

ENVIRONMENTAL ASSESSMENT
REVISED CEDAR CANYON SHEEP ALLOTMENT MANAGEMENT
DIXIE NATIONAL FOREST
IRON COUNTY, UTAH

Responsible Agency:	USDA, Forest Service
Responsible Official:	Hugh C. Thompson Dixie National Forest Supervisor
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ABSTRACT

The Cedar City District of the Dixie National Forest is proposing to change the management of the Cedar Canyon Sheep Allotment described in the Cedar Canyon Allotment Management Plan (AMP) dated 3/16/78. The AMP is not consistent with the Dixie National Forest Land and Resource Management Plan (LRMP). Though range condition on many areas of the Allotment is in an upward trend, some areas on the Allotment are not in line with the desired future conditions identified in the LRMP.

An important part of the Forest Service Mission on the Dixie National Forest is to provide a sustained flow of renewable forage resources while promoting a healthy and productive environment for the Forest's rangelands. In recognition of this, it is responsible and necessary that the Forest Service identify management actions which will move the entire Allotment toward the desired future condition. The selected actions will be subsequently documented in a revised AMP to meet present Forest Service policy and direction.

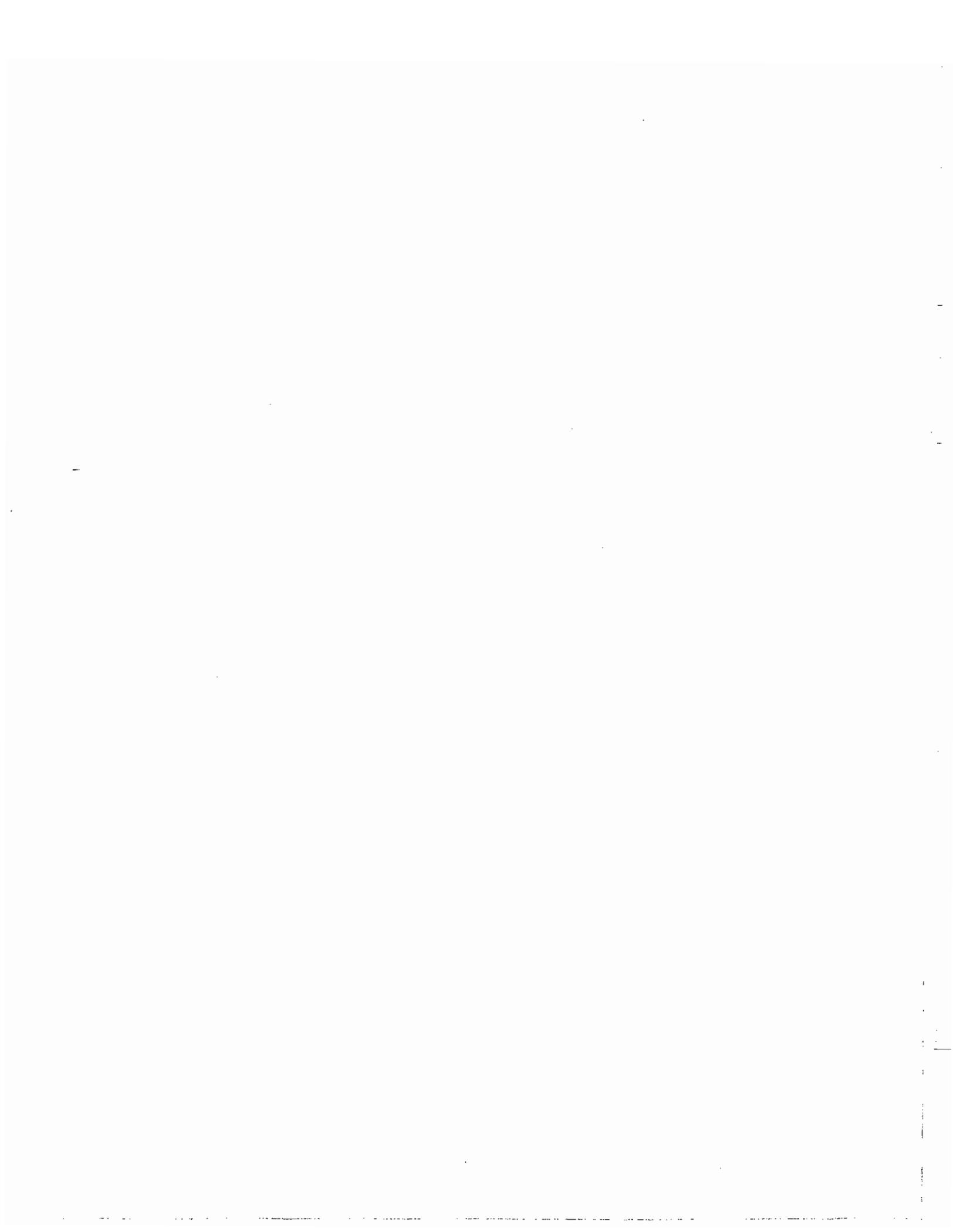
The Proposed Action is to reduce livestock numbers from 1097 sheep to 950 sheep for a 6/26-9/10 grazing season. A 3-pasture deferred-rotation grazing system would be implemented. Structural improvements and vegetation treatments required as part of project implementation are included in the Proposed Action.

This Environmental Assessment documents the analysis of the Proposed Action. In addition, four alternatives to the Proposed Action have also been evaluated in this Environmental Assessment, including "No Action", which would result in continuation of the existing grazing system and existing permitted numbers.



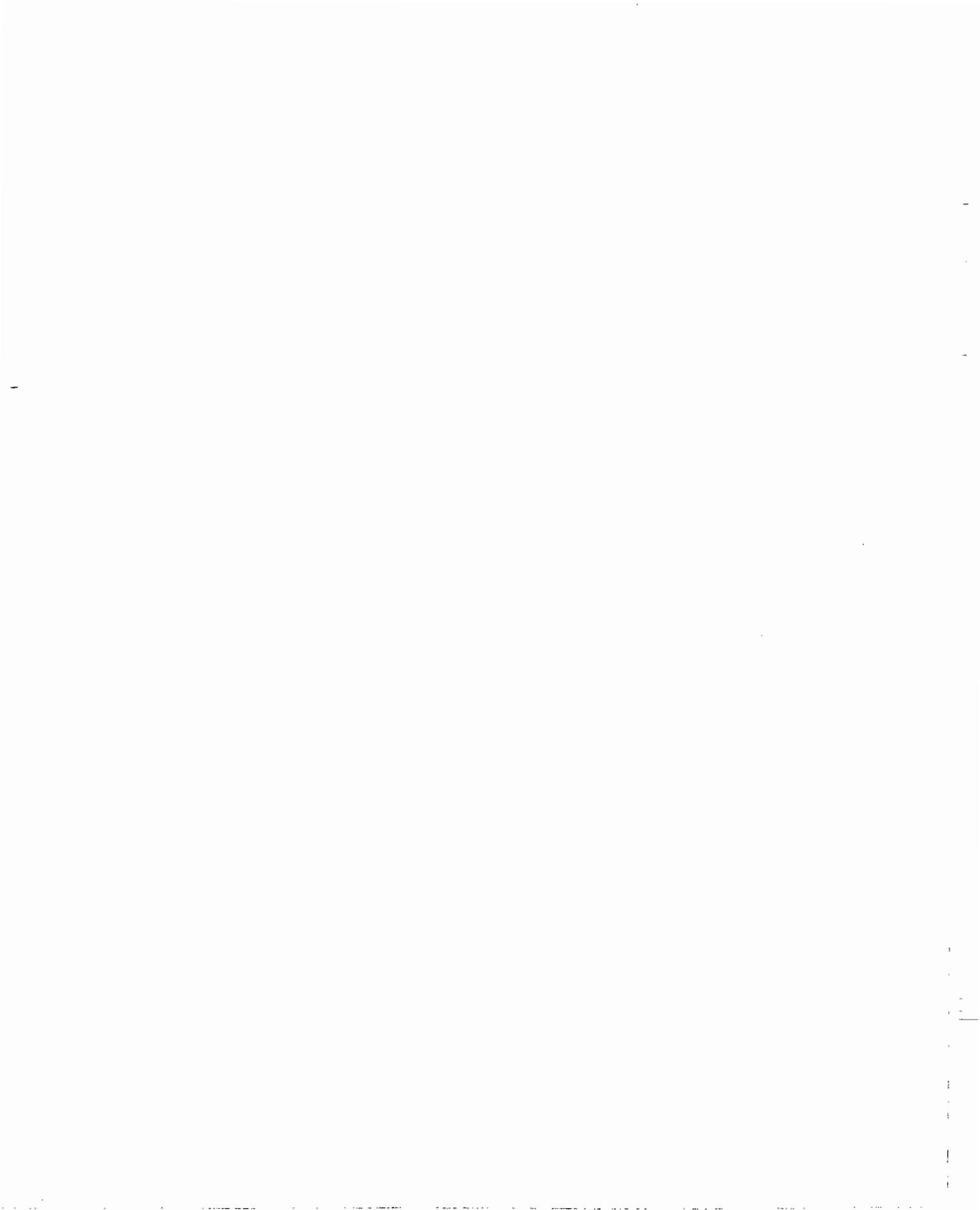
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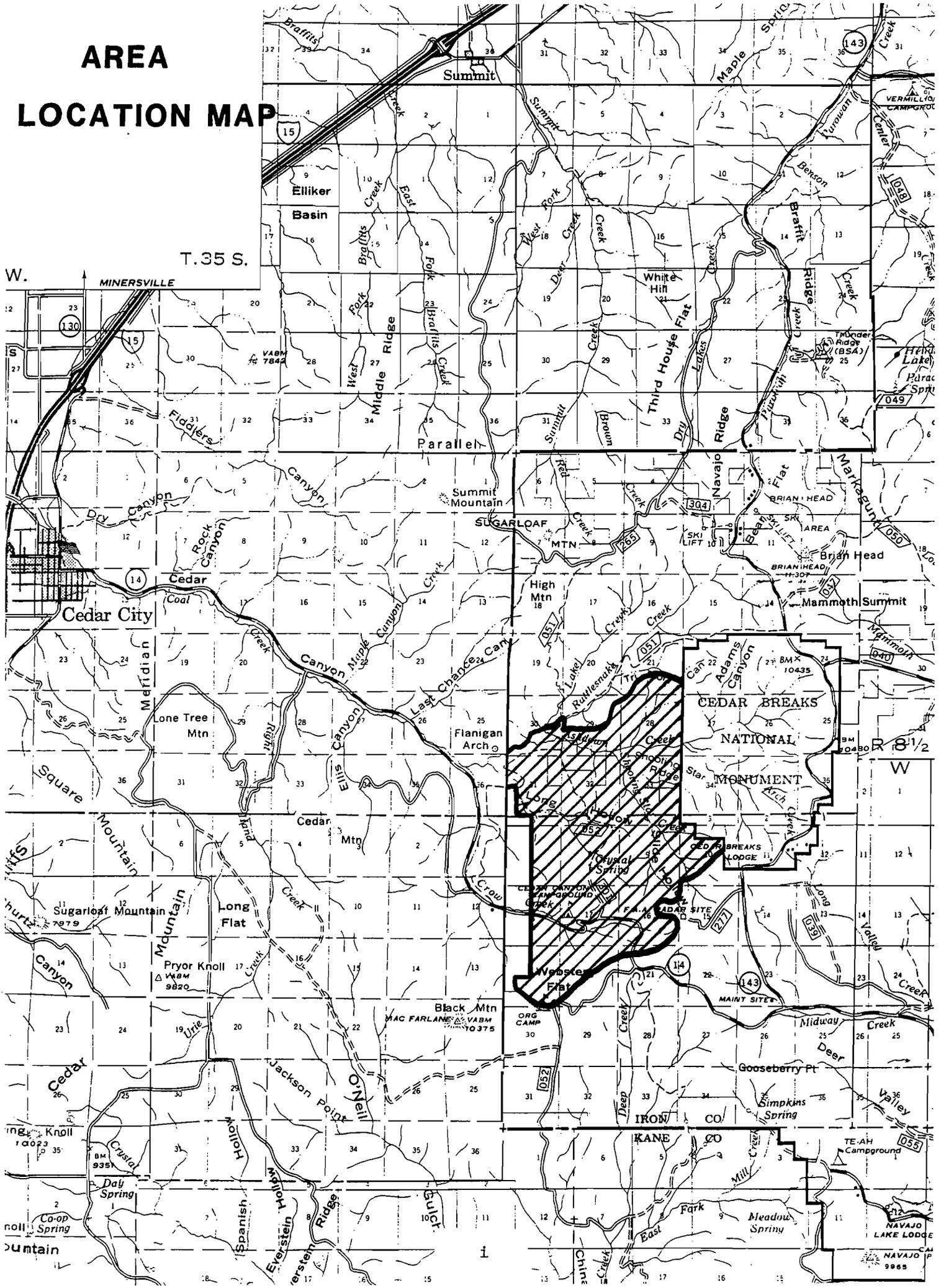


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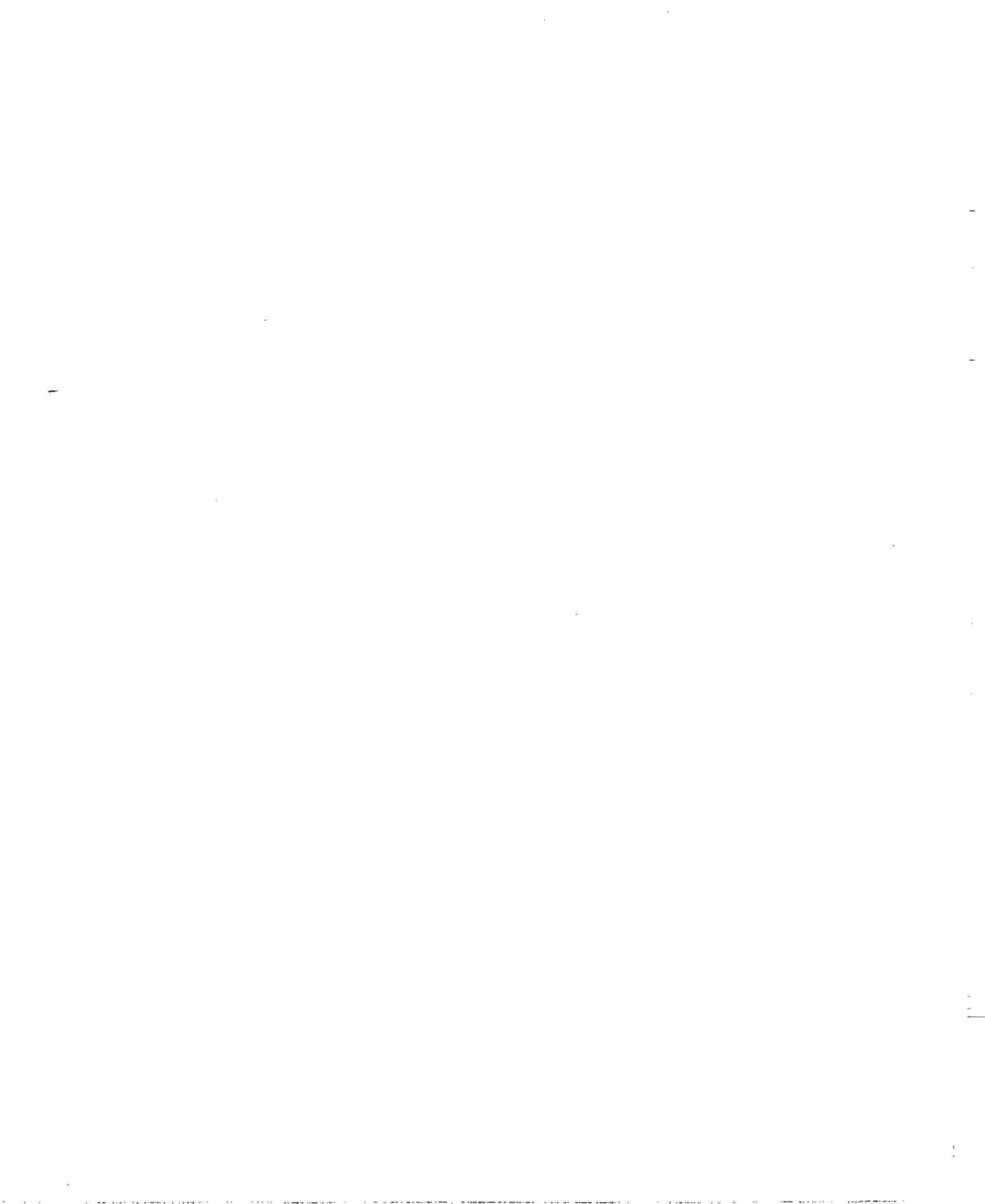
AREA LOCATION MAP





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SECTION 1: PURPOSE AND NEED FOR ACTION

INTRODUCTION

This environmental assessment (EA) was developed under the implementing regulations of the National Environmental Policy Act (NEPA), Council on Environmental Quality, Title 40, Code of Federal Regulation, Parts 1500-1508; and the National Forest Management Act (NFMA), Title 36, Code of Federal Regulations, Part 219. Further direction is provided in the 1986 Dixie National Forest Land and Resource Management Plan (LRMP).

This EA documents analysis of site-specific, on-the-ground proposals. It discloses the environmental consequences of implementing the Proposed Action and alternatives to the Proposed Action.

It is *not* the Cedar Canyon Allotment Management Plan. Actions selected by the deciding officer as a result of the analysis documented in this EA will be documented in an AMP that will guide future management of the Cedar Canyon Allotment.

PROJECT AREA

The Cedar Canyon Sheep Allotment includes approximately 7,230 acres of Dixie National Forest lands. In addition, approximately 320 acres of private land owned by two of the permittees is fenced in common with the National Forest lands within this Allotment.

Approximately 50% of the Allotment is located within the boundaries of the Ashdown Gorge Wilderness Area.

The Allotment lies within SLBM, T36S & T37S., R9W. (refer to Area Location Map at the front of this document).

FOREST PLAN DIRECTION

The Environmental Assessment for Revised Cedar Canyon Sheep Allotment Management is tiered to the Final Environmental Impact Statement for the Dixie National Forest Land and Resource Management Plan (FEIS-LRMP), and to the LRMP.

The National Forest land within the Dixie National Forest has been divided into Management Areas, which differ from each other in resource emphasis. The following Management Areas are represented in the Cedar Canyon Allotment: Management Areas 1 (General Direction), 1A (Developed Recreation), 2B (Roaded Natural Recreation), 8A (Wilderness) and 9A (Riparian Management). A map displaying the location of these Management Areas in the Cedar Canyon Allotment is in Appendix A.

Detailed descriptions of the Characteristics, Desired Future Condition and Management Area Direction are in LRMP-Chapter IV.

PURPOSE AND NEED STATEMENT

Management Area 1 (General Direction) and 8A (Wilderness) account for most of the grazing capacity on the Cedar Canyon Allotment.

1097 sheep are permitted on the Allotment from 6/26 through 9/10. The sheep are managed through "open grazing" rather than through exclusive use of sheep herders. Grazing use is divided among three grazing units that are unequal in capacity: Hi Perry, Crystal Spring and Ashdown Gorge. Approximately half of the

capacity within the Ashdown Gorge Unit is located on private land fenced in common with the National Forest. This private land belongs to the Permittees.

Actual livestock numbers grazed on the Allotment have varied from 10-25% below the permitted numbers 10 of the past 15 years. Livestock have also remained on the Allotment for the full grazing season.

While the vegetation condition and trend is upward on many areas of the Allotment, trailing in certain drainages, recurring bedgrounds and grazing use on some of the ridges are excessive in spite of the reduced livestock numbers. Some areas of suitable range are receiving light use.

Collectively, this indicates that permitted numbers are in excess of actual capacity, and inadequate livestock distribution and herding is occurring. Also, predators are impacting proper livestock distribution through disruption of the sheep movements and bedding activities.

Historically, Management Areas 1A and 2B have been closed to livestock grazing within the Allotment. However, poor fence condition and inadequate herding has resulted in livestock use within this area.

Finally, due to the poor condition of some of the Allotment boundary fence, sheep use on private land adjacent to Wood's Ranch has been a problem for private and Iron County landowners in this area.

