

United States
Department
of Agriculture

Forest Service
Intermountain Region

Dixie National Forest



Environmental Assessment

for

EAST FORK/CRAWFORD C&H ALLOTMENT PLAN

on the

**Powell Ranger District
Dixie National Forest**

January 1992

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| CHAPTER I. PROPOSAL | |
| A. Introduction | I-1 |
| B. Proposed Action | I-2 |
| C. Purpose and Need | I-2 |
| D. Decision to be Made | I-4 |
| E. Background | I-4 |
| F. Public Participation | I-5 |
| CHAPTER II. ALTERNATIVES | |
| A. Alternatives Considered in Detail | II-1 |
| B. Alternatives Considered, But Not Analyzed in Detail | II-7 |
| C. Summary of Alternatives | II-7 |
| D. Discussion of Alternative Grazing Strategies | II-13 |
| CHAPTER III. AFFECTED ENVIRONMENT | |
| A. Livestock Grazing | III-1 |
| B. Recreation and Visual Resources | III-1 |
| C. Soil and Water | III-2 |
| D. Fisheries | III-3 |
| E. Wildlife and Threatened, Endangered and Sensitive Species | III-4 |
| F. Vegetation | III-6 |
| CHAPTER IV. ENVIRONMENTAL CONSEQUENCES | |
| CHAPTER V. LIST OF PREPARERS | |
| CHAPTER VI. LIST OF AGENCIES AND PERSONS CONSULTED | |
| APPENDIXES | |
| A. Vicinity Map | |
| B. Alternative Maps | |
| C. Utilization Standards for Forage Species | |
| D. Grazing Capacity Summary | |
| E. Issues, Concerns and Opportunities (Identified But Not Evaluated) | |
| F. Public Involvement Documents | |
| G. Management Area Descriptions | |
| H. Monitoring | |
| I. Cultural Resources | |
| J. Biological Evaluation (See Project File) | |
| K. Project Costs (See Project File) | |
| L. References | |

ENVIRONMENTAL ASSESSMENT
FOR
EAST FORK/CRAWFORD C&H ALLOTMENT PLAN

Powell Ranger District
Dixie National Forest
Garfield and Kane Counties, Utah

CHAPTER I. PROPOSAL

A. INTRODUCTION

The Powell Ranger District of the Dixie National Forest has prepared this Environmental Assessment (EA) to document the analysis of alternative management actions, including the no-action alternative that is documented in the East Fork C&H Allotment Management Plan (AMP), dated 1980. The AMP is not consistent with the Dixie National Forest Land and Resource Management Plan (Dixie National Forest L&RMP). In 1986, the permitted use on the Crawford C&H Allotment was terminated because of permit violations. Also, this EA will document the analysis of the disposition of the Crawford C&H Allotment. Currently the East Fork and Crawford C&H Allotments do not have AMP's that address how management should be carried out to meet the direction contained in the Dixie National Forest L&RMP. Existing conditions on the allotments do not meet the desired future conditions identified in the Dixie National Forest L&RMP. Because of these conditions, it is necessary to prepare a new AMP to meet present Forest Service policy and direction.

The Federal Land Policy Management Act (FLPMA), as amended by the Public Rangelands Improvement Act allows for AMP's to be included in grazing permits at the discretion of the Secretary of Agriculture (43 USC (1752(d), as amended by 92 Stat. 1803 (1978). The Secretary has elected to exercise this discretion, and has delegated his authority to issue regulations in this area to the Chief of the Forest Service (see 36 CFR 222.1 and 222.2).

An AMP is defined in FLPMA as a document prepared in consultation with lessees or permittees applying to livestock operations on the public lands prescribing (1) the manner in and extent to which livestock operations will be conducted in order to meet multiple use, sustained-yield, economic, and other needs and objectives, (2) describing range improvements to be installed and maintained, and (3) containing such other provisions relating to livestock grazing and other objectives found by the Secretary to be consistent with the provisions of FLPMA.

The two allotments are located approximately 16-37 miles southeast of Panguitch, Utah, on the Paunsaugunt Plateau. The East Fork C&H Allotment lies entirely within the East Fork of the Sevier River drainage (Great Basin), while the Crawford C&H Allotment lies in the East Fork of the Sevier River drainage and the Colorado River drainage. Bryce Canyon National Park lies to the east and north of both allotments. A vicinity map showing the project area is included in Appendix A.

The Environmental Analysis and Assessment were 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 L&RMP.

B. PROPOSED ACTION

The Powell Ranger District of the Dixie National Forest proposes to combine portions of the Crawford C&H Allotment with the East Fork C&H Allotment. An AMP will be developed that will address this combination. The land below the Paunsaugunt Plateau Rim, on the south end of the Crawford C&H Allotment, would be closed to livestock grazing, except for lands adjacent to the National Forest boundary which could be permitted to adjoining land users for grazing of cattle.

In addition, the Forest Service proposes to approve the construction of 3 miles of fence to control unauthorized livestock use and 4.6 miles of fence for the protection of wildlife and recreation uses and management of livestock around Tropic Reservoir. An additional 1.6 miles of fence will also be constructed to enhance the recovery of riparian areas along the East Fork of the Sevier River and .8 mile of unit boundary fence would be constructed. A total of 443 head of cattle will graze on the allotments, from 6/16 to 9/30, annually. The proposed grazing system will be a seven pasture deferred rotation system. These actions will take affect upon approval of the AMP.

C. PURPOSE AND NEED

The proposed action is designed to implement and incorporate the goals and objectives of the 1986 Dixie National Forest L&RMP. The East Fork and Crawford C&H Allotments have AMP's, however, they are outdated and are not consistent with the Dixie National Forest L&RMP.

Existing conditions on the allotments do not meet the desired future conditions identified in the Dixie National Forest L&RMP. Because of these conditions, actions selected by the deciding officer will be incorporated into the new AMP. More specifically, the proposal has the following purposes:

The majority of the upland range sites are at or near the desired future condition for those vegetation communities. There is an opportunity for increased use (distribution) by livestock while maintaining these desired plant communities for optimum forage production (Dixie National Forest L&RMP, Chapter IV-109).

There are riparian areas which contain vegetation communities which are at an earlier successional stage with lower resource values for riparian dependent species than vegetation communities which have the potential to occupy these sites. The management area direction would be to provide healthy, self-perpetuating riparian plant communities (Dixie L&RMP, Chapter IV-135).

The recreation opportunities are high within the area around Tropic Reservoir. These uses are primarily associated with visual resources. The management area direction is to manage the visual resources so that management activities maintain or improve the quality of recreation opportunities (Dixie National Forest L&RMP, Chapter IV-68).

The Crawford C&H Allotment's grazing capacity is not presently obligated under a Term Grazing Permit. The desired future condition is to permit livestock grazing and develop allotment management plans that will ensure proper management (Dixie National Forest L&RMP, Chapter IV-21).

Water quality and stream channel stability are not providing for adequate fisheries habitat on some stretches of the East Fork of the Sevier River. The desired future condition is to maintain and improve existing levels of water quality and stream channel stability is maintained or improved, in areas where it is severely degraded (Dixie National Forest L&RMP, Chapter IV-135).

Riparian dependent wildlife and fish species habitat is being effected by livestock grazing around Tropic Reservoir. The desired future condition would be to have habitat that would be available to support in excess of minimum viable populations of riparian dependent wildlife and fish species (Dixie National Forest L&RMP, Chapter IV-73).

