. Coronado National Forest System lands cover 107,000 acres (63%) of this watershed. Other ownerships within this watershed are private, State of Arizona and Arizona State Parks.

The Sonoita Creek is classified as at least partially supporting all uses. Dissolved oxygen, beryllium and barium violations have caused the partial support designation. Turbidity violations have caused a threatened designation. Turbidity is the only one of these parameters likely to be grazing related.

Land uses on National Forest System and State lands are similar, with grazing and recreation the primary uses. Other ownerships have a variety of uses ranging from only recreation on State Park lands to urbanization on private lands.

There are 18 livestock grazing allotments within the Sonoita Creek watershed on National Forest System Lands. Ranches operate on other ownerships within this watershed as well.

Other activities being conducted by the Forest Service in this watershed in addition to livestock grazing are recreation, fuelwood harvest, and wildlife management. Dead and down fuelwood harvest has been conducted on a limited basis over the past ten years. The fuelwood harvest plan indicates no planned green fuelwood harvest within this watershed. Wildlife management over most of this watershed has been limited to influencing livestock grazing management to benefit or minimize alteration of wildlife habitat. Actions taken on the ground or in the channels for wildlife management purposes in this watersheds have been very limited.

Mining is currently a very minor activity, but proposals in the watershed may make it a major activity in the future. Abandoned mines are a source of poor water quality.

Environmental Consequences

Improved soil conditions will improve overall watershed conditions and water quality by reducing erosion and sediment delivery to channels. Failure of water quality to improve after BMP's are implemented is caused by either background levels that are out of compliance or an activity not affected by a BMP is causing the impact.

Neither fuelwood harvest nor wildlife management activities contribute to adverse cumulative effects within this watershed because the impacts are so minimal.

This decision will not affect any decisions to be made concerning mining.

Air Quality [3]

Affected Environment

Neither of these allotments is within an Air Quality Non-attainment Area for any air quality constituent. The Apache Springs allotment is not within a Class I Wilderness Area. The Fort allotment is partially within a Class I Wilderness Area.

Environmental Consequences

There will be no significant effects on air quality as a result of the proposed decision.

Vegetation [2,5,7,8,9]

Changes in forage utilization levels and grazing patterns may alter the density, vigor and composition of riparian dependent and upland species within this planning area, during the next ten years. These changes may also alter canopy structure and age class diversity of woody species.

Affected Environment

Species composition condition ratings are based on a comparison of existing vegetation composition to NRCS descriptions of the Potential Natural Community (PNC) at each monitoring site, using the standard NRCS procedures.

Trend findings indicate "apparent trend" as determined by the Rangeland Management Specialist and are based on apparent vigor and seedling presence of key species, estimated production, and recent climate conditions.

Apache Springs

Vegetation species composition is representative of the PNC on 47 percent of this allotment. There is no apparent trend in this area. Composition indicates a late seral stage on 38 percent of the allotment. It is improving on 32 percent of this area (12 percent of allotment), and is static on 68 percent of this area (26 percent of allotment). Composition indicates a mid-seral stage on 15 percent of the allotment. There is no apparent trend in this area. This area exhibits diversity that includes many species not normally associated with, but expected, at a location more open than the norm for this ecologic site.

Thinning of the canopy and midstory on approximately 59 percent of the allotment to represent presettlement (old growth) conditions would improve the composition rating.

Fort

Vegetation species composition is representative of the PNC on 13 percent of this allotment. There is an upward trend in this area. Composition indicates a late seral stage for 87 percent of the allotment. The trend is static on 75 percent of this area (65 percent of allotment), and downward on 25 percent of this area (22 percent of allotment). This downward trend is in response to disturbance, primarily by dispersed recreation activities (camping and vehicle travel) in the bottom of Adobe Canyon. These activities are occurring in any bottom location with minimal brush and/or trees. Conditions progressively improve as distance from the forest boundary and the number of impediments to travel (i.e., rough channel crossing or fence) increase. Adobe canyon is a potential site for a mesquite control project.

There are opportunities for woodland treatments to reduce the density of junipers and oaks, especially fuelwood and/or prescribed fire. Thinning the stand should result in increased available water for forage production and increase the duration of streamflow, plus decrease the competition for light and space. An area for possible burning was a ridge with mesquites on the ridgeline that cattle shade up under, resulting in high use and bare soil. Fire should be a part of the treatment for this ecosystem. The long term effect of cattle grazing and fire suppression has reduced the fire frequency and extent on this allotment.

In past years, utilization in the canyon bottoms and ridges has been too high in some pastures and during different seasons depending on cattle movements between pastures. There appears to be reductions in vegetative composition and vigor in drainage bottoms and ridges that have resulted from over utilization. Mesquites have invaded some drainage bottoms, slopes, and ridges; weedy plants have increased especially in drainage bottoms and the production, height, and number of seedstalks on bunchgrasses have been much reduced. A limited number of watering sites coupled with waterlines and associated drinkers which are often dry act to aggravate the cattle distribution/

utilization problems. The cow/calf operation especially during periods of hot weather operates to keep cattle near water sources and results in heavy utilization on gentle slopes and near water.

Riparian

Within the Apache Springs allotment Gardner Canyon, Sawmill Canyon and Cave Canyon are all designated Management Area 7 in the Coronado Plan. Riparian area data have been collected in Gardner Canyon. There are two riparian obligate tree species present in the transect. The potential is there for more variety, but it is doubtful that riparian species will account for more than 60 percent of the total woody plant composition. All other parameters are satisfactory.

No areas of the Fort allotment are designated in the Coronado Plan as Management Area 7. Data have been collected for Adobe Canyon. Ash trees were the only riparian obligate tree species found. Ash and several upland species are represented in all age classes. This is considered a dry riparian area with little potential for riparian area development, except around springs. There are minor amounts of unstable bank conditions.

Threatened, endangered and sensitive species

By agreement between the US Forest Service, US Fish and Wildlife Service, and Arizona Department of Game and Fish, a list of species have been compiled for the eastside of the Nogales Ranger District, i.e., the Santa Rita Mountains. This list of species has been used in evaluation of the effects of the alternatives for management of the Apache Springs and Fort allotments.