The Forest Service Mission is to provide for sustained flow of renewable resources, while promoting a healthy and productive environment for the Nation's forests and rangelands. It is responsible and necessary, then, that the Forest Service propose a project to meet the desired future condition for this area as described in the LRMP. This will be accomplished by bringing permitted grazing capacity in line with actual grazing capacity, improving livestock management to meet proper use standards and guidelines prescribed in the LRMP, effectively excluding livestock use within Management Areas 1A and 2B and resolving grazing conflicts on adjacent private lands.

PROPOSED ACTION

The Cedar City District proposes to employ a 3-unit deferred rotation grazing system.

Permitted use would be reduced from 1097 sheep for a 6/26 to 9/10 grazing season to 950 sheep for a 6/26 to 9/10 grazing season.

A private land permit would be issued to permittees (private land owners) for the equivalent of 300 sheep months credit. There would be no additional sheep numbers or season. If the private land is sold or fenced out of the Allotment, numbers or season would be reduced accordingly.

Improved herding, salting and bedground location practices would be employed. Structural improvements necessary to implement the revised management are included in this Proposed Action.

A complete description of the Proposed Action is included in this document under SECTION 2: ALTERNATIVES, INCLUDING THE PROPOSED ACTION.

ENVIRONMENTAL ISSUES

SCOPING

This section describes the efforts to determine the significant issues associated with the Proposed Action. Additional public involvement activities which occurred in conjunction with this project are included in this section.

The first step in the scoping process for management actions proposed for the Cedar Canyon Allotment was to identify members of the public who could be affected by the proposed action, or who might have an interest in the management of the Cedar Canyon Allotment. State and local government and other federal agencies were considered in this process.

These people and organizations were notified through personal contact by the District Range Staff Officer and/or by letter on January 18, 1991 that a revision in management practices on the Cedar Canyon Allotment was proposed to implement the LRMP in this area, and were informed about the kinds of decisions to be made. They were asked to comment on, or involve themselves in, the analysis of the Proposed Action and its alternatives.

A summary of public comments and the preliminary issues developed in response to the scoping letter were sent to all the respondents on May 21. On August 19, a public orientation meeting and field tour of the Cedar Canyon Allotment was held. As a follow-up, a written summary of the public meeting and tour, plus preliminary alternatives to the proposed action were sent out to interested publics on August 28. In all of these contacts, the opportunity for further comment was extended to all participants at each stage of the analysis process.

The record of these contacts, the mailing list and subsequent responses are in the Project File located at the Cedar City District Office.

ISSUE STATEMENTS

Approximately 21 individuals, groups, organizations and agencies responded to the invitation to comment on the proposed project, or involved themselves in the analysis of the project. Based on their input, and on information provided by Forest Service specialists to the Interdisciplinary Team, a list of the major issues to be considered in the analysis was developed. The following is the list of these major issues, and the indices of measurement for each.

1. Riparian areas may be adversely affected by livestock grazing. (Number of AMs and season of use)
2. The recreation experience at developed recreation sites (including Wood's Ranch, Cedar Canyon campground, Ats Quo Archery range, and Deer Haven campground) in addition to Ashdown Gorge Wilderness, may be impacted by livestock grazing. (Probability of livestock contact/level of grazing use between livestock and recreationists)
3. Wildlife may be affected by livestock grazing. (Probable impact on use patterns and habitat for Management Indicator Species)
4. Change in season or numbers may affect the permittees year-around livestock operation and economic stability. (Permitted AMs)
5. Uncontrolled livestock grazing may impact private land adjacent to the Allotment. (Miles of secure Allotment/unit boundary)
6. Watershed condition may be affected by livestock grazing. (Acres projected in unsatisfactory vegetative/soil condition)
7. Vegetation density, distribution and vigor may be affected by livestock grazing. (Acres projected in unsatisfactory/satisfactory range condition)

CUMULATIVE EFFECTS ANALYSIS OF ISSUES: In addition to the direct effects which will be evaluated for each of the previously described issues, some issues warrant a Cumulative Effects Analysis (CEA) resulting from

activities that would be generated by the implementation of the Proposed Action and alternatives. Those issues warranting a CEA are documented in the discussion of effects in Section 4 of this EA.

Issue #1 (riparian areas) was determined not to warrant a CEA. The cumulative effect of riparian conditions on this Allotment would be reflected in the overall watershed condition and on potential for relocation of wildlife species dependent on this vegetation community. The ID Team felt that these types of effects would be addressed under the CEA for Issue #3 (wildlife) and Issue #6 (watershed).

Issue #5 (uncontrolled livestock) was determined not to warrant a CEA as the problem affects a very localized area. The environmental effects related to this issue are appropriately addressed as direct effects.

SECTION 2: ALTERNATIVES, INCLUDING THE PROPOSED ACTION

INTRODUCTION

Section 2 describes the Proposed Action and the alternatives to the Proposed Action, including the "No Action" Alternative. In addition, this Section includes the alternatives considered but eliminated from detail analysis, features common to all "action" alternatives, and presents the environmental effects of the proposal and the alternatives in comparative form.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

4-PASTURE REST-ROTATION GRAZING SYSTEM

The 3-pasture system (Alternative 2) would address vegetation issues similarly to the 4-pasture system, and would not require additional fencing. This approach was acceptable to the tour participants.

CHANGE THE ALLOTMENT BOUNDARY IN THE HI PERRY UNIT

Considering the size and terrain of the Hi Perry Unit, it would not be feasible to change the boundary in a manner that would restrict sheep movement to the extent necessary to address the private property and recreation issues.

GRAZE HI PERRY LAST EACH YEAR

This alternative was originally proposed to address the private/county land conflicts. On the tour, the group decided that this alternative would not solve this issue, as the sheep would still have access to the private/county land during periods of recreation use.

ELIMINATION OF LIVESTOCK GRAZING

This alternative was not considered in detail on an Allotment-wide basis because it is not within the scope of the Purpose and Need, which is based on the existing and desired resource conditions on the Allotment, and conflicts with management direction provided in the LRMP.

Eliminating the grazing in the Hi Perry unit is being considered in detail in Alternative 4 because it specifically addresses two of the issues.

Eliminating grazing in the Ashdown Gorge Wilderness is not warranted by the existing resource conditions, as described in the Purpose and Need. The Wilderness Act of 1964, Section 4(d)(4)(2), specifically states that "the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture."

Livestock grazing was historically authorized in the Cedar Canyon Allotment area under the existing regulations at that time and is appropriate and consistent under the objectives described in the Multiple-Use Sustained-Yield Act of 1960.

While some areas in the Allotment are in unsatisfactory condition, many areas are in upward vegetation and soil condition. There have been no environmental issues raised to date which would warrant the complete removal of livestock from the Cedar Canyon Allotment area.

PREDATOR CONTROL

Predator control has been dropped from this analysis. The predator control program on the Dixie National Forest has been previously analyzed in the Environmental Assessment for Forest-Wide Integrated Animal Damage Management. The decision to implement non-lethal and lethal predator control activities on the

Forest is documented in the Decision Notice and Finding of No Significant Impact for Forest-Wide Integrated Animal Damage Management, signed April 25, 1991 by Dixie National Forest Supervisor Hugh C. Thompson.

Therefore, any predator control activities on the Cedar Canyon Allotment will follow the procedures outlined in the aforementioned Decision Notice, and will be separate from the decisions made in relation to the Environmental Assessment for Revised Cedar Canyon Sheep Allotment Management.

FEATURES COMMON TO ALL ACTION ALTERNATIVES

Applicable LRMP Standards and guidelines (S&G) for Management Areas 1, 1A, 2B, 8A and 9A are incorporated by reference in all action alternatives.

The following mitigation measures for this project are more specific applications of the S&Gs to the Cedar Canyon Allotment area.

Proper use would be 50% on all species except crested wheatgrass reseeding and wet meadows where 60% is allowable.

Permittees would do the herding necessary to avoid overuse on bedgrounds, salt grounds, drainage bottoms and ridgetops.

Permittees and the Forest Service would cooperatively designate salt areas, at least 1/10 mile from bedgrounds and water sources. One third of these designated areas will be rotated annually.

Sheep trailing along the length of the Long Hollow drainage would be prohibited.

Erosion control structures would be installed on Long Hollow Trail to reduce erosion and sediment transport into the stream.

In addition, the Proposed Action and all "action" alternatives include issuance of a private land permit to the permittees (private land owners) for the equivalent of 300 sheep months capacity for the private land fenced in common with the National Forest. If the private land is sold or fenced out of the Allotment, numbers or season would be reduced accordingly.

PROPOSED ACTION

The Cedar City District proposes to continue the existing 3-pasture modified deferred-rotation grazing system. Following is the grazing sequence for the first cycle:

TABLE 1: GRAZING SEQUENCE - PROPOSED ACTION

Year	Ashdown Gorge	Crystal Springs	Hi Perry
1	C	B	A
2	B	A	C
3	A	C	B

A: Graze first - at range readiness - until proper use is reached.

B: Graze second - until proper use is reached.

C: Graze third - until proper use is reached or 9/10.

Permitted use would be reduced from 1097 permitted sheep for a 6/26 to 9/10 grazing season to 950 permitted sheep for the same season. Total permitted use would be 2075 sheep months on National Forest land and 300 sheep months on private land for a total of 2375 sheep months on the Allotment.

Without a protection fence south of Highway U-14, permittees would be required to provide adequate herding to keep sheep out of the closed areas (Management Areas 1A and 2B).

Improvements, except for private land/forest boundary fences, would be constructed on a cooperative basis between the Forest Service and permittees to maintain the integrity of the system (see Appendix B, Improvement Maps). Those improvements needed for total implementation of the system are:

1. Cedar Canyon protection fence construction - Crystal Spring road east to Pinks, (approximately 3/4 mile).
2. Cedar Canyon protection fence reconstruction - College property boundary to Crystal Springs road, (approximately 1 1/4 miles)
3. Wood's Ranch/Forest boundary fence - subdivision protection fence, (1/2 mile).
4. Long Hollow division fence maintenance and reconstruction - College boundary to head of Long Hollow, (approximately 1 1/4 miles).
5. Crystal Springs Ridge (Wood Knoll) bedground fence (approximately 1/4 mile).

In the case of private land and livestock conflicts, permittees and landowners would need to resolve the conflicts.

ALTERNATIVES CONSIDERED AND ANALYZED IN DETAIL

Utilizing the issues identified in the analysis, the ID Team developed four alternatives in detail with others being eliminated from detailed study. The alternatives represent a range of management strategies and outputs to meet LRMP and Allotment objectives.

All the "action" alternatives are consistent with LRMP direction, and with the Management Area Prescriptions found in the LRMP, Chapter IV. Any of the "action" alternatives could be implemented without amending the Forest Plan.

ALTERNATIVE 1

Continue the management system used since 1978 and documented in the Cedar Canyon Allotment folder. This is the no action alternative. The Allotment is managed under a deferred-rotation grazing system. The sheep would begin grazing in the Hi Perry Unit one year and Ashdown Gorge Unit the next.

Following is the grazing schedule:

TABLE 2: GRAZING SEQUENCE - ALTERNATIVE 1

Year	Hi Perry	Crystal Spring	Ashdown Gorge
1	A	B	C
2	C	B	A

(Repeat Cycle)

A - Graze 6/26 until proper use is reached

B - Graze second until proper use is reached

C - Graze third until proper use is reached or 9/10 when sheep are removed from the Allotment.

The permitted numbers and season would remain at 1097 sheep for a 6/26 to 9/10 grazing season. Permitted use would be 2742 sheep months on the Allotment. There would be no capacity credited to the private land fenced in with National Forest land under this Alternative.

Permittees would continue to herd sheep out of Management Areas 1A and 2B.

There would be no new improvements constructed under this Alternative.

ALTERNATIVE 2

Implement a three unit rest-rotation grazing system. Livestock numbers would be adjusted to allow proper use standards to be met in each of the grazing units.

Following is the grazing schedule:

TABLE 3: GRAZING SEQUENCE - ALTERNATIVE 2

Year	Hi Perry	Crystal Spring	Ashdown Gorge
1	A	B	R
2	B	R	A
3	R	A	B

(Repeat cycle)

- A - Graze first until proper use is reached
- B - Graze second until proper use is reached
- R - Rest

Permitted use would be reduced from 1097 permitted sheep for a 6/26 to 9/10 grazing season to 700 permitted sheep for the same season. Total permitted use would be 1450 sheep months on National Forest land and 300 sheep months on private land for a total of 1750 sheep months on the Allotment.

Improvements, except for private land/forest boundary fences, would be constructed on a cooperative basis between the Forest Service and permittees to maintain the integrity of the system. Those improvements needed for total implementation of the system are:

1. Cedar Canyon Protection fence construction (Crystal Spring road (east to Pinks), approximately 3/4 mile - Permittees and Forest Service.
2. Cedar Canyon protection fence reconstruction (College property boundary to Crystal Springs road), approximately 1 1/4 miles - Permittees and Forest Service.
3. Wood's Ranch/Forest boundary fence (subdivision protection fence), 1/2 mile - construction would be a cooperative project among permittees, private land owners, Iron County and Utah Division of Wildlife Resources.
4. Long Hollow division fence maintenance and reconstruction (College boundary to head of Long Hollow), approximately 1 1/4 miles - Permittees and Forest Service.
5. Crystal Springs Ridge (Wood Knoll) bedground protection fence approximately 1/4 mile - Permittees and Forest Service.

ALTERNATIVE 3

The Cedar City District proposes to employ a 3-unit deferred rotation grazing system. The sheep would begin grazing in the Hi Perry Unit one year and Ashdown Gorge Unit the next.

Following is the grazing schedule:

TABLE 4: GRAZING SEQUENCE - ALTERNATIVE 3

Year	Hi Perry	Crystal Spring	Ashdown Gorge
1	A	B	C
2	C	B	A

- A - Graze 7/1 until proper use is reached
- B - Graze second until proper use is reached
- C - Graze third until proper use is reached or 9/25 when sheep are removed from the Allotment.

Permitted use would be reduced from 1097 sheep for a 6/26 to 9/10 grazing season to 800 sheep for a 7/1 to 9/25 grazing season. Total permitted use would be 1966 sheep months on National Forest land and 300 sheep months on private land for a total of 2266 sheep months on the Allotment.

Improvements, except for private land/forest boundary fences, would be constructed on a cooperative basis between the Forest Service and permittees to maintain the integrity of the system. Those improvements needed for total implementation of the system are:

1. Cedar Canyon protection fence construction (Crystal Spring road (east to Pinks), approximately 3/4 miles - Permittees and Forest Service.
2. Cedar Canyon protection fence reconstruction (College property boundary to Crystal Springs road), 1 1/4 miles - Permittees and Forest Service.
3. Wood's Ranch/Forest boundary fence (subdivision protection fence). 1/2 mile - construction would be a cooperative project with permittees, homeowners, Iron County, and UDWR.
4. Long Hollow division fence maintenance and reconstruction (College boundary to head of Long Hollow), approximately 1 1/4 miles - Permittees and Forest Service.
5. Crystal Springs Ridge (Wood Knoll) bedground protection fence, approximately 1/4 mile - Permittees and Forest Service.

ALTERNATIVE 4

The Cedar City District proposes to employ a 2-unit deferred rotation grazing system. The Hi Perry Unit would be closed to grazing along with the Cedar Canyon recreation complex.

Following is the grazing schedule:

TABLE 5: GRAZING SEQUENCE - ALTERNATIVE 4

Year	Ashdown Gorge	Crystal Spring
1	A	B
2	B	A

(Repeat Cycle)

A - Graze first until proper use

B - Graze second until proper use or 9/15 when sheep are removed from the Allotment

Permitted use would be reduced from 1097 sheep for a 6/26 to 9/10 grazing season to 700 sheep for a 7/1 to 9/15 grazing season. Total permitted use would be 1450 sheep months on National Forest land and 300 sheep months on private land for a total of 1750 sheep months on the Allotment.

Improvements, except for private land/forest boundary fences, would be constructed on a cooperative basis between the Forest Service and permittees to maintain the integrity of the system. Those improvements needed for total implementation of the system are:

1. Cedar Canyon protection fence construction (Crystal Spring road (east to Pinks), approximately 3/4 miles - Permittees and Forest Service.
2. Cedar Canyon protection fence reconstruction (College property boundary Crystal Springs road), 1 1/4 miles - Permittees and Forest Service.

3. Long Hollow division fence maintenance and reconstruction (College boundary to head of Long Hollow), approximately 1 1/4 miles - Permitees and Forest Service.
4. Crystal Springs Ridge (Wood Knoll) bedground protection fence approximately 1/4 mile - Permitees and Forest Service.

COMPARISON OF THE PROPOSED ACTION AND ALTERNATIVES

In this section, the Proposed Action and alternatives are compared in the way they address each Issue identified in Section 1. Tables graphically display the comparison, followed by a brief narrative. These comparisons are based on the detailed description of environmental effects, documented in Section 4: Environmental Effects.

ISSUE #1: Riparian areas may be adversely affected by livestock grazing. *(Number of AMs and season of use)*

TABLE 6: SUMMARIZED COMPARISONS FOR ISSUE #1

ALTERNATIVE	LONG HOLLOW AMs	SEASON OF USE	RATTLESNAKE AMs	SEASON OF USE
Prop. Action	2375	Early/Mid/Late	0	Not Grazed
1 (No Action)	2742	Mid	0	Not Grazed
2	1750	Early/Mid/Rest	0	Not Grazed
3	2266	Early/Mid/Late	0	Not Grazed
4	1750	Early/Mid	0	Not Grazed

NARRATIVE FOR ISSUE #1: Long Hollow is the riparian area most likely to be impacted by livestock use, as Rattlesnake Creek is not used by livestock.

Alternative 2 would provide the optimum management for the Long Hollow riparian area by implementing a rest-rotation system with substantially reduced numbers.

The Proposed Action and Alternative 3 would be similar in that livestock numbers would be reduced, a deferred-rotation system would be implemented and livestock distribution would be improved. Under alternative 3 numbers would be less than the proposed action but the livestock would be in each pasture longer.

Alternative 4 would reduce numbers but utilizes a two pasture deferred system in which Long Hollow would be deferred until mid-season.

Alternative 1 is the least favorable because, even with deferment, it has no reduction in numbers.

ISSUE #2: Dispersed recreation use may affect allotment management. *(Probability of contact between livestock and recreationists)*

TABLE 7: SUMMARIZED COMPARISONS FOR ISSUE #2

ALTERNATIVE	PERMITTED NUMBERS	GRAZING SYSTEM	
Proposed Action	950	3-Pasture, Deferred-Rotation	
1 (No Action)	1097	3-Pasture, Modified Deferred-Rotation	
2	700	3-Pasture, Rest-Rotation	
3	800	3-Pasture, Deferred-Rotation	
4	700	2-Pasture, Deferred-Rotation	

NARRATIVE FOR ISSUE #2: Probability of contact was determined by using the number of livestock on the allotment and the number of pastures livestock could be encountered at any given time.

Using this criteria, Alternative 4 rated the least impacting to recreationists because it provides the lowest stocking level, and would close the Hi Perry Pasture to grazing.

Alternative 2 would be the second least impacting because of stocking levels similar to Alternative 4 and one pasture being rested every year.

Alternative 3 would be the third least impacting because stocking levels would be the least except for Alternative 2 and 4 and a deferred-rotation system would be used.

Under the Proposed Action, livestock numbers wouldn't be reduced to the levels of Alternative 2, 3 and 4, but a deferred-rotation would be implemented.

Alternative 1 would be least desirable because numbers and season would remain the same.

ISSUE #3: Wildlife may be affected by livestock grazing. (Probable impact on use patterns and habitat for Management Indicator Species)

TABLE 8: SUMMARIZED COMPARISONS FOR ISSUE #3

ALTERNATIVE	IMPACT ON BIG GAME	IMPACT ON BIRDS	IMPACT ON SMALL MAMMALS
Proposed Action	+	+	+
1 (No Action)	0	0	0
2	++	++	++
3	+	+	+
4	++	+	+

NARRATIVE FOR ISSUE #3: The Proposed Action and alternatives 3 would not adversely impact any of the management indicator species. However, some treatments would have some positive benefits.

Alternative 2 would provide benefits to all classes due to the rest-rotation system. One rest pasture each year would be attractive to all forms of wildlife.

