

**ENVIRONMENTAL ASSESSMENT**  
**REVISED PANGUITCH LAKE CATTLE ALLOTMENT MANAGEMENT**  
**DIXIE NATIONAL FOREST**  
**GARFIELD COUNTY**

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**ABSTRACT**

The Cedar City Ranger District of the Dixie National Forest is proposing to change the management of the Panguitch Lake Cattle Allotment described in the Panguitch Lake Allotment Management Plan (AMP) dated 2/25/80. The AMP is not consistent with the Dixie National Forest Land and Resource Management Plan (LRMP). Forage utilization exceeds the Standards and Guidelines in the LRMP and key areas of the allotment are in unsatisfactory condition as undesirable shrub species invade.

The Forest Service Mission is to provide a sustained flow of renewable resource while promoting a healthy and productive environment for the Nation's forests and 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 202 cattle to 164 cattle for a 6/16-10/15 grazing season. A modified 4-pasture deferred-rotation grazing system would be continued. Structural improvements required as part of project implementation are included in the Proposed Action.

This Environmental Assessment documents the analysis of the Proposed Action. In addition, two 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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## **SECTION 1: PURPOSE AND NEED FOR ACTION**

### **A. 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.

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 Panguitch Lake Allotment Management Plan. Actions selected by the deciding officer as a result of the analysis documented in this EA will be included in an AMP that will guide future management of the Panguitch Lake allotment.

### **B. PROJECT AREA**

The Panguitch Lake Cattle Allotment includes approximately 10,848 acres of Dixie National Forest lands. These lands are located in SLBM, T35S.& T36S.; R6W.& R7W. (refer to Area Location Map at the front of this document).

The allotment also includes 540 acres of private land of which 440 acres are owned by one of the livestock grazing permittees. This land is currently grazed in conjunction with the National Forest lands within the allotment.

### **C. FOREST PLAN DIRECTION**

The Environmental Assessment for Revised Panguitch Lake Cattle 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 Dixie National Forest Land and Resource Management Plan (LRMP).

The National Forest System 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 Panguitch Lake Allotment: Management Areas 1 (General Direction), 1A (Developed Recreation), 2A (Semi Primitive Recreation Opportunities) 6A (Livestock Grazing), 7A (Timber Management), A map displaying the location of these Management Areas in the Panguitch Lake Allotment is in Appendix A.

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

### **D. DECISIONS TO BE MADE**

The decisions which will be made as a result of this analysis will be: The level of permitted livestock grazing, structural improvements (if any) which will be constructed, the grazing system, specific mitigation measures, and monitoring plan which will be implemented.

All decisions will be made by the Cedar City District Ranger, Dixie National Forest, USDA Forest Service; no others will be involved in making decisions related to these actions.

The Forest Service will utilize the selected level of stocking and season of use when issuing livestock grazing permits for the Panguitch Lake Allotment. No other permits or licenses will be issued based on this Environmental Assessment.

The decisions which will be made are specific to the Panguitch Lake Cattle Allotment, and will not establish any precedent for future decisions related to other grazing allotments on the Dixie National Forest.

## **E. PURPOSE AND NEED STATEMENT**

The 5246 acres designated in Management Area 6A and 7A provide most of the grazing capacity on the Panguitch Lake Allotment.

Currently, three ranchers (grazing permittees) hold ten-year livestock grazing permits for a total of 1067 animal unit months (AUMs) of available forage. Cow/calf pairs are the primary class of livestock grazed on the allotment. After consideration of the quantity of forage required for cow/calf pairs, a total of 202 cow/calf pairs are permitted to graze the allotment for a four-month grazing season (June 16 to October 15).

As a point of clarification, the amount of permitted grazing is calculated on the basis of AUMs, or the forage capacity of the allotment. However, grazing fees are collected based on animal months (AMs), or the time the livestock are on the allotment. This is simply the number of cow/calf pairs multiplied by the number of months they are permitted to graze. One cow/calf AM is the equivalent of 1.32 AUMs. Therefore, current permitted grazing on the Panguitch Lake Allotment may be expressed as either **1067 AUMs** or **808 AMs**.

The current permitted number of livestock has been in place for approximately 20 years. This number was based, in part, on the forage enhancement resulting from a successful reseeding program that took place on the allotment in 1952.

Forage and watershed conditions on the allotment have changed over the years. In addition to the normal decline in production and vigor which occurs in reseeded areas over time, forage production has gradually decreased because of the invasion of sagebrush and rabbitbrush in the reseeded area.

The allotment includes an established gully system. While active erosion is still prevalent on the allotment, some of the larger gullies have gradually shown improvement. The degraded condition of the reseeded areas, and the presence of active erosion on some of the same areas, has resulted in the classification of approximately 2000 allotment acres as "unsatisfactory range condition."

Water is a limiting factor to livestock distribution on the allotment, and contributes to the grazing pressure on the reseeded and other primary range areas where water is located (refer to the location of structural improvements in Appendix B). While suitable grazing areas exist in the forested portions of the allotment, they are lightly used due to the lack of drinking water in these areas for livestock. The potential for livestock use in these areas is evidenced when heavy rains fill otherwise dry dugouts and ponds; recorded livestock use in these areas substantially increases under these conditions.

During the past several years, some of which have been in drought conditions, the range has been unable to support the permitted livestock number for the entire grazing season. Annual reductions in number or season of use during drought years have varied from 55-60%, though intermittent years of normal or above-normal precipitation have moderated the long-term effects from drought.

Consideration of past grazing utilization in key areas, precipitation trends and forage production has resulted in revisions in the estimated grazing capacity for the allotment. Based on the levels of grazing utilization prescribed in the LRMP for proper use of the forage resource, the allotment can provide approximately 866 AUMs for grazing; 19% less than the 1067 AUMs currently under permit.

The purpose of the project is to improve forage and watershed conditions by bringing permitted grazing capacity in line with actual grazing capacity, and improving livestock distribution on the allotment.

## **F. PROPOSED ACTION**

The Forest Service proposes to revise existing management on the Panguitch Lake Cattle Allotment by improving livestock distribution, adjusting livestock numbers to reflect actual grazing capacity on the Allotment, and improving water distribution. Specifically, the Proposed Action reduces livestock numbers from 202 to 164 cattle for a 6/16 to 10/15 grazing season (from 808 AMs to 656 AMs). The current 4-pasture modified deferred-rotation grazing system would continue.

A complete description of the Proposed Action is included in this document under Section 2: Alternatives, Including the Proposed Action.



## SECTION 2: ALTERNATIVES, INCLUDING THE PROPOSED ACTION.

### A. INTRODUCTION

The purpose of this section is to describe, in detail, the Proposed Action and alternatives to the Proposed Action. It concludes with a comparison of the Proposed Action and alternatives, which is summarized from the detailed information provided in Section 4: Environmental Effects.

In addition to the description of possible management activities, this section begins with a discussion of the public involvement efforts to determine the significant issues, or sources of conflict, associated with the Proposed Action. These issues are important in that they serve as the basis for the development of alternative management actions which still meet the purpose and need, but attempt to resolve one or more of the issues associated with the Proposed Action.

### B. PUBLIC INVOLVEMENT

The first step in the scoping process for management actions proposed for the Panguitch Lake 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 Panguitch Lake Allotment. Elected officials and other local, State and federal agencies were considered in this process.

These people, organizations and agencies were notified by letter on December 24, 1991 that a revision in management practices on the Panguitch Lake Allotment was being considered, and were presented with the Proposed Action for the allotment.

The members of the Forest Service Interdisciplinary Team (IDT) responsible for evaluating the project analyzed the comments received. On May 15, 1992, a letter was sent out to all respondents identifying the issues to be carried in the analysis process. On June 18, a public orientation meeting and field tour of the Panguitch Lake Allotment was held to review the allotment and ensure that the IDT hadn't missed any issues. As a follow-up, a written summary of the public meeting and tour, plus preliminary alternatives to the Proposed Action were sent out to those interested in the project on December 9. At each stage of the analysis process, the opportunity for further comment was extended to all participants.

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

### C. ISSUE STATEMENTS

Approximately 31 individuals, 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 significant issues to be considered in the analysis was developed. The following is the list of these issues:

1. Reducing permitted livestock numbers and increasing the investment in structural and non-structural improvements would impact permittee viability.
2. Reducing permitted livestock numbers may have a negative economic "multiplier effect" on the town of Panguitch.
3. The cost of structural and non-structural improvements required to support livestock grazing may exceed the cost to the government (previously expressed as "public benefit").

4. The proposed level of stocking reductions may not be sufficient to improve vegetation condition and, in turn, may not improve watershed stability or forage production.
5. Livestock grazing in and around Panguitch Lake would affect water quality as it relates to fisheries habitat.

#### **D. ALTERNATIVES CONSIDERED BUT NOT ANALYZED FURTHER**

One management alternative considered, but eliminated from further analysis, included chemical treatment of sagebrush in an effort to increase forage production and limit the necessary reduction in permitted livestock. This alternative would have addressed Issues #1 and #2 to a degree. However, the chemical treatment would have been cost-shared with the livestock permittees, and would have required a substantial investment of dollars. We discussed this option with the permittees, and they said their share of the cost of this alternative was prohibitive. Therefore, this alternative was not considered a viable management option.

Except for the No Action Alternative (Alternative 1), we could not design an alternative which would require less reduction than the Proposed Action that would meet the Purpose and Need without intensive forage enhancement. However, the Proposed Action and alternatives will be measured against Issues #1 and 2 to determine the economic effect on the livestock permittees and the town of Panguitch. This will be documented in Sections 2 and 4.

We did not create a specific alternative for Issue #3. The Proposed Action has a minimum number of new structural improvements, and those proposed would aid in distribution/control of livestock rather than create additional forage capacity. We also removed the original references to any reseeding treatment from the Proposed Action. Therefore, the Proposed Action is essentially stocking the allotment at the current capacity without additional forage enhancement. The cost/benefit of the Proposed Action and each alternative will be addressed in Sections 2 and 4.

In response to Issue #4, the data we have collected does not support any reduction beyond that described in the Proposed Action. In fact, the stocking reduction described in the original Proposed Action was adjusted to reflect a slightly higher capacity after inclusion of this past season's (1992) information on Allotment forage conditions. While we will not develop a specific alternative with a greater stocking reduction, the discussion of the environmental effects of the Proposed Action and alternatives relative to Issue #4 will be documented in the Section 4.

#### **E. FEATURES COMMON TO ALL ACTION ALTERNATIVES**

The following mitigation measures, in addition to applicable LRMP standards and guidelines for Management Areas 1, 1A, 2A, 6A, and 7A, would apply to the Proposed Action or any alternatives to the Proposed Action:

1. Livestock utilization of forage plants would be 60% in reseeded areas and 50% on the remaining suitable range within the allotment.
2. The permittees and Forest Service would cooperatively designate salt grounds. Salt would be placed at least 1/4 mile from water sources, trails and roads.
3. Permittees would do the herding necessary to avoid overuse near water sources, salt grounds and drainages.
4. All structural improvements on the allotment would be constructed and maintained to Forest Service standards.

In addition, the Proposed Action and two alternatives include issuance of a private land permit to Grant Houston (permittee and private land owner) for the equivalent of 60 animal months 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.

## F. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

### PROPOSED ACTION

#### GRAZING SYSTEM

The Cedar City District proposes to continue the existing 4-pasture modified deferred-rotation grazing system.

**Table 1: Proposed Action Grazing Sequence**

YEAR	ROCK CANYON	EAST PASS	WEST PASS	PANGUITCH LAKE
1	A	B	C	D
2	B	C	A	D
3	C	A	B	D

(Repeat Cycle)

- A - Graze 6/16 until proper use is reached
- B - Graze second until proper use is reached
- C - Graze third until proper use is reached
- D - Graze approximately October 1 to October 15, then cattle would be removed from the allotment

#### PERMITTED USE

Permitted use on National Forest Lands within the allotment would be 164 cattle for a 6/16 to 10/15 grazing season (866 AUMs, 656 AMs). This represents a 19% reduction compared to currently permitted use.

#### LIVESTOCK DISTRIBUTION

Supplemental water hauling would be required as needed to keep the cattle properly distributed. This would be especially important in dry years when ponds have not filled. Permittees would do the riding necessary to keep the cattle from concentrating in Rock Canyon and around other water sources.

#### IMPROVEMENTS

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. The following table displays the structural improvements needed for implementation of this alternative. Appendix B contains a map of the location of these improvements.

**Table 2: Structural Improvements - Proposed Action**

NAME	TYPE	SIZE	LOCATION	COST
Cameron Trough	Spring Dev.	1 structure	Rock Canyon	\$2000
East Pass Trough	Pipeline & Trough	.50 Mi.	East Pass Pasture	\$1500
Dry Lake	Cattleguard	1 structure	Rock Canyon Pasture	\$3000
Panguitch Lake	Cattleguard	1 structure	Panguitch Lake	\$3000
<b>TOTAL</b>				<b>\$9500</b>

## ALTERNATIVE 1

### INTRODUCTION

This is the "No Action" alternative. Its consideration in the analysis is mandated by law. Under this alternative, there would be no change from the current allotment management practices.

### GRAZING SYSTEM

The allotment would continue to be managed under a 4-pasture modified deferred rotation grazing system, as it has been for over 10 years. Three pastures are located in Rock Canyon and East and West Pass Creek. The other pasture is adjacent to Panguitch Lake. The Panguitch Lake pastures would continue to be used the last two weeks of the grazing season to avoid conflicts with recreation use around Panguitch Lake.

**Table 3: Alternative 1 (No Action) Grazing Sequence**

YEAR	ROCK CANYON	EAST PASS	WEST PASS	PANGUITCH LAKE
1	A	B	C	D
2	B	C	A	D
3	C	A	B	D

(Repeat Cycle)

- A - Graze 6/16 until proper use is reached
- B - Graze second until proper use is reached
- C - Graze third until proper use is reached
- D - Graze approximately October 1 to October 15, then cattle would be removed from the allotment

### PERMITTED USE

The permitted numbers and season would remain at 202 cattle for 6/16 to 10/15 grazing season (1067 AUMs, 808 AMs).

### IMPROVEMENTS

Improvements would be the same as those outlined in the Panguitch Lake Allotment Management Plan approved 2/25/80. Most of the development work has been accomplished on the allotment. However, considerable work would be needed to bring improvements up to a satisfactory standard.

## ALTERNATIVE 2

### INTRODUCTION

Alternative 2 was developed in response to Issue #5: The effects of livestock grazing on Panguitch Lake. Primarily, it affects livestock grazing within the Panguitch Lake Pasture of the Panguitch Lake Allotment. Implementation of this Alternative would result in excluding livestock grazing on National Forest lands within the Panguitch Lake Pasture which are immediately adjacent to the Lake: When livestock are in the Panguitch Lake Pasture, they would be permitted to graze only the area **below** the Panguitch Lake Dam.

### GRAZING SYSTEM

This alternative would implement a 4-pasture modified deferred-rotation grazing system in the East Pass, West Pass, Rock Canyon and Panguitch Creek grazing pastures. The Panguitch Creek pasture would include the area below the Panguitch Lake dam. The area draining into Panguitch Lake would be excluded from grazing. The Panguitch Creek pasture would encompass the area south of Frei's meadow, the west slope of Haycock Mountain and east slope of Cooper Peak. Livestock numbers and season of use would be adjusted to allow proper use standards to be met in each of the grazing pastures.

**Table 4: Alternative 2 Grazing Sequence**

YEAR	ROCK CANYON	EAST PASS	WEST PASS	PANGUITCH CREEK
1	A	B	C	D
2	B	C	A	D
3	C	A	B	D

(Repeat Cycle)

- A - Graze 6/16 until proper use is reached
- B - Graze second until proper use is reached
- C - Graze third until proper use is reached
- D - Graze approximately October 1 to October 10, then cattle would be removed from the allotment

**PERMITTED USE**

Permitted numbers and season would be 164 cattle for a 6/16 to 10/10 grazing season (829 AUMs, 628 AMs). This represents a 23% reduction compared to currently permitted use.

**IMPROVEMENTS**

Improvements would be constructed on a cooperative basis between the Forest Service and permittees to increase forage production and improve distribution of the livestock. Those improvements needed for total implementation of the system are listed in Table 5. A map showing their locations is in Appendix C.