Environmental Consequences

The livestock numbers considered for each alternative included a range from the lowest to highest of: estimated capacity; permitted use; expected actual use.

The expected results for the Apache Springs allotment are the same for all three alternatives.

Because no change is expected as a result of implementing Alternative A, existing conditions are identified as the expected results for the Fort allotment.

Table 9 - Summary of Vegetation Composition and Trend (Alternative A)

Allotment Name	A	B	C		1	2	3
Apache Springs	66	27	7		19 17	47 10	7
Fort	13	73	14		13	73	14

Note: Ratings

A. Percent of allotment with a composition score of 75+, based on NRCS ecologic site guide.

- B. Percent of allotment with a composition score between 50 and 74, inclusive.
- C. Percent of allotment with a composition Score between 25 and 49, inclusive.

Sub Ratings

- 1. Percent of allotment with upward trend in composition.
- 2. Percent of allotment with no apparent trend in composition.
- 3. Percent of allotment with downward trend in composition.

Changes in vegetation conditions are in response to changes in the season of use, soil conditions, and/or livestock numbers resulting from the implementation of Alternative B.

Table 10 - Summary of Vegetation Composition and Trend (Alternative B)

Allotment Name	A	B	C		1	2	3
Apache Springs	66	27	7		19 17	47 10	7
Fort	50	43	7		37 7	13 36 3	4

Note: Rating criteria same as Table 9.

Changes in vegetation conditions are in response to changes in the season of use, soil conditions, and/or livestock numbers resulting from the implementation of Alternative C. There will be an automatic two year delay in implementation of this alternative for the Fort allotment, in accordance with current FS regulations.

Table 11 - Summary of Vegetation Composition and Trend (Alternative C)

Allotment Name	A	B	C		1	2	3
Apache Springs	66	27	7		19 17	47 10	7
Fort	42	50	8		29 6	13 44 3	5

Note: Rating criteria same as Table 9.

Riparian

The riparian areas found in the Apache Springs allotment are generally satisfactory with current management. Young riparian plants are common in areas with sufficient water near the surface.

Those areas with unsatisfactory condition are characterized as being dominated by non-riparian species. This condition is the result of generally dry habitat, and cannot be corrected during the period of a term grazing permit, regardless of the allotment management.

Adobe Canyon is the only area with potential for riparian area development, and that is limited to areas around springs. There are some areas with unstable banks. Continuing current management or managing for summer rest will not change riparian conditions. Closing the allotment may improve vegetation around springs.

Table 12 - Comparison of Expected Riparian Conditions (% of riparian area) - Fort

Condition Class	Existing	Alt. A	Alt. B	Alt. C
Satisfactory	86	86	86	87
Unsatisfactory	14	14	14	13

Threatened, endangered and sensitive species

There is no effect to these species because they are absent or suitable habitat is not present or would not be affected by actions proposed in the Apache Springs or Fort AMPs.

Lemmon's fleabane (Erigeron lemmonii)
Huachuca water umbel (Lilaeopsis schaffneriana ssp. recurva)

The District Biologist has determined, and the Forest Botanist has concurred, there will be "no effect" to the Pima pineapple cactus (Coryphantha scheeri var. robustispina), from the proposed actions in any of the alternatives.

The following sensitive species in the Santa Rita Mountains were eliminated from evaluation because they are not known to occur in the project area or there is no potential (suitable) habitat within the project area. There is no impact to these species.

Pima indian mallow (Abutilon parishii)
Santa Cruz Striped Agave (Agave parviflora ssp. parviflora)
Saiya aka Gonzalez amoreuxia (Amoreuxia gonzalezii)
Large-flowered Blue Star (Amsonia grandiflora)
Chiltepin aka bird pepper (Capsicum annuum var. glabriusculum)
Santa Cruz Star Leaf (Choisya mollis)
Mexican hemlock parsely (Conioselinum mexicanum)
Santa Cruz Beehive Cactus (Coryphantha recurvata)
Wiggins milkweed vine (Cynanchum wigginsii)
Needle-spined pineapple cactus (Echinomastus erectocentrus erectocentrus)
Pringle Hawkweed (Hieracium pringlei)
Wooly fleabane (Laennecia eriophylla)
Davis manihot (Manihot daviseae)
Lemmon cloak fern (Notholaena lemmoni)
Supine bean Phaseolus supinus

Pinos altos flame flower (Talinum humile)
Tepic flame flower (Talinum marginatum)
Thurber hoary pea (Tephrosia thurberi)

The District Biologist has determined, and the Forest Botanist has concurred, there will be no impact to the following sensitive species.

Lemmon aster (Aster potosinus) (Aster lemmoni)
Pringle fleabane (Erigeron pringlei)
Bartram echeveria aka Bartram's Stonecrop (Graptopetalum bartramii)
Golden aster (Heterotheca rutteri)
Lemmon lily (Lilium parryi)
Lyre-leaf twistflower (Streptanthus carinatus)

All three alternatives may impact individual plants of these species but the impact is not likely to result in a trend toward federal listing or loss of viability.

Wilcox fishhook cactus (Mammillaria wrightii wilcoxii)
Beardless Chinch Weed (Pectis imberbis)

Wildlife [2, 6, 7, 8]

Affected Environment

There have been studies of Mearn's quail conducted within Hog and Gardner Canyons. If utilization is too high, then Mearn's quail survival and reproduction is severely reduced. Studies indicate that utilization of grasses in excess of 45% by weight results in unsuitable habitat conditions for Mearn's quail. The Coronado Land and Resource Management Plan has been amended to provide for management of Mearn's quail habitat (Coronado NF Supplement No. 2600-94-1). In part this direction states that utilization of forage by livestock will not exceed 45% by weight. Allowable use levels of 35-40% are desirable in key habitat areas for Mearn's quail. The supplement calls for identification of key habitat areas by biologists and range conservationists; this is a task that needs to be completed. Draft maps of Mearn's quail habitat exist for these allotments.