This EA documents analysis of site-specific, on-the-ground proposals. It is not a general management plan for the two allotments. Actions selected by the deciding officer, as a result of the analysis documented in this EA, will be documented in an AMP that will guide future management of the allotments. The environmental analysis documented in the this EA is tiered to the Forest Plan and FEIS approved on September 2, 1986. It does not re-analyze the Management Area allocations already specified in the Dixie National Forest L&RMP. The scope of the analysis is limited to consideration of the proposed action and its alternatives, subject to existing programmatic goals, objectives, standards, and guidelines set forth in the Dixie National Forest L&RMP.

This EA is not a decision document: it does not describe the decision to be made by the deciding officer with regard to the proposed action. This EA discloses the environmental consequences of implementing the proposed action and alternatives to that action. The Forest Supervisor's decision is stated and explained in the Decision Notice accompanying this EA.

D. DECISION TO BE MADE

The two allotments are currently being managed under annual operating plans. Both allotments have AMP's. Livestock use on the allotments is adjusted each year to meet resource needs. The current AMP's must be revised to bring the allotments into compliance with NEPA regulations and the Dixie National Forest L&RMP.

The decision to be made from this EA is to choose one of four alternatives for managing the Crawford and East Fork C&H Allotments. These alternatives will be described in Chapter II.

E. BACKGROUND

East Fork C&H Allotment - The East Fork C&H Allotment has been grazed by domestic livestock since 1866 (sheep and cattle). There are no records of any deferred or rest rotation type grazing systems prior to the 1950's. In the 1950's, a deferred rotation system was tried using herders. In 1965, the allotment was divided into nine pastures and a rest rotation system of grazing was implemented. In 1975, the nine pastures were reduced to seven pastures and a combination of a deferred and rest rotation system of grazing was implemented (see 1980 approved AMP). However, in 1982, this grazing system was modified to allow the Heaton Brothers permitted cattle to split from the main herd and remain in the Sieler Unit while the remainder of the herd moved through the allotment to end the grazing season in the Tropic Reservoir Unit. This action reduced the distance the Heaton Brothers had to trail their cattle upstream and back to their ranch near Alton, Utah. Presently, eleven permittees are authorized to graze 443 cattle from 6/11 to 10/10 (1772 AM's) on the East Fork C&H Allotment.

Crawford C&H Allotment - Prior to 1945, the allotment was divided into two separate allotments. One allotment was named the Meadow-Upper Crawford Allotment and the other was named the Podunk-Lower Crawford Allotment. Approximately 2,005 acres of National Park System lands were included in the lower unit of the allotment. Throughout the years this allotment's permitted use has been reduced. In 1986, the permitted use on the Crawford Allotment was terminated because of permit violations. The permitted use was 175 cattle from 6/21 to 9/30 (583 AM's).

Proper management of this allotment has been difficult because of the variation in vegetation on the suitable range between the lower and upper units of the allotment. The upper units contained more lush forage and greater forage carrying capacity. The cattle preferred the upper units and without management fences, they would not stay in the lower unit. In 1969, the allotment was divided into four pastures. Three pastures above the Paunsaugunt Plateau Rim were grazed using a rest rotation grazing system and the lower unit, below the rim, was grazed using a deferred rotation grazing system. The Allotment Management Plan approved on January 9, 1978, also described this grazing system.

F. PUBLIC PARTICIPATION

One of the first steps in the scoping process for the Crawford and East Fork C&H Allotments was to identify members of the public who could be affected by the proposed action, and/or who might have an interest in the decisions made for this proposed action. Other Federal, State and local governmental agencies were considered in this process. These individuals and organizations were notified that an Allotment Management Plan was proposed to implement the Dixie National Forest L&RMP on the Powell Ranger District and were informed of decisions to be made. They were asked to comment on or involve themselves in the analysis of the proposed action and its alternatives. This was accomplished through notices in letters and personal contacts.

In this correspondence, the project was described as being an allotment management plan proposed for the Crawford/East Fork C&H Allotments. The public was informed that the project would involve refining the grazing systems to insure continued improvement of the soil and vegetation resources and determine the disposition of the Crawford C&H Allotment.

Notification of the project also explained that the proposed project, at this preliminary stage, would be consistent with the Dixie National Forest L&RMP.

Public Issues, Management Concerns and Opportunities

The Forest Service prepared an Initial Analysis and Scoping Paper for the project proposal and implemented a public scoping process to determine major issues and concerns associated with this project. An initial analysis and scoping paper (158 copies) was sent to private citizens, organizations, and local, State and Federal agencies.

Approximately 24 individuals, groups, organizations and agencies responded to the invitation to comment on the proposed project, or involved themselves in the analysis of the project. The Interdisciplinary Team assigned to this project reviewed the Dixie National Forest L&RMP and other available literature on the Crawford and East Fork C&H Allotment Management Plan revisions. Based upon the scoping process and after reviewing opportunities to improve management of the land resources, issues were identified that are relevant to this proposal and have been included in the analysis. Following are the issues identified, a brief description of the issues, and evaluation criteria that will be used to measure how well each alternative addresses the issues in the Environmental Consequences, Chapter IV:

1. Unsatisfactory riparian conditions exist within the analysis area.

There is a concern that unsatisfactory riparian conditions exist and this is evident by a lack of riparian vegetation species, poor diversity of vegetation species and instability of stream banks. Under these conditions both water quality and fisheries habitat are being adversely affected.

Alternatives addressing this issue will be analyzed using criteria which:

- a. Evaluate impacts of grazing on willow density, size and utilization.
- b. Evaluate impacts of grazing on water temperature.
- c. Evaluate impacts of grazing on sediment production levels.
- d. Evaluate impacts of grazing on streambank stability.

2. Elk and livestock competition for forage.

Some respondents stated elk are competing with livestock for forage, primarily in valley bottoms. The concern is that elk are using this forage prior to, during, and after livestock use and this use could be detrimental to the vegetation as well as reducing the amount of forage available for livestock, resulting in reduced livestock numbers.

Alternatives addressing this issue will be analyzed using criteria which:

- a. Evaluate impacts that dual wildlife and livestock grazing has on the vegetation communities.
- b. Evaluate elk and cattle grazing as it relates to proper use of forage criteria and carrying capacities for both elk and cattle.

3. Economic impacts on grazing permittees.

There is a concern of the economic impacts on the grazing permittees if livestock numbers are reduced or management practices changed.

Alternatives addressing this issue will be analyzed using criteria which:

- a. Evaluate impacts on the livestock carrying capacity.
- b. Evaluate costs of new range improvements.
- c. Evaluate costs of maintaining range improvements.
- d. Evaluate impacts of pasture moves.

4. Tropic Reservoir and Kings Creek Campground - Emphasis is on riparian habitat and recreation (Dixie National Forest L&RMP).

There has been a concern expressed that the area around Tropic Reservoir and the Kings Creek Campground should be managed for wildlife and recreation uses and there currently exists conflicts between recreational uses and livestock use.

Alternatives addressing this issue will be analyzed using criteria which:

- a. Evaluate impacts of livestock use vs. recreation uses.
- b. Evaluate impacts of livestock use vs. waterfowl habitat.

5. Use of National Forest System lands by adjoining land users.

There has been some concern that management of private lands adjoining National Forest System lands is difficult because of unfenced boundaries between the two. This situation occurs on the Crawford C&H Allotment below the rim and adjacent to the Deer Springs Ranch.

Alternatives addressing this issue will be analyzed using criteria which:

Evaluate potential impacts livestock grazing would have on lands suitable to cattle grazing on the Crawford C&H Allotment below the rim.