Alternative 4 would have similar benefits as Alternative 2 in the Hi Perry pasture. A deferred-rotation system with reduced numbers and a later grazing season would have positive effects on most wildlife species in the Crystal Springs and Ashdown Gorge pastures.

The Proposed Action and Alternatives 3 would have positive impacts on all classes due to the reduced numbers and deferred rotation treatments.

Alternative 1, although not negatively impacting any class, would not provide any additional benefits to wildlife habitat.

ISSUE #4: Change in season or numbers may affect the permittees year-around livestock operation and economic stability. *(Permitted AMs)*

TABLE 9: SUMMARIZED COMPARISONS FOR ISSUE #4

ALTERNATIVE	PERMITTED AMs
Proposed Action	2375
Alternative 1 (No Action)	2742
Alternative 2	1750
Alternative 3	2266
Alternative 4	1750

NARRATIVE FOR ISSUE #4: The No-Action Alternative would have the least economic impact on the permittees because there would be no reduction in numbers.

Although the permitted use is reduced, the Proposed Action would have the next lowest impact compared to the Alternative 3, because it amounts to the least reduction in numbers and the entering date remains the same.

Alternative 3 would be less impact compared to Alternative 2 and 4, because numbers would be greater and season of use longer.

Alternative 2 and 4 would have the greatest economic impact due to the substantial reduction in permitted use.

ISSUE #5: Uncontrolled livestock may be reducing the effectiveness of range management practices within the allotment, and impacting adjacent private land. *(Miles of secure allotment/pasture boundary)*

TABLE 10: SUMMARIZED COMPARISONS FOR ISSUE #5

ALTERNATIVE	HI PERRY/PRIVATE/COUNTY
Proposed Action	+
1 (No Action)	-
2	+
3	+
4	++

NARRATIVE FOR ISSUE #5: Alternative 4 would be the best to eliminate uncontrolled livestock grazing because it would close the Hi Perry pasture to grazing and would not require construction of a boundary fence.

Alternative 2 would be the next most desirable as it would require a boundary fence to be constructed and there would be no grazing one year out of three in the rest-rotation system.

The Proposed Action and Alternative 3 would be similar as a boundary fence would be constructed and there would be reduced livestock numbers.

Alternative 1 would be the least desirable because no fence would be constructed and livestock numbers would remain the same.

ISSUE #6: Watershed condition may be affected by livestock grazing. (Number of acres projected in unsatisfactory vegetative/soil condition).

TABLE 11: SUMMARIZED COMPARISONS FOR ISSUE #6

ALTERNATIVE	HI PERRY	CRYSTAL SPRINGS	ASHDOWN GORGE
Proposed Action	550	1175	650
1 (No Action)	550	1300	892
2	400/Rest	875/Rest	475/Rest
3	550	1066	650
4	0	1100	650

NARRATIVE FOR ISSUE #6: Alternative 2 would provide for the greatest number of acres in satisfactory condition, due to the substantially reduced livestock numbers, rest-rotation management, improved livestock distribution practices and vegetation treatments.

Alternative 4 would provide nearly as great an improvement towards satisfactory range, as it would eliminate Hi Perry from livestock grazing and reduce livestock numbers in the remaining two pastures. There would also be improved livestock distribution.

The Proposed Action and Alternative 3 would be similar in that livestock numbers would be reduced, a deferred-rotation system would be implemented and livestock distribution would be improved.

Alternative 1 would be the least favorable as it maintains the current high stocking level, with a grazing system that provides only mid-season deferment to the larger Crystal Springs Pasture.

ISSUE #7: Vegetation density, distribution and vigor may be impacted by livestock grazing. (Acres in satisfactory/unsatisfactory range condition)

TABLE 12: SUMMARIZED COMPARISONS FOR ISSUE #7

ALTERNATIVE	HI PERRY AMs	CRYSTAL SPR.AMs	ASHDOWN AMs	GRAZING SYSTEM
Proposed Action	550	1175	650	Deferred-Rotation
1 (No Action)	550	1300	892	Mod. Def-Rotation
2	400/Rest	875/Rest	475/Rest	Rest-Rotation
3	550	1066	650	Deferred Rotation
4	0	1100	650	Deferred-Rotation

NARRATIVE FOR ISSUE #7: Alternative 2 would provide for the greatest number of acres in satisfactory condition, due to the substantially reduced livestock numbers, rest-rotation management, improved livestock distribution practices and vegetation treatments.

Alternative 4 would provide nearly as great an improvement towards satisfactory range, as it would eliminate Hi Perry from livestock grazing and reduce livestock numbers in the remaining two pastures. There would also be improved livestock distribution.

The Proposed Action and Alternative 3 would be similar in that livestock numbers would be reduced, a deferred-rotation system would be implemented and livestock distribution would be improved.

Alternative 1 would be the least favorable as it maintains the current high stocking level, with a grazing system that provides only mid-season deferment to the larger Crystal Springs Pasture.

TOTAL BENEFIT/COST COMPARISON

An economic analysis was completed for the Proposed Action and each alternative. This analysis included benefits derived from the value of an animal unit month compared against the costs of fence construction, costs to monitor management actions and costs to administer the grazing program on the Cedar Canyon Allotment.

Monetary values for non-market goods (e.g. wildlife/fisherman user day) are not comparable to dollars used in the economic analysis because they are 'derived' dollar values and not based on actual market prices or cost data. Therefore, they were not included as benefits for the purposes of this economic analysis.

The benefit:cost ratios for the Proposed Action and alternatives are included in the table below:

TABLE 13: COMPARISON OF COST-BENEFIT RATIOS

ALTERNATIVE	BENEFIT:COST RATIO	ESTIMATED BENEFITS	ESTIMATED COSTS
Proposed Action	1.49:1	\$39,547	\$26,599
Alternative 1	6.54:1	\$52,260	\$7991
Alternative 2	1.04:1	\$27,635	\$27,635
Alternative 3	1.49:1	\$39,547	\$26,599
Alternative 4	1.12:1	\$27,635	24,599

Appendix C contains the economic analysis spreadsheets from which these numbers were derived.

SECTION 3: AFFECTED ENVIRONMENT

INTRODUCTION

The Allotment includes Management Areas (1, 1A, 2B, 8A, and 9A). Each of these management areas has specific management prescriptions relating to livestock, timber, recreation, and maintenance of wildlife and watershed values.

ISSUE 1: RIPARIAN AREAS

Rattlesnake Creek is a designated riparian area (Management Area 9A) in the LRMP. Long Hollow Creek, in addition to other seeps and springs are not designated as riparian areas but have riparian vegetation.

Rattlesnake Creek, though designated in Management Area 9A, is a narrow drainage that continually floods from high intensity summer storms. There is an accumulation of rock and debris in the channel that is transported any time high flows occur. With the condition that prevails, riparian vegetation is sparse to nonexistent.

Long Hollow is a small stream that has riparian characteristics. In dry years the stream may cease to flow. Livestock trail up and down the drainage and affect the stability of the adjacent upland vegetation, but the riparian area is in good condition.

ISSUE 2: RECREATION

Two full-service campgrounds are located within the Allotment: Deer Haven and Cedar Canyon. Deer Haven Campground is an organizational group site that is used throughout the summer. This campground is located on the boundary between the Webster Flat Allotment and the Cedar Canyon Allotment. Livestock are excluded by a perimeter fence of the campground.

Cedar Canyon Campground contains 19 individual camp sites, and is located off U-14. It receives moderate to heavy use during the summer. This campground is not fenced from livestock use, but is located within the area historically closed to livestock grazing through herding. Herding has not been successful in eliminating livestock use of this area.

Wood's Ranch recreation complex is located adjacent to the Forest boundary in Cedar Canyon. Iron County administers this site, which receives heavy recreation use during the spring, summer and fall. Some winter use also occurs. Due to the unserviceable condition of the boundary fence, livestock move from the National Forest land onto County land.

The Ats Quo Archery Range is located approximately one mile east of Cedar Canyon Campground. A special use permit is issued to the Ats Quo Archery Club in Cedar City for use of that area. The area is used by archers mainly during June, July and August prior to the deer and elk archery seasons. It is within the area historically closed to livestock grazing through herding, though herding has not been successful in eliminating livestock use of this area.

The north half of the Allotment is situated in the Ashdown Gorge Wilderness Area. In the Wilderness Area there is a network of trails including the Rattlesnake Trail (Cedar Breaks to Ashdown Gorge), Potato Hollow Trail (Crystal Springs to Ashdown Gorge), Blowhard Trail (Blowhard Mountain to Long Hollow), and Long Hollow (Lower Long Hollow to Crystal Springs). The trails are used by hikers, photographers, horseback riders, and hunters.

Hiking is the most common activity on the Allotment, consisting primarily of day hikers, who walk part way into the Wilderness and back out the same day. A larger number hike from the trail head at Mammoth Summit and Crystal Springs into Ashdown Gorge where they are picked up. The proximity to Cedar Breaks National Monument makes the area especially attractive to recreationists.

Conflict with livestock and recreationists using trails has been limited to the damage caused by sheep trailing along the same trails and decreasing the aesthetics, establishing multiple parallel trails, increasing erosion and trampling vegetation. Recreationists leave gates open or scare sheep away from suitable grazing areas on the Allotment.

Appendix D contains a map of the key recreation features within the Allotment.

ISSUE 3: WILDLIFE

The Cedar Canyon Allotment is characterized largely by aspen and aspen/mixed conifer habitat. Primary vegetation on the south-facing slopes are oakbrush and grass types; ridges are predominately grass.

For the purposes of this analysis, management indicator species (MIS) will be used in evaluating the effects of the Proposed Action and alternatives on wildlife. MIS are animals which, by their presence in a certain location or situation, are believed to indicate the habitat conditions for many other species. By monitoring their populations and habitat relationships, the effects of Forest Service management activities Allotment wildlife (LRMP III-13) can be evaluated.

The following species are MIS within the Cedar Canyon Allotment: Deer, elk, turkey, and common flicker. The common flicker will not be discussed in detail because it is a cavity-nesting bird; there are proposed management activities which would impact forest cover/snags.

Appendix D contains a map of key wildlife habitat areas on the Allotment.

There are no known threatened, endangered or sensitive wildlife species on the Allotment (Appendix E).

DEER

Mule deer are scattered throughout the Allotment. Most of the Allotment is used for cover, but the deer tend to use the oakbrush, sagebrush and bitterbrush areas. The aspen stands that are adjacent to the main foraging areas are more heavily used.

Although deer populations are not high, competition for forage with domestic livestock is more evident on the ridges between Ashdown Gorge and Long Hollow, Long Hollow and Moots Hollow and Moots Hollow and Cedar Canyon where bitterbrush is moderately to heavily hedged from grazing.

The deer located on the Allotment are part of the Parowan Deer Herd Unit on the Cedar City Ranger District. There is no critical winter range within the Allotment. The deer summer on the Forest in this area and then move off the Forest into Cedar Canyon, and to the foothills east of I-15 between Cedar City and Summit for the winter. I-15 prohibits the deer from migrating further to the west consequently the winter range for these animals is limited and becomes the controlling factor for the size of the deer herd on the Cedar Canyon Allotment.

ELK

Elk are present throughout the Allotment but only in small numbers. The Ashdown Gorge area seems to be the more preferred area of the allotment. Shooting Star and Spring Canyon are two drainages that are not used by sheep but would be likely to have elk use.

The Allotment does not contain critical elk winter range. However, it is likely that, during mild winters, some winter elk use occurs on the south facing slopes of Long Hollow, Moots Hollow and Cedar Canyon.

This elk population is part of the Panguitch Lake Elk Herd Unit on the Cedar City Ranger District. The herd unit is relatively new and elk populations are increasing over the unit as a whole. There have been no conflicts between elk and livestock on the herd unit to date.

TURKEY

Turkeys have occasionally been sighted on the Allotment. There have not been large populations in any particular location of the Allotment. Larger populations of turkeys have been identified in the Deep Creek and Webster Flat area, therefore it is likely that birds from these areas have overlapped onto the Cedar Canyon Allotment.

Oakbrush types in Cedar Canyon, Long Hollow and Potato Hollow would be the most attractive habitat for the small population of birds. Nesting habitat exists primarily in Ashdown Gorge.

ISSUE 4: SOCIO-ECONOMICS

Prior to 1927, two bands of sheep grazed the range from Potato Hollow west to the Forest boundary and north to Long Hollow. Each band used the range 30 days each season, 15 days in the spring, beginning June 21 and 15 days in the fall, beginning September 5. From 1925 to 1961, cattle grazed the Allotment. In 1961, the Allotment was changed from cattle to sheep, because of larkspur poisoning.

Cedar Canyon is a community Allotment comprised of small operators using this grazing resource in conjunction with their farm enterprises. Current permitted numbers are 1097 sheep for a June 26 to September 10 grazing season for a total of 2742 sheep months. There are three permittees with numbers ranging from 230 sheep to 467 sheep. All of the permittees have a ewe-lamb operation and use the Allotment as their summer range.

ISSUE 5: UNCONTROLLED LIVESTOCK USE

In 1968, a new fence was constructed on the boundary between Wood's Ranch Recreation Complex/Wood's Ranch Summer Home area and the Forest. The fence was constructed by the permittees on the Cedar Canyon Allotment and maintained by the homeowners. The fence was maintained for a few years but then neglected until now. Presently the fence is on the ground in unserviceable condition.

The private land/Forest boundary south of U-14 lies in the bottom of Hi Perry Hollow on the north part. The vegetation type is a aspen/mixed conifer type that is similar on both sides of the fence. When sheep graze the Hi Perry unit the sheep travel back and forth across the boundary. This is especially true when the sheep have been in the pasture for any length of time.

Private cabin owners have complained each year about sheep using their property while in the Hi Perry pasture. When the sheep use the Hi Perry pasture first in the grazing schedule, unauthorized grazing seems to be more of a problem as the sheep pull back to the north toward the Crystal pasture and end up on the private land.

ISSUE 6: WATERSHED

The Allotment lies within the Coal Creek Watershed. This includes the headwaters of the Coal Creek drainage lying within the Dixie National Forest. It is about six airline miles east of Cedar City, Utah. The drainage runs

in an east to northwest direction, draining a portion of the west rim of the Markagunt Plateau in Iron County, Utah. Water produced here flows into Cedar Valley, an extension of the Escalante Valley which is a closed watershed within the Great Basin system. This water is almost entirely used for irrigation and as a municipal water supply for Cedar City, a community of near 15,000 population. In good years some water may leave the west end of the valley as ground water.

Much of the upper watershed has been seriously affected by erosion. Sheet erosion is general over most of the watershed. With the exception of some aspen and dense conifer stands, few areas of any size are free of an effective gully system. These gullies quickly channel precipitation to streams during flood producing storms. Depletion of ground cover and the resultant loss of usable forage and the basic soil resource are a serious problem on many areas.

The major watershed problem on this drainage is flooding resulting from high intensity summer storms. Coal Creek has a history of flooding dating back to 1853, just two years after settlement. The presence of high amount of geological erosion areas indicates the drainage has never been fully stabilized. Floods began to result in serious damage in the early 1900's and floods of varying magnitude have occurred most years since.

The problem of sedimentation of ditches, canals, and other irrigation and municipal improvements is the most common watershed problem in the Coal Creek watershed. Due to increased occurrence with peak flows, sedimentation cannot be entirely separated from flood problems. A high amount of sedimentation continues even in periods that are relatively free of flood flows.

With the exception of the high quantity of sediment carried in suspension as a bed load in Coal Creek, water quality is generally adequate to meet present uses. Culinary water is derived from springs and deep wells. Chlorination is required, but otherwise the water is of good quality.

During floods a thick deposit of red mud clay and debris is left on areas which receive flood waters. During large floods runoff is entirely unsuitable for irrigation use. Water produced from smaller floods is often used for irrigation purposes even though it may be detrimental to the fields being watered.

The severity of channel erosion on Coal Creek tends to increase its efficiency to carry large flows of water. There is also a large amount of debris in the channel which is available for transport any time large flows occur.

ISSUE 7: VEGETATION DENSITY, DISTRIBUTION AND VIGOR

The Cedar Canyon Allotment encompasses five distinct vegetation types: Aspen, oakbrush, conifer, grass (reseeded areas), and dry meadow (see Vegetation Type Map, Appendix F). The suitable grazing area includes all types (see Suitability Map, Appendix G).

Riparian vegetation, other than a few small seeps and springs, is found only in the Long Hollow drainage. The Rattlesnake Creek riparian area is not grazed by the permitted sheep. These areas are discussed under Issue #1 - Riparian Areas.

Erigeron prosclyticus, originally included on the Region 4 Sensitive Species List, was identified in Cedar Canyon in an earlier inventory. In 1990 this species was removed from the Region 4 Sensitive Species List.

There are no other known threatened, endangered or sensitive plant species located on the Allotment (Appendix E).

While most of the vegetation on the Allotment is in satisfactory condition and stable/upward trend, some areas are in unsatisfactory condition and downward trend. Refer to Appendix H, Range Condition Map for a graphic display of satisfactory and unsatisfactory range conditions.

ASPEN TYPE

This vegetation type accounts for 1239 acres of the total 7230 acres within the Allotment.

The principle species in the aspen type are: Aspen (*Populus tremuloides*), snowberry (*Symphoricarpus oreophyllis*), bluegrass (*Poa pratensis*), Mountain brome (*Bromus marginatus*), slender wheatgrass (*Agropyron trachyacalum*), clover (*Trifolium spp.*) and dandelion (*Taraxicum officinale*).

Vegetation vigor is fair to good in these areas. Grazing pressure is moderate in these areas. (see Utilization Map, Appendix I).

OAKBRUSH TYPE

This vegetation type accounts for 215 acres of the total 7230 acres within the Allotment.

The principle species in the oakbrush type are: Oakbrush (*Quercus gambelii*), Mountain big sagebrush (*Artemesia vaseyana*), bitterbrush (*Purshia tridentata*), Kentucky bluegrass (*Poa pratensis*), Letterman needlegrass (*Stipa lettermani*), Nevada bluegrass (*Poa nevedensis*), and fleabane (*Erigeron flagellaris*).

Vegetation vigor is fair in these areas, and is related to the level of grazing pressure received. Areas receiving repeated use in excess of 50% are generally in low vigor (see Utilization Map, Appendix I). These areas are moderately used by livestock.

GRASS (RESEEDED TERRACES)

This vegetation type accounts for 30 acres of the 7230 acres within the Allotment.

The principle species in the reseeded areas are: Smooth brome grass (*Bromus inermis*), intermediate wheatgrass (*Agropyron intermedium*), orchard grass (*Dactylis glomerata*), bitterbrush (*Purshia tridentata*), sagebrush (*Artemesia ludoviciana*),

Vegetation vigor is fair to good in these areas, and is related to the level of grazing pressure received. Areas receiving repeated use in excess of 50% are generally in low vigor (see Utilization Map, Appendix I). These areas are moderately to heavily used by livestock because of the available water in the terraces.

The terracing is over 20 years old, and is in fair to good vigor. Grass species are still the main vegetative component.

MEADOW TYPE

This vegetation type accounts for 124 acres of the total 7230 acres within the Allotment.

The principle species in the meadow type are: Kentucky bluegrass (*Poa pratensis*), sedge (*Carex spp.*), wiregrass (*Juncus spp.*), timothy (*Phleum pratense*), dandelion (*Taraxicum officinale*), clover (*Trifolium spp.*), and yarrow (*Acillia lanulosa*).

Vegetation vigor is fair to good in these areas, and is related to the level of grazing pressure received (see Utilization Map, Appendix I). These areas are moderately used by livestock, depending on the quality of livestock distribution across the Allotment.

CONIFER TYPE

This vegetation type account for 540 acres of the total 7230 acres within the Allotment.

The principle species in the conifer type are: Douglas fir (*Pseudotsuga menziesii*), Englemann spruce (*Picea englemanii*), white fir (*Abies concolor*), and subalpine fir (*Abies lasiocarpa*), Letterman needlegrass (*Stipa lettermani*), slender wheatgrass (*Agropyron trachycaulm*), dandelion (*Taraxicum officinale*), and yarrow (*Achilla lanulosa*).

There is light understory in these timbered stands, and, consequently, light grazing use (see Utilization Map, Appendix I).