**Table 5: Structural Improvements - Alternative 2**

NAME	TYPE	SIZE	LOCATION	COST
Cameron Trough	Spring source & fencing	1 structure	Rock Canyon	\$2000
Haycock Mountain	Reservoir	1 structure	Panguitch Creek	\$750
Dry Lake	Cattleguard	1 structure	Rock Canyon Pasture	\$3000
Panguitch Lake	Cattleguard	1 structure	Panguitch Lake Lava	\$3000
Pass Creek	Fence	.5 Mi. fence	Pass Creek Spring	\$2000
TOTALS				\$10750

**G. COMPARISON OF THE PROPOSED ACTION AND ALTERNATIVES**

Comparison of the Proposed Action and alternatives will be divided into three sections. First, we will display our economic analysis, which addressed how the Proposed Action and alternatives met Issues #1, #2 and #3 (economic impacts to permittees, to the Town of Panguitch, and to the government, respectively).

Secondly, we have prepared a table which describes how the Proposed Action and alternatives 1) address the purpose and need, 2) whether they comply with the Forest Plan and 3) how they address Issues #4 and #5.

Finally, we have included a narrative which summarizes the effects to other resources which were included in this analysis: Recreation; wildlife; threatened, endangered, proposed, and sensitive species; cultural resources; and, finally, other 'mandatory' disclosures.

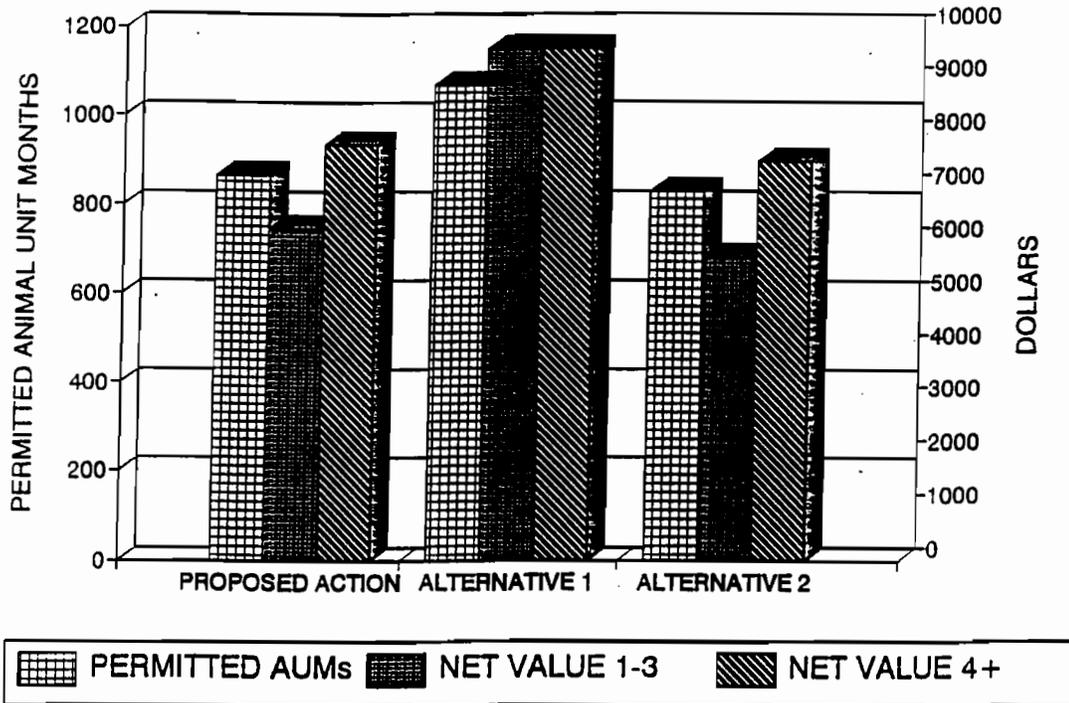
**ECONOMIC COMPARISONS (ISSUES #1-3)**

In order to disclose the direct/indirect effects to the grazing permittees, we are using figures derived by Nielsen (1991) to determine the dollar benefit per AUM.

In order to reflect the cost of structural improvements, we have included the permittee share (50%) of the cost of construction of the improvements. We then added them to the average annual costs for the first three years (full implementation usually is completed within three years). After three years, the values would return to average annual costs only.

**FIGURE 1: Net Values to Permittees**

**NET VALUE TO PERMITTEES**



Benefits to the permittees would be high under Alternative 1, because it is assumed that permitted livestock numbers would remain at the existing higher level. However, this analysis is a snapshot in time: it can be safely assumed that continued grazing at this level would ultimately reduce the vigor and productivity of the forage, and result in an eventual reduction in permitted numbers. Consequently, benefits would likely be reduced over time.

**TOWN OF PANGUITCH:** In analysis of the direct/indirect effects to the town of Panguitch, the 3.5 multiplier factor (Nielsen, 1991) will only be applied to the net value (permitted AUMs x \$8.98/AUM) from livestock grazing, which is dependent on the permitted livestock numbers under the Proposed Action and two alternatives.

**Table 6: Benefit from Livestock Grazing to the Town of Panguitch**

MANAGEMENT STRATEGY	PERMITTED AUMs	NET VALUE	MULTIPLIER	TOTAL VALUE
Proposed Action	866	\$7,776.68	3.5	\$27,218.38
Alternative 1	1067	\$9,581.66	3.5	\$33,535.81
Alternative 2	829	\$7,444.42	3.5	\$26,055.47

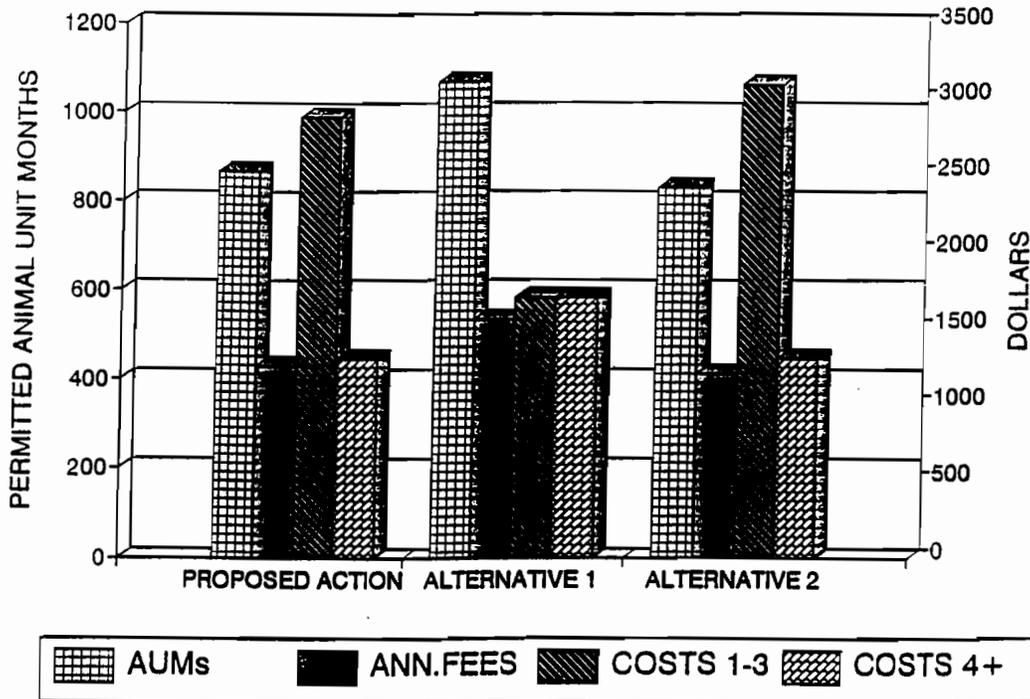
It should be noted that projected reductions in revenue to the community of Panguitch may not occur, since the permittees may be able to replace the AUMs lost on National Forest land with other purchased or leased forage.

**GOVERNMENT:** The direct/indirect effects of the Proposed Action and two alternatives to the cost/benefit to the Government is based on the permitted livestock numbers, and the cost to the Government for its share (50%) in the construction of structural improvements.

In order to reflect the cost of structural improvements, we have included the Government share (50%) of the cost of construction of the improvements. We then divided these over the number of AUMs, and added them to the average annual costs for the first three years (full implementation usually is completed within three years). After three years, the values would return to average annual costs only.

**FIGURE 2: Costs/Benefits to the Government**

## COSTS/BENEFITS TO GOVERNMENT



Alternative 1 (No Action) reflects slightly higher administration costs, as District range personnel would need to more closely monitor livestock grazing utilization under the higher stocking levels.

**COMPARISONS BY PURPOSE AND NEED, FOREST PLAN CONSISTENCY, ISSUES #4-5**

MANAGEMENT	ADDRESSES PURPOSE AND NEED?	CONSISTENT WITH FOREST PLAN?	HOW DOES IT ADDRESS ISSUES 4-5?
<p><b>PROPOSED ACTION</b></p>	<p>Yes-The Proposed Action reduces permitted livestock numbers to a level matching available forage. Improved cattle management practices are incorporated to improve livestock distribution.</p>	<p>Yes-The Proposed Action would gradually move the allotment towards the desired future condition in the Plan. It also incorporates appropriate standards and guidelines for livestock grazing.</p>	<p>This action would gradually improve vegetation and overall watershed conditions by stocking at levels which match available forage; preventing overgrazing through improved livestock distribution. This would improve vigor and productivity of the vegetation, which would increase soil cover and reduce adverse impacts to the watershed. This action would not correct the existing gully system, but would improve it over time. The Proposed Action would not resolve Issue #5.</p>
<p><b>ALTERNATIVE 1 (No Action)</b></p>	<p>The No Action Alternative would not address the purpose and need. Permitted grazing would continue to exceed available forage. Livestock distribution would continue to be a problem without improved management practices. Therefore, forage and watershed conditions would not be improved.</p>	<p>This alternative would not comply with the Forest Plan. Grazing utilization would exceed standards and guidelines. There would be no progression in any resource towards the Plan's desired future condition.</p>	<p>This alternative would not resolve declining vegetation and watershed conditions. It would not resolve the water quality issue, as livestock would still be permitted to graze up to the Panguitch Lake shore.</p>

MANAGEMENT	ADDRESSES PURPOSE AND NEED?	CONSISTENT WITH FOREST PLAN?	HOW DOES IT ADDRESS ISSUES 4-5?
ALTERNATIVE 2	<p>Yes-Alternative 2 reduces permitted livestock numbers to a level matching available forage. Improved cattle management practices are incorporated to improve livestock distribution.</p>	<p>Yes-Alternative 2 would gradually move the allotment towards the desired future condition in the Plan. It also incorporates appropriate standards and guidelines for livestock grazing.</p>	<p>This action would gradually improve vegetation and overall watershed conditions through stocking at levels which match available forage; preventing overgrazing through improved livestock distribution. This would improve vigor and productivity of the vegetation, which would increase soil cover and reduce adverse impacts to the watershed. This action would not correct the existing gully system, but would improve it over time. Alternative 2 is distinguished from the Proposed Action in that it resolves Issue #5 by prohibiting livestock use on the portion of the Panguitch Lake Pasture which is adjacent to the Lake.</p>

## COMPARISONS OF OTHER AFFECTED RESOURCES

*RECREATION:* Presently, there are no known conflicts between livestock grazing and recreation considering the time of year grazing is done at Panguitch Lake. By eliminating grazing at Panguitch Lake (alternative 2) there would be no livestock/recreation conflicts. Although the the Proposed Action would reduce permitted livestock numbers, grazing affects would be similar to current conditions (Alternative 1).

*WILDLIFE:* The Proposed Action and alternatives would not adversely impact any of the management indicator species. However, some treatments would have some positive benefits.

The Proposed Action and Alternative 2 would provide benefits to all classes due to the reduction in livestock numbers and improved livestock management. Water developments would enhance habitat for all forms of wildlife. Alternative 1, although not negatively impacting any class, would not provide any additional benefits to wildlife habitat.

***THREATENED, ENDANGERED, PROPOSED & SENSITIVE SPECIES:*** For T,E,& S the Proposed Action and alternatives would not adversely impact any of the listed species.

*CULTURAL RESOURCES:* The act of livestock grazing, in and of itself, would not impact any known or currently unknown, cultural resource sites (see letter from Dixie National Forest Archaeologist, Appendix Q). In fact, reductions in stocking levels and improved distribution would further remove any potential damage to sites caused by concentrated livestock use and trampling.

None of the proposed structural improvements were located within any known cultural resource sites.

Prior to the construction of any structural improvements, an intensive cultural resource inventory would be conducted on the site by a qualified archaeologist or Para-professional archaeologist. Clearance from the Utah State Historic Preservation Office would need to be obtained before the project could be implemented (see Appendix Q).

*OTHER MANDATORY DISCLOSURES:* Public health and safety within the allotment is not currently at risk, nor is it expected to be as a result of any of the management proposals. The only issue which might be extended to public health is water quality. However, none of the waters described are used as culinary water prior to some type of chemical treatment.

In light of this, public health and safety will not receive detailed analysis in this EA.

## SECTION 3: AFFECTED ENVIRONMENT

### A. INTRODUCTION

This section describes the current status of only those resources within the project area which may be affected by the proposed management activities. The resources described are: Recreation; social-economic; threatened, endangered, proposed and sensitive species; watershed; wildlife; vegetation; and cultural resources.

Those resources which warrant a cumulative effects analysis include a section which describes the cumulative effects area and past, present and future management activities which will be included in the analysis.

The discussions in Section 3 are based on information contained in the Project File, located at the Cedar City Ranger District Office.

### B. RECREATION

Panguitch Lake, a popular fishing lake and tourist attraction, is located on the northwest corner of this allotment. Lake View Resort and boat dock, and South Shore Forest Service boat ramp, are within the allotment. The Resort, boat dock, and boat landing all receive moderate to heavy recreation pressure during summer months.

The Lake View Resort is fenced to exclude livestock from the facility; however, no gates or cattleguards have been installed to keep livestock from entering on entrance roads. In spite of the lack of gates or cattleguards on entrance roads, there is little conflict with livestock and the Resort because grazing in the Panguitch Lake unit occurs after Labor Day weekend, which is the date the Resort closes for business. However, livestock can and will enter the Resort area if gates in the adjacent pasture are left open. This usually occurs several times during the grazing season.

The heaviest fishing occurs during the summer months, and tails off into the fall season. Shore fishing is generally concentrated near the dam when water levels are high, and on the east shore when levels are low. Camping is not allowed on the lake shore.

Livestock have access to the south/southeast lake shore when they are in the Panguitch Lake unit. Though grazing occurs after labor day, when there is little recreation use at the lake, evidence of past livestock use is present throughout the recreation season. Some recreationists find this evidence of use as distasteful as the actual presence of the livestock, and it may impair their recreation experience at the lake.

Several areas on the allotment are used as overflow campgrounds or dispersed camping areas. An overflow campground is located south of the South Shore boat ramp and is used as a camping area during heavy use periods such as Memorial Day, July 4th, July 24th, etc. Campers are directed to use this area until camping sites become available in one of several improved campgrounds near Panguitch Lake. Campers use the head of the Pass Creek drainage as a camping area and for family reunions. This area is occupied usually from spring through late October.

ATV use is increasing in popularity on this allotment. ATV use is restricted immediately around Panguitch Lake, which forces users to ride adjacent to the Lake on National Forest land. The Cooper Peak area within the Panguitch Lake allotment has been a popular place for ATV use. No evidence of livestock harassment by ATV users has been observed on this allotment.

Panguitch Lake is becoming more popular as a summer residence for people from local communities and neighboring states. As a result of the increasing number of residents and visitors, lakeside recreation activities are extending onto this allotment. Activities include hiking, ATV use, sightseeing, wildlife viewing, mountain biking, hunting, wood gathering, picnicking, etc.

Vehicle access through the allotment is somewhat impaired by gates (rather than cattleguards) at popular road crossings. Not only are the gates inconvenient to recreationists, the fact that they are often left ajar creates livestock control problems, and contributes to some degree to overuse in key areas of the allotment.

Key recreation features are displayed on the map contained in Appendix D.

*RECREATION CUMULATIVE EFFECTS ANALYSIS:* The scope of the cumulative effects analysis for recreation includes that area around and adjacent to Panguitch Lake. This would include Bunker Creek, Clear Creek, Rock Canyon, and Pass Creek drainages. White Bridge Campground would be included.

A list of past, present and reasonably foreseeable actions included in the cumulative effects analysis is located in Appendix O).

## **C. SOCIAL-ECONOMIC**

### **INTRODUCTION**

The analysis of social/economic resources will be divided into three areas: Permittees costs/benefits from grazing livestock on the allotment, the benefits to the town of Panguitch from livestock grazing, and revenues/costs to the government.

### **GRAZING PERMITTEES**

Currently, 202 head of cattle (808 AMs/1067 AUMs) are permitted on the Panguitch Lake Allotment. This number is divided unequally among three grazing permittees (89 head, 62 head, and 51 head).