6. Combining Crawford C&H Allotment with East Fork C&H Allotment.

Some respondents expressed the opportunity to combine the Crawford C&H Allotment with the East Fork C&H Allotment. The concern is that with increased elk use and increased emphasis on wildlife and recreation activities that combining of the two allotments would offset losses of livestock grazing capacity to other uses.

Alternatives addressing this issue will be analyzed using criteria which:

- a. Evaluate impacts to the East Fork C&H Allotments livestock carrying capacity.
- b. Evaluate impacts on permit administration.
- c. Evaluate impacts on the effectiveness of grazing systems.

This Environmental Assessment documents the analysis of the present condition, alternatives to address the major issues, and the environmental effects and consequences of implementing the alternatives. It also documents the analysis of an appropriate alternative that would be responsive to the purpose and need for this proposed action.

Documentation of the scoping and public involvement process is included in the project file available at the Powell Ranger District office. Other issues, concerns and opportunities that were identified, but were not considered within the scope of the proposed action or were not considered significant issues are listed in Appendix E.

CHAPTER II. ALTERNATIVES

This chapter describes a range of alternatives, including the proposed action (Alternative 4), for the Crawford and East Fork C&H Allotments on the Powell Ranger District, Dixie National Forest. These alternatives have been developed by an Interdisciplinary Team in response to issues identified during the scoping process (40 CFR Part 1501.7 Scoping).

This chapter is comprised of four parts: a) alternatives considered and analyzed in detail, b) alternatives considered, but not analyzed in detail, c) summary of alternatives, and d) discussion of alternative grazing strategies.

A. ALTERNATIVES CONSIDERED IN DETAIL

Alternative 1 - The No Action Alternative

This alternative is prescribed in the existing allotment management plan for the East Fork C&H Allotment. The Crawford C&H Allotment has no Term Grazing Permit issued for livestock grazing at this time. It is used under a temporary authorization by the East Fork C&H Allotment permittees in the Annual Plan of Use. For this alternative there would be no authorized grazing use of the Crawford C&H Allotment. Permitted livestock use on the East Fork C&H Allotment would be 443 cow-calf pairs to graze the allotment from 6/11 to 10/10, annually. Proper use would be 50% to 60% use of the forage growing on suitable range.

The grazing system would be a combination of rest rotation on two units (lower units) and a rotation system of grazing on the five upper units.

The following table shows the planned grazing schedule:

| Year | Daves Hollow | East Creek | Tropic Reservoir | Long Hollow | Bridge Hollow | Upper East Fork | Sieler |
|------|--------------|------------|------------------|-------------|---------------|-----------------|--------|
| 1992 | 7 | 1 | 5 | 6 | 2 | 3 | 4 |
| 1993 | 1 | 7 | 5 | 6 | 2 | 3 | 4 |
| | | | (Repeat Cycle) | | | | |

- 1 - Graze - 6/11 to 6/30 - or until proper use is reached.
- 2 - Graze - 7/01 to 7/25 - or until proper use is reached.
- 3 - Graze - 7/26 to 8/31 - or until proper use is reached.
- 4 - Graze - 9/01 to 9/15 - or until proper use is reached.
- 5 - Graze - 9/16 to 10/10 - or until proper use is reached.
(Tropic permittees cattle only - 296 head)
- 6 - Graze - 9/16 to 10/10 - or until proper use is reached.
(Heaton's cattle only - 147 head)
- 7 - Rest or graze last few days of grazing season when necessary.

It is to be noted that the Tropic permittee cattle are put in the Tropic Reservoir Unit the last part of the grazing season and Heaton's cattle in the Long Hollow Unit. This is a desirable management practice so the two herds are separated and can be removed easily from the allotment at the end of the grazing season. The Tropic cattle leave the allotment by trailing down the East Fork of the Sevier River while the Heaton permittee cattle leave the allotment by trailing up the East Fork of the Sevier River.

The grazing dates are tentative and will be adjusted as conditions and use warrant. On drought years, it may be necessary to use the rest pasture near the end of the grazing season.

The cattle will be in each unit for three to five weeks. After the cattle leave the unit they will not return, other than to trail through. The units will be permitted to recover the rest of the year. Under this system the forage plants in Daves Hollow and East Creek units will be permitted to reach full development one out of two years. Plants in the Tropic Reservoir and Long Hollow units will reach full development every year and plants in the three upper units will either reach the flowering stage or the early seed ripe stage before they are grazed.

Alternative 2 - Deferred Rest-Rotation

This alternative would add those units of the Crawford C&H Allotment which lie in the East Fork drainage to the East Fork C&H Allotment. The lower unit (below the rim) of the Crawford C&H Allotment would be closed to grazing except as may be permitted, on lands suitable to livestock grazing, to adjoining land owners in conjunction with adjacent private lands.

The permitted use on the combined Crawford/East Fork C&H Allotment would be 1201 AM's or 325 head, for a 6/11 to 9/30 grazing season. Proper use of forage would vary between the units from year to year. Some units could be grazed up to 50% or those grazed early in the season. Proper use would be 40% on riparian areas in those units grazed mid season. Proper use would be 30% on riparian areas in the units grazed late season. The objective of reduced use would be to retain and/or improve streambank vegetation for protection of soil against high streamflows and ice action on the streambanks. Willows would also receive less use and their growth would be encouraged to armor the streambanks against soil erosion.

There would be eight separate units which would be grazed in a four year deferred rest-rotation grazing system. Two units would be deferred each year at least until seed ripe. Two units would be completely rested from livestock use each year.

The following table shows the planned grazing schedule:

| Year | Daves Hollow | East Creek | Tropic Reservoir | Long Hollow | Bridge Hollow | Upper East Fork | Sieler | Crawford |
|------|--------------|------------|------------------|-------------|---------------|-----------------|--------|----------|
| 1992 | 6 | 1 | R | 5 | 2 | R | 4 | 3 |
| 1993 | 6 | 5 | 1 | R | 2 | 3 | R | 4 |
| 1994 | R | 6 | 5 | 1 | 4 | 3 | 2 | R |
| 1995 | 1 | R | 2 | 3 | R | 6 | 5 | 4 |

R = Rest, 1 = First (50%), 2 = Second (50%), 3 = Third (40%), 4 = Fourth (40%), 5 = Fifth (30%), 6 = Sixth (30%)

The four upper units (Upper East Fork, Sieler, Crawford, and Bridge Hollow) would not be used as the first unit any year because of late season range readiness in these units. Each unit would be grazed from one to four weeks. After the cattle leave the unit they would not return, other than to trail through. The units would be allowed to recover the rest of the year after grazing.

Improvements needed to implement this alternative are the following:

- Boundary changes between the Upper East Fork, Crawford and Sieler Units. This would include 1.8 miles of fence removal, fence construction of .6 mile, and moving one cattleguard.

Alternative 3

This alternative allows for the Crawford C&H Allotment to be grazed as prescribed in the 1978 Allotment Management Plan. The allotment would retain its own identity and the grazing capacity of the allotment would be allocated under a Term Grazing Permit. Permitted use would be 334 animal months for a total of 100 cattle with a 6/21 to 9/30 grazing season. The grazing system used would be a 4 unit rest-rotation grazing system. Proper use of 50% would be allowed on the allotment.

The grazing system is based upon three management units above the Paunsaugunt Plateau rim and one unit below the rim. The lower portion of the allotment below the rim would be managed as a separate unit and would be grazed annually in the fall as the cattle leave the allotment.