Vegetation vigor is fair to good in these areas, and is related to the level of grazing pressure received (see Utilization Map, Appendix I). These areas are lightly used by livestock, depending on the quality of livestock distribution across the Allotment.

Approximately 4230 acres of the Allotment are classed as non-range and not suitable for livestock grazing. The remaining 852 acres are closed to grazing.

SECTION 4: ENVIRONMENTAL EFFECTS

INTRODUCTION

The environmental effects provide the scientific and analytical basis for the comparison of alternatives described in Section 2. It includes the direct, indirect and cumulative effects for the Proposed Action and alternatives.

ISSUE #1 - EFFECTS OF LIVESTOCK GRAZING ON RIPARIAN AREAS

PROPOSED ACTION

Due to the natural grazing patterns and preference of sheep, riparian areas are not as negatively impacted by grazing as would be expected under cattle grazing (May and Davis, 1982; Platts, 1982). On the Cedar Canyon Allotment, this is evidenced by riparian areas which are already in good condition (refer to Section 3: Affected Environment, Issue #1). The 13% reduction in livestock numbers and full 3-pasture deferred rotation would more noticeably improve the adjacent upland type than affect the riparian zone.

Deferred grazing works best where considerable differences exist between the palatability of plants and the conveniences of areas for grazing (Holchek 1983). In the Cedar Canyon allotment, deferred use would provide the opportunity to balance grazing use on the upland types adjacent to the streamside zone and ridges with use on the less palatable, more distant upland sites. Increased vigor and seed production every other third year would also be a benefit.

The reduction in livestock trailing along Long Hollow would have positive benefits to streambank stability.

Utilization would be limited to 50% (LRMP), which would provide plant stubble for streambank protection.

ALTERNATIVE 1 - NO ACTION

There would be no adjustments in livestock numbers or season. The Cedar Canyon allotment would continue to be managed under a modified deferred-rotation grazing system.

Under the modified deferred-rotation system, the Long Hollow riparian area would receive mid-season use every year, and would not benefit from any deferment or rest.

The current good condition of riparian areas on the Allotment would be expected to remain stable in the short term; however, continued trailing along Long Hollow would eventually degrade streambank stability.

ALTERNATIVE 2

Due to the natural grazing patterns and preference of sheep, riparian areas are not as negatively impacted by grazing as would be expected under cattle grazing (May and Davis, 1982; Platts, 1982). On the Cedar Canyon Allotment, this is evidenced by riparian areas which are already in good condition (refer to Section 3: Affected Environment, Issue #1).

The substantial 36% reduction in livestock numbers and 3-pasture rest-rotation system would more noticeably improve the adjacent upland type than affect the riparian zone.

Criticism of traditional rest-rotation systems includes reports that rest-rotation systems increase trailing and trampling damage, causing streambank erosion and instability (Meehan and Platts 1978),

However, this rest-rotation system would be accompanied by a substantial reduction in numbers, rather than implementation of the system under the same stocking levels as traditionally applied. This, in combination with the reduction in livestock trailing along Long Hollow, would provide for improved streambank stability. Hayes (1978), in Idaho, stated that species composition appeared to be improved under a rest-rotation grazing system and bank slough occurrences were not increased if utilization was under 60%. Utilization would be limited to 50% (LRMP), which would provide plant stubble for streambank protection.

Claire and Storch (unpublished) found a rest-rotation system to be favorable for achieving desired streamside management objectives if 1 year rest out of 3 included in the scheme, as designed under this Alternative.

ALTERNATIVE III

This alternative would reduce animal months by 17%. Sheep numbers would be reduced to 800 head from a July 1 to September 25 grazing season. This would limit the number of sheep, making them easier to control.

Under the deferred-rotation system, the Long Hollow riparian area would receive late-season use every third year thus benefiting from deferment.

The reduction in livestock trailing along Long Hollow would have positive benefits to streambank stability.

Utilization would be limited to 50% (LRMP), which would provide plant stubble for streambank protection.

ALTERNATIVE IV

Under this alternative, there would be little effect on the riparian areas in Long Hollow and Rattlesnake drainages. Livestock numbers would be reduced due the exclusion of livestock grazing from the Hi Perry pasture, but the actual reduction from current use in these riparian areas would be slightly less than is currently recorded.

Benefits derived from the reduced numbers would be offset by the length of time that the riparian areas would be exposed to livestock: The entire 2.5 month season would be spread over two pastures rather than three.

The reduction in livestock trailing along Long Hollow would have positive benefits to streambank stability.

Utilization would be limited to 50% (LRMP), which would provide plant stubble for streambank protection.

ISSUE #2 - EFFECTS OF GRAZING ON RECREATION

PROPOSED ACTION

Under the Proposed Action, livestock numbers would be reduced 13%. As a result, the effects of trailing and trampling would be reduced, which would reduce the visual impacts of livestock grazing on the recreation experience.

The reduced numbers would improve the herders control of the sheep; this, in turn, would help the herder prevent conflicts with popular recreation areas.

Under the Proposed Action, recreationists within the Ashdown Gorge Wilderness would be exposed to livestock grazing approximately two months each year; varying between June 26 and September 10.

There is a direct relationship between the familiarity with National Forest as measured by the number of prior visits, and a willingness to accept intensive management practices. There is also data that indicates that users with more than 16 visits to the area are more likely to accept intensive grazing management than those with fewer visits (Saunderson, Meganck and Gibbs 1986).

On the Cedar Canyon Allotment, and particularly the Ashdown Gorge Wilderness, recreation users are split between local users and those from out of the area. Based on Saunderson (et.al) research, frequent visitors to the area would be more likely to accept more intensive livestock management practices prescribed under the Proposed Action than less frequent visitors.

The Cedar Canyon recreation complex, including Cedar Canyon Campground, Ats Quo Archery Range and Wood's Ranch Recreation Area, would be effectively closed to grazing, which would eliminate conflicts with recreationists in these areas.

The 50% utilization standard outlined in the LRMP, improved herding and proposed fencing would minimize overuse areas by livestock, and improve the esthetics of the recreation experience compared with Alternative 1 - No Action.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is located on the Recreation Cumulative Effects Map, Appendix J.

There are other livestock in and around the Ashdown Gorge Wilderness, and the remaining area within the Cedar Canyon Allotment. The Proposed Action would reduce the contribution of the Cedar Canyon Allotment to livestock numbers and recreation impacts within the cumulative effects area. There would be no expected displacement of recreationists from the area due to the management of the Cedar Canyon Allotment.

ALTERNATIVE 1 - NO ACTION

This alternative would continue the current level of animal months and the current modified deferred-rotation grazing system on the Allotment.

Because there would be no reduction in numbers, this Alternative has the highest potential of contact between recreationists and livestock. In addition, the same overuse adjacent to trails and around popular recreation sites would be expected to continue.

Livestock would be within the Ashdown Gorge Wilderness approximately two months each year; varying between June 26 and September 10. This would be the same period of time as in the Proposed Action, but with potentially higher livestock numbers.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is located on the Recreation Cumulative Effects Map, Appendix J.

There are other livestock in and around the Ashdown Gorge Wilderness, and the remaining area within the Cedar Canyon Allotment. Alternative 1 would not alter livestock numbers or management impacts beyond that currently experienced by recreationists within the cumulative effects area. There would be no reduction in the impacts, yet there would be no expected displacement of recreationists from the area due to the management of the Cedar Canyon Allotment.

ALTERNATIVE 2

Under Alternative 2, livestock would be reduced 36% and a three-pasture rest-rotation grazing system would be implemented. This alternative would result in the least amount of contact between livestock and dispersed recreationists.

Under this alternative, there would be 700 head of permitted sheep for a two and one half month season. Each grazing pasture would be rested one year out of three. With reduced numbers there would be less conflict with recreation users. One pasture would have no use which would be highly compatible with recreation users.

Since the Ashdown Gorge Wilderness is split between the Crystal Springs Pasture and the Ashdown Pasture, a portion of the Wilderness would receive no livestock use two years out of three. This would be attractive to recreationists who frequent this area.

There is a direct relationship between the familiarity with National Forest as measured by the number of prior visits, and a willingness to accept intensive management practice. There is also data that indicates that users with more than 16 visits to the area are more likely to accept intensive grazing management than those with fewer visits (Saunderson, Meganck and Gibbs 1986).

On the Cedar Canyon Allotment, and particularly the Ashdown Gorge Wilderness, recreation users are split between local users and those from out of the area. Based on Saunderson (et.al) research, frequent visitors to the area would be more likely to accept more intensive livestock management practices prescribed under the Proposed Action than less frequent visitors.

The Cedar Canyon recreation complex, including Cedar Canyon Campground, Ats Quo Archery Range and Wood's Ranch Recreation Area, would be effectively closed to grazing, which would eliminate conflicts with recreationists in these areas.

The 50% utilization standard outlined in the LRMP, improved herding and proposed fencing would minimize overuse areas by livestock, and improve the esthetics of the recreation experience compared with Alternative 1 - No Action.

Overall, this Alternative would yield more positive benefits to recreationists than the Proposed Action or other alternatives.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is located on the Recreation Cumulative Effects Map, Appendix J.

There are other livestock in and around the Ashdown Gorge Wilderness, and the remaining area within the Cedar Canyon Allotment. Alternative 2 would substantially reduce livestock numbers and provide one livestock-free pasture each year. This would enhance the recreation experience within the cumulative effects area, and may attract recreationists to this area. It would not, however, result in any substantial change in recreation use within the cumulative effects area.

ALTERNATIVE 3

Under Alternative 3, livestock numbers would be reduced 27% but animal months would be the same as the proposed action. There would be less visual impacts of livestock grazing on the recreation experience.

The reduced numbers would improve the herders control of the sheep; this, in turn, would help the herder prevent conflicts with popular recreation areas.

Under Alternative 3, recreationists within the Ashdown Gorge Wilderness would be exposed to livestock grazing approximately two months each year; varying between July 21 and September 25.

The Crystal Springs pasture would be used the same time each year for approximately a month and a half. Livestock would be using the Crystal Springs pasture from about July 21 to September 1.

There is a direct relationship between the familiarity with National Forest as measured by the number of prior visits, and a willingness to accept intensive management practices. There is also data that indicates that users with more than 16 visits to the area are more likely to accept intensive grazing management than those with fewer visits (Saunderson, Meganck and Gibbs 1986).

On the Cedar Canyon Allotment, and particularly the Ashdown Gorge Wilderness, recreation users are split between local users and those from out of the area. Based on Saunderson (et.al) research, frequent visitors to the area would be more likely to accept more intensive livestock management practices prescribed under the Proposed Action than less frequent visitors.

The Cedar Canyon recreation complex, including Cedar Canyon Campground, Ats Quo Archery Range and Wood's Ranch Recreation Area, would be effectively closed to grazing, which would eliminate conflicts with recreationists in these areas.

The 50% utilization standard outlined in the LRMP, improved herding and proposed fencing would minimize overuse areas by livestock, and improve the esthetics of the recreation experience compared with Alternative 1 - No Action.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is located on the Recreation Cumulative Effects Map, Appendix J.

There are other livestock in and around the Ashdown Gorge Wilderness, and the remaining area within the Cedar Canyon Allotment. The Proposed Action would reduce the contribution of the Cedar Canyon Allotment to livestock numbers and recreation impacts within the cumulative effects area. There would be no expected displacement of recreationists from the area due to the management of the Cedar Canyon Allotment.

ALTERNATIVE 4

Under Alternative 4, livestock numbers would be reduced 36%. As a result, the effects of trailing and trampling would be reduced, which would reduce the visual impacts of livestock grazing on the recreation experience.

The reduced numbers would improve the herders control of the sheep; this, in turn, would help the herder prevent conflicts with popular recreation areas.

Under Alternative 4, recreationists within the Ashdown Gorge Wilderness would be exposed to livestock grazing approximately 2 and 1/2 months each year; varying between July 1 and September 15.

There is a direct relationship between the familiarity with National Forest as measured by the number of prior visits, and a willingness to accept intensive management practices. There is also data that indicates that users with more than 16 visits to the area are more likely to accept intensive grazing management than those with fewer visits (Saunderson, Meganck and Gibbs 1986).

On the Cedar Canyon Allotment, and particularly the Ashdown Gorge Wilderness, recreation users are split between local users and those from out of the area. Based on Saunderson (et.al) research, frequent visitors to the area would be more likely to accept more intensive livestock management practices prescribed under the Proposed Action than less frequent visitors.

Because the Hi Perry pasture would be excluded from grazing, Alternative 4 would result in the most dependable exclusion of livestock from the Cedar Canyon recreation complex, including Cedar Canyon Campground, Ats Quo Archery Range and Wood's Ranch Recreation Area, which would eliminate conflicts with recreationists in these areas better than the Proposed Action and other alternatives.

The 50% utilization standard outlined in the LRMP, improved herding and proposed fencing would minimize overuse areas by livestock, and improve the esthetics of the recreation experience compared with Alternative 1 - No Action.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is located on the Recreation Cumulative Effects Map, Appendix J.

There are other livestock in and around the Ashdown Gorge Wilderness, and the remaining area within the Cedar Canyon Allotment. The Proposed Action would reduce the contribution of the Cedar Canyon Allotment to livestock numbers and recreation impacts within the cumulative effects area. There would be no expected displacement of recreationists from the area due to the management of the Cedar Canyon Allotment.

The total removal of livestock from the Hi Perry pasture would have positive benefits to the recreation experience within the cumulative effects area.

ISSUE #3 - EFFECTS OF GRAZING ON WILDLIFE

PROPOSED ACTION

Desired livestock numbers to benefit wildlife species depends upon the distribution of forage resources and movement patterns of the livestock (Kie and Loft 1990). Under the proposed action, general range conditions on the allotment would improve. Livestock numbers would be reduced and proper herding would be required to minimize overuse on critical areas.

Riparian areas would remain in similar condition to what they are now, with good plant vigor and desirable plant composition. Proper use by sheep should prevent any potential reduction in the abundance of forbs in the meadow communities (Bowns and Bagley). In a California study, sixty-eight wildlife species in wet meadow communities showed an affinity for forbs as specific habitat elements (Kie and Loft 1990).

Upland types adjacent to the riparian zone that are in unsatisfactory condition would show gradual improvement as trailing is reduced and utilization standards of 50% or less on all forage species are met. Grazing-induced changes in the structure and composition of plant communities can benefit some wildlife species while adversely affecting others (Kie and Loft 1990). Based on knowledge of the Cedar Canyon Allotment, most wildlife species would benefit from vegetation improvement in this zone of influence.

Concentration areas on ridges and other areas would improve as a combination of fencing and improved herding would reduce or temporarily eliminate grazing use (fencing Crystal Springs Ridge bedground). Vegetation composition and plant density would improve which would benefit all forms of wildlife species.

DEER

Populations would remain about the same as currently exist. Deer would respond to improved management, including deferred use in Crystal Springs pasture. Vigor of browse species would improve on key areas where severe hedging of plants has occurred.

Fencing would control livestock and maintain integrity of the grazing system which would improve range conditions. Fence construction and reconstruction would comply with fencing standards for wildlife (e.g fence height).

ELK

Populations are low on the allotment. It's likely that elk would increase as populations increase throughout the elk herd unit and habitat conditions continue to improve on the Allotment.

As elk increase, problems with fence maintenance would increase.

TURKEY

Effects of this action on turkeys would minimal. Turkeys would continue to frequent the area but mainly as a carryover population from areas with higher densities.

Improvement of range conditions, especially on unsatisfactory areas would benefit foraging turkeys.

CUMULATIVE EFFECTS: The area included in the Wildlife Cumulative Effects Analysis is located on the map in Appendix K.

The Proposed Action would not be expected to have any substantial effects to wildlife within the cumulative effects areas because no critical habitat is located on the Allotment.

Summer range for deer and elk would improve, but would not substantially alter big game use.

Turkey populations within the cumulative effects area are limited largely by adequate habitat. Effects of this action would likely improve forage conditions over time and result in improved turkey habitat, though not at a substantial level.

ALTERNATIVE 1 - NO ACTION

Under this alternative, livestock numbers would remain static and range conditions on the allotment would remain about the same. Forage would be left for big game species as utilization standards are met on the suitable range.

Riparian areas would remain in similar condition to what they are now, with good plant vigor and desirable plant composition to protect streambanks. Upland types adjacent to the riparian zone would continue to be a problem.

There are no improvements planned under this alternative. Habitat improvement that would result from fencing would not be achieved.

DEER

Populations would remain about the same as currently exist.

ELK

Populations are low on the allotment. It's likely that elk would increase as time goes by and as populations increase throughout the elk herd unit. There are areas on the allotment that are not used by sheep but are desirable for elk. Elk densities in these areas would likely increase, but would not increase due to improved conditions on range currently classified as unsatisfactory condition.

TURKEY

Effects of this action on turkeys would minimal. Turkeys would continue to frequent the area but mainly as a carryover population from areas with higher densities.

CUMULATIVE EFFECTS: The area included in the Wildlife Cumulative Effects Analysis is located on the map in Appendix K.

Alternative 1 would not be expected to have any substantial effects to wildlife within the cumulative effects areas because no critical habitat is located on the Allotment.

Summer range for deer and elk would remain static.

Turkey populations within the cumulative effects area are limited largely by adequate habitat. Effects of this action would neither improve nor harm turkey forage area conditions over time.

ALTERNATIVE 2

Under this alternative, general range conditions on the allotment would improve. A substantial reduction in livestock numbers would reduce the use on browse species. Forage would be left for big game species as utilization standards are met.

Desired livestock numbers to benefit wildlife species depends upon the distribution of forage resources and movement patterns of the livestock (Kie and Loft 1990). Under Alternative 2, general range conditions on the allotment would improve. Livestock numbers would be reduced and proper herding would be required to minimize overuse on critical areas.

A rest pasture would benefit most wildlife species. Some species would migrate into the pasture where forage would remain abundant. Data from this study clearly showed that elk selected for the rest pasture and avoided pastures with large concentrations of cattle (Knowles and Campbell 1976). A rest-rotation grazing system, with either one or two years rest out of three on a three-pasture system would likely yield greater benefits to wildlife than continuous, season-long grazing every year (Kie and Loft 1986).

Riparian areas would remain in similar condition to what they are now, with good plant vigor and desirable plant composition to protect streambanks.

Upland types adjacent to the riparian zone would improve as trailing is reduced and utilization standards are met. Areas in unsatisfactory condition would respond more rapidly under the rest system. Where range conditions have been significantly damaged by improper grazing in the past, it has been commonly prescribed and sometimes been viewed as the only alternative to elimination of livestock grazing (Vallentine 1986). Most wildlife species would benefit from vegetation improvement in this zone of influence.

Concentration areas on ridges and other areas would improve as a combination of fencing and improved herding would reduce or temporarily eliminate grazing use (fencing Crystal Springs Ridge bedground). Vegetation composition and plant density would improve which would benefit all forms of wildlife species.

DEER

Populations would remain about the same as currently exist. Deer would respond to improved management, including scheduled rest in Crystal Springs pasture. Vigor of browse species would improve on key areas where severe hedging of plants has occurred.

Fencing would control livestock and maintain integrity of the grazing system which would improve range conditions. Fence construction and reconstruction would comply with fencing standards for wildlife (e.g fence height).

ELK

Populations are low on the allotment. It's likely that elk would increase as populations increase throughout the elk herd unit and habitat conditions continue to improve on the allotment. Data from a Montana study clearly showed that elk selected for the rest pasture and avoided pastures with large concentrations of cattle (Knowles and Campbell 1976).

As elk increase, problems with fence maintenance would increase.

TURKEY

Effects of Alternative 2 on turkeys would minimal. Turkeys would continue to frequent the area but mainly as a carryover population from areas with higher densities.

Improvement of range conditions, especially on unsatisfactory areas would benefit foraging turkeys.

Turkey habitat would be enhanced by providing one rest pasture each year.

CUMULATIVE EFFECTS: The area included in the Wildlife Cumulative Effects Analysis is located on the map in Appendix K.

Alternative 2 would not be expected to have any substantial effects to wildlife within the cumulative effects areas because no critical habitat is located on the Allotment.

Summer range for deer and elk would improve, but would not substantially alter big game use.

Turkey populations within the cumulative effects area are limited largely by adequate habitat. Effects of this action would likely improve forage conditions over time and result in improved turkey habitat, though not at a substantial level.