Permittees are charged annually for the privilege of grazing on National Forest lands. This fee is based on a national formula which establishes grazing fees on all national forests and grasslands each year.

In addition to the grazing fees, permittees are responsible for the cost of labor and materials to maintain existing structural improvements, to provide salt, and to do the riding necessary to move and distribute livestock to/from and within the allotment as prescribed in the allotment management plan. These costs vary greatly from year to year.

Determining the costs and benefits to the permittees from grazing livestock on National Forest lands is difficult. While we know what the grazing fees are, we have no accurate way of calculating the additional costs of allotment management. For the purposes of comparison, then, we will rely on figures contained in a publication by Dr. Darwin B. Nielsen, extension economist and ranch management specialist with Utah State University (Nielsen, 1991). These figures are based on national averages and are for comparison only: We are not implying that these are the absolute costs or benefits actually incurred by the Panguitch Lake allotment permittees.

**Table 7: Current Costs/Benefits to Permittees**

AVERAGE COSTS/BENEFITS TO PERMITTEES	PER AUM	ANNUALLY
Average Benefit to the Permittees	\$23.72	\$25,309.24
Average Cost to the Permittees	\$14.74	\$15,727.58
Net Value to the Permittees	\$8.98	\$9581.66

**PERMITTEES CUMULATIVE EFFECTS ANALYSIS:** The economic affect to permittees in this section of the social/economic analysis is related solely to permitted livestock numbers and other allotment management requirements. In this context, no other past, present or reasonably foreseeable actions would have any cumulative effects on the cost/benefit of grazing livestock on the Panguitch Lake allotment. Therefore, there will be no cumulative effects analysis for this portion of the social/economic analysis.

**TOWN OF PANGUITCH**

The town of Panguitch benefits from the "multiplier" effect; that is, dollars generated through livestock grazing on the Panguitch Lake allotment are turned over several times in the community of Panguitch. Utah State University economists estimate that this multiplier effect is 3.5 (Nielsen, 1991). Thus, when applied to the net value of \$8.98/AUM to permittees, *the net value to the town of Panguitch is \$44.90/AUM.*

**PANGUITCH CUMULATIVE EFFECTS ANALYSIS:** The cumulative effects on the town of Panguitch will include potential increases/reductions in grazing on nine other grazing allotments on Dixie National Forest. These nine allotments have permittees who are based in or near the town of Panguitch (Project File). These allotments represent 9,733 permitted AUMs which, after the multiplier factor (Nielsen, 1991) is applied, contribute \$305,908.19 to the local economy.

In addition, Panguitch depends on the timber industry for a large portion of its economic base (LRMP EIS, III-32). Kaibab Industries employs 150 people in its Panguitch sawmill and woods operations, through direct employment and woods contractors. The mill produces dimension lumber and mine props and is currently operating at about two-thirds of its 30 MMBF capacity. Kaibab supplements Dixie National Forest stumpage to utilize the mill's capacity by transferring 10-12 MMBF per year in logs less than 14 inches in diameter from its mill in Fredonia, Arizona to the Panguitch mill.

The analysis of the effects of timber supply towards cumulative effects on the town of Panguitch will include the proposed Tippetts Valley Timber Harvest, Midway Face Viewshed Enhancement Project, and Ice Caves Timber Harvest.

**GOVERNMENT**

This section seeks to disclose the "bottom line" cost and benefit of livestock grazing on the Panguitch Lake Allotment.

Typically, this analysis would use "willingness-to-pay" values from the most recent Resources Planning Act Report (1990). We would also include benefits to recreation, wildlife, and other resources to arrive at a "public" benefit. These non-market values are very difficult to estimate. Based on public input, we have elected to simply compare the current grazing fees collected from the Panguitch Lake allotment to the current cost to the Cedar City Ranger District to administer this allotment.

Grazing fees are paid on a "per animal month (AM)" basis, and vary from year to year as previously described. In order to consistently compare costs and benefits, we will express grazing fees on a "per animal unit month

(AUM)\* basis. Thus, the 1992 grazing fee of \$1.92 per AM will be expressed as \$1.45 per AUM (1 cow/calf AM = 1.32 AUMs; therefore,  $\$1.92/1.32 = \$1.45$ ).

The District Range Staff has estimated that it costs \$1700 annually to administer the Panguitch Lake allotment under current management.

Currently, then, it costs \$1700 to administer the allotment, while \$1547 is the average return in grazing fees.

**GOVERNMENT CUMULATIVE EFFECTS ANALYSIS:** The cost/benefit to the government from grazing livestock on the Panguitch Lake allotment has a cumulative effect only on a national scale. This is outside the scope of this document, and will not be addressed.

#### **D. THREATENED, ENDANGERED, PROPOSED AND SENSITIVE SPECIES**

As documented in correspondence to and from the U.S. Department of Interior, Fish and Wildlife Service (see Appendix P), the following list of Federally listed Threatened and Sensitive Vertebrate Species (\*) and USDA Forest Service Region 4 Sensitive Vertebrate Species (+) have 5824 acres of suitable habitat within the project area (see Appendix G, Vegetation Type Map; Conifer, Aspen and Pinyon-Juniper types):

Mexican Spotted Owl *	<i>Strix occidentalis</i>
Spotted Bat +	<i>Euderma maculatum</i>
Western Big-Eared Bat +	<i>Plecotus townsendii</i>
Northern Goshawk +	<i>Accipiter gentilis</i>
Flammulated Owl +	<i>Otus flammeolus</i>

In the same correspondence previously referenced, Jones Goldenaster (*Heterotheca jonesii*), a USDA Forest Service Region 4 Sensitive Plant Species, was believed to have suitable habitat within the project area. Field exams specifically directed at locating this species resulted in the determination that the sandy soils which support this plant are, in fact, not found on the Panguitch Lake allotment (Project File). Therefore, no suitable habitat exists on the Panguitch Lake allotment for any Federally or Regionally listed threatened, endangered, proposed or sensitive plant species (Biological Evaluation: Project File).

**THREATENED, ENDANGERED, PROPOSED, AND SENSITIVE SPECIES CUMULATIVE EFFECTS ANALYSIS:** The area which will be included in the cumulative effects analysis is identified on the map in Appendix M.

Past, present and reasonably foreseeable activities which may have a cumulative effect on threatened, endangered, proposed or sensitive species are listed in Appendix O.

#### **E. WATERSHED**

##### **GENERAL INFORMATION**

Average annual precipitation in the project area varies from 9 to 25 inches (Project File). Most of the annual precipitation falls from October to April in the form of snow. The precipitation comes from frontal type storms that pass over from west to east. These storms are regional, and can last from hours to days.

Snowmelt is the principal source of late spring and early summer runoff. Most May to September precipitation is produced by thunderstorms that move into the area from the south. The storms rarely last more than a few hours, yet frequently produce local flooding.

The allotment lies within the Panguitch Lake and Rock Canyon watersheds, which drain east into the Sevier River. The main tributaries are Pass Creek, Rock Canyon, Deer Creek, Bunker Creek, and Clear Creek. The water is used primarily for irrigation purposes.

The amount of water in the streamflows fluctuates in response to thunderstorms and snowmelt. The lower portions of the watersheds receive a higher proportion of precipitation in the form of rain than the upper portions, which are of higher elevation. Mean daily flows fluctuate in response to precipitation and snowmelt, but long term average flow varies with drainage area and normal annual precipitation (Price and Others, 1987). The low flows of the streams in the two watersheds are affected by large, local variations in precipitation and geology.

Features limiting management on the allotment are the steep, strongly dissected slopes, high rates of erosion and overland flow, imperfectly drained soils in the valley bottoms, and sediment deposition on the more gentle slopes.

Sensitive watershed areas have been identified on the map in Appendix I.

**ROCK CANYON DRAINAGE:** In the Rock Canyon drainage, parent material is primarily limestone and shale with mixed alluvium in the valleys. Soils in the valleys are deep clay loams, while on the side slopes they are moderately deep, except where erosion has been extremely active and the parent material has been exposed.

Bedrock uplands with mostly shallow soils border gently sloping valleys that have formed from alluvial or volcanic deposits. In places alluvial fans extend into the valleys. Several areas have active gullies. This condition appears to relate to valley slopes, vegetative cover and other runoff and erosion characteristics. The gullies vary in size with the largest headwall measured at 16 feet.

**PANGUITCH LAKE DRAINAGE:** In the Panguitch Lake drainage, Panguitch Lake was a natural lake encompassing 777 acres until it was enlarged by a 22 foot dam to become a reservoir with a maximum surface area of 1248 acres. It is located approximately 18 miles southwest of Panguitch, Utah and 12 miles northeast of Cedar Breaks National Monument. The lake is located in a high tourist use area near three national parks and one national monument. In recent years, the construction of summer homes in the area has increased, many by residents of southern Nevada, southern California, and Arizona.

Springs supply a large percentage of the water in the tributaries to Panguitch Lake. Springs supply virtually all the water to Blue Spring Creek except for snowmelt runoff. They also supply significant amounts to Castle Creek, Bunker Creek, Clear Creek and Skoots Creek and Ipson Creek. Recharge for these springs is associated with the lava flows at the higher elevations to the south and west.

The Lake basin is probably resting on either limestones or extrusives of the Claron Formation or possibly a basal unit of the Brian Head Group, all of which have been demonstrated to produce flowing wells and large springs on the Markagunt Plateau.

## **SOILS**

**SOIL EROSION:** Soil mapping on the Panguitch Lake allotment has identified a few areas with moderately high to high erosion rates. Most of these areas are currently classified as unsuitable grazing areas (Project File).

One notable exception is the Shawa-Osote families association. This particular soil type is the dominant rangeland mapping unit on the allotment. These soils are very susceptible to rill and gully development. Though many of these areas have been treated and reseeded, extensive gully systems exist in most identified areas of this mapping unit (Project File), and continue to contribute sediment into the Rock Canyon drainage.

The presence of head cuts and nick points indicate the gullies are still active. Downcutting, as well as headward expansion and gully widening are evident. Soil erosion rates on the allotment are high as a result of large headcuts in Pass Creek, Rock Canyon and Cameron Wash and sheet erosion on other areas.

Some watershed rehabilitation work has been done to inhibit gully expansion, but much more work is needed to maintain and protect the rangeland resource and site productivity of these soils.

*SOIL COMPACTION:* Soil compaction from livestock grazing is a concern on isolated areas of the allotment and, though no compaction measurements have been made, it is evident that certain areas are compacted and forage productivity is adversely affected. Areas near natural springs and associated meadows, such as John Cameron Spring and the main water sources in Rock Canyon, are examples.

*SOIL MOISTURE AND PRODUCTIVITY:* Soil water is affected by grazing or other land practices. Overuse of the forage resource in areas on the Panguitch Lake allotment has adversely affected soil water. Any reduction in the moisture-absorbing and moisture holding capacity of the soil reduces its ability to absorb and hold the moisture that falls during high intensity storms. As a result, plant communities with lower water requirements have developed on heavily grazed areas of the allotment: Shrub species are replacing grasses and forbs in some areas.

Soils within the allotment continue to lose productivity as effective ground cover is reduced. There is evidence of plant pedestaling, cupping out between soil remnants, wind scouring and rilling.

### **WATER QUALITY**

The shoreline of Panguitch Lake is 45% publicly owned and administered by the U.S.D.A. Forest Service. The entire shoreline is open to the public for access to the lake.

There are many beneficial uses of Panguitch Lake and its watershed. Panguitch Lake provides recreationists some of the best fishing in Southern Utah. From Memorial Day to Labor Day the recreation facilities on both Forest service and private land are used to capacity. It has become a popular lake for ice fishing during the winter months.

There is a great demand for the Panguitch Lake water. Other than recreation purposes, the water is used for irrigation purposes in Panguitch Valley. Panguitch Creek flows into the Sevier River and is used downstream as well. Livestock and wildlife depend on the water for drinking year-around.

In 1975, the National Eutrophication Survey ranked Panguitch Lake 25th in water quality of the 27 lakes surveyed in Utah. Panguitch Lake was judged to be eutrophic, nitrogen limited, and receiving a eutrophic loading of 0.36 gm/m<sup>2</sup>/yr of phosphorus. No point sources of pollution were identified.

The eutrophication study on Panguitch Lake pointed to livestock grazing around the Lake as a contributor but not the main source of nutrient loading. Water quality has not been monitored to determine the impact of the Panguitch Lake cattle.

*WATERSHED CUMULATIVE EFFECTS ANALYSIS:* The scope of the cumulative effects area for watershed includes the drainages into Panguitch Lake and Panguitch Creek and that area that drains into Rock Canyon and Pass Creek (see map, Appendix N).

The effects of the Proposed Action and alternatives are expected to be cumulative with the other uses in this area that includes the many special uses, land development, recreation use, roads and trails and the past timber sales. Refer to Appendix O for a complete list of past, present, and reasonably foreseeable activities that will be included in this analysis.

## **F. WILDLIFE**

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 Panguitch Lake Allotment: Deer, elk, and common flicker. Other wildlife indicators are antelope and sage grouse.

Mule deer are scattered throughout the allotment. The Ponderosa pine type offers both cover and food for the species, although forage production isn't high. Much of the foraging takes place in the sagebrush areas adjacent to the conifer, mahogany and pinyon-juniper types. Cooper Peak and Rock Canyon Ridge are popular mule deer foraging areas.

The deer on this allotment are part of the Parowan Deer Herd Unit on the Cedar City Ranger District. There is no critical winter range within the allotment boundary. Deer populations in this area have fluctuated due to drought, hunting pressure, harsh winters and other factors unrelated to the management of this allotment.

Deer movement is based on geographical barriers, habits of the animal, elevation differences, etc. Deer use the area within the allotment from spring to late fall. They leave the area when snow depth forces them to lower elevations where forage is more accessible. Deer from higher elevations move through the allotment to lower elevations as part of their migration pattern. Occasionally, hunting pressure forces them to seek hiding cover off the allotment. Deer populations on the allotment are not high and there is no apparent direct competition with livestock.

Elk are found on the allotment, but not in large numbers. They have been seen on most areas of the allotment including the reseeded areas, Cooper Peak, and Rock Canyon. The elk population is part of the Panguitch Lake Elk Herd Unit on the Cedar City District. The herd unit is relatively new and elk populations are increasing over the unit as a whole. Elk are found year-around on the allotment but most of the use is during spring, summer and fall. To date, there are no known conflicts between elk and livestock on the allotment.

In December, 1986, antelope were transplanted to Sage Hen Hollow on BLM land. Approximately 30 antelope were transplanted and have since increased to 100+ head. They have ranged to other areas of the district including the Panguitch Lake allotment. Although there aren't large numbers of antelope using the allotment, they have been seen in lower East Pass and Rock Canyon. The allotment is used as summer range only as the antelope move to lower elevation range in the winter months.

There is turkey habitat on the allotment but turkeys have not been sighted. Considering the habitat, it is not likely that the numbers will increase substantially.

The common flicker will not be discussed in detail because it is a cavity nesting bird and grazing management will not effect it's habitat.

Sage grouse occur on certain areas within the allotment. The grouse prefer sage covered ridges and bottomlands where rabbitbrush and sagebrush are dominant. Most sightings occur near the Forest Boundary in Rock Canyon. Water is limited on the allotment and tends to keep populations in check.

*WILDLIFE CUMULATIVE EFFECTS ANALYSIS:* The scope of the cumulative effects for wildlife include areas restricted by geographical and physical features (refer to map in Appendix K). These features influence the movement of management indicator species near the Panguitch Lake cattle Allotment. These geographical features includes lavabeds and benchlands rising along the west and south, the Panguitch Creek drainage on the north and Highway 89 on the east.

Refer to Appendix 0 for a complete list of past, present, and reasonably foreseeable activities that will be included in this analysis.

## **G. VEGETATION**

The 5246 acres designated in Management Area 6A and 7A provide most of the grazing capacity on the Panguitch Lake Allotment.

The current permitted number of livestock has been in place for approximately 20 years. This number was based, in part, on the forage enhancement resulting from a successful reseeding program that took place on the allotment in 1952.

Forage and watershed conditions on the allotment have changed over the years. In addition to the normal decline in production and vigor which occurs in reseeded areas over time, forage production has gradually decreased because of the invasion of sagebrush and rabbitbrush in the reseeded area. The degraded condition of the reseeded areas, and the presence of active erosion on some of the same areas (refer to Section 3: Affected Environment, Watershed), has resulted in the classification of approximately 2000 allotment acres as "unsatisfactory range condition" (see Appendix F, Range Condition Map).