The following table shows the planned grazing schedule:

| Year | Meadow Canyon | Upper Crawford | Lower Crawford | East Fork |
|----------------|---------------|----------------|----------------|-----------|
| 1992 | 3 | 2 | 1 | R |
| 1993 | 3 | R | 2 | 1 |
| 1994 | 3 | 1 | R | 2 |
| (Repeat Cycle) | | | | |

- 1 = Graze 1st half of season or until proper use is reached.
- 2 = Graze 2nd half of season or until proper use is reached.
- 3 = Graze last 10 days of season or until proper use is reached.
- R = Season long rest for seedling establishment. On extremely dry years, the rest pasture may be grazed.

The grazing system allows each pasture above the rim one complete year of rest and one deferment until seed ripe every three years. The pasture below the rim will receive deferment until after seed ripe every year.

The East Fork C&H Allotment would be grazed using a six pasture deferred-rotation grazing system. The permitted use would be 1278 AM's or 346 cattle, for a 6/11 to 9/30 grazing season. Proper use would vary between 30-50% depending on the timing of use of the units. Forage in units to be grazed in the early season could be used up to 50% and the units to be grazed mid season would be used up to 40% on riparian vegetation. The units grazed late season would only be used up to 30% on both riparian vegetation and other rangelands. There would be regrowth in units grazed early and mid season and proper use in the late season units would be reduced to retain streamside vegetation for protection of soils from high streamflows and ice action on the streambanks. Willows would also receive less use and their growth would be encouraged to armor the streambanks against soil erosion. Proper use of rangelands during the late season would be reduced in the Daves Hollow and East Creek Units to allow for elk, deer and antelope browse needs. Also, this reduced use would help provide for early season forage needs the following year.

To meet other resource needs and to accelerate the recovery of degraded riparian conditions along the East Fork of the Sevier River, fencing would take place under this alternative. The Kings Creek Campground and Tropic Reservoir would be fenced from livestock grazing. This would reduce conflicts between livestock grazing and recreation users in the area and also allow for improvement of riparian and nesting habitat for waterfowl. Other segments of stream stretches above Tropic Reservoir could be fenced following successful recovery efforts of this stream segment.

The riparian areas along the East Fork of the Sevier River in the East Creek Unit would also be fenced to accelerate recovery of this riparian area. This area could be used in conjunction with the East Creek Unit or as a small separate unit. Any grazing use would be determined on an annual basis. This

would be dependent on the recovery of the riparian areas meeting desired future conditions. Water gaps for livestock watering would be provided as needed on the East Fork of the Sevier River.

Because of the reduced grazing capacity in the Tropic Reservoir Unit, portions of this unit would be grazed with the Long Hollow and East Creek Units. See the alternative maps in Appendix B.

The following table shows the planned grazing schedule:

| Year | Daves Hollow | East Creek | Long Hollow | Bridge Hollow | Upper East Fork | Sieler |
|-------|--------------|----------------|-------------|---------------|-----------------|--------|
| 1992 | 1 | 6 | 2 | 5 | 3 | 4 |
| ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1993 | 6 | 1 | 5 | 2 | 4 | 3 |
| ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| | | (Repeat Cycle) | | | | |

Year 1

- 1 - Graze 6/11 to 6/26 - or until proper use of 50% is reached.
- 2 - Graze 6/27 to 7/31 - or until proper use of 50% is reached.
- 3 - Graze 8/01 to 8/26 - or until proper use of 40% is reached.
- 4 - Graze 8/27 to 9/05 - or until proper use of 40% is reached.
- 5 - Graze 9/06 to 9/21 - or until proper use of 30% is reached.
- 6 - Graze 9/22 to 9/30 - or until proper use of 30% is reached.

Year 2

- 1 - Graze 6/11 to 6/25 - or until proper use of 50% is reached.
- 2 - Graze 6/26 to 7/23 - or until proper use of 50% is reached.
- 3 - Graze 7/24 to 8/03 - or until proper use of 40% is reached.
- 4 - Graze 8/04 to 8/30 - or until proper use of 40% is reached.
- 5 - Graze 8/31 to 9/17 - or until proper use of 30% is reached.
- 6 - Graze 9/18 to 9/30 - or until proper use of 30% is reached.

The grazing season dates are tentative and would be adjusted as forage utilization and conditions warrant. The Daves Hollow and East Creek units, followed by the Bridge Hollow and Long Hollow units, would be grazed at the beginning of the season to allow forage in the upper (higher elevation) units time to reach proper range readiness.

The following improvements are needed to implement this alternative:

- Construction of .8 mile of division fence (Upper Crawford).
- Construction of 1 cattleguard (Upper Crawford).
- Construction and reconstruction of 3 miles of allotment boundary fence (Meadow Canyon Unit).
- Reconstruction of two water developments (Meadow Canyon Unit).
- Construction of 1.6 miles of riparian fence (East Creek Unit).
- Construction of 4.6 miles of fence around Tropic Reservoir and Kings Creek Campground (3.8 miles - optional).

- Construction of 4 cattleguards (Tropic Reservoir Unit - 3 optional).
- Fence realignment between Blue Fly C&H Allotment and East Fork C&H Allotment (1.2 miles - optional).
- Fence realignment in vicinity of Whiteman Spring (1.3 miles - optional).

Alternative 4 - The Proposed Action

This alternative would add those units of the Crawford C&H Allotment which lie in the East Fork drainage to the East Fork C&H Allotment. The lower unit (below the rim) of the Crawford C&H Allotment would be closed to grazing except as may be permitted, on lands suitable to livestock grazing, to adjoining land owners in conjunction with adjacent private lands.

The permitted use on the combined Crawford/East Fork C&H Allotment would be 1550 AM's or 443 head for a 6/16 to 9/30 grazing season. The grazing system used would be the same as that described for the East Fork C&H Allotment in Alternative #3 except this alternative would have seven units.

The following table shows the planned grazing schedule:

| Year | Daves Hollow | East Creek | Long Hollow | Bridge Hollow | Upper East Fk. | Sieler | Crawford |
|----------------|--------------|------------|-------------|---------------|----------------|--------|----------|
| 1992 | 1 | 7 | 2 | 6 | 3 | 5 | 4 |
| 1993 | 7 | 1 | 6 | 2 | 5 | 4 | 3 |
| (Repeat Cycle) | | | | | | | |

Year 1

- 1 - Graze 6/16 to 7/02 - or until proper use of 50% is reached.
- 2 - Graze 7/03 to 7/26 - or until proper use of 50% is reached.
- 3 - Graze 7/27 to 8/21 - or until proper use of 50% is reached.
- 4 - Graze 8/22 to 9/04 - or until proper use of 40% is reached.
- 5 - Graze 9/05 to 9/12 - or until proper use of 40% is reached.
- 6 - Graze 9/13 to 9/23 - or until proper use of 30% is reached.
- 7 - Graze 9/24 to 9/30 - or until proper use of 30% is reached.

Year 2

- 1 - Graze 6/16 to 6/27 - or until proper use of 50% is reached.
- 2 - Graze 6/28 to 7/18 - or until proper use of 50% is reached.
- 3 - Graze 7/19 to 8/06 - or until proper use of 50% is reached.
- 4 - Graze 8/07 to 8/15 - or until proper use of 40% is reached.
- 5 - Graze 8/16 to 9/05 - or until proper use of 40% is reached.
- 6 - Graze 9/06 to 9/20 - or until proper use of 30% is reached.
- 7 - Graze 9/21 to 9/30 - or until proper use of 30% is reached.