Grazing can be compatible with Mearns quail production: light to moderate utilization retains sufficient cover for survival and reproduction to occur and may encourage production of tubers and bulblets which the Mearns quail eat. However, management of cattle and Mearns quail has long been controversial as evidenced by many letters to the files by quail hunters unhappy with the range (quail habitat) conditions.

Both allotments are also very important areas for whitetail deer and javelina hunting.

Apache Springs

Fish and Gardner Canyons are well known and long established areas for Mearns quail hunting. The oak woodland with good cover of native bunchgrasses provide suitable habitat conditions for Mearns quail.

Fort

Oak woodland with good cover of native bunchgrasses in Adobe and Wood Canyons provide suitable habitat conditions for Mearn's quail.

The waterlines and associated drinkers are often shut off to control the distribution of cattle within pastures. This also means that water is unavailable for wildlife; those that require free water must move or perish.

The Fort Allotment is also a very important area for whitetail deer and javelina hunting, as well as for Mearn's quail.

The riparian enclosure at El Pilar needs maintenance; the fence may also need to be moved to facilitate livestock movement.

Threatened, endangered and sensitive species

By agreement between the US Forest Service, US Fish and Wildlife Service, and Arizona Department of Game and Fish, a list of species have been compiled for the eastside of the Nogales Ranger District, ie the Santa Rita Mountains. This list of species has been used in evaluation of the effects of the two alternatives for management of the Apache Springs and Fort allotments.

Mexican Spotted Owl Management Territories occur on portions of both allotments.

Areas within both allotments are being considered for Tarahumara frog reintroduction.

The Apache Springs Allotment (near Apache Springs Ranch and Fish Canyon) contain some stands of agaves with the greatest numbers and density that occur on the Nogales RD. These stands may be important to the Lesser long-nosed bat as well as lending visual feature and texture. Cave of the Bells has been gated to control access; Lesser long-nosed bats have used this cave as a roost site. There are other mines and caves within the allotment that may be providing bat roost sites.

Environmental Consequences

There is no effect to these species because they are absent or suitable habitat is not present or would not be affected by actions proposed in these AMPs.

Sonoran Pronghorn (Antilocapra americana sonoriensis)
Mexican wolf (Canis lupus baileyi) *
Masked bobwhite (Colinus virginianus ridgwayi)
Southwestern Willow Flycatcher (Empidonax traillii extimus)
Jaguar (Felis onca) *
Ocelot (Felis pardalis) *
Jaguarundi (Felis yagouaroundi tolteca) *
Sonora Chub (Gila ditaenia)
Cactus ferruginous pygmy owl (Glaucidium brasilianum cactorumnae)
Desert Tortoise (Gopherus agassizii)
Bald Eagle (Haliaeetus leucocephalus)

* Forestwide BA&E on Effects of Grazing on Listed and Proposed Species analyzed effects on these species.

The District Biologist has determined there will be "no effect" to the following threatened, endangered or proposed species from any of the proposed alternatives.

Northern aplomado falcon (Falco femoralis septentrionalis)
American peregrine falcon (Falco peregrinus anatum)
Lesser long-nosed bat (Leptonycteris curasoae yerbabuenae)

The District Biologist has determined there will be a "may effect, but not likely to adversely effect" situation for the Mexican Spotted Owl (Strix occidentalis lucida).

The District Biologist has determined there will be a "may effect, but not likely to adversely effect" situation for the Gila topminnow (Poeciliopsis occidentalis occidentalis). The Zone Fisheries Biologist has concurred with this determination.

Sensitive species in the Santa Rita Mountains that were eliminated from evaluation because they are not known to occur in the project area or there is no potential (suitable) habitat within the project area. There is no impact to these species.

Baird's sparrow (Ammodramus bairdii)
Five-striped sparrow (Amphispiza quinquestrata)
Sprague's pipit (Anthus spragueii)
Common black-hawk (Buteogallus anthracinus)
Northern beardless tyrannulet (Camptostoma imberbe)
Buff-collared Nightjar (Caprimulgus ridgwayi)
Western yellow-billed cuckoo (Coccyzus americanus occidentalis)
Black-bellied whistling duck (Dendrocygna autumnalis)
Spotted Bat (Euderma maculatum)
Plains Narrow-mouthed Toad (Gastrophrene olivacea)
Gila monster (Heloderma suspectum)
Blue-throated hummingbird (Lampornis clemenciae)
Brown vine snake (Oxybelis aeneus)
Rose-throated becard (Pachyramphus aglaiae)
Black-capped gnatcatcher (Polioptila nigriceps)
Huachuca springsnail (Pyrgulopsis thompsoni)
Lowland leopard frog (Rana yavapaiensis)
Thick billed parrot (Rynchopsitta pachyrhyncha)
Bunch grass lizard (Sceloporus scalaris)
Thick-billed Kingbird (Tyrannus crassirostris)
Tropical Kingbird (Tyrannus melancholicus)

The District Biologist has determined there will be no impact from any alternative to the following species. The Zone Fisheries Biologist has concurred regarding the fish species.

Northern Goshawk (Accipiter gentilis)
Violet-crowned hummingbird (Amazilia violiceps)
Zone-tailed hawk (Buteo albonatus)
Elegant Trogon (Trogon elegans)
Mountain skink (Eumeces callicephalus)
Barking frog (Hylactophryne augusti cactorum)
Chiricahua leopard frog (Rana chiricahuensis)
Tarahumara frog (Rana tarahumarae)

Western red bat (Lasiurus blodssevillei)
Mexican long-tongued bat (Choeronycteris mexicana)
California leaf-nosed bat (Macrotus californicus)
Southwestern cave bat aka cave myotis (Myotis velifer brevis)
Townsend's big-eared bat (Plecotus townsendii)
Greater western Mastiff bat (Eumops perotis californicus)
Longfin dace (Agosia chrysogaster)
Gila chub (Gila intermedia)
Speckled dace (Rhinichthys osculus)
Desert sucker (Catostomus clarki)
Stephan's riffle beetle (Heterelmis stephani)

There are no activities proposed by any alternative that would affect mines or caves, thus bat colonies would not be affected.