Water is a limiting factor to livestock distribution on the allotment, and contributes to the grazing pressure on the reseeded and other primary range areas where water is located (refer to the location of structural improvements in Appendix B). While suitable grazing areas exist in the forested portions of the allotment, they are lightly used due to the lack of drinking water in these areas for livestock. The potential for livestock use in these areas is evidenced when heavy rains fill otherwise dry dugouts and ponds; recorded livestock use in these areas substantially increases under these conditions (Project File).

Precipitation on the Panguitch Lake Allotment varies considerably, as it does on other areas of the district. However, based on observations over the last 15+ years, precipitation has been relatively low compared to other areas on the district. Twelve of the last 21 years, or approximately 60% of the time, total moisture was below average (Project File).

Sharp (1970) concluded that precipitation--amounts and distribution--is probably the most dominant factor in the variability of forage production in semi-arid and arid environments. This is evidenced on the Panguitch Lake allotment, as forage production correlates directly with precipitation amounts. In particular, April-May-June moisture has a lot to do with forage production on the allotment. For instance, forage production varied from less than 100 lbs./acre (air dry weight) in 1991 to nearly 600 lbs/acre in 1981, while precipitation varied from 1.69 inches in April-May-June in 1991 to 3.03 inches in 1981. In 1990 and 1991, when the drought was most severe, livestock numbers were reduced by 25% and 40% respectively to graze the allotted time and protect the grazing resource.

Consideration of past grazing utilization in key areas, precipitation trends and forage production has resulted in revisions in the estimated grazing capacity for the allotment. Based on the levels of grazing utilization prescribed in the LRMP for proper use of the forage resource, the allotment can provide approximately 866 AUMs for grazing; 19% less than the 1067 AUMs currently under permit.

Six vegetation types comprise the majority of acres (7,367) within the Panguitch Lake allotment (total of 10,848 acres). They are aspen, browse, sagebrush/grass, reseeded/grass, conifer, pinyon-juniper (see Vegetation Type Map, Appendix E). Suitable grazing areas exist within all vegetation types (see Suitability Map, Appendix G). Range condition varies by vegetation type and utilization patterns. Refer to Appendix F for mapped range conditions, and Appendix H for mapped utilization patterns.

Riparian vegetation is located primarily on 540 acres of private land grazed in common with the allotment. The permittee whom owns most of the private land waives grazing management of the private land to the government in exchange for 15 head of cattle which he grazes in addition to his permitted number.

#### ASPEN TYPE

This vegetation type accounts for 252 acres of the total 10,848 acres within the Allotment.

The principle species in the aspen type are: squirreltail (*Sitanion hystrix*), sheep fescue (*Festuca ovina*), mountain muhly (*Mulenbergia montana*), Indian paintbrush, (*Castilleja spp.*), (*Erigeron flagellaris*), Oregon grape (*Berberis repens*), and sagebrush (*Artemesia tridentata*).

Vegetation vigor is good in these areas due to the low level of grazing pressure they receive (see Utilization Map, Appendix H).

#### BROWSE TYPE

This vegetation type accounts for 301 acres of the total 10,848 acres within the Allotment.

The principle species in the browse type are: curleaf mahogany (*Cercocarpus ledifolius*), sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), aster (*Erigeron flagellaris*), needlegrass (*Stipa lettermani*), blue grama (*Bouteloua gracilis*) and Indian ricegrass (*Oryopsis hymenoides*).

Vegetation vigor is good in these areas due to the low level of grazing pressure they receive (see Utilization Map, Appendix H).

#### SAGEBRUSH/GRASS TYPE

This vegetation type accounts for 1205 acres of the total 10,848 acres within the Allotment.

The principle species in the sagebrush/grass type are: sagebrush (*Artemisia nova*), bitterbrush (*Purshia tridentata*), loco weed (*Astragalus spp.*), aster (*Erigeron spp.*), needle & thread (*Stipa comata*), Blue grama (*Bouteloua gracilis*), skeleton weed (*Lygodesmia spp.*), and Indian ricegrass (*Oryopsis hymenoides*).

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 H). These areas are moderately used by livestock.

#### RESEEDED/GRASS

This vegetation type accounts for 1929 acres of the 10,848 acres within the Allotment.

The principle species in the reseeded areas are: Mountain big sage (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus nauseosus*) & (*Chrysothamnus vicidifloris*), smooth bromegrass (*Bromus inermis*), and crested wheatgrass (*Agropyron cristatum*).

The reseeded is over 35 years old and competition from invading brush species has reduced the forage production on the area.

The principle species in the native grass areas are: sedge (*Carex spp.*), fleabane (*Erigeron flagellaris*), and needlegrass (*Stipa columbiana*).

Vegetation vigor is poor to fair in the reseeded and native grass areas, and is related to the high level of grazing pressure received. Areas receiving repeated use in excess of 60% are generally in low vigor (see Utilization Map, Appendix H).

#### CONIFER TYPE

This vegetation type accounts for 3942 acres of the total 10,848 acres within the Allotment.

The principle species in this type are: Ponderosa pine (*Pinus ponderosa*), snowberry (*Symphoricarpos spp.*), bitterbrush (*Purshia tridentata*), western wheatgrass (*Agropyron smithii*), sedge, (*Carex spp*) (see Utilization Map, Appendix H).

#### PINYON-JUNIPER TYPE

This vegetation type accounts for 1596 acres of the total 10,848 acres within the Allotment.

The principle species in the in the Pinyon-Juniper type are: black sage (*Artemesia nova*), junegrass (*Koeleria cristata*), muttongrass (*Poa fendleriana*), and Indian paintbrush (*Castilleja spp.*).

This type receives very little use by livestock because of low forage production.

#### NONRANGE TYPES

This portion of the allotment makes up a total of 1623 acres of the total.

Barren areas such as lava and heavy conifer areas producing less than 50 lbs. are considered nonrange.

*VEGETATION CUMULATIVE EFFECTS ANALYSIS:* The area includes the land situated between Mammoth Creek and Panguitch Creek on the south and north and Sevier River and Blue Spring Valley on the east and west (see map in Appendix L). The land includes a variety of vegetation types as described previously. However, the main vegetation types are ponderosa pine, mahogany, bitterbrush, black sage and big sage. The lower portion of the area consists of pinyon-juniper on the ridges and big sage in the swales and valley bottoms.

Refer to Appendix 0 for a complete list of past, present, and reasonably foreseeable activities that will be included in this analysis.

### **H. CULTURAL RESOURCES**

Cultural resource surveys have been conducted on the Panguitch Lake Allotment between 1975-1988. These surveys were conducted to clear specific range, timber and special use projects for implementation. Surveyed areas included those areas impacted by specific project activities: Many acres within the allotment have never been surveyed for the presence of cultural resources.

During these project-specific surveys, several cultural resource sites were located and recorded. None of these sites were considered eligible for inclusion on the National Register of Historic Places.

### **I. OTHER MANDATORY DISCLOSURES**

#### PUBLIC HEALTH AND SAFETY

Public health and safety within the allotment is not currently at risk, nor is it expected to be as a result of any of the management proposals. The only issue which might be extended to public health is water quality. However, none of the waters described are used as culinary water prior to some type of chemical treatment.

In light of this, public health and safety will not receive detailed analysis in this EA.

#### UNIQUE LANDS/GEOGRAPHIC CHARACTERISTICS

There are no unique lands/geographic characteristics such as parklands, prime farmlands, wild and scenic rivers, or ecological critical areas within the project area.

## SECTION 4: ENVIRONMENTAL EFFECTS

### A. INTRODUCTION

The environmental effects provide the scientific and analytical basis for the comparison of alternatives described in Section 2. They include direct, indirect, and cumulative effects from the Proposed Action and alternatives on the resources described.

The discussions in Section 4 are based on information contained in the Project File, located at the Cedar City Ranger District Office.

### B. EFFECTS OF GRAZING ON RECREATION

#### PROPOSED ACTION

##### DIRECT AND INDIRECT EFFECTS

Under the Proposed Action, livestock would still have access to the south and southeast shores of Panguitch lake, though the period of use would still be after Labor Day, when the Lake View Resort is closed for the season and recreation use is substantially reduced. Though herding would be done to minimize livestock use along the lakeshore, there would continue to be evidence of past livestock use along this area. This may be offensive to some recreationists, and impair their recreation experience.

As a result of the installation of the Panguitch Lake cattleguard, incidences of livestock entering the Lake View Resort area prior to Labor Day would be greatly reduced, if not in fact completely eliminated.

Under the Proposed Action, the reduction in livestock numbers, coupled with actions to improve livestock distribution, would prevent grazing overuse on areas of the allotment which are visible to recreationists. This would enhance the visual qualities of these areas (Saunderson, et.al., 1987). In addition, the lower livestock numbers would reduce the potential number of contacts between ATV and/or dispersed recreationists and livestock.

Ponds and other bodies of water are popular attractants for recreationists. Improved management practices under the Proposed Action would better distribute livestock, keeping them from congregating at water bodies.

Installation of cattleguards would eliminate the need to open and close gates, thereby improving livestock control (compromised when gates are left open), and providing easier access across the allotment than currently exists for recreationists.

##### CUMULATIVE EFFECTS

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

Private land recreation operations, recreation special uses, and increased trail systems on private as well as Federal land, have all increased recreation opportunities and use within the cumulative effects area. As recreation use increases, as predicted within the cumulative effects area based on trends observed by Forest Service personnel, the recreation experience may be reduced by the number and intensity of use.

In addition, ground-disturbing management activities, such as timber harvest, have, and would continue to, occur on private and Federal lands within the cumulative effects area. These activities usually result in short-term displacement of recreationists until the management activities are completed, and the area takes on a more natural appearance. However, following such activities, improved road and trail systems are often created, and may improve dispersed and/or motorized recreation use over time.

The cumulative effect from the Proposed Action in combination with other past, present and future activities within the cumulative effects area would be negligible. Though the recreation experience within the allotment would improve, as described under Direct/Indirect effects, it is unlikely that a substantial increase in recreationists would occur, or that it would substantially reduce the recreation burden to other sites within the cumulative effects area.

The greatest cumulative effect on the recreation resource from selection of the Proposed Action would be to mitigate a potentially declining recreation experience as the concentration of recreationists increases along the lakeshore and in other areas within the cumulative effects area.

## **ALTERNATIVE 1 - NO ACTION**

### **DIRECT AND INDIRECT EFFECTS**

There would be no change in the current stocking levels nor the present management of the Panguitch Lake Allotment. Cattle would continue to use the Panguitch Lake area after October 1 each year.

Under No Action, livestock would still have access to the south and southeast shores of Panguitch lake, though the period of use would still be after Labor Day, when the Lake View Resort is closed for the season and recreation use is substantially reduced. Though herding would be done to minimize livestock use along the lakeshore, there would continue to be evidence of past livestock use along this area. This may be offensive to some recreationists, and impair their recreation experience.

Incidences of livestock entering the Lake View Resort area prior to Labor Day would be expected to continue. This may negatively effect the Lake View Resort managers by impacting the recreation experience at the Resort.

Grazing overuse on areas of the allotment which are visible to recreationists would likely continue under the higher stocking rate. This would compromise the visual qualities of these areas and may negatively affect recreationists (Saunderson, et.al., 1987).

Since Alternative 1 would result in no livestock reductions or additional herding/distribution practices by the permittees, the potential number of contacts between ATV and/or dispersed recreationists and livestock would be expected to remain the same as currently exists, or slightly increase as recreation pressure from Panguitch Lake increases. This may have a negative effect on the recreation experience, and could result in future livestock harassment by recreationists.

The existing access problems associated with gates rather than cattleguards at popular road crossings would continue, and livestock control would occasionally be compromised by gates which were left open.

### **CUMULATIVE EFFECTS**

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

Private land recreation operations, recreation special uses, and increased trail systems on private as well as Federal land, have all increased recreation opportunities and use within the cumulative effects area. As recreation use increases, as predicted within the cumulative effects area based on trends observed by Forest Service personnel, the recreation experience may be reduced by the number and intensity of use.

In addition, ground-disturbing management activities, such as timber harvest, have, and would continue to, occur on private and Federal lands within the cumulative effects area. These activities usually result in short-term displacement of recreationists until the management activities are completed, and the area takes on a more natural appearance. However, following such activities, improved road and trail systems are often created, and may improve dispersed and/or motorized recreation use over time.

The cumulative effect from Alternative 1 in combination with other past, present and future activities within the cumulative effects area would be negligible. Though the recreation experience would not directly or indirectly improve by selection of the No Action alternative, it would not result in a substantial displacement of recreationists likely to use the area, and would not create a burden to other recreation sites within the cumulative effects area.

The greatest cumulative effect on the recreation resource from selection of the No Action alternative would be to contribute to a potentially declining recreation experience as the concentration of recreationists increases along the lakeshore and in other areas within the cumulative effects area.

## **ALTERNATIVE 2**

### **DIRECT AND INDIRECT EFFECTS**

Under Alternative 2, livestock would not be allowed to utilize the area of the Panguitch Lake unit with access to the south and southeast shores of Panguitch lake. This would be accomplished through riding and the construction of additional water sources away from the lake. These actions would virtually eliminate contact between recreationists and livestock at the lakeshore. In addition, evidence of past livestock use along the lakeshore would eventually subside. Both of these factors would potentially improve the recreation experience along the lakeshore.

As a result of the installation of the Panguitch Lake cattleguard, incidences of livestock entering the Lake View Resort area prior to Labor Day would be greatly reduced, if not in fact completely eliminated.

Under Alternative 2, the reduction in livestock numbers, coupled with actions to improve livestock distribution, would prevent grazing overuse on areas of the allotment which are visible to recreationists. This would enhance the visual qualities of these areas to recreationists (Saunderson, et.al., 1987).

In addition, the lower livestock numbers would reduce the potential number of contacts between ATV and/or dispersed recreationists and livestock. One exception might be that livestock would use the dispersed recreation overflow area between Panguitch Lake and Pass Creek in greater numbers since they would be directed away from the lakeshore area under Alternative 2.

Ponds and other bodies of water are popular attractants for recreationists. Improved management practices under Alternative 2 would better distribute livestock, keeping them from congregating at water bodies.

Installation of cattleguards would eliminate the need to open and close gates, thereby improving livestock control (compromised when gates are left open), and providing easier access across the allotment than currently exists for recreationists.

### **CUMULATIVE EFFECTS**

The area included in the cumulative effects analysis is located on the recreation Cumulative Effects Map, Appendix J.

Private land recreation operations, recreation special uses, and increased trail systems on private as well as Federal land, have all increased recreation opportunities and use within the cumulative effects area. As recreation use increases, as predicted within the cumulative effects area based on trends observed by Forest Service personnel, the recreation experience may be reduced by the number and intensity of use.

In addition, ground-disturbing management activities, such as timber harvest, have, and would continue to, occur on private and Federal lands within the cumulative effects area. These activities usually result in short-term displacement of recreationists until the management activities are completed, and the area takes on a more natural appearance. However, following such activities, improved road and trail systems are often created, and may improve dispersed and/or motorized recreation use over time.

The cumulative effect from the Proposed Action in combination with other past, present and future activities within the cumulative effects area would be negligible. Though the recreation experience within the allotment would improve, most notably along the lakeshore, as described under Direct/Indirect effects, it is unlikely that a substantial increase in recreationists would occur, or that it would substantially reduce the recreation burden to other sites within the cumulative effects area.

The greatest cumulative effect on the recreation resource from selection of Alternative 2 would be improvement of the recreation experience along the lakeshore. It would also mitigate a potentially declining recreation experience as the concentration of recreationists increases along the lakeshore and in other areas within the cumulative effects area.

## **C. SOCIAL/ECONOMIC RESOURCES**

### **INTRODUCTION**

The effects of implementing the Proposed Action, Alternative 1 (No Action), and Alternative 2 on social/economic resources is discussed under three sections: Permittees costs/benefits from grazing livestock on the allotment, the benefits to the town of Panguitch from livestock grazing, and revenues/costs to the government. It should be emphasized that the costs/benefits are estimates, and are used for comparison purposes only. They are, however, the best information available.

### **DIRECT/INDIRECT EFFECTS**

**GRAZING PERMITTEES:** The Proposed Action and two alternatives vary in the degree of permitted livestock use, and amount of prescribed structural improvements.

In order to disclose the direct/indirect effects to the grazing permittees, we are using figures derived by Nielsen (1991) to determine the dollar benefit per AUM. We then multiply these figures by the permitted AUMs prescribed under the Proposed Action and each alternative.