ALTERNATIVE 3

Under the proposed action, general range conditions on the allotment would improve. Livestock numbers would be reduced and proper herding would be required to minimize overuse on critical areas. Desired livestock numbers to benefit wildlife species depends upon the distribution of forage resources and movement patterns of the livestock (Kie and Loft 1990).

Riparian areas would remain in similar condition to what they are now, with good plant vigor and desirable plant composition. However, it should be noted that heavy grazing by sheep over long periods can reduce the abundance of forbs in some mountain meadow communities (Bowns and Bagley). In a California study, sixty-eight wildlife species in wet meadow communities showed an affinity for forbs as specific habitat elements (Kie and Loft 1990).

Upland types adjacent to the riparian zone that are in unsatisfactory condition would show gradual improvement as trailing is reduced and utilization standards of 50% or less on all forage species are met. Based on our knowledge of the area, most wildlife species would benefit from vegetation improvement in this zone of influence. Grazing-induced changes in the structure and composition of plant communities can benefit some wildlife species while adversely affecting others (Kie and Loft 1990).

Concentration areas on ridges and other areas would improve as a combination of fencing and improved herding would reduce or temporarily eliminate grazing use (fencing Crystal Springs Ridge bedground). Vegetation composition and plant density would improve which would benefit all forms of wildlife species.

DEER

Populations would remain about the same as currently exist. Deer would respond to improved management, including deferred use in Crystal Springs pasture. Vigor of browse species would improve on key areas where severe hedging of plants has occurred.

Fencing would control livestock and maintain integrity of the grazing system which would improve range conditions. Fence construction and reconstruction would comply with fencing standards for wildlife (e.g fence height).

ELK

Populations are low on the allotment. It's likely that elk would increase as populations increase throughout the elk herd unit and habitat conditions continue to improve on the allotment.

As elk increase, problems with fence maintenance would increase.

TURKEY

Effects of this action on turkeys would be minimal. Turkeys would continue to frequent the area but mainly as a carryover population from areas with higher densities.

Improvement of range conditions especially on unsatisfactory areas would benefit foraging turkeys.

CUMULATIVE EFFECTS: The area included in the Wildlife Cumulative Effects Analysis is located on the map in Appendix K.

Alternative 3 would not be expected to have any substantial effects to wildlife within the cumulative effects areas because no critical habitat is located on the Allotment.

Summer range for deer and elk would improve, but would not substantially alter big game use.

Turkey populations within the cumulative effects area are limited largely by adequate habitat. Effects of this action would likely improve forage conditions over time and result in improved turkey habitat, though not at a substantial level.

ALTERNATIVE 4

Under this alternative, general range conditions on the allotment would improve. A substantial reduction in livestock numbers would reduce the use on browse species. Forage would be left for big game species as utilization standards are met.

Elimination of the Hi Perry pasture from grazing coupled with the closed area in Cedar Canyon would take approximately one third of the area out of the allotment. Some wildlife species may benefit while others might not. Grazing induced changes in the structure and composition of plant communities can benefit some wildlife species while adversely affecting others (Kie and Loft 1990).

Riparian areas would remain in similar condition to what they are now, with good plant vigor and desirable plant composition to protect streambanks. Upland types adjacent to the riparian zone would improve as trailing is reduced and utilization standards are met.

Concentration areas on ridges and other areas would improve as a combination of fencing and improved herding would reduce or eliminate grazing. Vegetation composition and plant density would improve which would benefit most wildlife species.

DEER

Populations would remain about the same as currently exist. Deer would respond to improved management, including deferred use in Crystal Springs pasture. Vigor of browse species would improve on key areas where severe hedging of plants has occurred.

Fencing would control livestock and maintain integrity of the grazing system which would improve range conditions. Fence construction and reconstruction would comply with fencing standards for wildlife (e.g fence height).

Deer may be attracted to the Hi Perry pasture as livestock use would be excluded under this Alternative.

ELK

Populations are low on the allotment. It's likely that elk would increase as populations increase throughout the elk herd unit and habitat conditions continue to improve on the allotment.

Elk may be attracted to the Hi Perry pasture as livestock use would be excluded under this Alternative.

As elk increase, problems with fence maintenance would increase.

TURKEY

Effects of this action on turkeys would be significant. Turkeys would continue to frequent the area and would be more likely to locate in the Hi Perry pasture where there would not be competition from livestock. Improvement of range conditions especially on unsatisfactory areas would benefit foraging turkeys.

CUMULATIVE EFFECTS: The area included in the Wildlife Cumulative Effects Analysis is located on the map in Appendix K.

Alternative 4 would not be expected to have any substantial effects to wildlife within the cumulative effects areas because no critical habitat is located on the Allotment.

Summer range for deer and elk would improve, but would not substantially alter big game use. Big game may be attracted to the Hi Perry pasture as livestock use would be excluded under this Alternative. However, this should not result in substantial alteration of current use patterns.

Turkey populations within the cumulative effects area are limited largely by adequate habitat. Effects of this action would likely improve forage conditions over time and result in improved turkey habitat, though not at a substantial level.

ISSUE #4 - EFFECTS ON SOCIO-ECONOMICS

PROPOSED ACTION

Under the Proposed Alternative, animal months would be reduced by 13% (excluding private land grazing), from 2742 animal months to 2375 animal months.

Allotment reductions create detrimental effects on the ranching sector by forcing ranchers to substitute higher cost forages in order to maintain herd sizes (Torell, et.al, 1981). If they choose to reduce the herd size for their entire operation, then pasture costs increase as a result of facilities, equipment, etc., costs spread over the smaller herd size.

CUMULATIVE EFFECTS: The Environmental Impact Statement for the LRMP describes the local zone of influence as those counties whose economies are directly affected by Forest actions. Because of variation between communities' economic bases, the zone of influence is further broken down into analysis units.

The Cedar Canyon Allotment is located within the Cedar City/Parowan analysis unit. The economy in this analysis unit is substantially more diversified than other rural southwestern Utah counties, and is not significantly dependent on livestock forage provided by the Dixie National Forest (LRMP EIS, Appendix BII-81).

Therefore, though adversely impacting the permittees on the Cedar Canyon Allotment, the negative effects from the Proposed Action to the Cedar City/Parowan analysis unit would be diluted by the small contribution that the livestock industry makes to the more diversified local economy.

ALTERNATIVE 1 - NO ACTION

There would be no reduction in animal months under this alternative. Therefore, there would be no economic impact to the permittees.

CUMULATIVE EFFECTS: The Environmental Impact Statement for the LRMP describes the local zone of influence as those counties whose economies are directly affected by Forest actions. Because of variation between communities' economic bases, the zone of influence is further broken down into analysis units.

The Cedar Canyon Allotment is located within the Cedar City/Parowan analysis unit. The economy in this analysis unit is substantially more diversified than other rural southwestern Utah counties, and is not significantly dependent on livestock forage provided by the Dixie National Forest (LRMP EIS, Appendix BII-81).

Therefore, though benefiting the permittees on the Cedar Canyon Allotment, the positive effects from the No Action Alternative to the Cedar City/Parowan analysis unit would be diluted by the small contribution that the livestock industry makes to the more diversified local economy.

ALTERNATIVE 2

Under Alternative 2, animal months would be reduced by 36% (excluding private land grazing), from 2742 animal months to 1750 animal months.

This Alternative, compared with the Proposed Action and other alternatives, would cause the greatest negative impact to the ranchers due to the size of the reduction.

Allotment reductions create detrimental effects on the ranching sector by forcing ranchers to substitute higher cost forages in order to maintain herd sizes (Torell, et.al, 1981). If they choose to reduce the herd size for their entire operation, then pasture costs increase as a result of facilities, equipment, etc, costs spread over the smaller herd size.

CUMULATIVE EFFECTS: The Environmental Impact Statement for the LRMP describes the local zone of influence as those counties whose economies are directly affected by Forest actions. Because of variation between communities' economic bases, the zone of influence is further broken down into analysis units.

The Cedar Canyon Allotment is located within the Cedar City/Parowan analysis unit. The economy in this analysis unit is substantially more diversified than other rural southwestern Utah counties, and is not significantly dependent on livestock forage provided by the Dixie National Forest (LRMP EIS, Appendix BII-81).

Therefore, though adversely impacting the permittees on the Cedar Canyon Allotment more than the Proposed Action and other alternatives, the negative effects from Alternative 2 to the Cedar City/Parowan analysis unit would be diluted by the small contribution that the livestock industry makes to the more diversified local economy.

ALTERNATIVE 3

Under Alternative 3, animal months would be reduced by 17% (excluding private land grazing), from 2742 animal months to 2266 animal months.

Allotment reductions create detrimental effects on the ranching sector by forcing ranchers to substitute higher cost forages in order to maintain herd sizes (Torell, et.al, 1981). If they choose to reduce the herd size for their entire operation, then pasture costs increase as a result of facilities, equipment, etc, costs spread over the smaller herd size.

CUMULATIVE EFFECTS: The Environmental Impact Statement for the LRMP describes the local zone of influence as those counties whose economies are directly affected by Forest actions. Because of variation between communities' economic bases, the zone of influence is further broken down into analysis units.

The Cedar Canyon Allotment is located within the Cedar City/Parowan analysis unit. The economy in this analysis unit is substantially more diversified than other rural southwestern Utah counties, and is not significantly dependent on livestock forage provided by the Dixie National Forest (LRMP EIS, Appendix BII-81).

Therefore, though adversely impacting the permittees on the Cedar Canyon Allotment, the negative effects from Alternative 3 to the Cedar City/Parowan analysis unit would be diluted by the small contribution that the livestock industry makes to the more diversified local economy.

ALTERNATIVE 4

Under Alternative 4, animal months would be reduced by 36% (excluding private land grazing), from 2742 animal months to 1750 animal months.

Allotment reductions create detrimental effects on the ranching sector by forcing ranchers to substitute higher cost forages in order to maintain herd sizes (Torell, et.al, 1981). If they choose to reduce the herd size for their entire operation, then pasture costs increase as a result of facilities, equipment, etc, costs spread over the smaller herd size.

CUMULATIVE EFFECTS: The Environmental Impact Statement for the LRMP describes the local zone of influence as those counties whose economies are directly affected by Forest actions. Because of variation between communities' economic bases, the zone of influence is further broken down into analysis units.

The Cedar Canyon Allotment is located within the Cedar City/Parowan analysis unit. The economy in this analysis unit is substantially more diversified than other rural southwestern Utah counties, and is not significantly dependent on livestock forage provided by the Dixie National Forest (LRMP EIS, Appendix BII-81).

Therefore, though adversely impacting the permittees on the Cedar Canyon Allotment, the negative effects from Alternative 4 to the Cedar City/Parowan analysis unit would be diluted by the small contribution that the livestock industry makes to the more diversified local economy.

ISSUE #5 - EFFECTS OF GRAZING ON UNCONTROLLED LIVESTOCK GRAZING

PROPOSED ACTION

By implementing this action, approximately .5 miles of boundary fence would be constructed in Hi Perry Hollow by the permittees, private land owners and Iron County to control the permitted livestock. The conflicts between grazing on the Cedar Canyon allotment and private land owners and Wood's Ranch recreation complex would be eliminated.

Once the fence is constructed, the fence would be maintained annually by the homeowners and permittees to maintain a secure boundary. Permittees would do the herding necessary to avoid pressure on the allotment boundary fence.

Permitted livestock would be reduced 13%. In the Hi Perry pasture, sheep would use the area for approximately three weeks each year beginning June 26, August 21, and July 15 respectively.

ALTERNATIVE I - NO ACTION

Reconstruction of the Forest/private land boundary fence in Hi Perry Hollow is not planned under this alternative.

Permittees would continue the present system of herding, which is to control the sheep by loose herding. This has not proven to be successful in keeping livestock off private/County land.

When Hi Perry is grazed first in the grazing schedule, the sheep would be expected to pull toward the Crystal Springs pasture after about a week. When this happens the sheep would get on private land, Wood's Ranch Recreation Area and frequently onto State Highway U-14, based on past experience.

Permitted sheep numbers would be unchanged. Sheep would use the Hi Perry pasture for approximately two weeks beginning June 26 one year and August 25 the next.

ALTERNATIVE 2

Under this alternative, the Forest/private land boundary fence would be reconstructed to control the permitted livestock. This would involve reconstruction of approximately .5 miles of boundary fence by the permittees, private land owners, and Iron County. With the reconstruction of the Hi Perry boundary fence, a secure boundary would be established between the Cedar Canyon grazing allotment and private land.

Permitted livestock would be reduced 36%. Sheep would graze the Hi Perry pasture for approximately four weeks two out of three years. One year out of three the area would be rested from livestock grazing, which would further reduce potential conflicts.

ALTERNATIVE 3

Under this alternative, the Forest/private land boundary fence would be reconstructed to control the permitted livestock. This would involve reconstruction of approximately .5 miles of boundary fence by the permittees, private land owners, and Iron County. With the reconstruction of the Hi Perry boundary fence, a secure boundary would be established between the Cedar Canyon grazing allotment and private land.

Sheep numbers would be reduced to a manageable level of 800 head (27% of current obligation). Sheep would use the pasture for approximately three weeks each year beginning first one year and last the next.

ALTERNATIVE 4

With this alternative, the area south of State Highway U-14 would be closed to grazing. The Forest/private land boundary fence described under the other alternatives would not be needed. The Cedar Canyon protection fence north of U-14 would be reconstructed to control the sheep when they were grazing the Crystal Springs pasture.

Permitted livestock would be reduced 36%. The Hi Perry pasture would be closed to grazing, which would provide the most certain means of eliminating the conflict with private/County land.

ISSUE #6 - EFFECTS OF LIVESTOCK GRAZING ON WATERSHED CONDITION

PROPOSED ACTION

The Proposed Action would result in overall continued improvement of the watershed conditions on the allotment as livestock numbers would be reduced by 13%. A deferred-rotation grazing system would be implemented that would defer grazing until after seed ripe in all the pastures one year out of three.

In many upland areas, widespread overgrazing on rangelands decreased watershed condition by destroying plant cover and decreasing infiltration of water into the soil (Craddock and Pearse 1938, Dortignac and Love 1960, Ellison 1954, Elmore and Beschta 1987, Forsling 1931, Leopold 1946, Rich And Reynolds 1963, Woodward and Craddock 1945).

The Crystal Springs pasture is the most sensitive to grazing at the present time, as most of the watershed problems have been identified in this pasture.

In the 1960's, terracing was done on the ridge between Crystal Springs and Cedar Canyon to stabilize a gully system. Although this area is stabilized and current grazing has maintained it, there are areas adjacent to this area that are still in unsatisfactory watershed condition.

The objectives of deferment are to increase seed production, enhance seedling establishment, protect plants susceptible to trampling damage and defoliation in early spring, and to prevent overgrazing during low forage availability in early spring (Heady, 1984).

The Proposed Action is different from the current system of grazing in that the vegetation is deferred until seed ripe one year out of three in all the pastures. This would allow the plants to regain their vigor and establish seeds. On areas that are in unsatisfactory condition, perennial plants would gradually increase. The ridge between Long Hollow and Potato Hollow, and the south facing slope of Cedar Canyon and Moots Hollow would likely improve.

Proposed fencing would protect overused areas such as the Crystal Spring Ridge (Wood Knoll) bedground and allow it to recover. Also fencing would protect closed areas as well as maintain the integrity of the grazing system.

Improvement in overall range condition and vegetative cover would have positive benefits to the watershed condition within the Cedar Canyon Allotment.

CUMULATIVE EFFECTS: The area included in the Watershed Cumulative Effects Analysis is located on the map in Appendix L.

The Coal Creek Watershed has a history of erosion and instability. A large part of the erosion is natural geological occurrences. However, sediment yields from the Cedar Canyon allotment have been substantial in the past. Under the Proposed Action sediment loads into Coal Creek would gradually decrease.

ALTERNATIVE I - NO ACTION

There would be no adjustments in livestock numbers or season under this alternative. The allotment would continue to be managed under a modified deferred-rotation grazing system.

The larger number of sheep would continue to present herding difficulties, resulting in overuse of key areas. Areas currently in unsatisfactory condition (Long Hollow, the ridge between Long Hollow and Potato Hollow, and the south-facing slopes of Cedar Canyon and Moots Hollow) would continue to be heavily impacted by sheep trailing. Soil movement from these areas would continue.

The vegetation would be grazed prior to seed ripe in most years. This would not meet the objectives to increase seed production, enhance seedling establishment, and protect plants susceptible to trampling damage and defoliation in early spring.

The Crystal Springs pasture would continue to maintain watershed stability on most areas of the allotment. However, those areas in unsatisfactory condition would be difficult to improve because of lack of seed ripe treatment.

There are no proposed improvements planned under this alternative. Therefore, lack of control of the sheep would continue to result in watershed instability from overuse range on some areas of the allotment.

CUMULATIVE EFFECTS: The area included in the Watershed Cumulative Effects Analysis is located on the map in Appendix L.

Over long term the allotment as a whole would maintain or slightly degrade over current conditions. Sediment loads into Coal Creek watershed would be similar, or slightly higher, to what they are now.

ALTERNATIVE 2

In many upland areas, widespread overgrazing on rangelands decreased watershed condition by destroying plant cover and decreasing infiltration of water into the soil (Craddock and Pearse 1938, Dortignac and Love 1960, Ellison 1954, Elmore and Beschta 1987, Forsling 1931, Leopold 1946, Rich And Reynolds 1963, Woodward and Craddock 1945).

Under this alternative there would be a major reduction of 36% in animal months. A 3-pasture rest-rotation grazing system would be implemented.

The three pastures, including Crystal Springs, would be rested from grazing every third year. This would allow plants to regain vigor and seedlings to become established.

Studies indicate that rest-rotation grazing systems maintain vegetation cover and trend comparable to total livestock exclusion on breaks-type range in north central Montana (Watts et al., 1987). Also where range conditions have been significantly damaged by improper grazing in the past, it has been commonly prescribed and sometimes been viewed as the only alternative to elimination of livestock grazing (Valentine 1986).

Utilization standards of a maximum of 50% on all vegetation species would be used on the allotment. Trailing of sheep along the length of Long Hollow would be prohibited. These actions would improve vegetation condition and cover and, consequently, watershed stability.

Proposed fencing would protect overused areas such as the Crystal Spring Ridge (Wood Knoll) bedground and allow it to recover. Also fencing would protect closed areas as well as maintain the integrity of the grazing system.

CUMULATIVE EFFECTS: The area included in the Watershed Cumulative Effects Analysis is located on the map in Appendix L.

The Coal Creek Watershed has a history of erosion and instability. A large part of the erosion is natural geological occurrences. However, sediment yields from the Cedar Canyon allotment have been substantial in the past. Under Alternative 2, sediment loads into Coal Creek would gradually decrease.

ALTERNATIVE 3

In many upland areas, widespread overgrazing on rangelands decreased watershed condition by destroying plant cover and decreasing infiltration of water into the soil (Craddock and Pearse 1938, Dortignac and Love 1960, Ellison 1954, Elmore and Beschta 1987, Forsling 1931, Leopold 1946, Rich and Reynolds 1963, Woodward and Craddock 1945).

There would be a reduction of 17% under this alternative. Sheep numbers would be reduced to a more manageable level of 800 head. A modified deferred-rotation grazing system would be used.

The objectives of deferral are to increase seed production, enhance seedling establishment, protect plants susceptible to trampling damage and defoliation in early spring, and to prevent overgrazing during low forage availability in early spring (Heady, 1984).

The main difference in this grazing system and the current system is that the season of use would be moved back to July 1. As a result, the sheep would enter the Crystal Springs pasture after July 21 when Hi Perry is grazed first and after July 25 when Ashdown Gorge is grazed first. Livestock use on vegetation would be deferred until at least flowering and in some cases seed ripe every other year in each pasture. This would allow the plants to regain their vigor and establish seeds. On areas that are in unsatisfactory condition, ground cover would gradually increase, thereby stabilizing the watershed.

However, these benefits may be off-set by sheep remaining in each pasture for a longer time, which would result in additional impact to key areas if the sheep were not herded properly.

Less sheep would reduce the trailing and trampling damage sustained in all the pastures. Improved herding coupled with less animals would provide greater opportunities to protect unstable areas on the allotment.

50% utilization standards on all vegetation species would be used on the allotment. Trailing of sheep along the length of Long Hollow would be prohibited. These actions would serve to stabilize soil movement from areas currently in unsatisfactory condition.