It is unlikely that Underwood's Mastiff Bat (*Eumops underwoodi*) occurs on project area; therefore it is unlikely that there will be any impact from any alternative.

All alternatives may impact individuals of the following species, but are not likely to result in a trend toward federal listing or loss of viability.

Mearn's southern pocket gopher *Thomomys umbrinus mearnsi*
Green rat snake (Senticolis triaspis intermedia)
Canyon (giant) spotted whiptail (Cnemidophorus burti)
Arizona ridge-nosed rattlesnake (Crotus willardi willardi)

The Yellow-nosed cotton rat (Sigmodon ochrognathus) will be impacted by all of the alternatives.

Economic [11]

Domestic livestock grazing contributes to the livelihood of permittees as well as to the economy of local communities and counties. Individual allotments provide incremental contributions to the economy. Changes in several allotments will have cumulative impacts on the local economy. The number of direct and indirect jobs supported and payments to counties from federal receipts provide a relative comparison of economic effects from changes in livestock grazing.

Affected Environment

Approximately 2.5 full time job equivalents rely on livestock grazing on these two allotments. Local county governments receive a portion of the grazing fees (25%) collected on NFS lands. Range betterment funds (50% of grazing fees) and matching permittee contributions are used to complete structural and nonstructural improvement projects that benefit the livestock grazing, vegetation management, watershed management and wildlife management programs. Grazing permittees provide maintenance on all existing structural improvements.

Environmental Consequences

The following tables show the effects on full time job equivalents, payments to counties (without Payment in Lieu of Taxes offset) and the range betterment fund (\$ available for range improvement projects) associated with these alternatives. These are estimated annual averages based on the historic (previous five years) percent of permit use as paid actual use, and the current grazing fee

(\$ 1.35/head month). The reduced capacity estimate based on the completed Beck Land Exchange is reflected in the Fort allotment data for Alternatives A and B.

The economic data for Alternatives A and B is the same.

Table 12 - Economic Data for Alternatives A and B

Allotment	Cap. (HM)	Perm. (HM)	Actual (HM)	FTE's	County Pay- ments	Range Betterment
Apache Springs	1704	1704	1472	1.4	\$ 497	\$ 994
Fort	779	779	717	0.7	\$ 242	\$ 484
Total	2483	2483	2189	2.1	\$ 739	\$ 1478

There will be a two year delay in implementing Alternative C for the Fort allotment, in accordance with current FS regulations. All income from the Fort allotment will end during the third year.

Table 13 - Economic Data for Alternative C

Allotment	Cap. (HM)	Perm. (HM)	Actual (HM)	FTE's	County Pay- ments	Range Betterment
Apache Springs	1704	1704	1472	1.4	\$ 497	\$ 994
Fort	156	156	143	0.1	\$ 48	\$ 97
Total	1860	1860	1615	1.5	\$ 545	\$ 1091

Recreation/Wilderness [11]

Affected Environment

There are no developed recreation sites on these allotments. The Arizona Trail utilizes existing roads and in a couple of areas, new trail was constructed. A trailhead will be installed on the Gardner Canyon road, just west of Apache Springs Ranch. The trailhead will host parking for horse trailers and other vehicles and will contain information signs about the area and directions to the trail. The trail allows hikers, equestrian and mountain bikes on non-roaded areas. Currently there have been no conflicts between users on the trail and grazing.

The Apache Springs allotment has three caves: Onyx, Cave of the Bells and Hidden Cave. There are pull-outs for these caves and a trail system to all three. There are no conflicts between cave users and grazing.

The Apache Springs Allotment has some of the best public access into the east end of the Santa Rita Mountains via roads in Fish and Gardner Canyons. Yet even this access is in danger of being lost over time. The Gardner Canyon road (FR 92) is a public road, but land exchanges have occurred or are proposed near the Highway 83 end of Gardner Canyon, thus pushing the Forest Boundary further away from the Highway and potentially allowing much more private home development. This could eventually pose a threat to public access into Gardner Canyon. The lack of public access into the Santa Ritas is a major concern of the Santa Rita East and West Ecosystem areas, as well as the impacts and losses to the National Forest by past, proposed, and future land exchanges in the Sonoita/Gardner/Fish Canyon/Rosemont areas.

Despite the public road access that does exist, some areas of the allotment in the Gardner Canyon area off Highway 83 are blocked off by private property. They have roads to them, but access is denied to the public.

The area also receives use by general recreationists. There are some camping areas near roads that get "beat out" through repeated use.

Public road access to the Fort Allotment is a problem in some areas and the public access situation could worsen at any time. The existing access road into the National Forest in Adobe Canyon could be shut off. Despite the public road access that does exist, some areas of the allotment such as Crown C headquarters and Wood Canyon are blocked off by private property. They have roads to them, but access is denied to the public.

The District is proposing creating a new road in upper Wood Canyon to provide access into the canyon for the public. If this project is completed, then the existing access route into Wood Canyon will be closed and rehabilitated.

The Mt. Wrightson Wilderness extends into the extreme western portion of both allotments. Apache Springs has 760 acres of wilderness and Fort has 820 acres of wilderness.

Environmental Consequences

There will be no significant effects on the recreation/wilderness program from any of the alternatives. If the private land owners in Adobe and Wood canyons close access onto the Forest, the permittee will need to use a longer route for accessing the allotments.

Heritage Resources [4]

Affected Environment

Grazing in this area probably dates back to Mexican times, though some Spanish use is also possible. Grazing was at a peak in the late 19th century, when the Empire Ranch was a massive operation centered in the basin to the east. Current grazing levels are far lower than the peak ca. 100 years ago. A number of small mining operations were active in the late 19th and early 20th centuries.

No increase in grazing intensity is proposed.

Six improvement projects have been proposed for the Apache Springs Allotment.

One improvement project has been proposed for the Fort Allotment. However, the possibility exists (Alternative C) for improvement removal activities.