In order to reflect the cost of structural improvements, we have included the permittee share (50%) of the cost of construction of the improvements. We then added them to the average annual costs for the first three years (full implementation usually is completed within three years). After three years, the values would return to average annual costs only.

Additional annual maintenance costs were not factored into this analysis because: 1) The new improvements would require little maintenance for several years, and 2) the number of additional structures would not be significant under the Proposed Action or Alternative 2, and maintenance costs would not significantly increase from current levels. Routine maintenance of structural improvements is factored in to Nielsen's calculations of the annual costs of grazing on federal lands (Nielsen, 1991).

**Table 8: Costs/Benefits to the Permittees**

MANAGEMENT	AUMs	REVENUES	COSTS YR 1-3	NET VALUE 1-3	COSTS YR 4+	NET VALUE 4+
Proposed Action	866	\$20,541.52	\$14,347.84	<b>\$6,193.68</b>	\$12,764.84	<b>\$7,776.68</b>
Alternative 1	1067	\$25,309.24	\$15,727.58	<b>\$9,581.66</b>	\$15,727.58	<b>\$9,581.66</b>
Alternative 2	829	\$19,663.88	\$14,011.46	<b>\$5,652.42</b>	\$12,219.46	<b>\$7,444.42</b>

Benefits to the permittees would be high under Alternative 1, because it is assumed that permitted livestock numbers would remain at the existing higher level. However, this analysis is a snapshot in time; it can be safely assumed that continued grazing at this level would ultimately reduce the vigor and productivity of the forage, and result in an eventual reduction in permitted numbers. Consequently, benefits would likely be reduced over time.

**TOWN OF PANGUITCH:** In analysis of the direct/indirect effects to the town of Panguitch, the 3.5 multiplier factor (Nielsen, 1991) will only be applied to the net value (permitted AUMs x \$8.98/AUM) from livestock grazing, which is dependent on the permitted livestock numbers under the Proposed Action and two alternatives.

While we recognize that there would be some benefit to the town of Panguitch if materials for improvement construction are purchased locally, this figure was considered insignificant for comparison purposes.

**Table 9: Benefit from Livestock Grazing to the Town of Panguitch**

MANAGEMENT STRATEGY	PERMITTED AUMs	NET VALUE	MULTIPLIER	TOTAL VALUE
Proposed Action	866	\$7,776.68	3.5	<b>\$27,218.38</b>
Alternative 1	1067	\$9,581.66	3.5	<b>\$33,535.81</b>
Alternative 2	829	\$7,444.42	3.5	<b>\$26,055.47</b>

It should be noted that projected reductions in revenue to the community of Panguitch may not occur, since the permittees may be able to replace the AUMs lost on National Forest land with other purchased or leased forage.

**GOVERNMENT:** The direct/indirect effects of the Proposed Action and two alternatives to the cost/benefit to the Government is based on the permitted livestock numbers, and the cost to the Government for its share (50%) in the construction of structural improvements.

In order to reflect the cost of structural improvements, we have included the Government share (50%) of the cost of construction of the improvements. We then divided these over the number of AUMs, and added them to the average annual costs for the first three years (full implementation usually is completed within three years). After three years, the values would return to average annual costs only.

Alternative 1 (No Action) reflects slightly higher administration costs, as District range personnel would need to more closely monitor livestock grazing utilization under the higher stocking levels.

**Table 10: Costs/Benefits to the Government**

<b>MANAGEMENT STRATEGY</b>	<b>AUMs</b>	<b>ANNUAL FEE REVENUES</b>	<b>ANNUAL ADMINISTRATIVE COST YEAR 1-3</b>	<b>ANNUAL ADMINISTRATIVE COST AFTER 3 YEARS</b>
Proposed Action	866	\$1,255.70	\$2,883	\$1,300
Alternative 1	1067	\$1,547.15	\$1,700	\$1,700
Alternative 2	829	\$1,202.05	\$3,092	\$1,300

**CUMULATIVE EFFECTS ANALYSIS**

As discussed in Section 3: Affected Environment, Social/Economic Resources, the cumulative effects analysis will apply only to the town of Panguitch.

As previously described, nine grazing allotments on Dixie National Forest occur within the cumulative effects area for the town of Panguitch, and represent a total of 9,733 permitted AUMs. When considered with the 3.5 multiplier factor, this results in a contribution of \$305,908.19 to the local economy.

**PROPOSED ACTION AND ALTERNATIVE 2:** None of the allotments within the cumulative effects area have recently (within 20 years) had increases or reductions. Several of these allotments will likely have a revision in their allotment management plans within the next 5 years. However, we are unable to predict if the permitted numbers will increase, decrease, or remain the same. Following conversations with the range conservationists on the Cedar City and Powell Ranger Districts, we conclude that the total permitted numbers within the cumulative effects area are not likely to change substantially in either direction. Thus, reductions proposed for the Panguitch Lake allotment when added to other past, present and reasonably foreseeable future actions on other allotments within the cumulative effects area would not create substantial cumulative effects.

The effects on the town of Panguitch from proposed grazing reductions on the Panguitch Lake allotment when considered in combination with timber harvest activities on the Dixie National Forest are not expected to yield substantial adverse cumulative effects, especially in light of the recent decision (March 22, 1993) to harvest timber in Tippetts Valley.

The discussion of the cumulative effects on the town of Panguitch from timber harvest is based on information contained in the Final Supplement to the Final Environmental Impact Statement for the Tippetts Valley Timber Harvest (1993). The criteria used to assess cumulative effects from timber harvest were the estimated number of jobs sustained in the timber industry, and the amount of local income generated. These are directly related to the amount of timber volume harvested under currently proposed forest management activities, the most significant of those being the proposed Midway Face Viewshed Management Project, Ice Caves Timber Harvest, and the recently approved Tippetts Valley timber harvest.

There could be a slightly adverse cumulative effect to the town of Panguitch from a reduction in permitted grazing if "No Action" alternatives are selected for the Midway Face or Ice Caves projects, though the contribution from reduced grazing would be incremental when compared to revenues lost from lack of timber volume. Any effect would depend on the availability of substitution timber supply from other Districts (Project File).

While there is no guarantee that Kaibab Forest Products will successfully bid the Tippetts Valley timber sale, the potential income to the town of Panguitch would offset any incremental effect that this grazing reduction would have on the local economy.

**ALTERNATIVE 1 (NO ACTION):** This alternative would contribute the least to cumulative effects on the town of Panguitch, at least in the short term. This is because there would be no stocking reduction. However, as previously mentioned, there would likely be a stocking reduction in the future due to loss in vigor and productivity from overused primary range areas.

CUMULATIVE EFFECTS SUMMARY: The livestock reduction proposed for the Panguitch Lake allotments could negatively impact the town of Panguitch if timber supply on the Forest is reduced as well. However, the impacts from reduced grazing would be incremental compared to the effects from loss of timber volume, and may be further reduced in AUMs lost on National Forest land were replaced by purchased or leased forage. The impacts from reduced grazing would also be incremental if action alternatives were selected for the proposed timber harvest projects, resulting in timber volume to sustain the local mill.

Cumulative effects would also be minimized if the town of Panguitch continued its diversification into recreation and tourism industries.

#### **D. EFFECTS ON THREATENED, ENDANGERED, PROPOSED & SENSITIVE SPECIES**

As documented in the Biological Assessment for Threatened, Endangered and Proposed Animal Species and the Biological Evaluation for Sensitive Animal Species (Project File), the Dixie National Forest Wildlife Biologist has determined that there will be no adverse effects (direct, indirect or cumulative) resulting from the Proposed Action on any of the threatened, endangered, proposed or sensitive animal species which have suitable habitat within the project area.

As documented in the Biological Evaluation for Sensitive Plant Species (Project File), the Dixie National Forest Wildlife Biologist has determined that there would be no adverse effects (direct, indirect, or cumulative) resulting from the Proposed Action on any of the threatened, endangered, proposed or sensitive plant species, as no suitable habitat for these species exists within the project area.

Therefore, none of the management proposals would conflict with provisions of the Endangered Species Act.

#### **E. EFFECTS OF GRAZING ON WATERSHED**

##### **PROPOSED ACTION**

DIRECT AND INDIRECT EFFECTS: The reduced livestock numbers, improved livestock management practices, and deferred-rotation grazing system prescribed in the Proposed Action would reduce areas of overgrazing on the Panguitch Lake Allotment. This would result in increased seedling establishment, improved vegetation vigor and production, and increased vegetation litter. Further, it would reduce trampling damage to susceptible plants, and would prevent recurring early season defoliation. Undesirable shrub species would continue to increase, but at a slower rate.

Over time, an overall improvement in the watershed conditions on the allotment would be expected (Craddock and Pearse 1938; Dortignac and Love 1960; Ellison 1954; Elmore and Beschta 1987; Forsling 1931; Heady, 1984; Leopold 1946; Parker, 1960; Rich and Reynolds 1963; Woodward and Craddock 1945).

Under the Proposed Action, no floodplains or wetlands would be adversely affected, as defined in Executive Orders 11988 and 11990.

**Impacts on Soil Erosion:** Under the Proposed Action, erosion rates would gradually decrease. Reduction in livestock use would lessen the impact to the soil resource and timing of use would encourage establishment of new plants and litter buildup.

Improved litter deposition and accumulation would increase infiltration rates, and protect the soil surface. Reducing overuse of the range resource would create an increase in perennial vegetation with an improved size and character of root systems, further stabilizing the soil (Lassen et al., 1952; Love, 1959).

While the Proposed Action would move the allotment in the direction of watershed stability, it would not in itself correct the extensive gulying which has occurred on this allotment. Watershed structural improvements

specifically designed for watershed rehabilitation and restoration would be needed to expedite the healing process and correct active headcuts.

**Effects on Soil Compaction:** There would be a decrease in soil compaction at John Cameron meadow after it was fenced to control livestock grazing. Forage utilization standards would be closely monitored in Rock Canyon to assure that 60% utilization is not exceeded. This would reduce the impact on the dry meadows and would reduce compaction in these areas as well (Heady, 1962).

**Effects on Soil Productivity:** Soil productivity would improve as effective ground cover increased from improved grazing distribution and reduced grazing utilization. Lighter grazing pressure and deferred grazing under the Proposed Action would maintain plant vigor of desirable understory plants and increase competition for sagebrush and rabbitbrush. There would be a gradual buildup in vegetation and litter accumulation. As previously mentioned, infiltration rates would improve with improved vegetation production and litter accumulation (Rauzi, 1960).

**Effects on Water Quality:** Under the Proposed Action, the impact of cattle use on Panguitch Lake would continue, though the permittees would do additional riding to help mitigate this problem. Coliform counts related to livestock use near the water would likely maintain current levels (Kunkle and Meiman, 1967).

**CUMULATIVE EFFECTS** :Refer to the Watershed Cumulative Effects Map in Appendix N for the area included in this analysis.

As previously mentioned, in 1975 the National Eutrophication Survey ranked Panguitch Lake 25th in water quality of the 27 lakes surveyed in Utah. Panguitch Lake was judged to be eutrophic, nitrogen limited, and receiving a eutrophic loading of 0.36 gm/m<sup>2</sup>/yr of phosphorus. No point sources of pollution were identified. While a concerted effort has been made by some recreationists, homeowners and agencies to launch a campaign aimed at waste reduction at Panguitch Lake, the eutrophic condition of the lake has not substantially improved.

There is a large sediment load going into Panguitch Lake from the upper watershed. About 58% of the phosphorus loading enters Panguitch Lake from Blue Springs Creek. The source of most of the phosphorus is naturally-occurring, phosphorus-laden soils in the upper watershed. The riparian vegetation within this drainage is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is on private property and is due to overgrazing coupled with high flows during the runoff season.

Other impacts are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these uses contribute to the nutrient/sediment loading in Panguitch Lake.

Past grazing practices have had the greatest cumulative effect on the Rock Canyon watershed. Timber harvest and road densities have also contributed to the high erosion rates within this watershed.

Under the Proposed Action, erosion potential would be reduced. Allotment contributions of sediment into the cumulative effects area would be expected to decline over time as the vigor and productivity of vegetation improved.

However, the Proposed Action would result in continued contributions of coliform into the lake from livestock use along the lakeshore. This would add to the nutrient-loading problems at the lake, though the levels might be slightly less than current levels due to the emphasis on distributing livestock away from the lake when possible under the Proposed Action.

Therefore, the Proposed Action would result in reducing the contributions of sediment from the Allotment into the cumulative effects area, and maintain or slightly reduce contributions from the Allotment to nutrient-

loading at the lake. This would, incrementally, reduce adverse cumulative effects that exist today with the Panguitch Lake and Rock Canyon watersheds.

### ALTERNATIVE 1 - NO ACTION

#### DIRECT AND INDIRECT EFFECTS

Under the No Action alternative, the current deferred-rotation grazing system would continue, but at the existing high stocking levels. While many beneficial effects may be attributed to deferred-rotation grazing (Heady, 1984; Parker, 1960; overgrazing resulting from poor livestock distribution and overstocking of ranges, especially in the reseeded areas and Rock Canyon, would reduce the benefits 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).

While No Action would not be beneficial to watershed stability, it would not cause substantial adverse effects to floodplains or wetlands, as defined in Executive Orders 11988 and 11990.

**Effects on Soil Erosion:** Currently active gullies would remain so, and would continue to contribute a large amount of sediment downstream. Soil erosion rates on the allotment would remain high as a result of large headcuts in Pass Creek, Rock Canyon and Cameron Wash and overland flow from rilling on other areas.

**Effects on Soil Compaction:** Soil compaction, with subsequent reductions in forage productivity, would continue in John Cameron meadow and Rock Canyon. This would result from overgrazing, especially on these wet soils (Heady, 1984).

**Effects on Soil Productivity:** Soils within the allotment would continue to lose productivity as active erosion occurs. Current grazing pressure, even under deferred grazing, would result in continued loss of soil and lack of litter cover to protect the soil. Soil moisture holding capacity and productivity would be adversely affected.

**Effects on Water Quality:** Under No Action, the impact of cattle use on Panguitch Lake would continue. Coliform counts related to livestock use near the water would likely maintain current levels (Kunkle and Meiman, 1967).

#### CUMULATIVE EFFECTS

Refer to the Watershed Cumulative Effects Map in Appendix N for the area included in this analysis.

As previously mentioned, in 1975 the National Eutrophication Survey ranked Panguitch Lake 25th in water quality of the 27 lakes surveyed in Utah. Panguitch Lake was judged to be eutrophic, nitrogen limited, and receiving a eutrophic loading of 0.36 gm/m<sup>2</sup>/yr of phosphorus. No point sources of pollution were identified. While a concerted effort has been made by some recreationists, homeowners and agencies to launch a campaign aimed at waste reduction at Panguitch Lake, the eutrophic condition of the lake has not substantially improved.

There is a large sediment load going into Panguitch Lake from the upper watershed. About 58% of the phosphorus loading enters Panguitch Lake from Blue Springs Creek. The source of most of the phosphorus is naturally-occurring, phosphorus-laden soils in the upper watershed. The riparian vegetation within this drainage is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is on private property and is due to overgrazing coupled with high flows during the runoff season.

Other impacts are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these uses contribute to the nutrient/sediment loading in Panguitch Lake.

Past grazing practices have had the greatest cumulative effect on the Rock Canyon watershed. Timber harvest and road densities have also contributed to the high erosion rates within this watershed.

Under the No Action alternative, erosion potential would not be improved; the allotment would continue to contribute sediment into the Panguitch Lake and Rock Canyon watersheds. As the vigor and productivity of vegetation declines from overgrazing, the amount of sediment would likely increase over time.

In addition, the No Action alternative would result in continued contributions of coliform into the lake from livestock use along the lakeshore. This would continually add to the nutrient-loading problems at the lake.

Selection of the No Action alternative would not result in substantial contributions of sediment or nutrients to the cumulative effects area; however, it would result in steady or increasing contributions over time.

## **ALTERNATIVE 2**

**DIRECT AND INDIRECT EFFECTS:** The reduced livestock numbers, improved livestock management practices, and deferred-rotation grazing system prescribed in Alternative 2 would reduce areas of overgrazing on the Panguitch Lake Allotment. This would result in increased seedling establishment, improved vegetation vigor and production, and increased vegetation litter. Further, it would reduce trampling damage to susceptible plants, and would prevent recurring early season defoliation. Undesirable shrub species would continue to increase, but at a slower rate. Over time, an overall improvement in the watershed conditions on the allotment would be expected (Craddock and Pearse 1938; Dortignac and Love 1960; Ellison 1954; Elmore and Beschta 1987; Forsling 1931; Heady, 1984; Leopold 1946; Parker, 1960; Rich and Reynolds 1963; Woodward and Craddock 1945).