The grazing dates are tentative and would be adjusted as conditions and use warrant. The Daves Hollow and the East Creek units followed by the Long Hollow and Bridge Hollow units would be used during the early season to allow the upper (higher elevation) units time to reach proper range readiness. The riparian area on the East Fork of the Sevier River from the gauging station above Tropic Reservoir down thru the East Creek unit would be fenced to improve riparian conditions. The fenced areas will not be closed to grazing, however, it will be a number of years before the riparian areas are restored and livestock grazing will be authorized.

The following improvements are needed to implement this alternative:

- Construction of 1.6 miles of riparian fence (East Creek Unit).
- Construction of 4.6 miles of fence around Tropic Reservoir and Kings Creek Campground (3.8 miles - optional).
- Construction of 4 cattleguards (Tropic Reservoir Unit - 3 optional).
- Construction of .6 miles of division fence and removal of 1.3 miles of fence and moving one cattleguard (Dairy Hollow).
- Fence realignment between Blue Fly C&H and East Fork C&H Allotments (1.2 miles - optional).
- Fence realignment in the vicinity of Whiteman Spring (1.3 miles - optional).
- Construction of 3 miles National Forest boundary fence (Meadow Canyon Unit - optional).

Alternatives 2, 3 and 4 are consistent with Dixie National Forest L&RMP Management Direction and with Management Area Prescriptions found in Chapter IV for the areas the proposed action would take place. Each of these alternatives could be implemented without amending the Forest Plan.

B. ALTERNATIVES CONSIDERED, BUT NOT ANALYZED IN DETAIL

1. The no grazing alternative of domestic livestock on both the Crawford and East Fork C&H Allotments was eliminated from detailed study because this alternative would not meet the general goals and management area direction for livestock grazing in the Dixie National Forest L&RMP.
2. Alternatives to provide consecutive years rest in selected units to improve riparian areas was eliminated from detailed study because it was felt that the uplands in each unit did not need to be rested. Resting a complete unit to protect riparian areas was not needed. Other options considered were riparian fencing, timing of grazing in units, length of stay and utilization levels.

C. SUMMARY OF ALTERNATIVES

Four alternatives were analyzed in detail. Alternative 1 (No Action) does not allow for grazing use of the Crawford C&H Allotment. The units of the East Fork C&H Allotment are scheduled to be grazed the same time each year.

Alternative 2 (Deferred-Rest Rotation) adds the Crawford C&H Allotment to the East Fork C&H Allotment. Two units would be rested each year under a cycle that would be repeated every four years.

Alternative 3 (Deferred Rotation) does not include the Crawford C&H Allotment with the East Fork C&H Allotment. The Crawford C&H Allotment would be grazed using a rest-rotation grazing system. The East Fork C&H Allotment would be grazed using six units each year for one to four weeks depending upon utilization levels under a deferred rotation grazing system. Riparian, recreation and wetland areas would have protection and enhancement fencing.

Alternative 4 (Proposed Action) is the same as Alternative 3 except that the Upper Crawford Units are part of the seven unit deferred rotation grazing system on the East Fork C&H Allotment.

The following activities are common to all four of the alternatives:

The allotment boundaries will be fenced as Forest Service, Park Service, grazing permittees and/or other private funds become available.

No livestock would be allowed on National Forest System lands until proper range readiness is reached, annually.

Herding and salting practices would be followed to achieve proper distribution of livestock.

Monitoring of forage utilization levels would determine when to move livestock to the next scheduled unit. When all the scheduled units have been grazed to proper use, livestock would be removed from the allotment.

Numbers of livestock and season of use would be adjusted annually as determined by the District Ranger.

All range improvements would be maintained to the standard which they were constructed. Reconstruction of improvements would be completed as determined necessary by the District Ranger and as funds are available.

When livestock are moved to the next unit all livestock would be moved in a timely manner. Strays would not be allowed to stay in the previously grazed unit.

Grazing these units in a rest or deferred rotation grazing system may require that livestock be trailed across units not scheduled for grazing at that time. It would be necessary that livestock be moved through the units promptly and not left in the unscheduled units.

Hauling of water for livestock may be necessary to achieve proper distribution of livestock when necessary and without hauling water in the Daves Hollow and East Creek Unit the grazing use could be adjusted downward (40% Daves Hollow, 20% East Creek Unit) for a total of 215 AM's or 15 days.

Livestock water could possibly be developed from culinary water sources located on the allotment. This would depend upon the availability of excess water and obtaining water rights. The needs of the administration site (Daves Hollow) and the campground (Kings Creek) would be the first priority.

Monitoring of sedimentation levels would continue annually.

Elk use would be monitored, using paired plots, to determine use by elk prior to livestock grazing in key riparian areas.

The small unit along the Highway between Rubys Inn and the Bryce Canyon National Park boundary would only be grazed by livestock when trailing to and from the allotment.

Control of shrubby cinquefoil (Potentilla fruticosa), may become necessary. Any controls would be done when approved by the District Ranger in accordance with the instructions on the herbicide label.

Historic and/or cultural resource clearances will be completed prior to any new range improvement project developments.

Threatened, endangered and sensitive plant and animal species will have Biological Evaluations prior to any new range improvement project developments where necessary.

COMPARISON OF EFFECTS OF THE ALTERNATIVES

Table II-1 summarizes the effects of implementing each alternative by issue.

Table II-1. COMPARISON OF EFFECTS

| Relevant Issues | Alternative 1 No Action | Alternative 2 | Alternative 3 | Alternative 4 Proposed Action |
|--|---|--|--|---|
| Issue 1: Unsatisfactory riparian condition exists | | | | |
| a. Impact on willows | Slight increase in willows. | More increase in willows than Alt. #1. | Willows would increase more than Alt. #2. | Most improvement. |
| b. Impact on water temperature | Slight improvement in water temperature. | More improvement than alt. #1 | More improvement than Alt. #1 or 2 | Most improvement. |
| c. Impact on sedimentation level | Slight improvement in sedimentation levels. | More improvement than Alt. #1. | More improvement than Alt. #1 or 2. | Most improvement. |
| d. Impact on streambank stability | Slight improvement in bank stability. | More improvement than Alt. #1. | More improvement than Alt. #1 or 2. | Most improvement. |
| Issue 2: Elk and livestock competition for forage | | | | |
| a. Elk and livestock use on vegetation | Use is increasing. | Most available forage. Less forage diversity than Alt. #4. | Least available forage Less forage diversity than Alt. #4. | Less available vegetation than Alt. #1 and 2. Most improved forage diversity. |
| b. Elk vs. cattle on grazing carrying capacity | Competition is increasing. | Less livestock AM's with this Alt. than Alt. #1, also 2 units rested from livestock each year. | Most competition. More livestock AM's than other alternatives. | Less livestock AM's than Alt. #1. The fenced riparian units won't have livestock. |