This area has been the scene of a large number of heritage resource investigations. The reason for the relatively intense level of investigation is the number of land exchanges that have been proposed over the past 20 years. Land exchanges that have received detailed cultural resource investigations include the Beck, Barchas, Palo Seco/Abbey, Sierra Grande and Stratman land exchanges. Numerous investigations have also been made by Forest Service archeologists.

This research has revealed extensive occupation of the east slope of the Santa Ritas. In general, prehistoric sites are predominantly small open-air habitations showing as artifact scatters with no obvious architecture. Historic sites in the area are for the most part associated with mining and to a lesser extent, ranching in the late 19th and early 20th centuries.

Environmental Consequences

For purposes of assessment of potential effects on cultural resources, key considerations are: (a) the effects of grazing on known sites, including sensitive site types, such as rock shelters, rock art and standing structures; (b) the potential effects of any proposed increase in grazing intensity; and (c) the potential effects of any range improvements.

Extensive reconnaissance has not shown sites with standing architecture. Rock shelters and rock art sites have not been noted in the area, in part, because of predominance of soft alluvial sediments at lower elevations. No cases of severe trampling or erosion caused by contemporary grazing are known.

Undertakings, as defined in the Forest Service Manual, are projects, activities or programs that can result in changes in the character of historic properties. Proposed improvements that have negligible potential to affect historic properties are considered non-undertakings not subject to cultural resource survey and evaluation of effect. All six of the proposed improvement projects for the Apache Springs Allotment are non-undertakings. A cultural resource survey and evaluation has been completed for the single project proposed for the Fort Allotment. Cultural resource surveys and evaluations need to be completed before the removal process occurs, if Alternative C is implemented.

National Forest Management Act Findings

The proposed action (Alternative B) is consistent with the Coronado National Forest Land Management Plan (LMP). This project will further the goals and objectives listed in the LMP. The project area is located primarily in Management Area 4, with minor inclusions of Management Areas 7 and 9, and is consistent with the stated management emphasis for these areas. This project does not involve timber harvest nor is it located on suitable timber land; therefore the other National Forest Management Act findings do not need to be addressed.

CHAPTER 4 - CONSULTATION WITH OTHERS

List of Persons Consulted

These agencies were contacted during the analysis process:

- US Fish and Wildlife Service
- Arizona Game and Fish Department
- Arizona State Legislature
- Arizona Department of Environmental Quality
- Arizona State Land Department
- Pima County Extension Agency
- Pima County Board of Supervisors
- Santa Cruz County Extension Agency
- Santa Cruz County Board of Supervisors

These organizations/businesses were contacted during the analysis process:

- Ecoplan Associates
- Desert Gold Diggers
- Tucson Audubon Society
- Sierra Club
- Greater Arizona Bicycle Association
- Southern Arizona Hiking Club
- The Wildlife Society
- Arizona Wildlife Federation
- BJ's Bike Shop
- Cobre Ridge Endurance Ride
- Green Valley Recreation Hiking Club
- Southern Arizona Mountain Bike Association
- Pima Trails Association
- Tucson Orienteering Club
- Quail Unlimited
- Mountain States Broadcasting, Fox 11
- Old Pueblo Endurance Ride
- Tucson Electric Power Company
- Friends of Madera Canyon
- Forest Conservation Council
- Wood Canyon Corporation
- Greater Gila Biodiversity Project
- The Nature Conservancy
- TET Prospecting Equipment
- The Sonoita Valley Planning Partnership
- Arizona Riparian Council
- Southwest Center for Biological Diversity

One individual was contacted during the analysis process.

APPENDIX A

**PROCESS RECORD INDEX
ENVIRONMENTAL ASSESSMENT
APACHE SPRINGS AND FORT
ALLOTMENT MANAGEMENT PLANS**

A. Document Availability

Copies of this environmental assessment and the supporting documentation are available at the Nogales Ranger District, 303 Old Tucson Road, Nogales, Arizona 85621, telephone number (602) 281-2296.

B. Listing of Record Documentation**RECORD INDEX**

DOC NO.	DOCUMENT NAME	DOCUMENT AUTHOR	DOCUMENT ADDRESSEE	DATE
1	Initial Work Schedule	Range Mngmt Spec.	District Staff	09/12/95
2	Project Initiation Letter	District Ranger	Range/Watershed/ Solls Staff Officer	09/18/95
3	Public Meeting Notes A. Soncita Valley Planning Partnership B. Soncita Valley Planning Partnership			09/23/95 12/09/95
4	Initial Scoping Letters A. Permittee B. AZ Game and Fish Dept. C. Mailing List D. Arizona Riparian Council	District Ranger	(b) (6)	09/26/95 09/26/95 10/02/95 10/16/95
5	Scoping Responses A. The Nature Conservancy B. Tucson Electric Power Co. C. Wilderness Society D. AZ Dept. Environ. Quality E. AZ Game and Fish Dept. F. US Fish & Wildlife Service G. AZ Riparian Council H. Forest Conservation Council I. SW Center for Bio. Diversity J. AZ Game and Fish Dept. K. Permittee	(b) (6)	District Ranger	10/05/95 10/09/95 10/10/95 10/11/95 10/31/95 10/31/95 11/01/95 11/02/95 11/02/95 11/03/95 01/16/96

[illegible]

DOC NO.	DOCUMENT NAME	DOCUMENT AUTHOR	DOCUMENT ADDRESSEE	DATE
12	EA Responses A. Individual B. The Nature Conservancy C. Crown C Ranch D. AZ Game and Fish E. Individual	(b) (6)		11/23/98 11/26/98 12/05/98 12/05/98 12/16/98
13	Finding of No Significant Impact	District Ranger	Public	06/13/97
14	Decision Notice	District Ranger	Public	06/13/97
15	DN Notification A. Legal Notice B. CNF Supervisor's Office C. Crown C Ranch D. AZ Game and Fish Dept. E. The Nature Conservancy F. Individual G. Individual H. SW Center for Bio. Diversity	District Ranger	(b) (6)	06/17/97 08/17/97 08/17/97 06/17/97 06/17/97 08/17/97 06/17/97 06/17/97

APPENDIX B - CHANGES/CORRECTIONS

The following changes/corrections should be added to the environmental assessment:

Chapter 1 - Project Scope

Issues

The issues are:

1. Environmental effects of livestock grazing
2. Watershed conditions in Adobe Canyon
3. Range improvement conditions
4. Effects on the Santa Cruz County economy

Project Location/Analysis Area

The project area contains approximately 14,590 acres (Apache Springs, 9,790; Fort, 4,800) of land with capacity for livestock grazing (Full Capacity Range) within 20,020 acres (Apache Springs, 12,890; Fort, 7,130) of NFS lands and 160 acres (Apache Springs) of land owned by other entities.