Under Alternative 2, no floodplains or wetlands would be adversely affected, as defined in Executive Orders 11988 and 11990.

**Impacts on Soil Erosion:** Under Alternative 2, erosion rates would gradually decrease. Reduction in livestock use would lessen the impact to the soil resource and timing of use would encourage establishment of new plants and litter buildup.

Improved litter deposition and accumulation would increase infiltration rates, and protect the soil surface. Reducing overuse of the range resource would create an increase in perennial vegetation with an improved size and character of root systems, further stabilizing the soil (Lassen et al., 1952; Love, 1959).

While Alternative 2 would move the allotment in the direction of watershed stability, it would not in itself correct the extensive gullying which has occurred on this allotment. Watershed structural improvements specifically designed for watershed rehabilitation and restoration would be needed to expedite the healing process and correct active headcuts.

**Effects on Soil Compaction:** There would be a decrease in soil compaction at John Cameron meadow after it was fenced to control livestock grazing. Forage utilization standards would be closely monitored in Rock Canyon to assure that 60% utilization is not exceeded. This would reduce the impact on the dry meadows and would reduce compaction in these areas as well (Heady, 1962).

**Effects on Soil Productivity:** Soil productivity would improve as effective ground cover increased from improved grazing distribution and reduced grazing utilization, Lighter grazing pressure and deferred grazing under the Alternative 2 would maintain plant vigor of desirable understory plants and increase competition for sagebrush and rabbitbrush. There would be a gradual buildup in vegetation and litter accumulation. As previously mentioned, infiltration rates would improve with improved vegetation production and litter accumulation (Rauzi, 1960).

**Effects on Water Quality:** This is the major distinguishing factor between the Proposed Action and Alternative 2. While cattle use would still occur at the Panguitch Lake shore under the Proposed Action, it would not be

permitted under Alternative 2. Thus, coliform counts related to livestock use near the water would likely be reduced over time under Alternative 2.

CUMULATIVE EFFECTS: Refer to the Watershed Cumulative Effects Map in Appendix N for the area included in this analysis.

As previously mentioned, in 1975 the National Eutrophication Survey ranked Panguitch Lake 25th in water quality of the 27 lakes surveyed in Utah. Panguitch Lake was judged to be eutrophic, nitrogen limited, and receiving a eutrophic loading of 0.36 gm/m<sup>2</sup>/yr of phosphorus. No point sources of pollution were identified. While a concerted effort has been made by some recreationists, homeowners and agencies to launch a campaign aimed at waste reduction at Panguitch Lake, the eutrophic condition of the lake has not substantially improved.

There is a large sediment load going into Panguitch Lake from the upper watershed. About 58% of the phosphorus loading enters Panguitch Lake from Blue Springs Creek. The source of most of the phosphorus is naturally-occurring, phosphorus-laden soils in the upper watershed. The riparian vegetation within this drainage is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is on private property and is due to overgrazing coupled with high flows during the runoff season.

Other impacts are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these uses contribute to the nutrient/sediment loading in Panguitch Lake.

Past grazing practices have had the greatest cumulative effect on the Rock Canyon watershed. Timber harvest and road densities have also contributed to the high erosion rates within this watershed.

Under Alternative 2, erosion potential would be reduced. Allotment contributions of sediment into the cumulative effects area would be expected to decline over time as the vigor and productivity of vegetation improved.

Alternative 2 would result in elimination of coliform contributions from allotment cattle into Panguitch Lake, the distinguishing effect when compared with the Proposed Action.

Therefore, Alternative 2 would result in reducing the contributions of sediment and nutrient-loading into the cumulative effects area. This would lessen adverse cumulative effects that exist today with the Panguitch Lake and Rock Canyon watersheds.

## **F. EFFECTS OF GRAZING ON WILDLIFE**

### **PROPOSED ACTION**

DIRECT AND INDIRECT EFFECTS: Though no critical habitat exists on the allotment for any of the wildlife management indicator species, the Proposed Action would be expected to enhance non-critical habitat conditions for these species through reduced stocking and improved livestock distribution (Kie and Loft, 1990).

The additional fence required at John Cameron Spring would be built to a standard that has been determined least detrimental to wildlife movement, and would mitigate impacts to wildlife.

**Deer:** Populations would remain approximately the same as existing. Deer would respond positively to improved management and increased water supplies. Some increase in vigor of browse and forage plants would result from the reduction of livestock and improved distribution of livestock on the allotment. Better

management practices, such as riding to keep livestock from overusing key areas, would also help to improve vegetative conditions for deer.

Maintenance of fences and installation of cattleguards would control livestock and maintain integrity of the grazing system which would improve range conditions.

**Elk:** Elk tend to use the allotment area during the spring. As numbers continue to expand on the elk herd unit, elk numbers would be expected to increase on the Allotment. As range conditions improve, elk use would increase, especially in the spring before cattle use the allotment.

Elk, by nature, tend to leave areas when livestock directly compete for forage, though they have been shown to prefer feeding areas that previously have been grazed by cattle (Grover and Thompson 1986). Skovlin et al. (1968) indicated that elk tolerated light stocking levels of cattle but were inhibited by moderate to heavy stocking. The lighter stocking levels prescribed in the Proposed Action would be easily tolerated by elk. If elk herds were allowed to increase in size, grazing conflicts with livestock may increase.

**Antelope (Pronghorn):** Antelope numbers would be expected to remain static under the Proposed Action. Antelope would occasionally use the allotment during summer months but would return to more preferred range during the winter. Preferred vegetation for this species would not be significantly affected by this action.

**Sagegrouse:** Populations on the allotment would remain static or slightly increase as sagebrush continues to gradually increase on the reseeded areas. Although improvements in range condition would not have a substantial effect on the population, additional watering areas would be beneficial.

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

The existing condition of habitat for management indicator species within the cumulative effects area is based on current forage/cover conditions, and the quality of the foraging areas.

Though past timber harvest activity has occurred on private as well as Federal lands within the cumulative effects area, levels of cover (hiding, thermal, and escape cover) are not limiting.

Past and present levels of livestock grazing on private and Federal lands within the cumulative effects area has resulted in areas of overuse, particularly in riparian areas which are critical for wildlife.

Additional subdivision of private lands currently providing wildlife habitat may result in a net loss of habitat within the cumulative effects area. In addition, increased recreation pressure, both on private and Federal lands, may displace local wildlife populations in the future. This, coupled with habitat loss due to development, would yield adverse cumulative effects.

The Proposed Action would contribute incrementally to improved quality habitat within the cumulative effects area through improved habitat conditions on the allotment (increase of sagebrush and rabbitbrush would not be as rapid; however, browse production is not a limiting factor for wildlife populations on the allotment) both in overall watershed condition and forage availability. These effects, however, would not be substantial as there is no critical wildlife habitat on the allotment.

## **ALTERNATIVE 1 - NO ACTION**

### **DIRECT AND INDIRECT EFFECTS**

Under the No Action alternative, livestock numbers would remain static and range conditions would continue to change as brush species invade the reseeded areas. Plant vigor would vary depending on precipitation and degree of livestock use on the forage plants.

**Deer:** Populations would respond favorably as the browse component of the habitat would be expected to increase on reseeded areas.

**Elk:** Populations on the allotment vary from year to year and would not change as a result of this alternative. However, heavier livestock use would result in lower vigor of grass plants and a more rapid invasion of brush species such as sagebrush and rabbitbrush. This would reduce forage for elk and create more competition with livestock.

**Antelope (Pronghorn):** Populations would remain about the same or slightly increase as sagebrush increases on reseeded areas.

**Sagegrouse:** Sagegrouse would continue to occupy portions of the allotment and would possibly increase as sagebrush continues to encroach on reseeded areas and habitat improves for this species.

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

The existing condition of habitat for management indicator species within the cumulative effects area is based on current forage/cover conditions, and the quality of the foraging areas.

Though past timber harvest activity has occurred on private as well as Federal lands within the cumulative effects area, levels of cover (hiding, thermal, and escape cover) are not limiting.

Past and present levels of livestock grazing on private and Federal lands within the cumulative effects area has resulted in areas of overuse, particularly in riparian areas which are critical for wildlife.

Additional subdivision of private lands currently providing wildlife habitat may result in a net loss of habitat within the cumulative effects area. In addition, increased recreation pressure, both on private and Federal lands, may displace local wildlife populations in the future. This, coupled with habitat loss due to development, would yield adverse cumulative effects.

The No Action alternative would contribute incrementally to lower quality habitat within the cumulative effects area through declining habitat conditions on the allotment, both in overall watershed condition and forage availability (except browse species, which would increase under this alternative). These effects, however, would not be substantial as there is no critical wildlife habitat on the allotment.

## **ALTERNATIVE 2**

**DIRECT AND INDIRECT EFFECTS:** Though no critical habitat exists on the allotment for any of the wildlife management indicator species, the Alternative 2 would be expected to enhance non-critical habitat conditions for these species through reduced stocking and improved livestock distribution (Kie and Loft, 1990).

The additional fence required at John Cameron Spring would be built to a standard that has been determined least detrimental to wildlife movement, and would mitigate impacts to wildlife.

The additional water sources which would be developed under Alternative 2 would also be beneficial to all wildlife management indicator species on the allotment.

**Deer:** Populations would remain approximately the same as existing. Deer would respond positively to improved management and increased water supplies. Some increase in vigor of browse and forage plants would result from the reduction of livestock and improved distribution of livestock on the allotment. Better management practices, such as riding to keep livestock from overusing key areas, would also help to improve vegetative conditions for deer.

Maintenance of fences and installation of cattleguards would control livestock and maintain integrity of the grazing system which would improve range conditions.

**Elk:** Elk tend to use the allotment area during the spring. As numbers continue to expand on the elk herd unit, elk numbers would be expected to increase on the Allotment. As range conditions improve, elk use would increase, especially in the spring before cattle use the allotment.

Elk, by nature, tend to leave areas when livestock directly compete for forage, though they have been shown to prefer feeding areas that previously have been grazed by cattle (Grover and Thompson 1986). Skovlin et al. (1968) indicated that elk tolerated light stocking levels of cattle but were inhibited by moderate to heavy stocking. The lighter stocking levels prescribed in the Alternative 2 would be easily tolerated by elk. If elk herds were allowed to increase in size, grazing conflicts with livestock may increase.

**Antelope (Pronghorn):** Antelope numbers would be expected to remain static under Alternative 2. Antelope would occasionally use the allotment during summer months but would return to more preferred range during the winter. Preferred vegetation for this species would not be significantly affected by this action.

**Sagegrouse:** Populations on the allotment would remain static or slightly increase as sagebrush continues to gradually increase on the reseeded areas. Although improvements in range condition would not have a substantial effect on the population, additional watering areas would be beneficial.

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

The existing condition of habitat for management indicator species within the cumulative effects area is based on current forage/cover conditions, and the quality of the foraging areas.

Though past timber harvest activity has occurred on private as well as Federal lands within the cumulative effects area, levels of cover (hiding, thermal, and escape cover) are not limiting.

Past and present levels of livestock grazing on private and Federal lands within the cumulative effects area has resulted in areas of overuse, particularly in riparian areas which are critical for wildlife.

Additional subdivision of private lands currently providing wildlife habitat may result in a net loss of habitat within the cumulative effects area. In addition, increased recreation pressure, both on private and Federal lands, may displace local wildlife populations in the future. This, coupled with habitat loss due to development, would yield adverse cumulative effects.

Alternative 2 would contribute incrementally to improved quality habitat within the cumulative effects area through improved habitat conditions (increase of sagebrush and rabbitbrush would not be as rapid; however, browse production is not a limiting factor for wildlife populations on the allotment) on the allotment, both in overall watershed condition and forage availability. These effects, however, would not be substantial as there is no critical wildlife habitat on the allotment.

## **G. EFFECTS OF GRAZING ON VEGETATION**

### **PROPOSED ACTION**

**DIRECT AND INDIRECT EFFECTS:** The reduced livestock numbers, improved livestock management practices, and deferred-rotation grazing system prescribed in the Proposed Action would reduce areas of overgrazing on the Panguitch Lake Allotment. This would result in improved vegetation vigor and production, increased seedling establishment, protection of plants susceptible to trampling damage and defoliation in early spring, and increased vegetation litter. It would provide for periodic grazing after seed maturity, which

would injure plants less and be beneficial for both seed and rhizome reproducing plants (Lassen, et al., 1952; Love, 1959; Stoddart, et.al,1975).

Lighter grazing pressure and deferred grazing under the Proposed Action would maintain plant vigor of desirable understory plants and increase competition for sagebrush and rabbitbrush in the reseeded areas. Undesirable shrub species would continue to increase, but at a slower rate.

Less cattle numbers and improved distribution would reduce impact on key areas of the allotment. Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978).

**CUMULATIVE EFFECTS:** Impacts to vegetation within the cumulative effects area are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these are ground-disturbing uses, and have altered naturally occurring vegetation.

The riparian vegetation within the cumulative effects area is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is generally on private property and is due to overgrazing coupled with high flows during the runoff season.

The Proposed Action would have a positive effect on the vegetation vigor and plant density on the allotment. It would slow the encroachment of shrubs and other woody species into grassland areas on the allotment by increasing the competitive ability of the perennial herbaceous plant species. This would lessen other declines in vegetation throughout the cumulative effects area.

#### **ALTERNATIVE 1 - NO ACTION**

##### **DIRECT AND INDIRECT EFFECTS**

This alternative would continue a modified deferred-rotation grazing system with current livestock numbers and season. Under the current management, proper use as specified in the Land and Resource Management Plan would not be met in the grazing pastures. Gammon (1978) stated that "it is a common false assumption that rest or deferment can compensate for overuse or for previous critical season use, regardless of conditions." This is borne out on the arid rangelands of the Arizona strip where Hughes (1979) found that any system of grazing, including rest-rotation, caused deterioration of the vegetation when utilization exceeded 55 percent.

In the reseeded areas, maintaining existing livestock numbers and distribution practices would result in uneven grazing patterns. Key grazing areas would receive overuse and less accessible, poorly watered areas would be underutilized. This would reduce herbaceous plant vigor and density in these areas by taxing root reserves needed to maintain the plant (Waller, et.al. 1985). A higher level of less desirable perennial plants would be expected to make up the majority of the plant composition in the popular grazing areas over time. Heavy stocking rates may result in a species complex (rabbitbrush & sagebrush) that is generally less palatable, less productive and more grazing tolerant (Heitschmidt, et.al, 1989).

In summary, the continuation of a modified deferred-rotation system under current stocking would accelerate deterioration of the reseeded areas. This would mean less forage production and more undesirable shrubs. Areas that are excessively used would result in loss of preferred grass species (Stoddart, et al., 1975).

**CUMULATIVE EFFECTS:** Impacts to vegetation within the cumulative effects area are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these are ground-disturbing uses, and have altered naturally occurring vegetation.

The riparian vegetation within the cumulative effects area is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is generally on private property and is due to overgrazing coupled with high flows during the runoff season.

The No Action alternative would incrementally contribute to a declining condition of vegetation throughout the cumulative effects area. Invasion of undesirable vegetation, heavy utilization of readily accessible and highly palatable forage plants, and stable to slightly increased use by wildlife species (elk, antelope, etc.) would result in degradation of vegetation and less optimal forage conditions.

The No Action alternative would result in encroachment of shrubs and other woody vegetation into grassland types within the cumulative effects area. It would contribute to a higher proportion of annual and shallow rooted plants within the area.

## **ALTERNATIVE 2**

**DIRECT AND INDIRECT EFFECTS:** The reduced livestock numbers, improved livestock management practices, and deferred-rotation grazing system prescribed in the Alternative 2 would reduce areas of overgrazing on the Panguitch Lake Allotment. This would result in improved vegetation vigor and production, increased seedling establishment, protection of plants susceptible to trampling damage and defoliation in early spring, and increased vegetation litter. It would provide for periodic grazing after seed maturity, which would injure plants less and be beneficial for both seed and rhizome reproducing plants (Lassen, et al., 1952; Love, 1959; Stoddart, et.al,1975).

Lighter grazing pressure and deferred grazing under the Alternative 2 would maintain plant vigor of desirable understory plants and increase competition for sagebrush and rabbitbrush in the reseeded areas. Undesirable shrub species would continue to increase, but at a slower rate.

Less cattle numbers and improved distribution would reduce impact on key areas of the allotment. Plant vigor and range condition would be improved; however, areas currently in unsatisfactory condition would be slower to respond (Launchbaugh and Owensby, 1978).