| Relevant Issues | Alternative 1 No Action | Alternative 2 | Alternative 3 | Alternative 4 Proposed Action |
|---|--|--|---|--|
| Issue 3: Economic impacts on grazing permittees | | | | |
| a. Livestock carrying capacity | 1772 AM's East Fork 0 AM's Crawford Animal Months (AM's) | 1201 AM's East Fork | 1278 AM's East Fork 334 AM's Crawford 1612 AM's Total | 1550 AM's East Fork |
| b. Costs of new improvements | No new improvements. | \$ 500 Forest Service \$2,880 Permittees | \$34,100 Forest Service \$17,040 Permittees | \$23,640 Forest Service \$12,080 Permittees |
| 1. With Options | | | | |
| 2. Without Options | No new improvements | \$ 500 Forest Service \$2,880 Permittees | \$19,860 Forest Service \$ 6,840 Permittees | \$11,400 Forest Service \$ 2,800 Permittees |
| c. Costs of maintenance of improvements | No change. | Less than Alt. #1 1/2 mile new fence and removal of 2.3 miles. | Most increased costs. | More than Alt. #1 & 2. |
| d. Impact of pasture moves | 7 units used. Crawford - no moves | 6 units used. | East Fork - 6 units used. Crawford - 4 units used. | East Fork - 7 units used. |
| Issue 4: Tropic Reservoir and Kings Creek Campground | | | | |
| a. Impact of livestock on recreation areas | Slight increase as recreation use increases. | More conflicts 3 of 4 years. No conflicts 1 of 4 years. | Little to no con- flicts. | Same as Alt. #3. |
| b. Impact of livestock on water fowl habitat | Greatest impact, least vegetation improvement #1. | Less impact than Alt. #1. | Little to no impact to nesting habitat. | Same as Alt. #3. |

| Relevant Issues | Alternative 1 No Action | Alternative 2 | Alternative 3 | Alternative 4 Proposed Action |
|---|--|--|---|--|
| Issue 5: Use of National Forest System lands by adjoining land users | | | | |
| a. Impacts of grazing below the rim on - (vegetation) | No livestock use. | No change unless use permitted to adjoining users. Then: Increased use would compete with wildlife. | Same as Alt. #2. | Same as Alt. #2. |
| (improvements) (permit administration) | No maintenance. Least time and costs. | No change. More time and costs. | Most costly. Most possible costs. | Same as Alt. #2. Same as Alt. #2. Same as Alt. #2. |
| Issue 6: Combining allotments | | | | |
| a. Impacts of livestock grazing capacity on East Fork permittees | No change. | Loss of 571 AM's. | East Fork - Loss of 494 AM's. Crawford - Gain of 334 AM's. | Loss of 222 AM's. |
| b. Impacts on permit administration | No change. | Same as Alt. #1. | Increase in administration costs. | Same as Alt. #1. |
| c. Effectiveness of grazing systems | Least effective grazing system. | Better than Alt. #1, less than 3 and 4. | Less than Alt. #4, Crawford would be less effective. | Most effective system. |

D. DISCUSSION OF ALTERNATIVE GRAZING STRATEGIES

Different grazing strategies were considered by the Interdisciplinary Team to assist in achieving the desired future condition as described in Chapter I.

The effectiveness of any grazing strategy in accomplishing the stated desired future condition depends on how the grazing variables of severity, frequency and timing are manipulated. Grazing ungulates tend to select for the current years growth with the necessary protein, fiber and energy content to meet biological requirements. Cattle tend to be severe grazers in that they tend to remove the majority of the current years growth from a plant or portion of a plant that is bitten as long as it is accessible and not mixed with other non-palatable material. Attempts to control the severity of grazing (utilization levels) can only be accomplished in terms of average utilization for the forage plants in the given area. This can be monitored for all forage in the area or for selected key species. Using such techniques such as herding, salting, water development and fencing can serve to spread grazing more evenly over a given area. This changes the distribution of grazing but not the average utilization levels for the total area.

Frequency of grazing is important in managing ungulate grazing. Once a plant has had the current years growth removed, it utilizes a portion of the energy stored in its roots to initiate regrowth. Once sufficient leaf volume is produced the plant can complete regrowth and replace roots with energy available throughout photosynthesis. If the plant is grazed again before regrowth and recovery is complete it must once again draw on root reserves to initiate regrowth. If this happens several times, a significant reduction in plant vigor can result. If this scenario continues over time, plant mortality eventually occurs. This can lead to a shift in the plant community, with the most palatable species being reduced or eliminated, resulting in less biological diversity which is contrary to the desired future condition. Effects from the frequency of grazing can be controlled through the time that the plants in a given area are exposed to grazing and by allowing for adequate recovery periods between grazing periods.

Frequency of grazing is particularly important in areas where plant regrowth is relatively rapid, such as riparian areas. This is because the faster a plant is growing the greater the number of times it attempts to regrow and is exposed to regrazing during a set period. As previously mentioned, this type of repetitious grazing results in reduced plant vigor and eventual mortality. When forage plants along a streambank are low in vigor with weaker smaller root systems they are less effective in maintaining bank stability which is also contrary to the desired future condition.

The third grazing variable, timing, also requires attention in order to meet the desired future condition. Different plants initiate growth and complete the various stages of growth at different times during the season depending largely on the species of plant and the site it is growing on. The effect that grazing has on a plant is influenced by the growth stage that it is in at the time that it is grazed. To allow for this, grazing the same pasture at the same time of year every year should be avoided. Timing is also important to avoid conflicts. Examples include avoiding grazing a campground during a peak recreation period or grazing a wetland being managed for waterfowl production during the nesting season. With a larger number of pastures, greater flexibility exists to avoid conflicts.

These principles of grazing management were used to structure the various alternatives for these two allotments. The Interdisciplinary Team chose to emphasize deferred systems over rest rotation because of the greater control that they offer in managing grazing frequency. The alternatives that call for additional riparian protection provides even greater control over the frequency and timing of grazing. It is believed that the time provided between grazing use periods in each pasture are adequate to allow for regrowth and recovery. Monitoring will be needed to check this assumption and adjustments in management made if the desired future conditions are not being met.

The desired future condition includes an increase in woody canopy along riparian areas where the potential exists. In order for existing woody vegetation (willows) to expand, reproduction from seed or from suckering will need to occur. Planting is another option. Once reproduction occurs, a grazing strategy is needed that allows young plants to become established. The principles discussed above apply to young plants as well as mature plants. Young plants are more susceptible to mortality from severe and frequent grazing than are mature established plants.

Another question that remains is the extent to which elk are affecting riparian vegetation. The Interdisciplinary Team suspects that elk may be increasing the grazing frequency on riparian vegetation, especially willows. This use by elk reduces the effectiveness of planned recovery periods. Additional monitoring information is needed to address this subject.

With this discussion in mind the preferred alternative proposed calls for the use of a deferred rotation grazing system. This system calls for using all of the pastures each season for a specified period of time, depending upon use levels. Several pastures are deferred until the latter part of the growing season each year. The utilization levels for those pastures with riparian vegetation grazed, after the growing period, will be used at a lower use level to reduce use on willows and leave streambank vegetation for protection against ice action and high streamflows.

CHAPTER III. AFFECTED ENVIRONMENT

The two allotments include Management Areas (MA's) 1, 1A, 2A, 2B, 6A, 7A and 9A. Each of these MA's has specific management prescriptions relating to range resources, recreation, soil, water, timber, visual, wildlife and fish management. Detailed management prescriptions are displayed in the 1986 Dixie National Forest L&RMP, Chapter IV. This section describes the environmental components that would be affected by the alternatives if they were implemented. Only those environmental components that are relevant to the issues, purpose and need, and the decision to be made will be addressed.

A. LIVESTOCK GRAZING

Livestock grazing has occurred on the Powell Ranger District since the establishment of the local communities in 1866. In the early days of the Forest, sheep were the primary users of the range with beef, dairy cattle, and horses in secondary rolls. Today, this role in grazing class of livestock has changed. The primary class of stock is beef cattle.