Chapter 2 - Alternatives

Interdisciplinary teams formed on the Nogales Ranger District to analyze the grazing program review LMP standards and guidelines, existing conditions and issues identified during the scoping process; and then develop one or more alternatives to current management. The preferred alternative is generally developed through consensus, and is viewed as being the most beneficial to all the resources involved, and the most responsive to identified issues.

Alternatives Dropped from Detail Study

A "Maximize Livestock Production" alternative was dropped from detail study. This alternative was discussed by members of the interdisciplinary team. However, it was not promoted by outside entities and was not developed in detail.

Alternatives Considered In Detail

Table 1 - Mitigation Measures Common to All Alternatives

Mitigation Measure	Reason	Effectiveness
Site specific biologist review	Determine need for FWS consultation	Avoids non-compliance with ESA
Consultation with FWS	ESA compliance	Avoids negative impacts to endangered species

Table 1 - Mitigation Measures Common to All Alternatives (continued)

Mitigation Measure	Reason	Effectiveness
Site specific cultural resource surveys	Protect cultural resources	Avoids negative impacts to cultural resources
Regular allotment inspections with permittees	Permit compliance	Extremely effective
Best Management Practices (BMP's)	Air and water quality	Extremely effective

Alternative Description

The alternatives include a "continue current management" alternative, a "modify current management" alternative and a "no grazing" alternative for each allotment. These alternatives include adjustments of the allotment boundary necessitated by completion of various land exchanges.

Apache Springs

Alternative C (No Grazing)

- * Season of use: None
- * Number of permitted livestock: 0
- * Miles of non grazing Forest Boundary fence to be constructed: 2.5
- * Miles of internal fence to be removed: 14.5
- * Wells to have pumps removed and wholes capped: 2
- * Spring developments to be abandoned/removed: 2
- * Earthen dams to be removed and sites reclaimed: 11
- * Cattle guards to be removed: 1
- * Miles of pipeline to be abandoned: 1.5
- * Miles of allotment boundary fence to remain: 23
- * Miles of non-grazing boundary fence to be maintained: 2.5

Table 2 - Comparison of Alternatives for Selected Criteria

Comparison Criteria	Alt. A	Alt. B	Alt. C
Allotment Grazing Management Changes	NO	YES	YES
Season of Use Changes - Allotment	NO	YES	YES
Season of Use Changes - Pastures	NO	YES	YES
Site Specific Standards and Guidelines in Permits as Result of This Decision	NO	YES	YES

Table 2 - Comparison of Alternatives for Selected Criteria (continued)

Comparison Criteria	Alt. A	Alt. B	Alt. C
Improvement Work Approved as Part of This Decision	NO	YES	YES

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

All livestock will be removed within two fiscal years and all improvement work affecting livestock utilization patterns should be completed within two fiscal years of a decision to implement Alternative C.

Soil [1, 2]

Environmental Consequences

In general, eliminating grazing and managing riparian areas by alternatives that meet Coronado Plan Standards and Guidelines will have the same result during the ten years following implementation of a decision. Soil condition will improve in the absence of grazing in most cases. This is because more organic material from ungrazed plants is available to form litter and for incorporation into the soil. The mechanisms for breaking off of the plant and placing it in contact with the soil are reduced in the absence of grazing. However, over the ten year period analyzed, it is estimated that natural processes will cause sufficient organic matter to be converted to litter and begin incorporation into the soil to result in modest overall improvement in soil condition where poor litter cover or organic matter is the parameter causing impairment.

Apache Springs

Eliminating grazing will result in more organic matter available for incorporation into the soil.

Table 3 - Comparison of Expected Soil Conditions (% of Allotment) - Apache Springs

Condition Class	Existing	Alt. A	Alt. B	Alt. C
Satisfactory	82	85	85	86
Impaired	18	15	15	14

* Unsuitable soils are not included in the soil condition table. All percentages are based on the percentage of lands considered suitable for grazing, and having capacity assigned.

In Alternative C, conditions improve in response to improved soil and/or vegetation conditions.

Table 8 - Summary of Erosion Ratings with Management Sub-Ratings (Alt. C)

Allotment Name	A	B	C		1	2	3
Apache Springs	76	19	5		100		
Fort	74	11	15		74 4	7 5	10

Water Quality [1, 2]

Air Quality [1]

Vegetation [1, 2]

Environmental Consequences

There will be an automatic two year delay in implementation of Alternative C for either allotment, in accordance with current FS regulations.

Apache Springs

Eliminating grazing will not increase the amount of satisfactory riparian area.

Threatened, endangered and sensitive plant species

There will be no effect from the "no grazing" alternative to the following species:

- Bartram echeveria aka Bartram's Stonecrop (Graptopetalum bartramii)
- Lemmon lily (Lilium parryi)
- Lemmon cloak fern (Notholaena lemmoni)
- Lyre-leaf twistflower (Streptanthus carinatus)

There will be positive impacts to the following species from the "no grazing" alternative:
Beardless Chinch Weed (Pectis imberbis)

Wildlife [1]

Threatened, endangered and sensitive animal species

The Fish and Wildlife Service has concurred with the finding of "may effect, not likely to adversely effect" regarding the Gila Topminnow.