**CUMULATIVE EFFECTS:** Impacts to vegetation within the cumulative effects area are the result of moderate road densities within the cumulative effects area, other private and Federal livestock grazing, very heavy impacts from summer home development around Panguitch Lake, Clear Creek and Blue Spring Valley, past logging activities in Bunker Creek and Blue Spring Mountain, powerline and phone line special uses. All of these are ground-disturbing uses, and have altered naturally occurring vegetation.

The riparian vegetation within the cumulative effects area is highly variable with areas of high quality to areas of poor quality or non-existent riparian vegetation. The latter area is generally on private property and is due to overgrazing coupled with high flows during the runoff season.

Alternative 2 would have a positive effect on the vegetation vigor and plant density on the allotment. It would slow the encroachment of shrubs and other woody species into grassland areas on the allotment by increasing the competitive ability of perennial herbaceous plant species. This would lessen other declines in vegetation throughout the cumulative effects area.

## **H. CULTURAL RESOURCES**

The act of livestock grazing, in and of itself, would not impact any known or currently unknown, cultural resource sites (see letter from Dixie National Forest Archaeologist, Appendix Q). In fact, reductions in stocking levels and improved distribution would further remove any potential damage to sites caused by concentrated livestock use and trampling.

None of the proposed structural improvements were located within any known cultural resource sites.

Prior to the construction of any structural improvements, an intensive cultural resource inventory would be conducted on the site by a qualified archaeologist or Para-professional archaeologist. Clearance from the Utah State Historic Preservation Office would need to be obtained before the project could be implemented (see Appendix Q).

## **I. OTHER MANDATORY DISCLOSURES**

### **PUBLIC HEALTH AND SAFETY**

Public health and safety within the allotment is not currently at risk, nor is it expected to be as a result of any of the management proposals. The only issue which might be extended to public health is water quality. However, none of the waters described are used as culinary water prior to some type of chemical treatment.

In light of this, public health and safety will not receive detailed analysis in this EA.

### **UNIQUE LANDS/GEOGRAPHIC CHARACTERISTICS**

There are no unique lands/geographic characteristics such as parklands, prime farmlands, wild and scenic rivers, or ecological critical areas within the project area. There would, therefore, be no affect on any of these areas from the Proposed Action or alternatives.

## **J. MONITORING**

Implementation and effectiveness monitoring will be conducted to measure the effects of the selected management practices on resources within the Panguitch Lake Allotment.

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.

Monitoring practices have been developed for each of the resources identified as Issues in this EA. Appendix R 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.

Table 11 contains a summary of the proposed monitoring activities.

**Table 11: Monitoring Summary**

PASTURE	STUDY TYPE	YEAR									
		1	2	3	4	5	6	7	8	9	10
<b>East Pass</b>	Grazing Utilization	X	X	X	X	X	X	X	X	X	X
	Photo Points		X					X			
	Watershed Condition										
	Water Quality										

PASTURE	STUDY TYPE	YEAR									
		1	2	3	4	5	6	7	8	9	10
<b>West Pass</b>	Grazing Utilization	X	X	X	X	X	X	X	X	X	X
	Photo Points		X					X			
	Watershed Condition		X		X		X		X		X
	Water Quality										

PASTURE	STUDY TYPE	YEAR									
		1	2	3	4	5	6	7	8	9	10
<b>Rock Canyon</b>	Grazing Utilization	X	X	X	X	X	X	X	X	X	X
	Photo Points	X				X					X
	Watershed Condition	X		X		X		X		X	
	Water Quality										

PASTURE	STUDY TYPE	YEAR									
		1	2	3	4	5	6	7	8	9	10
<b>Panguitch Lake</b>	Grazing Utilization	X	X	X	X	X	X	X	X	X	X
	Photo Points										
	Watershed Condition										
	Water Quality	X	X	X	X	X	X	X	X	X	X

## SECTION 5: LIST OF PREPARERS

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

### INTERDISCIPLINARY TEAM MEMBERS

<b>NAME</b>	<b>TITLE</b>	<b>SUBJECT AREA</b>
Dale Harris	Interdisciplinary Team Leader District Range Conservationist	Range/Wildlife
Randy Houston	District Range Technician	Range/Wildlife
Susan Hayman	Resource Specialist	Technical Editor/Public Involvement/NEPA

### TECHNICAL SUPPORT

James Bayer	Soil Scientist	Soils
Nanolivia Crowley	Hydrologist	Watershed
Brent Mace	Recreation Specialist	Recreation
Marian Jacklin	Archaeologist	Cultural Resources



## SECTION 6: LITERATURE CITATIONS

- Craddock, George W.; Pearse, C. Kenneth 1938. Surface Runoff and Erosion on Granitic Mountain Soils as Influenced by Range Cover, Soil Disturbance, Slope and Precipitation Intensity. Circular 482. Washington, D.C.: U.S. Department of Agriculture. 24 p.
- Gammon, D.M. 1978. A review of experiments comparing systems of grazing management on natural pastures. Proc. Grassld. Soc. South Africa 13: 75-82
- Gifford, Gerald F. 1972. Beneficial and Detrimental Effects of Range Improvement Practices on Runoff and Erosion. Watershed Management
- Grover, Karl E., and Michael J. Thompson. 1986. Factors influencing spring feeding site selection by elk in the Eikhorn Mountains, Montana, Journal of Wildlife Management 50:466-470.
- Headly, Harold F. (1984) Concepts and Principles Underlying Grazing Systems. In Natl. Res. Council/Natl. Acad. Sci. "Developing Strategies for Rangeland Management." Westview Press Boulder, Colorado, pp. 885-902
- Heitschmidt, Rodney K., Steven L. Dowhower, William E. Pinchak, Stephen K. Canon. 1989. Journal of Range Management, 42(6): pp. 468-473.
- Hughes, Lee E.. Rest-Rotation grazing on the Arizona Strip: An observation. Rangelands 1: 106-108; 1979. Humphrey, R.R. 1962, Range Ecology. The Ronald Press Company. pp. 110.
- Kie and Loft. 1990. Can Livestock Be Used as a Tool to Enhance Wildlife Habitat?. General Technical Report RM-194. pp. 7-21.
- Kunkle, S.H. and J.R. Meiman. 1967. Water quality of mountain watersheds. Hydrology Paper 21, Colorado State Univ., Fort Collins. 53 p.
- Lassen, Leon, Lull, Howard W., and Frank, Bernard, 1952. Some plant-soil-water relations in watershed management. U.S. Dept. Agr. Cir. 910.
- Launchbaugh, John L. and Clenton E. Owensby. 1978. Kansas Rangelands: Their Management Based on a Half Century of Research. Kan. Agric. Exper. Sta. Bull. 622. 56 pp.
- Love, L.D., 1958. Rangeland Watershed Management. Soc. Amer. Foresters Proc. 198-200
- Nielsen, Darwin B. 1991. Rural Utah Economic Survival - Federal Land Grazing. Utah State University Extension Publication ERI-91-05. 13 pp.
- Parker, K.W.. 1960. Principles of grazing management as related to vegetation condition and soil stability. Fifth world forestry congress proceedings.
- Price, D. and Others. 1987. Hydrology of Area 57, North Great Plains and Rocky Mountain Coal Provinces, Utah and Arizona, U.S. Geological Survey Water Resource Investigations. Open File Report 84-068, 1987.
- Rauzi, Frank. 1960. Plant cover increases water intake rate on rangeland soils. Crops and soils 12:30.
- Saunderson, H. Reed, Richard A. Meganck, and Kenneth C. Gibbs. 1987. Range Management and Scenic Beauty as Perceived by Dispersed Recreationists. Journal of Range Management, 39(5).

Skovlin, Jon M. Paul J. Edgerton, and Robert W. Harris. 1968. The Influence of Cattle Management on Deer and Elk. *Trans. N. Amer. Wildl. Conf.* 33: 169-181.

Stoddart, Lawrence A., Arthur D. Smith, Thadis W. Box. 1975. *Range Management*. McGraw-Hill Book Company. 532 pp.

Waller, Steven S., Lowell E. Moser, Patrick E. Reese, and George A. Gates. 1985 *Understanding Grass Growth: The Key to Profitable Livestock Production*. 18 pp.

## 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.

**Alluvium** - Unconsolidated clastic material deposited by running water, including gravel, sand, silt, clay, and various mixtures of these.

**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.

**Animal unit month** - The potential forage intake (i.e., animal demand) of one animal unit for a period of one month (30 days).

### 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).

**Ephemeral Streams** - Streams that flow only as a direct response to rainfall or snowmelt events. They have no base flow.

*Eutrophic* - Rich and dissolved nutrients photosynthetically productive and often deficient in oxygen during warm periods.

*Extrusive* - Denoting igneous rocks derived from deep-seated molten matter emplaced and cooled on the earth's surface.

## 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].

*Gully* - A very small channel with steep sides cut by running water and through which water ordinarily runs only after a rain or ice or snow melt.

*Guzzler* - A permanent, self-filling water catchment similar to a cistern.

## H

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

*Headwall* - A steep slope at the head of a valley; e.g. the rock cliff at the back of a cirque.

## 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.

*Preferred species* - Plant species that are preferred by animals and are grazed first by choice.

*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.

*Shrub* - A woody plant with relatively low growth habit and usually having multiple erect, spreading, or prostrate stems.

*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 alteration 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.

*Uplands* - Land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone on the hillslope continuum.

## 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.

*Wolf plant* - A plant of a species generally considered palatable that remains mostly ungrazed when exposed to grazing.

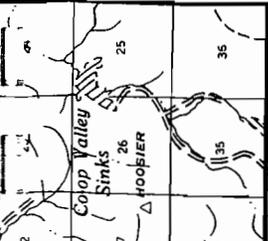
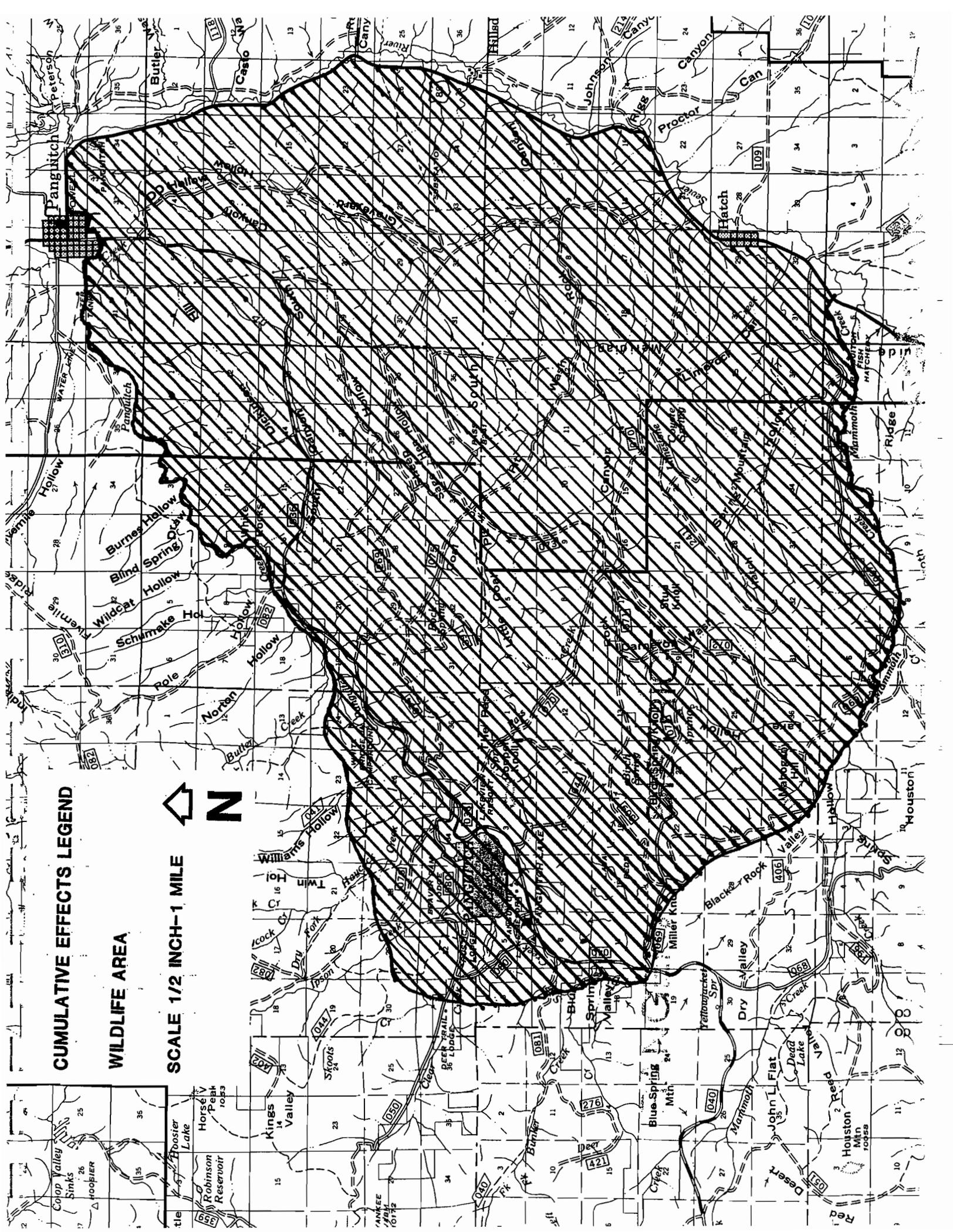
WILDLIFE CUMULATIVE EFFECTS AREA MAP

# CUMULATIVE EFFECTS LEGEND

## WILDLIFE AREA



SCALE 1/2 INCH=1 MILE



Hooper Lake	1053
Horseshoe Reservoir	1053
Robinson Reservoir	1053
Kings Valley	1053

Sticks	24
Clear Creek	25
Blue Spring Mtn	24
Spring Valley	13
Blue Spring	24
Miller Kn	19
Yellowjackets Spr	25
Dry Valley	29
John L Flat	35
Dead Lake	35
Valley	35
Red Desert	35
Houston Min	1053

Blue Spring	24
Miller Kn	19
Yellowjackets Spr	25
Dry Valley	29
John L Flat	35
Dead Lake	35
Valley	35
Red Desert	35
Houston Min	1053

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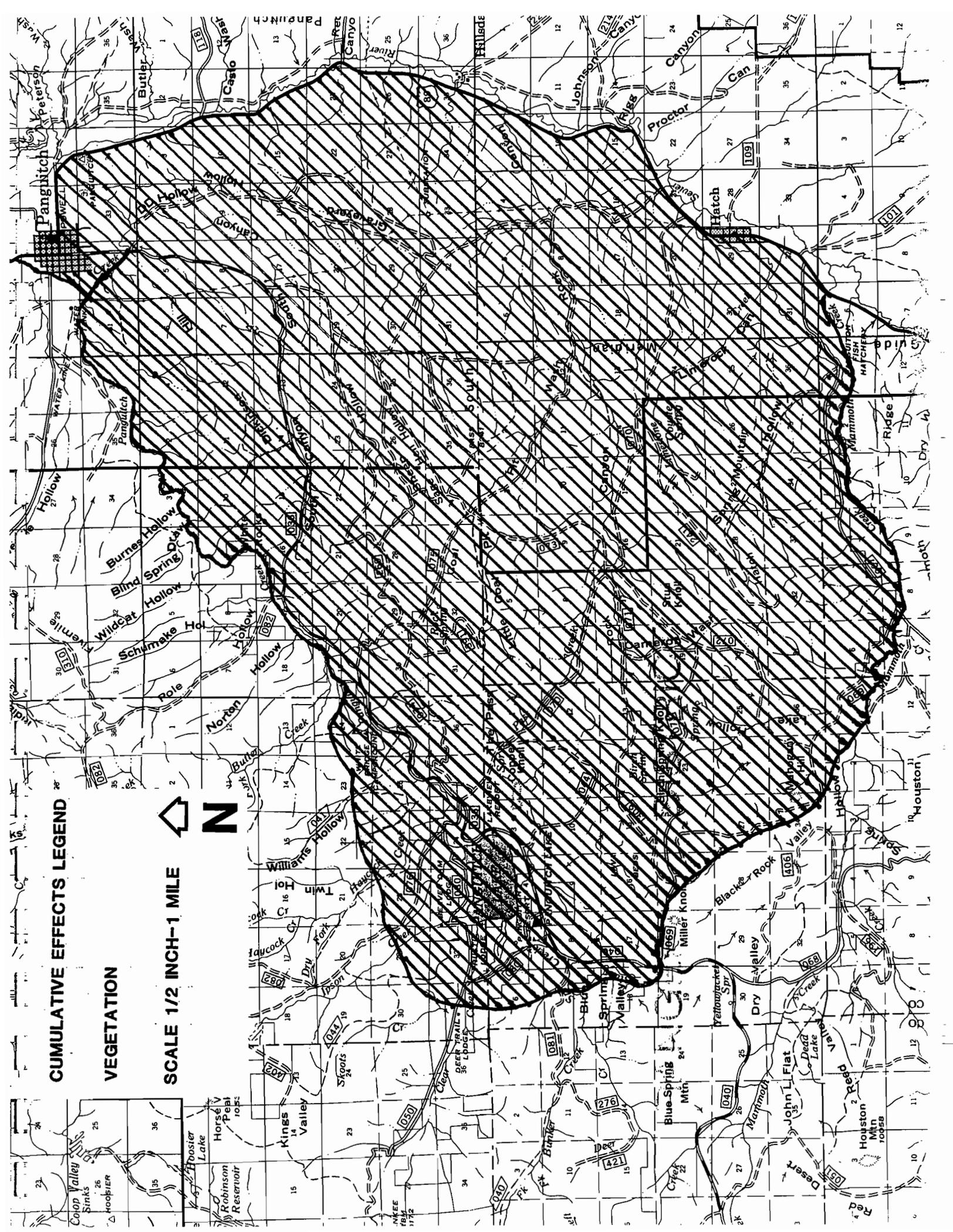
Blue Spring	24
Miller Kn	19
Yellowjackets Spr	25
Dry Valley	29
John L Flat	35
Dead Lake	35
Valley	35
Red Desert	35
Houston Min	1053