The East Fork C&H Allotment is presently grazed by cattle. A total of 11 permittees graze livestock on the allotment. These 11 permittees have Term Grazing Permits for a total of 443 cattle. The Term Grazing Permits authorize a grazing season of June 11 to October 10 for a total of 1772 animal months. The Allotment Management Plan for the East Fork C&H Allotment was approved in 1980. This plan calls for two units grazed under a rest rotation grazing system in which one of the two spring use units is rested every year. This is unless there is a shortage of forage and then the rested unit can be used in the fall. The other five units are used on a rotation grazing system with approximately the same time of use scheduled each year. For several years the five upper units have had some seasonal changes so as not to graze them at same time each year.

The Crawford C&H Allotment has not had a Term Grazing Permit authorized since 1986, when the existing permit was cancelled due to permit violations. The upper units of the allotment have been approved for use with the East Fork C&H Allotment on an annual basis.

B. RECREATION AND VISUAL RESOURCES

The East Fork of the Sevier River area possesses unique scenery. The timbered mountainsides intermingled with mountain streams provide a beautiful view to the Forest visitor. This locale is highly visible to travelers using Forest Road No. 87. The Tropic Reservoir area has one developed campground. The area surrounding the lakeshore is used by fishermen, hikers and off-highway vehicle users. Throughout the summer and late into the fall hunting season, dispersed camping is very popular in the vicinity surrounding Tropic Reservoir and the mountain streams.

Dispersed Recreation - The amount of time people spend participating in the recreation activities in the East Fork of the Sevier (drainage) has never been objectively measured. Subjective estimates have been made of dispersed recreation indicating use within the East Fork area of approximately 102,000 Recreation Use Days (RUD's) annually. The general impression (based on increased hunter use, and increases in personal firewood and Christmas tree sales) is that this demand is increasing at a rate of 1 or 2% annually.

Developed Recreation - Recreation use within Kings Creek Campground has been objectively monitored annually since 1982. Campground occupancy has varied annually from 28 to 42%. These figures however, do not accurately reflect the increased use of the group camping facility. Kings Creek Campground is a popular location for group activities (scouts, church groups, family reunions, etc.). This use has gradually increased since 1982.

An overall assessment of Kings Creek Campground and group area is that recreation use within developed sites is fairly constant at about 14,000 RUD's annually. As the public continues to become knowledgeable about the campground location, use will increase.

C. SOIL AND WATER

The analysis area comprises portions of the East Fork of the Sevier River headwaters. Tropic Reservoir is categorized as Management Area 4A - Fish and Aquatic Habitat. Management Area 9A - Riparian Management is located along the East Fork of the Sevier River and selected tributaries. Information sources for the affected environment include a General Aquatic Wildlife System (GAWS) Survey conducted on the East Fork of the Sevier River in 1982 and riparian inventory data collected in July 1988.

Streambanks are unstable throughout the project area. Vertical, bare, eroding banks are common. The channel is incised in many reaches above and below Tropic Reservoir. Headcutting is severe in several of the tributaries. These instability problems have been addressed with rock and log structures over the years. Some of these structures have been effective in stabilizing headcuts, but permanent rehabilitation has been limited. Cattle trailing along streambanks is limiting revegetation and streambank stabilization efforts. Less than 40 percent of streambanks on the East Fork Sevier River above Tropic Reservoir are stable.

Stream channel substrata embeddedness is high. The abundance of fines in the substrata is evidence of the active erosion taking place in the channel. Large quantities of fine sediment decrease aquatic productivity by covering spawning habitat and reducing oxygen supply to fish embryos and macroinvertebrates.

The East Fork of the Sevier River was identified as a High Priority Non-Point Source Pollution Watershed by the State due to sediment problems (Utah Dept. of Agriculture, 1988). Excessive phosphate, high maximum water temperatures and turbidity were identified as impairments to the cold water fishery. Occasional violations of nutrient and turbidity standards during storm events are common in wildland basins regardless of watershed condition. However, extreme temperature is a direct result of the unsatisfactory riparian condition in the project area.

D. FISHERIES

The East Fork C&H Allotment and a portion of the Crawford C&H Allotment are on the Paunsaugunt Plateau in the headwaters of the East Fork of the Sevier River. The fishery environment affected by land management activities in this area includes the East Fork of the Sevier River, tributaries to the East Fork of the Sevier River and Tropic Reservoir.

The East Fork of the Sevier River is classified as a Class 3 trout stream by the Utah Division of Wildlife Resources (UDWR). Class 3 streams are important trout streams which comprise approximately half of the total stream fishery habitat in Utah. Fish species present include cutthroat trout, brown trout, rainbow trout, brook trout, shiners, and mountain suckers.

The stream is in a more stable condition than it was following the severe overgrazing in the early 1900's. However, it is still far below its potential for fisheries. The lack of bank stabilizing riparian vegetation has resulted in many raw, vertical, eroding banks which yield poor fish habitat. In addition, heavy sediment loads have impacted trout forage and successful trout spawning. Sediment suffocates both aquatic insects and incubating trout eggs.

Macroinvertebrate populations are low and species present are predominantly sediment tolerant. Macroinvertebrate communities were evaluated at two sites on the East Fork of the Sevier River in 1987. The population sampled near Sieler Creek was dominated by sediment-tolerant species. The population sampled near the USGS gage contained no clean water species which indicates that the stream is suffering severe stress. Macroinvertebrate biomass at both sites was low and judged to be limiting numbers and size of fish. Samples were collected at these sites again in 1989 and 1990 and similar results were obtained.

Some tributaries to the East Fork of the Sevier River are also Class 3 trout streams. These include Kanab Creek, Podunk Creek, and Crawford Creek. Fish species present in these streams are the same as that found in the East Fork of the Sevier River. Fish populations and habitat have also been impacted by grazing in these tributaries.

Kanab and Crawford Creeks are both designated as 9A Riparian Management Areas. Podunk Creek is located within a 6A Livestock Grazing Management Area.

Tropic Reservoir is located at an elevation of 7,835 feet in the Upper East Fork drainage. It covers 180 surface acres and has a maximum depth of 30 feet. It has been classified as a Class 3 reservoir by the Utah Division of Wildlife Resources. Class 3 reservoirs are important locally and may attract non-resident anglers.

The fishery in the reservoir is currently below potential. The reservoir is being impacted by sedimentation and drastic water level drawdowns. Sedimentation is decreasing water depth in the reservoir which results in excessive macrophyte growth. This excessive plant material creates additional demands on winter oxygen levels as the plants decompose. This situation is exacerbated by frequent reservoir drawdowns during the winter resulting from irrigation company operation. The net result is poor overwinter trout survival due to low dissolved oxygen levels. To circumvent this problem, the Utah Division of Wildlife Resources is managing the reservoir as a put-and-take trout fishery. Approximately 12,000 catchable-size rainbow trout are stocked annually at a cost of \$15,652.

E. WILDLIFE AND PLANT THREATENED, ENDANGERED AND SENSITIVE SPECIES

More than 350 species of wildlife and fish inhabit the Dixie National Forest for all or a portion of their life cycle. Consumptive and nonconsumptive uses of many of these species are an important part of recreation on this analysis area.

Elk herds on National Forest System lands (Paunsaugunt Plateau) began to be established in the early 1980's. There is an informal agreement with the Utah Division of Wildlife Resources to maintain elk numbers at their present level (200 estimated) on these National Forest System lands.

Deer hunting within the analysis area has high recreational values. The deer herds have declined in recent years. The area on the Crawford C&H Allotment below the rim is good deer habitat. This area (311 suitable acres) has been closed to livestock use since 1986.

Antelope use lands on the north end of the East Fork C&H Allotment. Their numbers have been increasing.