There will be no effect from the "no grazing" alternative to the following species:

- Zone-tailed hawk** (Buteo albonatus)
- Elegant Trogon** (Trogon elegans)
- Bat Colonies**
- Western red bat** (Lasiurus blodssevillii)

California leaf-nosed bat (Macrotus californicus)
Southwestern cave bat aka cave myotis (Myotis velifer brevis)
Townsend's big-eared bat (Plecotus townsendii)
Greater western Mastiff bat (Eumops perotis californicus)
Underwood's Mastiff Bat (Eumops underwoodi)
Mountain skink (Eumeces callicephalus)
Gila monster (Heloderma suspectum)
Canyon (giant) spotted whiptail (Cnemidophorus burti)
Gila chub (Gila intermedia)
Speckled dace (Rhinichthys osculus)
Desert sucker (Catostomus clarki)
Stephan's riffle beetle (Heterelmis stephani)

There will be impact to the following species from the no grazing alternative. These changes are not likely to result in a trend toward federal listing or loss of viability.

Mexican long-tongued bat (Choeronycteris mexicana)
Yellow-nosed cotton rat (Sigmodon ochrognathus) not FS Sensitive.
Mearn's southern pocket gopher (Thomomys umbrinus mearnsi)
Longfin Dace (Agosia chrysogaster)

There will be a positive impact from the "no grazing" alternative for the following species:

Violet-crowned hummingbird (Amazilia violiceps)
Green rat snake (Senticolis triaspis intermedia)
Arizona ridge-nosed rattlesnake (Crotus willardi willardi)
Chiricahua leopard frog (Rana Chiricahuensis) C1, FS Sensitive.

Economic [3, 4]

Environmental Consequences

There will be a two year delay in implementing Alternative C, in accordance with current FS regulations. All income and employment related to the affected allotment will end during the third year. However, the amounts shown in Table 13 for this alternative are the average for a ten year period.

Table 13 - Economic Data for Alternative C

Allotment	Cap. (HM) *	Perm. (HM)	Actual (HM)	FTE's	County Pay- ments	Range Betterment
Apache Springs	170	170	147	0.1	\$ 497	\$ 994
Fort	156	156	143	0.1	\$ 48	\$ 97
Total	326	326	290	0.2	\$ 545	\$ 1,091

Grazing capacity is based on professional judgement of the rangeland management specialist. It is determined through consideration of objectives expressed by members of the interdisciplinary team

Grazing capacity is based on professional judgement of the rangeland management specialist. It is determined through consideration of objectives expressed by members of the interdisciplinary team for a particular alternative and characteristics of the environment (slope, productivity, soil stability, other factors) in and around the grazing allotment.

There are no lands on these allotments identified as "Potential Capacity Range".

Improvement costs

Apache Springs

There are no FS improvement related costs associated with Alternative A.

Forest Service improvement related costs associated with Alternative B are estimated to be approximately \$ 25,000

The estimated FS cost to implement Alternative C includes improvement work as listed in the alternative description plus 8 years of routine maintenance for retained improvements. These costs are estimated to be approximately \$ 91,000.

Fort

There are no FS improvement related costs associated with Alternative A.

Forest Service improvement related costs associated with Alternative B are estimated to be approximately \$ 21,000

The estimated FS cost to implement Alternative C includes improvement work as listed in the alternative description plus 8 years of routine maintenance for retained improvements. These costs are estimated to be approximately \$ 45,000.

Combined

The estimated cost to implement Alternative C for both allotments is approximately \$ 161,000.

Alternative C is not anticipated to have adverse impacts on mining activities, land exchanges or landline location activities.

Recreation [1, 3, 4]

Heritage Resources [1, 3, 4]

Environmental consequences of "No Grazing" alternative on heritage resources.

Termination of all grazing should have no foreseeable negative impact on heritage resource sites. This alternative could have beneficial effects for any prehistoric artifact scatter sites that have been subject to trampling. Reduction of trampling and accompanying increase in ground cover would result in less exposure and less breakage of artifacts at the ground surface. Lower visibility of artifacts would make them less susceptible to removal by Forest visitors.

Increased potential of wildfires has been suggested to be a possible consequence of cessation of grazing. If this is the case, then a consequent risk to flammable heritage resources properties, most notably historic wooden structures, could result. In the Santa Rita East, standing historic buildings are known only at Kentucky Camp, a property that has already been excluded from grazing. Accordingly, the risk from increased fire potential would not be affected by acceptance of a "No Grazing" alternative.

Range facilities (fences, pipelines, stock ponds, etc.) proposed for removal under the "No Grazing" alternative should be reviewed to assure that none is itself a significant historic property. No such historically significant range facilities are known, but a review of available information about the construction and historic context of facilities should be made prior to their removal.

National Forest Management Act Findings

The proposed action (Alternative B) is consistent with the recent (6/96) Region-wide forest plan amendment.

CHAPTER 4 - CONSULTATION WITH OTHERS

Two individuals were contacted:

Jeff Burgess

Mike Seidman

APPENDIX C - RESPONSE TO COMMENTS

01. The Environmental Assessment only addresses two management alternatives. This does not comply with the legal obligation to consider all reasonable alternatives.

A review of Appendix B, will show that a "No Grazing" alternative has also received detailed analysis. A "Maximize Livestock Production" alternative was also considered. However, it did not receive detailed analysis.

02. Under the heading "Preferred Alternative Identification", the EA tends to focus only on economic benefits. Nothing is said of ecological benefits or costs, thus not addressing the stated issues.

The environmental assessment, as a whole, addresses the issues, including the ecological benefits or costs.

03. The EA lacks a thorough discussion concerning livestock numbers. Most range scientists agree the number of animals is one of the most important factors to be considered when drafting a livestock management plan.

After the resource related parameters are established for an alternative, then season of use and finally, livestock capacity estimates are developed based upon existing information specific to the site being analyzed (Appendix B, Alternative Development). A range of numbers is then considered for each alternative (see economic analysis, environmental consequences). Grazing capacity is based on professional judgement of the rangeland management specialist. It is determined through consideration of objectives expressed by members of the interdisciplinary team for a particular alternative and characteristics of the environment (slope, productivity, soil stability, other factors) in and around the grazing allotment. Generally, permitted use is less than or equal to the estimated capacity. Deviations in permitted numbers from the capacity estimate are the result of discussions between the permittee and the FS relative to short term management objectives. Actual Use refers to the expected average annual use during a ten year period.