**VEGETATION CUMULATIVE EFFECTS AREA MAP**

**CUMULATIVE EFFECTS LEGEND**

**VEGETATION**

SCALE 1/2 INCH=1 MILE

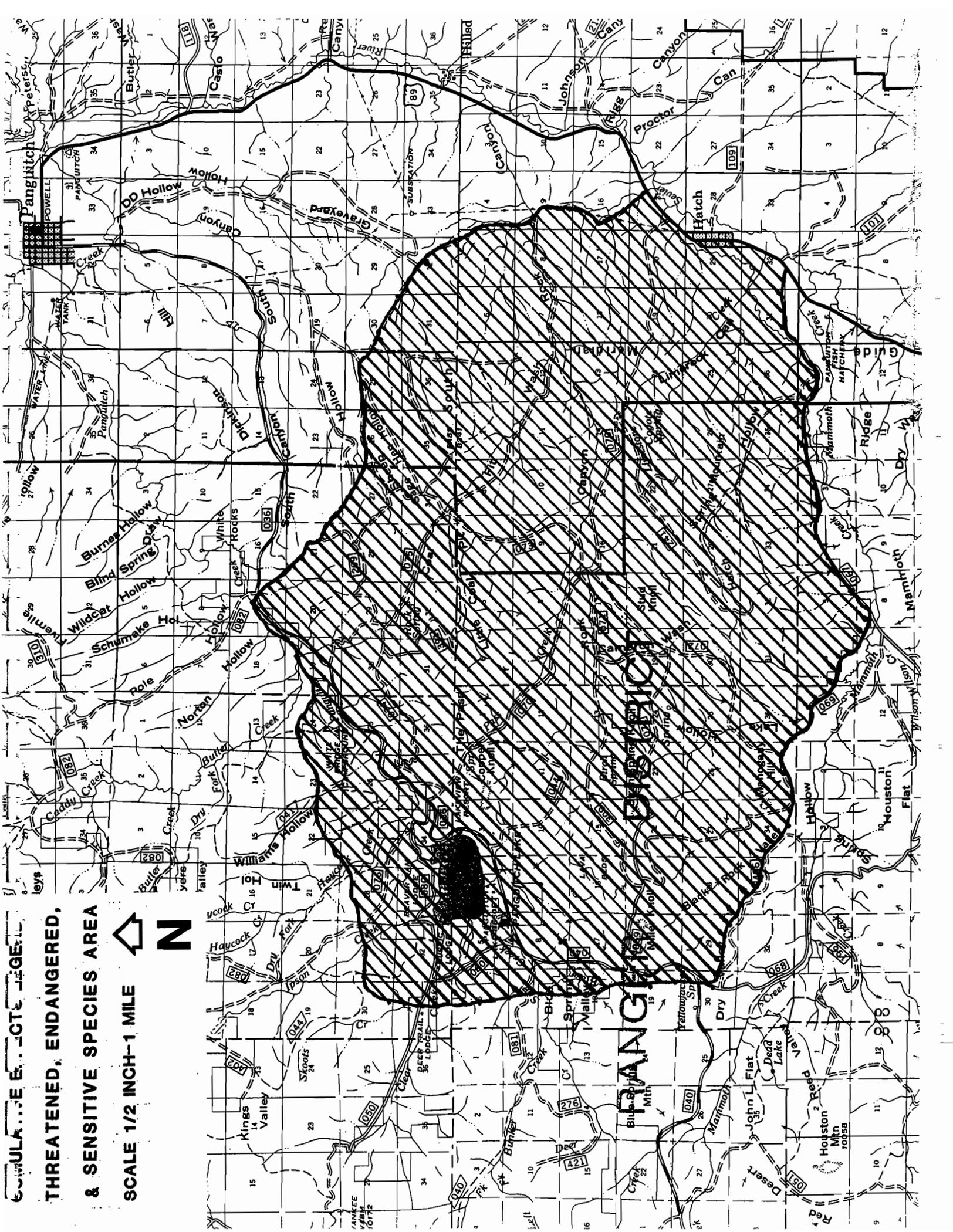


T, E & S SPECIES CUMULATIVE EFFECTS AREA MAP

**COLUMBIA ELECTRIC  
THREATENED, ENDANGERED,  
& SENSITIVE SPECIES AREA**



**SCALE 1/2 INCH=1 MILE**



WATERSHED CUMULATIVE EFFECTS AREA MAP

A  
E  
P  
E  
E  
I  
Y  
C

PAST, PRESENT AND FUTURE PROJECTS

## PAST, PRESENT AND FUTURE ACTIONS

### **TIMBER SALES**

Delong Creek Timber Sale  
Blue Spring Mountain Timber Sale \*\*  
Rock Canyon Timber Sale \*  
Lake Hollow Timber Sale \*  
Haycock Mountain Timber Sale \*, \*\*

### **GRAZING ALLOTMENTS**

Panguitch Lake Cattle Allotment \*, \*\*  
Sidney Valley Cattle Allotment  
Warren Bunker Sheep Allotment  
Hatch Mountain/Castle Valley Sheep Allotment \*, \*\*  
Haycock Creek Sheep Allotment \*, \*\*  
Dry Lake/Bunker Cattle Allotment \*, \*\*  
Sage Valley/Horse Valley Sheep Allotment  
Little Valleys Cattle Allotment  
Butler Creek Cattle Allotment \*  
Haycock Mountain/Brian Head Sheep Allotment \*, \*\*

### **PRIVATE LAND GRAZING PERMITS (\*ON & OFF\*)**

Daniel Tebbs Pasture Permit \*  
Ray Tebbs Pasture Permit \*  
Della Tebbs Pasture Permit \*, \*\*  
Wallace Miller Pasture Permit \*, \*\*  
Frei's Pasture Permit \*, \*\*  
Hatch Pasture Permit \*

### **WILDLIFE AND FISHERIES**

Rotenone of Panguitch Lake and tributaries (1991) \*, \*\*  
Fivemile Prescribed Burn (1991)  
Sheep Hollow Wildlife Guzzler \*  
Haycock Mountain Trick Tank \*

### **WATERSHED IMPROVEMENTS**

Pass Creek Proposed Watershed Stabilization \*  
Cameron Wash Proposed Watershed Stabilization \*  
Rock Canyon Proposed Watershed Stabilization \*  
Spring Hollow Proposed Watershed Stabilization \*  
Lake Hollow Proposed Watershed Stabilization \*  
Haycock Mountain Proposed Area Road Closure \*  
Miller Seep Watershed Stabilization +  
Mexican Hollow Watershed Stabilization +

### **RECREATION DEVELOPMENTS**

Panguitch Lake Campground \*, \*\*  
White Bridge Campground \*, \*\*  
Pass Creek Overflow Camping Area \*, \*\*  
Wildlife Point Boat Ramp \*, \*\*

**TRAILS**

Spruce Trail  
Bunker Creek Trail \*\*  
Scoots Creek Trail \*, \*\*  
Lowder Creek/Sidney Valley Trail  
Horse Valley/Little Valleys Trail  
Caddy Creek Trail  
Ipson Crossing Trail

**SPECIAL USE PERMITS**

Wilson Road Permit  
Michael Heaton Road Permit \*, \*\*  
Skoots Creek Water Transmission \*, \*\*  
Yancy Water Transmission \*, \*\*  
Hyatt Road Permit \*, \*\*  
Rustic Lodge Water Transmission \*, \*\*  
Wilson Water/Power Transmission \*, \*\*  
Rustic Lodge Boat Dock \*, \*\*  
Panguitch Irrigation Co. Dam \*, \*\*  
Legrande Frei Road Permit \*, \*\*  
Panguitch Lake Resort Boat Dock/Wharf \*, \*\*  
UP&L Power Transmission \*  
Michael Tebbs Water Transmission \*  
Mt. States Telephone Line \*  
Skipworth Road Permit \*, \*\*  
Dale Robinson Water Pipeline  
Garfield County Road Permit  
Lakeview Lodge \*, \*\*

**LAND EXCHANGES**

Henrie Land Exchange \*  
Mammoth Ridge Proposed Land Exchange +

**PRIVATE LAND DEVELOPMENT**

Blue Springs Subdivision \*, \*\*  
Panguitch Lake Subdivisions (inclusive) \*, \*\*  
Wilson Private Property  
Castle Valley Private Property  
Kings Valley Private Property  
Horse Valley Private Property  
Tebbs Private Property \*  
Henrie Private Property \*

+ Wildlife/Vegetation Cumulative Effects Area Only  
\* Also Within Wildlife/Vegetation Cumulative Effects Area  
\*\* Also Within Recreation Cumulative Effects Area

**USDA FISH AND WILDLIFE SERVICE LETTER**



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
FISH AND WILDLIFE ENHANCEMENT  
UTAH STATE OFFICE  
2078 ADMINISTRATION BUILDING  
1745 WEST 1700 SOUTH  
SALT LAKE CITY, UTAH 84104-5110



In Reply Refer To

(FWE)

May 7, 1992

Ronald S. Wilson, District Ranger  
Cedar City Ranger District  
Dixie National Forest  
82 N. 100 East  
P.O. Box 0627  
Cedar City, Utah 84721

Dear Mr. Wilson:

We have received your letters concerning the following proposed projects on the Cedar City Ranger District of the Dixie National Forest:

1. Grimshaw Access Road
2. High Desert Racing Association's Color Country Runoffs
3. Cedar Canyon Sheep Allotment
4. Panguitch Lake Cattle Allotments

The U. S. Fish and Wildlife Service (Service) concurs with your lists of threatened, endangered, proposed and candidate species which may occur within each area.

Since there is a listed endangered species (peregrine falcon) in the vicinity of the Cedar Canyon Sheep Allotment, and a potential for a proposed species (Mexican spotted owl) to occur in the area of all of the projects, the Forest Service should review their proposed actions and determine if any of the proposed actions "may affect" listed species or their critical habitat or "may jeopardize the continued existence" of a proposed species or result in destruction or adverse modification of proposed critical habitat. If the determination is "may affect" for listed species or "may jeopardize the continued existence" for proposed species you must request in writing formal consultation from the Assistant Field Supervisor, at the address given above. At that time you should provide a copy of the biological assessment and any other relevant information that assisted you in reaching your conclusion. The Service has developed a set of internal guidelines for conferencing procedures on the Mexican spotted owl which have been provided to the Regional Forester.

The Service can enter into formal Section 7 consultation only with another Federal agency. State, county or any other governmental or private organizations can participate in the consultation process, help prepare information such as the biological assessment, participate in meetings, etc.

Your attention is also directed to Section 7(d) of the Endangered Species Act, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the

formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

It appears that there may be wetlands in the vicinity of some of the project areas. The Forest Service should be aware that if the project will alter any wetlands or flood plains a permit must be obtained from the Army Corps of Engineers. If you have any questions please contact us. The Service representative in Salt Lake City who will provide you technical assistance is Susan Linner at (801) 524-5630.

Sincerely,

A handwritten signature in black ink, appearing to read "Clark D. Johnson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Clark D. Johnson  
Assistant Field Supervisor

**LETTER FROM DIXIE NATIONAL FOREST ARCHAEOLOGIST**



United States  
Department of  
Agriculture

Forest  
Service

Dixie N.F.

Reply to: 2360

Date: Dec. 15, 1992

Subject: Cultural Resource Inventories for Panquitch Lake Allotment

To: Ron Wilson, Cedar City District Ranger

A search of the cultural resource files were undertaken on December 15, 1992 to determine the extent of previously inventoried areas within the Panquitch Lake Allotment as part of the Allotment Management Plan process.

Several surveys have been conducted adjacent to the allotment boundary and the following cultural resource reports have been written for projects within the boundaries:

Birch Spring Archaeological Survey DX-75-20; Lake Hollow T/S DX-75-30;  
Copper Draw T/S DX-77-69; Lake View T/S Dx-77-77; Rock Canyon Gully  
Stabilization DX-80-128; D-2 Spring Development Dx-83-192; Cameron  
Wash T/S Dx-86-304

From the data collected in these previously inventoried areas. It can be determined that the area holds a high potential for the discovery of significant archeological and historical sites.

It is recommended that before implementing any ground disturbing development projects within the Panquitch Lake Allotment that an intensive cultural resource inventory be conducted by a qualified archeologist or Para-Professional.

If you have any questions please contact Marian Jacklin at (801)865-3700.

*for Mark E. Van Every*  
RALPH S. RAWLINSON

Recreation, Minerals, and Lands Staff Officer



**MONITORING FORMS**

# MONITORING FORM

**OBJECTIVE:** Determine degree and distribution of livestock use.

**ITEM TO MONITOR:** Percent utilization, by weight, of forage plants in key areas.

**TYPE OF MONITORING:** Implementation monitoring

**METHODS/PARAMETERS:** Visual inspections, with occasional clipped plots, by Forest Service range conservationist and technician.

**FREQUENCY/DURATION:** Annually, during and following use in each pasture.

**PROJECTED COSTS:** \$500/annually

**REPORTING PROCEDURES:** Unit Examination Record and utilization maps filed in 2220 Section of the Allotment Folder, Cedar City Ranger District.

**RESPONSIBILITY:** District Range Conservationist, District Range Technician.

# MONITORING FORM

**OBJECTIVE:** Determine vegetation density, distribution and vigor (other than riparian areas).

**ITEM TO MONITOR:** Vegetation densities, composition and vigor on key benchmark areas.

**TYPE OF MONITORING:** Effectiveness monitoring

**METHODS/PARAMETERS:** Nested frequency transect on one representative site of allotment in Rock Canyon pasture. West Pass enclosures and existing photo points at Parker 3-Step locations would be used for comparisons.

**FREQUENCY/DURATION:** 5-year interval

**PROJECTED COSTS:** \$100/annually

**REPORTING PROCEDURES:** Transect summary, photo comparisons, and brief evaluation of findings. File located in 2210 Section of Allotment Folder, Cedar City Ranger District.

**RESPONSIBILITY:** District Range Conservationist

# MONITORING FORM

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

**ITEM TO MONITOR:** Progression of gully erosion and overall soil stability.

**TYPE OF MONITORING:** Effectiveness monitoring

**METHODS/PARAMETERS:** Cross section and headcut measurements to determine change. Photo points to determine trend in vegetation and soil and overall stability of site.

**FREQUENCY/DURATION:** 2-year interval

**PROJECTED COSTS:** \$250/annually

**REPORTING PROCEDURES:** Before and after photo comparison, measurements 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 water quality of Panguitch Lake.

**ITEM TO MONITOR:** Monitor water quality before and after livestock are put in the Panguitch Lake Pasture.

**TYPE OF MONITORING:** Effectiveness monitoring

**METHODS/PARAMETERS:** Water sampling near shore at designated points in grazing areas on Panguitch Lake.

**FREQUENCY/DURATION:** Annually during months preceding and immediately after grazing.

**PROJECTED COSTS:** \$100/annually

**REPORTING PROCEDURES:** Nitrate and phosphorus content levels of the Lake. A narrative would be written to describe results. File is located in 2210 Section of Allotment Folder, Cedar City Ranger District.

**RESPONSIBILITY:** Forest Hydrologist