Proposed fencing would protect overused areas such as the Crystal Spring Ridge (Wood Knoll) bedground and allow it to recover. Also fencing would protect closed areas as well as maintain the integrity of the grazing system.

CUMULATIVE EFFECTS: The area included in the Watershed Cumulative Effects Analysis is located on the map in Appendix L.

The Coal Creek Watershed has a history of erosion and instability. A large part of the erosion is natural geological occurrences. However, sediment yields from the Cedar Canyon allotment have been substantial in the past.

Sediment loads into the Coal Creek would be less as watershed conditions gradually improve on the allotment.

ALTERNATIVE 4

In many upland areas, widespread overgrazing on rangelands decreased watershed condition by destroying plant cover and decreasing infiltration of water into the soil (Craddock and Pearse 1938, Dortignac and Love 1960, Ellison 1954, Elmore and Beschta 1987, Forsling 1931, Leopold 1946, Rich and Reynolds 1963, Woodward and Craddock 1945).

This alternative would require a reduction of 36% in animal months. The Hi Perry pasture would be closed to grazing. A two pasture deferred-rotation grazing system would be implemented involving only the Crystal Springs and Ashdown Gorge pastures.

Watershed conditions would improve on the west-facing, oakbrush slopes where livestock trails are evident in the Hi Perry pasture following elimination of all livestock grazing from this pasture. However, this improvement would have minimal impact within the entire Allotment because this pasture does not have the most significant watershed concerns of the three pastures within the Allotment.

Vegetation treatment would be similar to Alternative 3 in that Crystal Springs pasture would be deferred until approximately July 25 every other year. Improvement in watershed condition would be most difficult in this Pasture under this Alternative.

This alternative is different from the current system of grazing in that the vegetation is deferred until at least flowering and in some cases seed ripe every other year in each pasture. This would allow the plants to regain their vigor and establish seeds. On areas that are in unsatisfactory condition, ground cover would gradually increase.

The objectives of deferment are to increase seed production, enhance seedling establishment, protect plants susceptible to trampling damage and defoliation in early spring, and to prevent overgrazing during low forage availability in early spring (Heady, 1984).

Less sheep would reduce the trailing and trampling damage sustained in the two pastures being grazed. Improved herding coupled with less animals would provide greater opportunities to protect unstable areas on the allotment.

Utilization standards of a maximum of 50% on all vegetation species would be used on the allotment. Trailing of sheep along the length of Long Hollow would be prohibited. These actions would have positive benefits to watershed condition within the Cedar Canyon Allotment.

Proposed fencing would protect overused areas such as the Crystal Spring Ridge (Wood Knoll) bedground and allow it to recover. Also fencing would protect closed areas as well as maintain the integrity of the grazing system.

CUMULATIVE EFFECTS: The area included in the Watershed Cumulative Effects Analysis is located on the map in Appendix L.

The Coal Creek Watershed has a history of erosion and instability. A large part of the erosion is natural geological occurrences. However, sediment yields from the Cedar Canyon allotment have been substantial in the past. Long term effects would be some reduction in sediment loads into Coal Creek. Areas in Hi Perry that are contributing to erosion because of grazing would be reduced.

ISSUE #7 - EFFECTS ON VEGETATION DENSITY, DISTRIBUTION AND VIGOR

The probable effects on riparian vegetation are discussed under Issue #1 - Riparian Areas, and will not be included in this section.

PROPOSED ACTION

The Proposed Action would implement a deferred-rotation grazing system under reduced numbers. This provides for deferment through the seed ripe stage for all three pastures every third year.

Improved production and quality of forage results from rotation grazing practices (Walton, et.al, 1981). Grazing after seed maturity injures plants less and is beneficial for both seed and rhizome reproducing plants (Stoddart, et.al, 1975). These benefits would be realized in all three pastures (Ashdown, Crystal Springs and Hi Perry). Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978). This would be especially true in the Crystal Springs Pasture, which would benefit from a periodic seed-ripe treatment that it has not previously experienced.

Plant communities have the potential to change when grazed by animals. Those plants most preferred by the grazing animals are the first to show signs of stress from grazing. As a result of this stress, the preferred plants lose vigor, little annual growth is produced and reproduction may be absent. This may result in the death of the plant and eventual removal of this component of the vegetation communities (Stoddart, et.al, 1975).

In the forb and aspen areas, improved distribution practices would result in a moderate level of utilization in these previously lightly used areas. As overuse would be unlikely under improved distribution, current plant composition and vigor would be maintained.

Harper (unpublished) reported that undergrowth production in aspen stands decreased progressively as the proportion of conifers in the stands increased. In addition to being less productive in the strongly seral stands, plant communities consisted of a smaller proportion of herbs and a greater proportion of shrubs.

Improvements on existing fences, and new fence construction, would have the effect of providing more secure pastures to manage rotation grazing and improve livestock distribution (effects on vegetation previously described).

In summary, the implementation of a deferred-rotation system under reduced livestock numbers, and improved herding practices would result in a moderate improvement in the acres currently categorized as unsatisfactory range condition.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is displayed on the Watershed Cumulative Effects Map, (Appendix L).

The Proposed Action would enhance overall vegetation vigor, density and diversity within the Cedar Canyon Allotment area, and would therefore contribute positively towards these attributes within the cumulative effects area.

The moderate improvement from unsatisfactory to satisfactory condition would result in a higher percentage of vegetative cover with stable root systems (as compared to shallow, annual plant root systems). This would improve soil stabilization and reduce sedimentation within the watershed from overland flow.

ALTERNATIVE 1-NO ACTION

This Alternative would continue the existing modified deferred-rotation grazing system under current livestock numbers. This provides for alternate year deferment through the seed ripe stage for the Ashdown Gorge and Hi Perry Pastures, and for annual use following the flowering stage for the Crystal Springs Pasture.

Improved production and quality of forage results from rotation grazing practices (Walton, et.al, 1981). Grazing after seed maturity injures plants less and is beneficial for both seed and rhizome reproducing plants (Stoddart, et.al, 1975). These benefits would be realized most on the Ashdown Gorge and Hi Perry Pastures. Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978). This would be especially true in the Crystal Springs Pasture, which would not benefit from a periodic seed-ripe treatment.

Plant communities have the potential to change when grazed by animals. Those plants most preferred by the grazing animals are the first to show signs of stress from grazing. As a result of this stress, the preferred plants lose vigor, little annual growth is produced and reproduction may be absent. This may result in the death of the plant and eventual removal of this component of the vegetation community (Stoddart, et.al, 1975).

Heavy stocking rates may result in a species complex that is generally less palatable, less productive and more grazing tolerant (Heitschmidt, et.al, 1989). In addition, the larger numbers of sheep would perpetuate the herder's difficulty of properly distributing the sheep in the dense timber and rough terrain found on this Allotment.

In the aspen areas, grazing pressure would continue to be light to moderate. Current plant composition and vigor would be maintained.

Forage production in aspen areas would decrease as the conifer component increases with natural succession. Harper (unpublished) and Kleinman (1973) reported that undergrowth production in aspen stands decreased progressively as the proportion of conifers in the stands increased. In addition to being less productive in the strongly seral stands, plant communities consisted of a smaller proportion of herbs and a greater proportion of shrubs.

In summary, the continuation of a modified deferred-rotation system under existing livestock numbers would maintain those acres in unsatisfactory range condition.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is displayed on the Watershed Cumulative Effects Map, Appendix L.

Alternative 1 would gradually reduce vegetation vigor, density and diversity within the Cedar Canyon Allotment area, and would therefore contribute negatively towards these attributes within the cumulative effects areas.

ALTERNATIVE 2

Alternative 2 would implement a 3-Pasture rest-rotation system under substantially reduced numbers. This provides for total rest for one year out of three in each of the grazing Pastures.

Improved production and quality of forage results from rotation grazing practices (Walton, et.al, 1981). Grazing after seed maturity injures plants less and is beneficial for both seed and rhizome reproducing plants (Stoddart, et.al, 1975). Studies have indicated that a spring-summer rest period two years in succession results in a significant increase in perennial grasses (Martin, 1973). Rest-rotation has also been found to minimize the negative effects of drought on rangeland (Ratliff and Rader, 1962; Woolfolk, 1960).

Some improvement would be expected in all pastures, but especially in the Crystal Springs Pasture (which has received repeated same-season use) from the implementation of the rest-rotation system. This is because plants vary in their palatability, resulting in different plants being grazed different seasons (Stoddart, et.al, 1975). Therefore, grazing pressure on a given plant would be expected to vary depending on the season of use, which would provide some relief to some plant species.

Plant communities have the potential to change when grazed by animals. Those plants most preferred by the grazing animals are the first to show signs of stress from grazing. As a result of this stress, the preferred plants lose vigor, little annual growth is produced and reproduction may be absent. This may result in the death of the plant and eventual removal of this component of the vegetation communities (Stoddart, et.al, 1975).

In the aspen areas, improved distribution practices would result in a moderate level of utilization in these previously lightly used areas. As overuse would be unlikely under improved distribution, current plant composition and vigor would be maintained.

Harper (unpublished) reported that undergrowth production in aspen stands decreased progressively as the proportion of conifers in the stands increased. In addition to being less productive in the strongly seral stands, plant communities consisted of a smaller proportion of herbs and a greater proportion of shrubs.

Improvements on existing fences, and new fence construction, would have the effect of providing more secure pastures to manage rotation grazing and improve livestock distribution (effects on vegetation previously described). This would be particularly evident in the Crystal Springs pasture.

Substantially reduced livestock numbers would improve the herder's effectiveness in distributing livestock away from heavily used areas.

In summary, the implementation of a rest-rotation system under substantially reduced livestock numbers, would result in a greater rate of improvement (compared to the Proposed Action and other alternatives) in the acres currently categorized as unsatisfactory range condition.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is displayed on the Watershed Cumulative Effects Map, Appendix L.

Alternative 2 would enhance overall vegetation vigor, density and diversity within the Cedar Canyon Allotment area, and would therefore contribute positively towards these attributes within the cumulative effects area.

ALTERNATIVE 3

This alternative would implement a deferred-rotation grazing system under considerably reduced numbers but a longer grazing season. This provides for deferment through the seed ripe stage for all three pastures every third year, similar to the proposed action..

Improved production and quality of forage results from rotation grazing practices (Walton, et.al, 1981). Grazing after seed maturity injures plants less and is beneficial for both seed and rhizome reproducing plants (Stoddart, et.al, 1975). These benefits would be realized in the three pastures (Ashdown Gorge, Crystal Springs and Hi Perry). Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978).

Plant communities have the potential to change when grazed by animals. Those plants most preferred by the grazing animals are the first to show signs of stress from grazing. As a result of this stress, the preferred plants lose vigor, little annual growth is produced and reproduction may be absent. This may result in the death of the plant and eventual removal of this component of the vegetation community (Stoddart, et.al, 1975).

Plants vary in their palatability, resulting in different plants being grazed different seasons (Stoddart, et.al, 1975). Therefore, grazing pressure on a given plant would be expected to vary depending on the season of use, which would provide some relief to some plant species. However, under this Alternative, the Crystal Spring Pasture would be exposed to grazing pressure at the same time every year, which would prevent the opportunity for seasonal rest.

In the aspen areas, improved distribution practices would result in improved utilization in these previously lightly used areas. As overuse would be unlikely under improved distribution, current plant composition and vigor would be maintained.

Harper (unpublished) reported that undergrowth production in aspen stands decreased progressively as the proportion of conifers in the stands increased. In addition to being less productive in the strongly seral stands, plant communities consisted of a smaller proportion of herbs and a greater proportion of shrubs.

Improvements on existing fences, and new fence construction, would have the effect of providing more secure pastures to manage rotation grazing and improve livestock distribution (effects on vegetation previously described).

Reduced livestock numbers would improve the herder's effectiveness to distribute livestock away from typically overused areas.

In summary, implementation of this Alternative would have some benefits to vegetation density, distribution and vigor. There would be improvement in the acres currently categorized as unsatisfactory range condition and those acres in satisfactory condition range would maintain or improve.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is displayed on the Watershed Cumulative Effects Map, Appendix L.

Alternative 3 would maintain or improve vegetation vigor, density and diversity within the Cedar Canyon Allotment area, and would therefore contribute positively towards these attributes within the cumulative effects area.

ALTERNATIVE 4

Alternative 4 implement a 2-pasture deferred-rotation grazing system under reduced numbers. This would provide for early and late season use for each pasture.

The elimination in grazing on the Hi Perry Pasture would not alter plant composition substantially, as vegetation density, distribution and vigor are basically satisfactory in this pasture already.

Improved production and quality of forage results from rotation grazing practices (Walton, et.al, 1981). Grazing after seed maturity injures plants less and is beneficial for both seed and rhizome reproducing plants (Stoddart, et.al, 1975). These benefits would be realized on the two pastures under this Alternative. Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978). The Crystal Springs Pasture would show the slower improvement of the two pastures.

There would be some off-set in benefits from deferment and reduced numbers due to the longer time period vegetation would be exposed to livestock in each pasture.

Plant communities have the potential to change when grazed by animals. Those plants most preferred by the grazing animals are the first to show signs of stress from grazing. As a result of this stress, the preferred plants lose vigor, little annual growth is produced and reproduction may be absent. This may result in the death of the plant and eventual removal of this component of the vegetation community (Stoddart, et.al, 1975).

In the aspen areas, improved distribution practices would result in a moderate level of utilization in these previously lightly used areas. As overuse would be unlikely under improved distribution, current plant composition and vigor would be maintained. The Hi Perry Pasture would respond the quickest with complete rest from grazing.

Harper (unpublished) reported that undergrowth production in aspen stands decreased progressively as the proportion of conifers in the stands increased. In addition to being less productive in the strongly seral stands, plant communities consisted of a smaller proportion of herbs and a greater proportion of shrubs.

Improvements on existing fences, and new fence construction, would have the effect of providing more secure pastures to manage rotation grazing and improve livestock distribution (effects on vegetation previously described).

In summary, the implementation of a 2-pasture deferred-rotation system under reduced livestock numbers and improved herding plus improvements would result in improvement in the acres currently categorized as unsatisfactory range condition, though not as rapid an improvement as under other management systems.

CUMULATIVE EFFECTS: The area included in the cumulative effects analysis is displayed on the Watershed Cumulative Effects Map, Appendix L.

Alternative 4 would enhance overall vegetation vigor, density and diversity on all pastures within the Cedar Canyon Allotment area, and would therefore contribute positively towards these attributes within the cumulative effects area.

The moderate improvement from unsatisfactory to satisfactory condition would result in a higher percentage of vegetative cover with stable root systems (as compared to shallow, annual plant root systems). This would improve soil stabilization and reduce sedimentation within the watershed from overland flow.

MONITORING

Three different types of monitoring will be conducted to measure the effects of the selected management practices on resources within the Cedar Canyon Allotment: Implementation, Effectiveness and Validation Monitoring.

Implementation monitoring determines if the project was implemented as described in the EA and in the subsequent revised Allotment Management Plan, e.g. actual livestock use does not exceed 50% utilization in riparian areas.

Effectiveness monitoring determines if the management actions accomplished what was intended, e.g. 50% utilization maintains or improves vegetation condition.

Validation monitoring determines if the management actions are resolving the issues identified for the project.

Monitoring practices have been developed for each of the resources identified as Issues in this EA. Appendix M contains the monitoring forms which fully described the objective of monitoring, the item to monitor, the type of monitoring, the methods and parameters that will be used, the frequency and duration of monitoring, the projected costs associated with the monitoring, the procedures used to report results, and who will be responsible for implementing the monitoring practices.

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The following individuals were members of the Interdisciplinary Team or provided technical support.

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SECTION 7: GLOSSARY

A

Actual use - The use made of forage on any area by livestock and/or game animals without reference to permitted or recommended use. It is usually expressed in terms of animal-unit months or animal-units.

Affected environment - The natural and physical environment that exists at the present time within the area being analyzed.

Allotment - An area designated for the use of a prescribed number and kind of livestock under one plan of management.

Alternative - One of several policies, plans, or projects proposed for decision making.

Animal months - A month's tenure upon range by one animal. Not synonymous with animal-unit month.

B

Benefit - The total value of an output or other effect.

Benefit cost/ratio - Measure of economic efficiency computed by dividing total discounted primary benefits by total discounted economic costs.

Biodiversity - The variety of life and its myriad of processes in an area. Because biodiversity is so complex, it is usually discussed in terms of species diversity, genetic diversity, ecosystem diversity and regional diversity.

Browse - Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big game animals for food.

C

Canopy - The more-or-less continuous cover of branches and growth.

Climax - The highest ecological development of a plant community.

Community - A group of one or more populations of plants and animals in common spatial arrangement.

Competition - The active demand by two or more organisms or kinds of organisms for some environmental resource in short supply.

Conifer - Those cone-bearing trees, mostly evergreen, including the pine, spruce, fir, etc.

Continuous grazing - The grazing of a specific unit by livestock throughout a year or for that part of the year during which grazing is feasible. The term is not necessarily synonymous with yearlong grazing.

Cultural resource - The remains of sites, structures, or objects used by humans in the past---historical or archaeological.

D

Decreaser - Plant species of the original or climax vegetation that will decrease in relative amount with continued overuse.

Deferment - Delay or discontinuance of livestock grazing on an area for an adequate period of time to provide for plant reproduction, establishment of new plants, or restoration of vigor of existing plants.

Deferred grazing - The use of deferment in grazing management of a management unit, but not in a systematic rotation including other units.

Deferred rotation - Any grazing system having a stocking density index >1 and <2 , which provides for a systematic rotation of the deferment among pastures.

Density - (1) The number of individuals per unit area. (2) Refers to the relative closeness of individuals to one another.

Desirable plant species - Species which contribute to the management objectives.

Discount rate - An interest rate that represents the cost or time value of money in determining the present value of future costs and benefits.

Dispersed recreation - A general term referring to recreation use outside the developed recreation site; this includes activities such as scenic driving, hunting, backpacking, and recreation in primitive environments.

District Ranger - The official responsible for the administration of Forest System lands contained within a District boundary of a National Forest. He/she reports to the Forest Supervisor.

Diversity - The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan. See also "Edge," "Horizontal Diversity," and "Vertical Diversity."

E

Ecosystems - An interacting system of organisms considered together with their environment; for example, marsh, watershed, and lake ecosystems.

Effects - Environmental consequences as a result of a proposed action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects and impacts as used in this statement are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic cultural, economic, Social, or Health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even in on balance the agency believes that the effects will be beneficial (40 CFR 1508.8).

Environmental analysis - An analysis of alternative actions and their predictable short-and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions.

Environmental assessment - The concise public document required by the regulations for implementing the procedural requirements of NEPA (40 CFR 1508.9).

F

Forage - All browse and non-woody plants that are available to livestock or wildlife for grazing or harvested for feeding.

Forb - Any herbaceous plant other than true grasses, sedges, or rushes.

Forest Supervisor - The official responsible for administering the National Forest System lands in a Forest Service administrative unit, which may consist of two or more National Forests or all the Forests within a state. He/she reports to the Regional Forester.

G

Grass/forb - An early Forest successional stage where grasses and forbs are the dominant vegetation.

Grazing capacity - The maximum stocking rate possible without inducing damage to vegetation or related resources. It may vary from year to year on the same area due to fluctuating forage production.

Grazing system - A specialization of grazing management which defines systematically recurring periods of grazing and deferment for two or more pastures or management units. Descriptive common names such as "Merrill," "Hormay," "South African switchback," etc., may be used. However, the first usage of a grazing system name in a publication should be followed by a description using standard format. This format shall consist of a numerical description in the following prescribed order: [the number of pastures (or units)-number of herds; length of grazing periods: length of deferment periods for any given unit in the system followed by an abbreviation of the unit of time used].

H

Habitat - The place where a plant or animal naturally or normally lives or grows.

I

Increaser - Plant species of the original vegetation that increase in relative amount, at least for a time, under overuse.

Interdisciplinary approach - The utilization of individuals representing two or more areas of knowledge and skills focusing on the same task, problem, or subject. Team member interaction provides necessary insight to all stages of the process.

Intermountain Region - That part of the National Forest System which encompasses National Forests within the Intermountain Region (Utah, southern and central Idaho, western Wyoming, and Nevada).