04. The phrase "the livestock numbers considered for each alternative include a range from the lowest to highest of: estimated capacity, permitted use and expected actual use" is used to describe data in various tables. If my understanding is correct, the EA is saying that differing stocking rates will make no difference in vegetation condition and trend or soil conditions.

On this allotment, there is always variability in the number of livestock present. There will be times when the actual number of livestock present will be below any of these numbers.

05. The Southwest is a land of extremes; therefore, proper grazing management must recognize and plan for the often wide seasonal and annual fluctuations in forage production. To ensure compatibility with other uses the District needs to at least consider authorizing less than the "maximum" livestock numbers the land can support.

The permitted number of livestock is the number of animals that a grazing allotment can support, other needs and uses considered, under optimum conditions. Authorized use

levels (number of animals) are not automatically set at the permitted numbers. Adjustments in livestock numbers and season of use will depend on the specific situation. Pasture rotation patterns within each allotment change within and between years, in response to environmental and other conditions.

06. Capability should not be the sole criteria for guiding the authorization of permitted numbers. The Forest Service must also define suitability.

Capability and suitability of National Forest System lands for specific uses are determinations arrived at through development of the Forest Management Plan (NFMA). These determinations are beyond the scope of this project level decision.

07. The EA mentions that "LMP Standards and Guidelines regarding livestock grazing" will be part of the grazing permit. What are these Standards and Guidelines?

The Standards and Guidelines applicable to all grazing allotments are on page 94 of the Record of Decision for Amendment to Forest Plans, Arizona and New Mexico (6/96). Allotment specific standards and guidelines (utilization levels, season of use for specific pastures, etc.), if any, are included in the alternative description portion of the environmental assessment.

08. Is this permittee's operation currently in compliance with the Standards and Guidelines?

Yes.

09. Will cows be removed from a pasture if utilization limits have been exceeded earlier than expected?

Pasture rotation patterns within each allotment will change within and between years, in response to environmental conditions. Early removal of livestock has occurred and may occur again.

10. Please define "impaired soils."

The soil condition indicates a reduction of the soil's inherent productive capacity with respect to soil function. The ability of the soil to function has been reduced.

11. Is livestock grazing on this allotment in compliance with the Clean Air and Clean Water Acts?

Yes.

12. What are the Potential Natural Communities for this allotment? The allotment is not an ecological unit in itself. To understand one allotment it is necessary to understand what is happening around it.

The Potential Natural Communities (PNC) are not allotment specific. Some ecologic sites are totally contained within one allotment while others extend across allotment boundaries. PNC descriptions used during analysis are included in ecologic (range, woodland) site guides produced by the Natural Resource Conservation Service (NRCS). These guides are available through the NRCS.

13. Does the phrase "no apparent trend" mean that vegetation conditions are remaining the same or does it mean the District does not know if conditions are changing?

It means that all indications are that conditions are remaining the same.

14. Under "Issues" the EA states that " a wildlife emphasis alternative must be developed", and that "Natural diversity, forest health and long-term productivity should be maintained."

This were incorrectly identified as issues. Refer to Appendix B for a listing of the issues.

15. Various statements in the EA suggest that monitoring is being conducted on the allotment, but no description of the methodology or frequency is provided.

The type and frequency of monitoring depends upon the program area involved, the issues of concern for that program area and available funding. The environmental assessment is a summary of reports filed by the various specialists involved in the analysis. Any monitoring data referenced in their reports is referenced in the environmental assessment. Data included in the specialist reports are included in the environmental assessment.

16. There is concern that the Fish Canyon range reference area, which was excluded from grazing during the Greaterville Land Allocation process in 1991, lies within the current allotment planning area, is mentioned in several places in the allotment planning document, but no reference is made to its ungrazed status.

This range reference area is not within the boundaries of any grazing allotment. Therefore, the reintroduction of grazing into this area has not been considered.

17. Tables 9, 10 and 11, indicate that Alternative B will result in the best vegetative composition after ten years. This analysis seems contrary to logic.

Improvement in vegetation composition is expected to begin immediately after implementation of Alternative B. In accordance with FS regulations, Alternative C cannot be fully implemented for the first two years of the analysis period. Therefore, it is expected there will be a two year delay before improvement begins in vegetation composition.

18. It is not clear why the period of use for Alternative B, for the Fort Allotment was selected.

At least partial growing season rest was required by the interdisciplinary team. Late growing season rest provides adequate time between the end of grazing and start of dormancy for plants to accumulate total available carbohydrates and develop buds. The proposed season of use can be compatible with overall ranch operation.

19. There is some concurrence with selection of Alternative B as the preferred alternative.

No response

20. The pedestrian cattleguards for the Arizona Trail need to be widened so the cattle do not cross them.

These cattleguards were installed as part of another project. The manager for that project is aware of this problem and is taking corrective action.

21. There is a concern that the reduction in permitted numbers is solely in response to changes in land status and is excessive in comparison to the number of acres removed from the allotment.

The adjustment to permit numbers in response to changes in land status that removed lands from the allotment and implementation of Mearns' quail management guidelines. Proper adjustments to permit numbers should have occurred with these two events. The current adjustment is designed to correct these oversights.

22. There may be years when it is better to use the Fort Allotment year-round. Can this be accommodated?

The option to modify allotment management always exists. However, the time constraints of the decision process may prevent adjustments in certain situations.

23. There is support for a mesquite control project in Adobe Canyon, possibly using fuelwood harvesting.

This would need to be considered as either a separate project or an amendment to this project. Fuelwood management itself, is beyond the scope of this decision.

24. Most of the damage done to the canyon bottom comes from camping and excessive vehicular travel. A proper level of road maintenance needs to be considered.

This is beyond the scope of this decision. However, information gathered during this process will be included in future analyses for other projects within this area.

25. The only riparian that has been impacted by cattle is El Pilar. Although this area is now enclosed by a fence, it may need to be monitored more closely, to ensure cattle do not enter this enclosure. Bear Tunnel and Pipe springs have been impacted very little by cattle.

This information was considered during analysis of expected results from each alternative.