Issue - A point, matter, or question of public discussion or interest to be addressed or decided through the planning process.

M

Management area - An area of land with similar management goals and a common management prescription.

Management direction - A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

Management Indicator Species (MIS) - A species selected because its population changes indicate effects of management activities on the plant and animal community. A species whose condition can be used to assess the impacts of management actions on a particular area.

Mitigation - Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

Monitoring and evaluation - The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

N

National Environmental Policy Act (NEPA) - An act to declare a National policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National Forest Management Act (NFMA) - A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide that development.

NEPA - An abbreviation for the National Environmental Policy Act.

No Action Alternative - The most likely condition expected to exist in the future (short term) if current management direction were to continue unchanged. In the long term conditions would be expected to change in relation to natural succession or influenced by fire, insect or disease.

O

Objective - A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Optimum - A level of production that is consistent with other resource requirements as constrained by environmental, social, and economically sound conditions.

P

Palatability - The relish with which a particular species or plant part is consumed by an animal.

Pasture - (1) A grazing area enclosed and separated from other areas by fence. (2) Forage plants used as food by grazing animals.

Perennial plant - A plant that has a life cycle of 3 or more years.

Permittee - One who holds a permit to graze livestock on state, federal or certain privately-owned lands.

Policy - A guiding principle which is based on a specific decision or set of decisions.

Prescribed burning - The use of fire as a management tool under specified conditions for burning a predetermined area.

Proper use - A degree and time of use of current year's growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

Proposed action - In terms of the National Environmental Policy Act, the project, activity, or decision that a federal agency intends to implement or undertake.

Public participation - Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

R

Range - Lands producing native forage for animal consumption and lands that are revegetated naturally or artificially to provide forage cover that is managed like native vegetation, which are amenable to certain range management principles or practices.

Range condition - The current productivity of a range relative to what that range is naturally capable of producing.

Ranger District - Administrative subdivisions of the Forest supervised by a District Ranger who reports to the Forest Supervisor.

Regional Forester - The official responsible for administering a single Region.

Responsible official - The Forest Service employee who has been delegated the authority to carry out a specific planning action.

S

Scoping process - A continuing process throughout the environmental analysis for planning and management activities. It may involve a series of meetings, telephone conversations, or written comments from different interested groups.

Seral species - A tree species representative of the early or intermediate stages in natural succession; typically they are relatively intolerant species.

Shade-intolerant plants - Plants species that do not germinate or grow well in the shade.

Shade-tolerant plants - Plants that grow well in shade.

Shrub/seedling - A Forest successional stage in which shrubs and seedling trees are the dominant vegetation.

Soil compaction - Reduction of soil volume which results in alternation of soil, chemical, and physical properties.

Soil productivity - The capacity of a soil to produce a specific crop such as fiber, forage, etc., under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients and length of growing season.

Standard and guideline - A principle requiring a specific level of attainment, a rule to measure against; a mandatory requirement.

Suitable range - (1) Range accessible to livestock and which can be grazed on a sustained yield basis without damage to the resource. (2) The limits of adaptability of plant or animal species.

U

Understory - The trees and other woody species growing under a more-or-less continuous cover of branches and foliage.

V

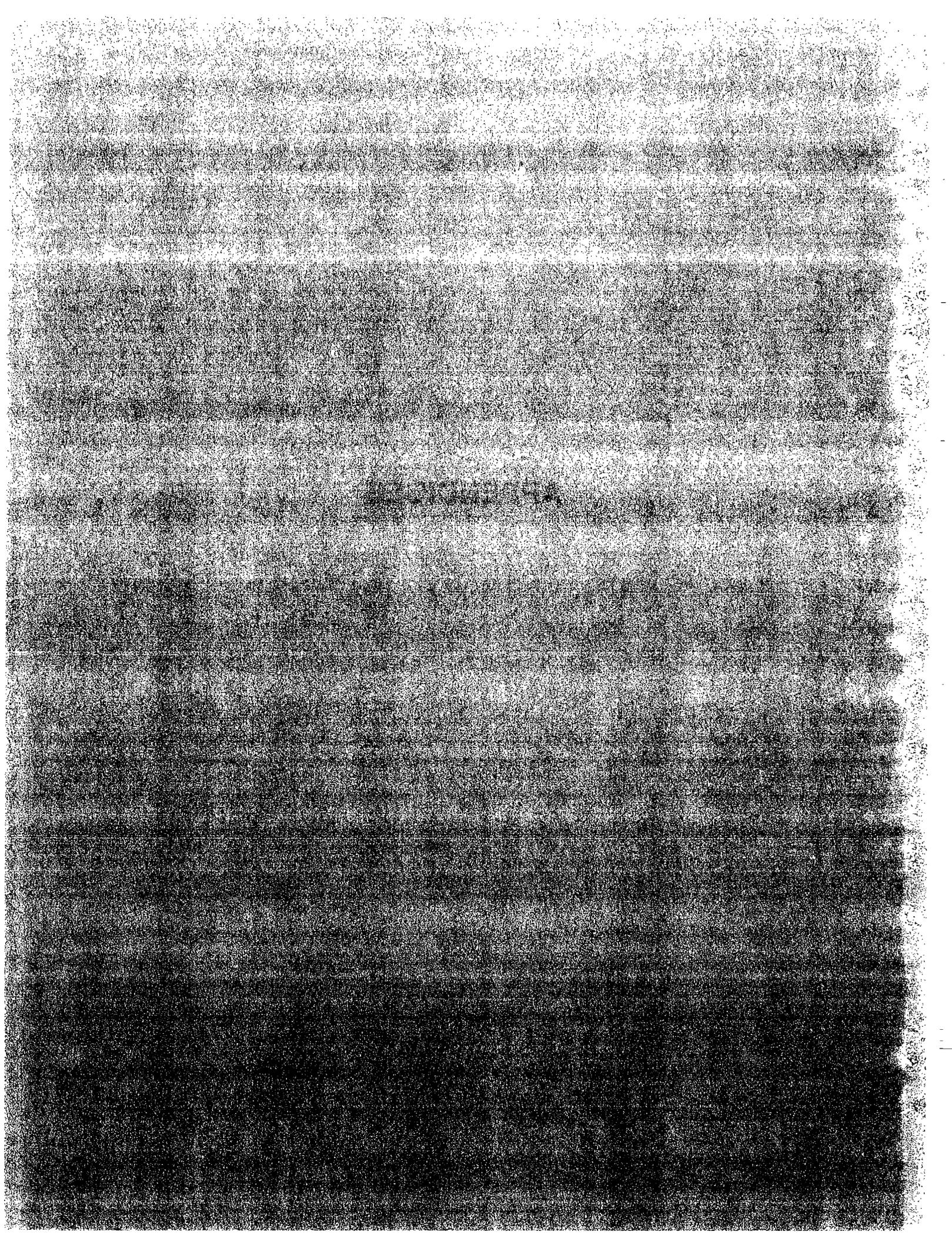
Vegetation type - A plant community with distinguishable characteristics.

W

Watershed - The entire area that contributes water to a drainage system or stream.

Wildlife habitat diversity - The distribution and abundance of different plant and animal communities and species within a specific area.

APPENDICES



APPENDIX C

S/YEAR/PERIOD

	C. Analysis Time Periods (Year)				
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
20. Analysis and Plans *	\$0	\$0	\$0	\$0	\$0
21. Resource Management *	\$800	\$800	\$800	\$0	\$0
22. Maintenance Forage Impr. *	\$0	\$0	\$0	\$0	\$0
23. Maintenance Structural Impr. *	\$0	\$0	\$0	\$0	\$0
24. Support *	\$0	\$0	\$0	\$0	\$0
25. FS Other Operational Costs *	\$0	\$0	\$0	\$0	\$0
26. Total Operational Costs	\$800	\$800	\$800	\$0	\$0
27. (a) Discount Factor	0.04000	6.0021	10.5631	15.2470	
28. (b) Present Value	2.8861	4.1160	4.5611	4.6838	16.2470
28. (c) Total P.V. Operational Costs	\$2,309	\$3,293	\$3,649	\$0	\$0
29. Total P.V. Budget Costs Inv. & Oper.					\$9,250
					\$14,034

PART III ECONOMIC COSTS (Permittee, Cooperator)

	B. Year Period				
	1	2	3	4	5
30. Investment Costs					
31. Forage Improvement *	\$0	\$0	\$0	\$0	\$0
32. Structural Improvements *	\$4,500	\$2,375	\$0	\$0	\$0
33. Total Investment Costs *	\$4,500	\$2,375	\$0	\$0	\$0
34. (a) Discount Factor	1.0000	0.9615	0.9246	0.8890	0.8548
35. (a) Present Value Econ. Inv. Costs	\$4,500	\$2,284	\$0	\$0	\$0
36. (b) Total Present Value					
Operational Costs (Ave./Yr)					
37. Maintenance					
37. (a) Forage Improvement *	\$0	\$0	\$0	\$0	\$0
37. (b) Structural Improvement *	\$500	\$500	\$500	\$0	\$0
37. (c) Total	\$500	\$500	\$500	\$0	\$0
38. Other Permittee Costs *	\$0	\$0	\$0	\$0	\$0
39. Total Economic Costs	\$500	\$500	\$500	\$0	\$0
40. Discount Factor	2.8861	4.1160	4.5611	4.6838	16.2470
41. (a) Present Value	\$1,443	\$2,058	\$2,281	\$0	\$0
41. (b) Total P.V. Econ. Oper. Costs					
42. TOTAL P.V. ECONOMIC COSTS					\$5,782
					\$12,565

C. Analysis Time Period

	C. Analysis Time Period				
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
43. Benefits Present Value					
44. Costs Present Value					
44. (a) Budget Costs	\$14,034				\$39,547
44. (b) Economic Costs	\$12,565				\$26,599
44. (c) Total Costs					
45. BENEFIT/COST RATIO					1.49 : 1
46. PRESENT NET VALUE (B - C)					\$12,948

PART IV B/C SUMMARY

43. Benefits Present Value					
44. Costs Present Value					
44. (a) Budget Costs	\$14,034				\$39,547
44. (b) Economic Costs	\$12,565				\$26,599
44. (c) Total Costs					
45. BENEFIT/COST RATIO					1.49 : 1
46. PRESENT NET VALUE (B - C)					\$12,948
47. ALLOTMENT PROJECT RATING:					
47. Highly Favorable	1.50				0
47. Favorable	1.00				1
47. Marginal	0.50				0

	C. Analysis Time Periods (Year)						
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25		
20. Analysis and Plans *	\$0	\$0	\$0	\$0	\$0		
21. Resource Management *	\$200	\$200	\$200	\$0	\$0		
22. Maintenance Forage Impr. *	\$0	\$0	\$0	\$0	\$0		
23. Maintenance Structural Impr. *	\$0	\$0	\$0	\$0	\$0		
24. Support *	\$0	\$0	\$0	\$0	\$0		
25. FS Other Operational Costs *	\$0	\$0	\$0	\$0	\$0		
26. Total Operational Costs	\$200	\$200	\$200	\$0	\$0		
27. (a) Discount Factor	0.04000	6.0021	10.5631	15.2470			
28. (b) Present Value	2.8861	4.1160	4.5611	4.6838	16.2470		\$2,313
28. (c) Total P.V. Operational Costs	\$577	\$823	\$912	\$0	\$0		\$3,995
29. Total P.V. Budget Costs Inv. & Oper.							

PART III ECONOMIC COSTS (Permittee, Cooperator)

	B. Year Period						
	1	2	3	4	5	6 - 10	11 - 15
30. Investment Costs							
31. Forage Improvement *	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32. Structural Improvements *	\$0	\$1,750	\$0	\$0	\$0	\$0	\$0
33. Total Investment Costs *	\$0	\$1,750	\$0	\$0	\$0	\$0	\$0
34. (a) Discount Factor	0.04000	0.9615	0.9246	0.8890	0.8548	3.8054	3.1278
35. (a) Present Value Econ. Inv. Costs	\$0	\$1,683	\$0	\$0	\$0	\$0	\$0
36. (b) Total Present Value							

Operational Costs (Ave./Yr)

	C. Analysis Time Period						
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25		
37. Maintenance	\$0	\$0	\$0	\$0	\$0		
(a) Forage Improvement *	\$200	\$200	\$200	\$0	\$0		
(b) Structural Improvement *	\$200	\$200	\$200	\$0	\$0		
(c) Total	\$0	\$0	\$0	\$0	\$0		
38. Other Permittee Costs *	\$200	\$200	\$200	\$0	\$0		
39. Total Economic Costs	0.04000	4.1160	4.5611	4.6838	16.2470		
40. Discount Factor	\$577	\$823	\$912	\$0	\$0		
41. (a) Present Value							
(b) Total P.V. Econ. Oper. Costs	\$52,260	\$3,995	\$3,995	\$7,991			
42. TOTAL P.V. ECONOMIC COSTS							\$2,313
							\$3,995

PART IV B/C SUMMARY

43. Benefits Present Value							
44. Costs Present Value							
(a) Budget Costs							
(b) Economic Costs							
(c) Total Costs							
45. BENEFIT/COST RATIO							6.54 : 1
46. PRESENT NET VALUE (B - C)							\$44,269
47. ALLOTMENT PROJECT RATING:							
Highly Favorable	1.50	*					1
Favorable	1.00						0
Marginal	0.60						0

C. Analysis Time Periods (Year)

\$/YEAR/PERIOD

	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
20. Analysis and Plans *	\$0	\$0	\$0	\$0	\$0
21. Resource Management *	\$800	\$800	\$800	\$0	\$0
22. Maintenance Forage Impr. *	\$0	\$0	\$0	\$0	\$0
23. Maintenance Structural Impr. *	\$0	\$0	\$0	\$0	\$0
24. Support *	\$0	\$0	\$0	\$0	\$0
25. FS Other Operational Costs *	\$0	\$0	\$0	\$0	\$0
26. Total Operational Costs	\$800	\$800	\$800	\$0	\$0
27. (a) Discount Factor	0.04000	6.0021	10.5631	15.2470	
28. (b) Present Value	2.8861	4.1160	4.5611	4.6838	16.2470
(c) Total P.V. Operational Costs	\$2,309	\$3,293	\$3,649	\$0	\$9,250
29. Total P.V. Budget Costs Inv.& Oper.					\$14,034

PART III ECONOMIC COSTS (Permittee, Cooperator)

	1	2	3	4	5	6 - 10	11 - 15	16 - 25
A. Investment								
30. Investment Costs								
31. Forage Improvement *	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32. Structural Improvements *	\$4,500	\$2,375	\$0	\$0	\$0	\$0	\$0	\$0
33. Total Investment Costs *	\$4,500	\$2,375	\$0	\$0	\$0	\$0	\$0	NA
34. (a) Discount Factor	0.04000	0.9615	0.9246	0.8890	0.8548	3.8054	3.1278	4.6838
35. (a) Present Value Econ. Inv. Costs	\$4,500	\$2,284	\$0	\$0	\$0	\$0	\$0	NA
36. (b) Total Present Value								\$6,784

C. Analysis Time Period

	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
Operational Costs (Ave./Yr)					
37. Maintenance	\$0	\$0	\$0	\$0	\$0
(a) Forage Improvement *	\$500	\$500	\$500	\$0	\$0
(b) Structural Improvement *	\$500	\$500	\$500	\$0	\$0
(c) Total	\$0	\$0	\$0	\$0	\$0
38. Other Permittee Costs *	\$500	\$500	\$500	\$0	\$0
39. Total Economic Costs	0.04000	4.1160	4.5611	4.6838	16.2470
40. Discount Factor	\$1,443	\$2,058	\$2,281	\$0	\$0
41. (a) Present Value					
(b) Total P.V. Econ. Oper. Costs	\$5,782	\$12,565	\$12,565	\$26,599	\$5,782
42. TOTAL P.V. ECONOMIC COSTS					\$12,565

PART IV B/C SUMMARY

43. Benefits Present Value	\$27,635
44. Costs Present Value	\$14,034
(a) Budget Costs	\$12,565
(b) Economic Costs	\$26,599
(c) Total Costs	1.04 : 1
45. BENEFIT/COST RATIO	\$1,036
46. PRESENT NET VALUE (B - C)	

47. ALLOTMENT PROJECT RATING:
 . Highly Favorable 0
 . Favorable 1
 . Marginal 0

S/YEAR/PERIOD C. Analysis Time Periods (Year)

	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
20. Analysis and Plans *	\$0	\$0	\$0	\$0	\$0
21. Resource Management *	\$800	\$800	\$800	\$0	\$0
22. Maintenance Forage Impr. *	\$0	\$0	\$0	\$0	\$0
23. Maintenance Structural Impr. *	\$0	\$0	\$0	\$0	\$0
24. Support *	\$0	\$0	\$0	\$0	\$0
25. FS Other Operational Costs *	\$0	\$0	\$0	\$0	\$0
26. Total Operational Costs	\$800	\$800	\$800	\$0	\$0
27. (a) Discount Factor	0.04000	6.0021	10.5631	15.2470	
(b) Present Value	2.8861	4.1160	4.5611	4.6838	16.2470
(c) Total P.V. Operational Costs	\$2,309	\$3,293	\$3,649	\$0	\$9,250
29. Total P.V. Budget Costs Inv. & Oper.					\$14,034

PART III ECONOMIC COSTS (Permittee, Cooperator)

	B. Year Period							
	1	2	3	4	5	6 - 10	11 - 15	16 - 25
30. Investment Costs								
31. Forage Improvement *	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32. Structural Improvements *	\$4,500	\$2,375	\$0	\$0	\$0	\$0	\$0	\$0
33. Total Investment Costs *	\$4,500	\$2,375	\$0	\$0	\$0	\$0	\$0	\$0
34. (a) Discount Factor	1.0000	0.9615	0.9246	0.8890	0.8548	3.8054	3.1278	4.6838
35. (a) Present Value Econ. Inv. Costs	\$4,500	\$2,284	\$0	\$0	\$0	\$0	\$0	\$0
36. (b) Total Present Value								NA
37. Maintenance								\$6,784
(a) Forage Improvement *	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
(b) Structural Improvement *	\$500	\$500	\$500	\$500	\$500	\$0	\$0	\$0
(c) Total	\$500	\$500	\$500	\$500	\$500	\$0	\$0	\$0
38. Other Permittee Costs *	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
39. Total Economic Costs	\$500	\$500	\$500	\$500	\$500	\$0	\$0	\$0
40. Discount Factor	2.8861	4.1160	4.5611	4.6838	16.2470			
41. (a) Present Value	\$1,443	\$2,058	\$2,281	\$0	\$0			\$5,782
(b) Total P.V. Econ. Oper. Costs								\$12,565
42. TOTAL P.V. ECONOMIC COSTS								

C. Analysis Time Period

	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25
43. Benefits Present Value					
44. Costs Present Value					
(a) Budget Costs	\$14,034				\$39,547
(b) Economic Costs	\$12,565				\$26,599
(c) Total Costs					
45. BENEFIT/COST RATIO					1.49 : 1
46. PRESENT NET VALUE (B - C)					\$12,948

PART IV B/C SUMMARY

43. Benefits Present Value					
44. Costs Present Value					
(a) Budget Costs	\$14,034				\$39,547
(b) Economic Costs	\$12,565				\$26,599
(c) Total Costs					
45. BENEFIT/COST RATIO					1.49 : 1
46. PRESENT NET VALUE (B - C)					\$12,948
47. ALLOTMENT PROJECT RATING:					
Highly Favorable	1.50				0
Favorable	1.00				1
Marginal	0.60				0

C. Analysis Time Periods (Year)

\$/YEAR/PERIOD	C. Analysis Time Periods (Year)						
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25		
20. Analysis and Plans *	\$0	\$0	\$0	\$0	\$0		
21. Resource Management *	\$800	\$800	\$800	\$0	\$0		
22. Maintenance Forage Impr. *	\$0	\$0	\$0	\$0	\$0		
23. Maintenance Structural Impr. *	\$0	\$0	\$0	\$0	\$0		
24. Support *	\$0	\$0	\$0	\$0	\$0		
25. FS Other Operational Costs *	\$0	\$0	\$0	\$0	\$0		\$9,250
26. Total Operational Costs	\$800	\$800	\$800	\$0	\$0		\$14,034
27. (a) Discount Factor	0.04000	6.0021	10.5631	15.2470			
28. (b) Present Value	2.8861	4.1160	4.5611	4.6838	16.2470		
29. (c) Total P.V. Operational Costs	\$2,309	\$3,293	\$3,649	\$0	\$0		
29. Total P.V. Budget Costs Inv. & Oper.							

PART III ECONOMIC COSTS (Permittee, Cooperator)

	B. Year Period						
	1	2	3	4	5	6 - 10	11 - 15
30. Investment Costs							
31. Forage Improvement *	\$0	\$0	\$0	\$0	\$0	\$0	\$0
32. Structural Improvements *	\$2,500	\$2,375	\$0	\$0	\$0	\$0	\$0
33. Total Investment Costs *	\$2,500	\$2,375	\$0	\$0	\$0	\$0	\$0
34. (a) Discount Factor	0.04000	0.9615	0.9246	0.8890	0.8548	3.8054	3.1278
35. (a) Present Value Econ. Inv. Costs	\$2,500	\$2,284	\$0	\$0	\$0	\$0	\$0
36. (b) Total Present Value							

Operational Costs (Ave./Yr)

	C. Analysis Time Period						
	1 - 3	4 - 8	9 - 15	16 - 25	1 - 25		
37. Maintenance	\$0	\$0	\$0	\$0	\$0		
(a) Forage Improvement *	\$500	\$500	\$500	\$0	\$0		
(b) Structural Improvement *	\$500	\$500	\$500	\$0	\$0		
(c) Total	\$0	\$0	\$0	\$0	\$0		
38. Other Permittee Costs *	\$0	\$0	\$0	\$0	\$0		
39. Total Economic Costs	\$500	\$500	\$500	\$0	\$0		
40. Discount Factor	0.04000	4.1160	4.5611	4.6838	16.2470		
41. (a) Present Value	\$1,443	\$2,058	\$2,281	\$0	\$0		
(b) Total P.V. Econ. Oper. Costs							
42. TOTAL P.V. ECONOMIC COSTS							\$5,782
							\$10,565

PART IV B/C SUMMARY

43. Benefits Present Value	\$27,635
44. Costs Present Value	
(a) Budget Costs	\$14,034
(b) Economic Costs	\$10,565
(c) Total Costs	\$24,599
45. BENEFIT/COST RATIO	= 1.12 : 1
46. PRESENT NET VALUE (B - C)	\$3,036
47. ALLOTMENT PROJECT RATING:	
Highly Favorable	0
Favorable	1
Marginal	0

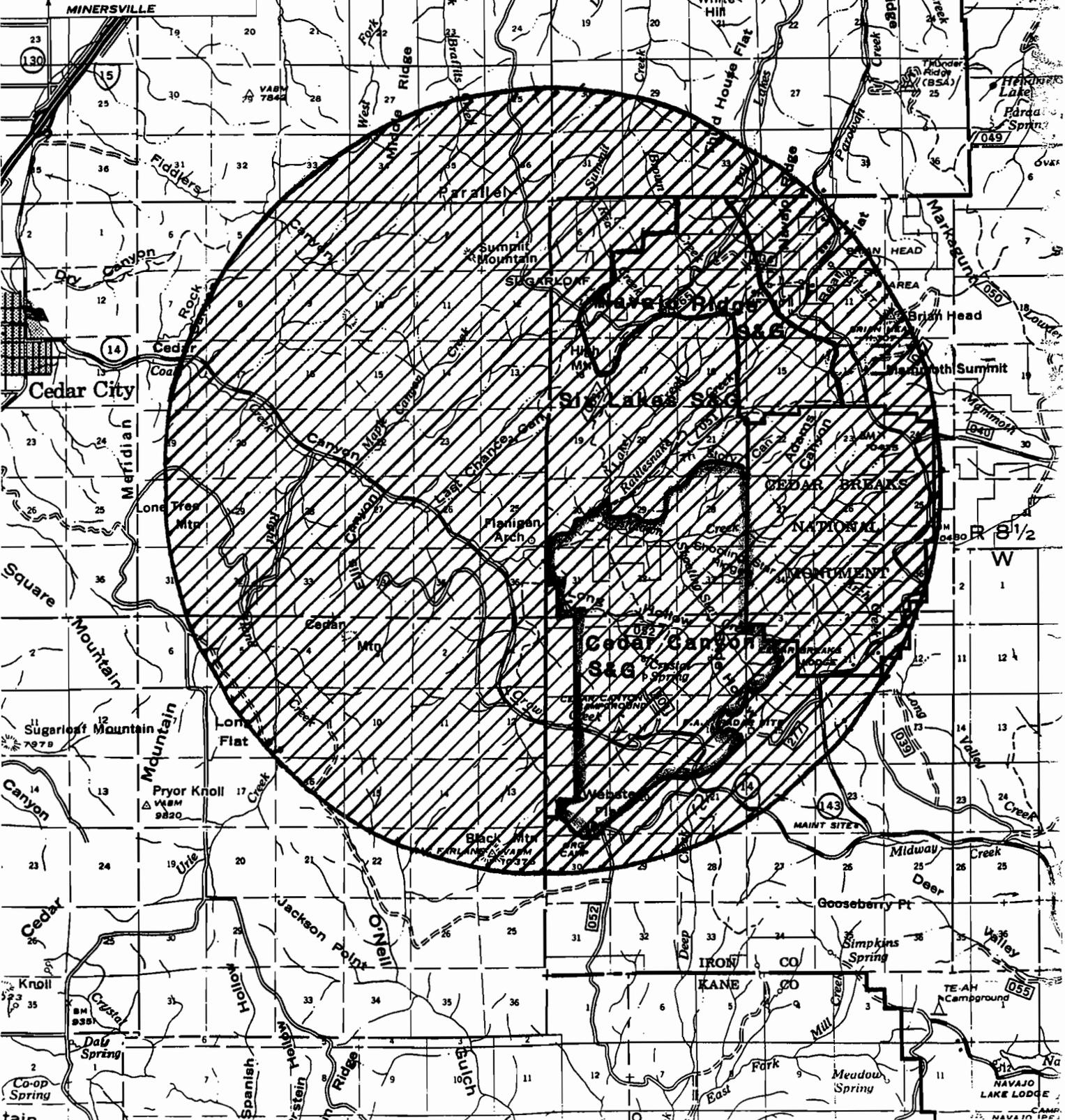
APPENDIX J

DISPERSED RECREATION
SCALE 1/2 INCH - 1 MILE



T.35 S.

MINERSVILLE



APPENDIX K

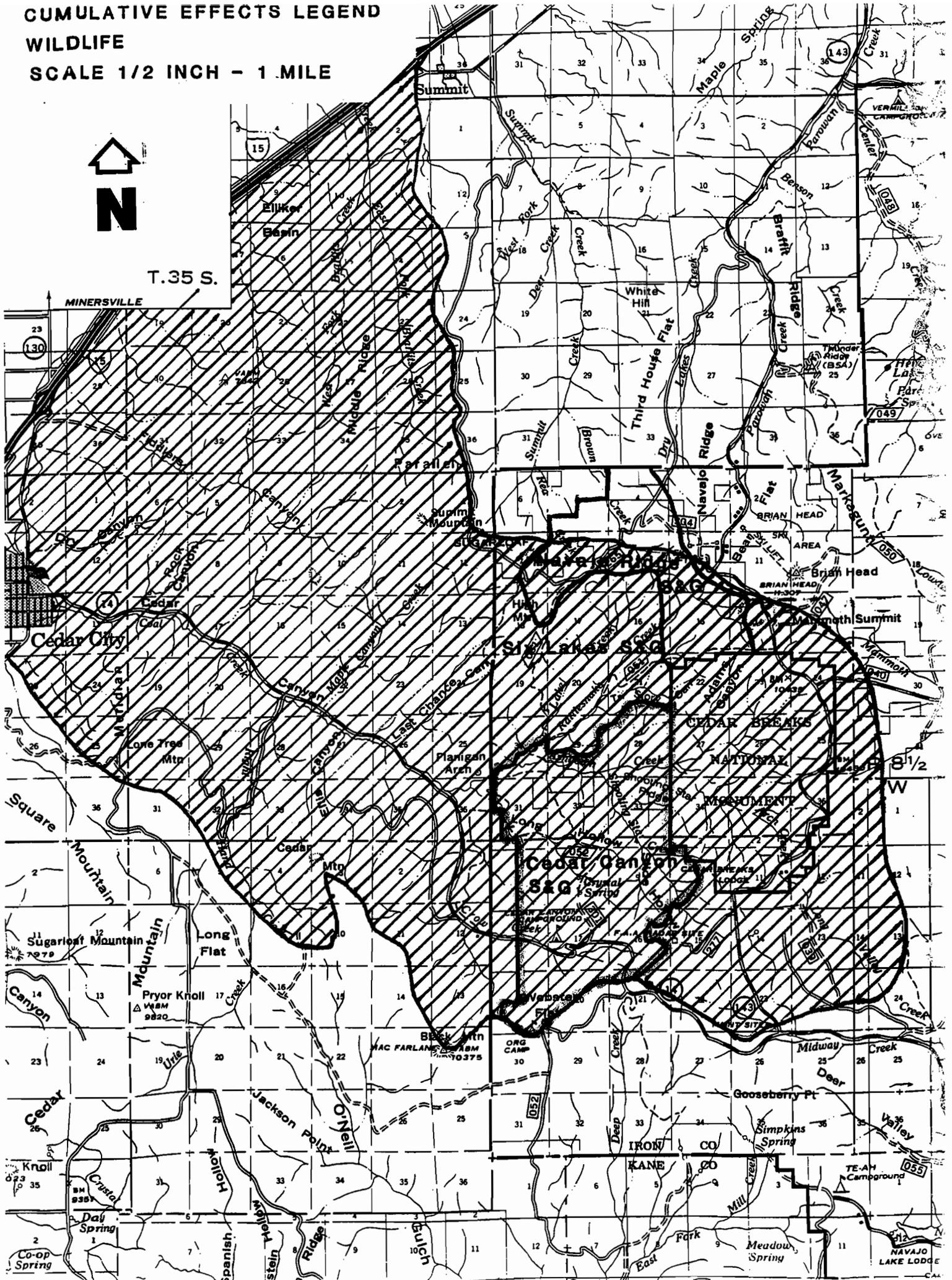
CUMULATIVE EFFECTS LEGEND

WILDLIFE

SCALE 1/2 INCH - 1 MILE



T.35 S.



MINERSVILLE

130

14

Cedar City

Lone Tree Mtn

Square Mountain

14

Cedar

Knoll

Co-op Spring

Pryor Knoll

Urie

Spanish

Wollor

Wollor

Spanish

Wollor

Long Flat

Black Mtn

Jackson Point

O'Neill

Ridge

Blunch

Blunch

Black Mtn

ORG CAMP

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Black Mtn

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APPENDIX I

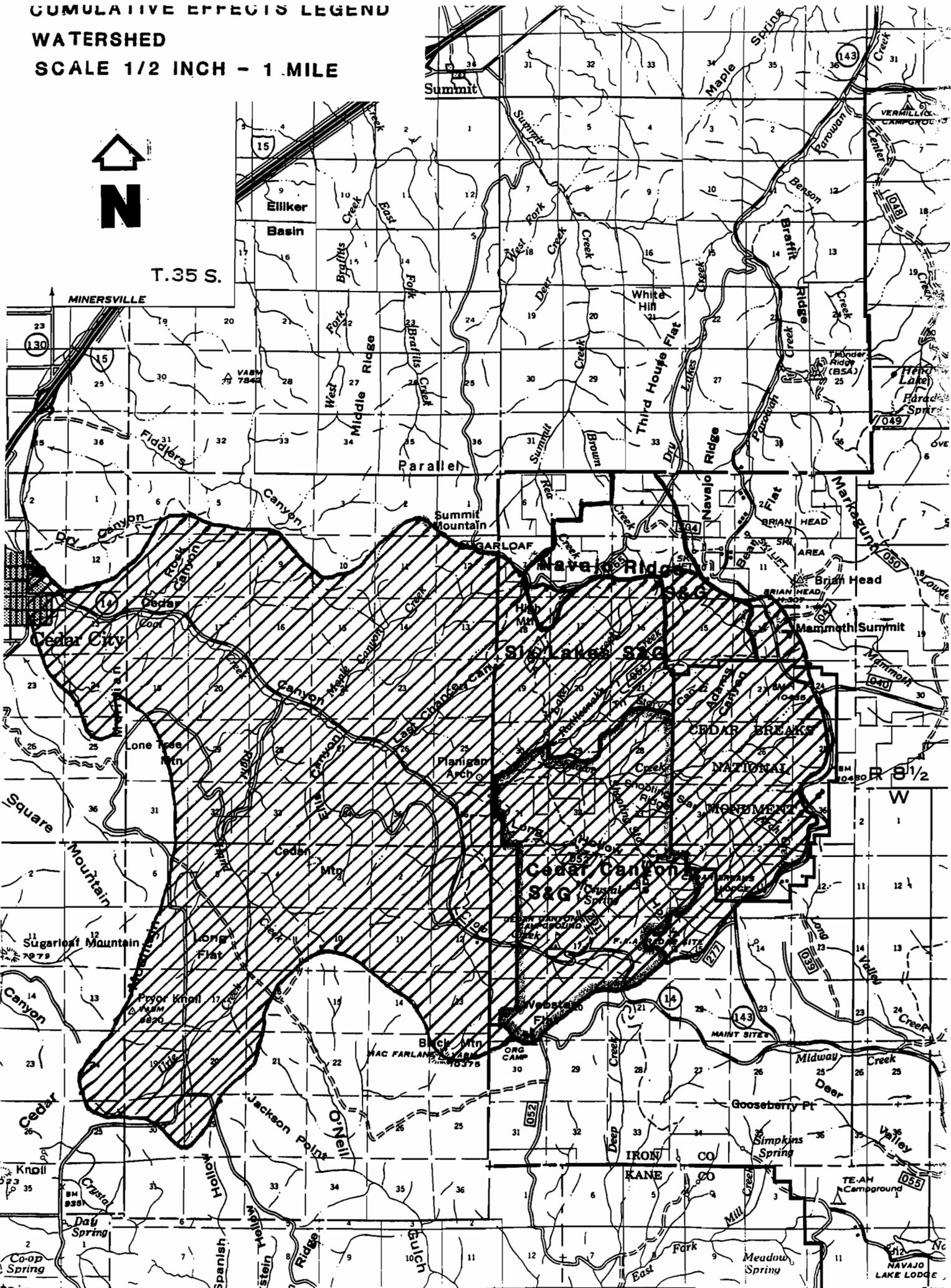
CUMULATIVE EFFECTS LEGEND

WATERSHED

SCALE 1/2 INCH - 1 MILE



T.35 S.



MINERSVILLE

130

15

VADN 7842

Flooders

Parallel

Summit Mountain

Navajo Ridge

Markagunt

Brian Head

Mammoth Summit

Cedar City

Six Lakes

CEDAR BREAKS

NATIONAL

MONUMENT

Cedar Canyon

Square Mountain

Sugarloaf Mountain

Cedar Canyon

Knoll

Crystal

Co-op Spring

Spanish

Wheeler

Lone Flat

Fryer Knoll

Black Mtn

Jackson Pk

O'Neill

Ridges

English

Planigan Arch

Black Mtn

Wagon

Deep Creek

IRON CO

KANE CO

East

MAC FARLANE

ORG CAMP

Wagon

Deep Creek

IRON CO

KANE CO

East

Wagon

NAVAJO LAKE LODGE

APPENDIX M

MONITORING FORM

OBJECTIVE: Monitor riparian area condition on allotment. Areas most effected by live-stock grazing would be lower Long Hollow.

ITEM TO MONITOR: Channel stability and overall condition & trend.

TYPE OF MONITORING: Effectiveness monitoring

METHODS/PARAMETERS: Photo points of representative sections along Long Hol-low Creek.

FREQUENCY/DURATION: 5-year frequency

PROJECTED COSTS: \$50/annually

REPORTING PROCEDURES: Narritive summary of findings including before and after photos. Transect files are located in 2210 Section of Cedar Canyon Allotment Folder, Cedar City Ranger District.

RESPONSIBILITY: District Range Conservationist

MONITORING FORM

OBJECTIVE: Determine livestock impacts on developed and dispersed recreation.

ITEM TO MONITOR: Frequency of contacts between livestock and recreationists and the effects.

TYPE OF MONITORING: Validation monitoring

METHODS/PARAMETERS: Record comments and/or complaints

FREQUENCY/DURATION: Weekly

PROJECTED COSTS: \$300/annually

REPORTING PROCEDURES: Summary of comments and brief narrative report. File is located in 2210 Section of Allotment Folder, Cedar City Ranger District.

RESPONSIBILITY: Wilderness Ranger and District Range Conservationist

MONITORING FORM

OBJECTIVE: Map use patterns and utilization percentages of wildlife indicator species. Indicator species are deer, elk, turkey, common flicker and Goshawk.

ITEM TO MONITOR: Use patterns of use by vegetation type on key areas as determined by Forest and Utah Division of Wildlife Resource personnel.

TYPE OF MONITORING: Validation monitoring

METHODS/PARAMETERS: Pellet group transects on key areas; utilization cages to monitor utilization; and construction of livestock/wildlife enclosure.

FREQUENCY/DURATION: 2-year interval

PROJECTED COSTS: \$200/annually

REPORTING PROCEDURES: Transect summary and narrative report filed in 2210 Section of Allotment Folder, Cedar City Ranger District.

RESPONSIBILITY: District Range Conservationist or Forest Wildlife Biologist, and DWR personnel.

MONITORING FORM

OBJECTIVE: Determine degree of uncontrolled livestock use.

ITEM TO MONITOR: Miles of secure boundary

TYPE OF MONITORING: Implementation monitoring

METHODS/PARAMETERS: Inspect improvements and monitor permittee compliance.

FREQUENCY/DURATION: Annually

PROJECTED COSTS: \$50/annually

REPORTING PROCEDURES: Condition checklist of improvements

RESPONSIBILITY: Range Conservationist, private land owners, and Iron County representative.

MONITORING FORM

OBJECTIVE: Determine watershed condition (soil productivity and stability) on key areas of the allotment.

ITEM TO MONITOR: Vegetation and litter cover (effective ground cover) and soil stability.

TYPE OF MONITORING: Effectiveness monitoring

METHODS/PARAMETERS: Photo plot transect located to show change (including bare ground and soil displacement) on oakbrush/grass type either on south facing slope of Cedar Canyon or ridge between Long Hollow and Ashdown Gorge.

FREQUENCY/DURATION: 5-year interval

PROJECTED COSTS: \$100/annually

REPORTING PROCEDURES: Before and after photo comparison and brief narrative of results. File is located in 2210 Section of Allotment Folder, Cedar City Ranger District.

RESPONSIBILITY: District Range Conservationist

MONITORING FORM

OBJECTIVE: Measure condition and trend of vegetation on key areas of the allotment.

ITEM TO MONITOR: Monitor vegetation diversity including density, vigor, and distribution of plants.

TYPE OF MONITORING: Effectiveness monitoring

METHODS/PARAMETERS: Nested frequency transect or equivalent established on key area in Crystal Spring Pasture.

FREQUENCY/DURATION: 5-year interval

PROJECTED COSTS: \$100/annually

REPORTING PROCEDURES: Summary of transect data, brief evaluation of trend and photographic record. File is located in 2210 Section of Allotment Folder, Cedar City Ranger District.

RESPONSIBILITY: District Range Conservationist

APPENDIX N



Reply to: 1950

Date: October 17, 1991

Subject: Cultural Resources - Revised Allotment Management

To: District Ranger

This memo is in regard to the impacts on cultural resources from the Proposed Action and alternatives to the Proposed Action which are described in the Environmental Assessment for Revised Cedar Canyon Allotment Management.

Proposed changes to the grazing system and livestock distribution methods will have no impact on cultural resources, and do not require cultural resource inventories.

However, fences, reservoirs, and any other ground-disturbing structural or non-structural improvements which are necessary to implement the selected alternative will require on-the-ground cultural resource clearance prior to their construction/execution.

Due to the variability of proposed improvements in the alternatives, I will conduct these inspections following selection of the alternative which will be implemented. You will be advised immediately if any historic properties are discovered in these inspections.

Marian Jacklin

MARIAN JACKLIN
Forest Archaeologist