A management indicator species is an animal which, by its presence in a certain location or situation, is believed to indicate the habitat conditions for many other species. By monitoring their populations and habitat relationships, we can see the effects of Forest Service management activities on all the fish and wildlife of the Forest (refer to Forest Plan, FEIS, pg. III-13). The following are the primary indicator species within the analysis area:

| <u>Species</u> | <u>Vegetation Types</u> |
|---------------------|---|
| Mule Deer | Grass-forb, sagebrush, mountain brush, pinyon-juniper, sapling-mature aspen, sapling mature conifer |
| Rocky Mountain Elk | Grass-forb, sapling-mature aspen, sapling-old growth conifer |
| Wild Turkey | Mountain brush, pole-mature aspen, mature-old growth conifer |
| Goshawk | Riparian tree, mature aspen, mature-old growth conifer |
| Common Flicker | Mature aspen, mature conifer |
| Yellowbreasted Chat | Riparian shrub-tree |

There are two endangered species and one threatened species which could occupy areas on the Crawford & East Fork C&H Allotments. The bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus) are federally classified as endangered, under the Endangered Species Act of 1973 (ESA) and may be present within this analysis area. The Utah Prairie Dog (Cynomys parvidens) is listed as threatened and is present on the East Fork C&H Allotment.

Endangered Species

Bald Eagle - Habitat for the bald eagle is managed within the guidelines established in the Dixie National Forest L&RMP. Bald eagles are a winter migrant resident and have been seen roosting around Tropic Reservoir.

Peregrine Falcon - Peregrine falcons are known to nest in the cliffs of Bryce Canyon National Park, which is adjacent to the Crawford and East Fork C&H Allotments. Peregrines could be foraging on areas of these two allotments.

Threatened Species

Utah Prairie Dog - Utah prairie dogs do occupy habitats on the East Fork C&H Allotment. The Utah Division of Wildlife Resource has in the past transplanted prairie dogs to the area. Any future transplants will be guided by the Utah Prairie Dog Recovery Plan and the NEPA process.

Sensitive Species

Sensitive species have been determined by the Regional Forester (FSM 2670.5) and are those species for which population viability is a concern. Region 4 has an official listing of sensitive vertebrate and plant species by National Forest. Six sensitive animal species may exist in areas being considered in the analysis area and including the following:

| | |
|--------------------------|-----------------------------------|
| Spotted Bat | <u>Euderma maculatum</u> |
| Townsend's Big-eared Bat | <u>Plecotus townsendii</u> |
| Willow Flycatcher | <u>Empidonax traillii extimus</u> |
| Flammulated Owl | <u>Otus flammeolus</u> |
| Mexican Spotted Owl | <u>Strix occidentalis lucida</u> |
| Three-toed Woodpecker | <u>Picoides tridactylus</u> |
| Northern Goshawk | <u>Accipiter gentilis</u> |

Five sensitive plant species are found within the decision area and include the following:

| | |
|--------------------------|------------------------------|
| Reveal Indian-paintbrush | <u>Castillejia revealii</u> |
| Red Canyon catseye | <u>Cryptantha ochroleuca</u> |
| Widtsoe wild-buckwheat | <u>Eriogonum aretioides</u> |
| Red Canyon beardtongue | <u>Penstemon bracteatus</u> |
| Peterson catch fly | <u>Silene petersoni</u> |

A Biological Evaluation of the potential affect of the proposed action has been completed. This evaluation has concluded that implementation of any of the alternatives evaluated in this EA is not likely to adversely affect the recovery of the endangered bald eagle, peregrine falcon, Utah prairie dog or adversely impact the sensitive species resident on the analysis area. (See Project File)

F. VEGETATION

Crawford C&H Allotment

According to the 1967 range allotment analysis there are 1109 acres suitable for livestock grazing on the Crawford C&H Allotment of which 798 suitable acres are within the East Fork of the Sevier River Watershed, above the rim. There are 311 suitable acres, below the rim, in the Paria River Watershed. These 311 acres are located within four different drainages.

According to the 1967 Range Suitability Map, the following vegetative types are found below the rim: Sagebrush, Browse-Shrub, Dry Meadow, Pinyon-Juniper, and Timber.

Above the rim in the East Fork of the Sevier River Watershed the following vegetative types are found: Wet Meadows, Dry Meadows, Broadleaf Trees, and Timber. The dry meadow types have received cultural treatments. This type is usually found on slopes intermediate in elevation between the wet meadow types and the aspen-mix conifer types.

Unit examinations and parker 3-step cluster data indicate that the overall trend for the allotment is in a stable to improving condition.

Riparian areas along Crawford Creek are in a high seral stage and streambanks are stable with overhanging vegetation. Willows are present along this creek but densities are low. The willows are not needed for stream channel stabilization on this creek.

East Fork C&H Allotment

The 1961 range allotment analysis states that there are a total of 4205 acres suitable for livestock grazing. According to the 1963 Range Suitability Map, the following vegetative types are found within the allotment: Grassland, Wet Meadow, Dry Meadow, Sagebrush, Browse, Conifer and Timber. The conifer and timber vegetation types are most often classified as unsuitable for livestock grazing but at times can be considered transitory range. The Whiteman Bench area is an example of transitory range. Following the 1961 range analysis the East Fork C&H Allotment received cultural treatments, mainly in the sagebrush, dry meadow and grassland types.

Unit examinations, parker 3-step cluster data, and photo comparisons indicate that the overall trend for the allotment is in a stable to improving condition. However, some sites do indicate that there has been a loss in forage plants. The 1961 range analysis indicates that over 90% of the suitable acres were in fair or good condition.

The riparian areas along the East Fork of the Sevier River range from low to high seral stages. While portions of the riparian areas are showing signs of improvement there are other areas that remain in less than desired condition.

Kentucky bluegrass is the most dominant species within the riparian areas. Riparian plants such as sedges, rushes and willows were judged to be increasing, but are subdominant and account for less than one-third of riparian area vegetation.

Sedges and rushes promote streambank building and stability with their deep, fibrous root systems. Kentucky bluegrass is a shallow rooting plant that provides valuable groundcover, but is much less effective in stabilizing streambanks. Willow canopy is important for stream shade and fish cover as well as providing critical wildlife habitat. Willows are present, although suppressed, throughout the riparian area. Willow sprouts are abundant, but older plants are heavily hedged. Beavers are causing additional stress on willow growth by using branches to build dams in some areas. Stream shade and fish cover is almost nonexistent. As a result, summer stream temperatures often exceed optimum for trout habitat. Maximum stream temperatures over 70 degrees are not uncommon during the summer.

Overhanging riparian vegetation is lacking on large areas of the allotment. This vegetation is an important food source for aquatic organisms because it adds detritus and falling terrestrial insects to the stream.

G. Timber

During the 40-year period from 1948-87, approximately 153,000,000 board feet of timber has been harvested in the Upper East Fork Sevier River drainage. A high percentage of the drainage has been cutover with the exception of the steep slopes in the mixed conifer type.

Harvest during the 1940's and 1950's was directed at removing large, overmature trees, consequently harvest per acre was generally low. During this period lumber demand was low. The small sawmills scattered around the area had enough processing capacity to supply a local demand. Most of these mills went out of business in the mid 1950's. The remaining mills moved their operations to Panguitch.

In 1962 the demand for lumber increased and mill capacity increased accordingly. Timber harvest in the mixed conifer type accelerated to sustain demand and capacity. When markets were poor economically, local mills depended on the East Fork timber as a ready supply. In many instances sale areas within 20 miles of Panguitch were pushed ahead on the Action Plan to accommodate the economic situation.

Clearcutting in the mixed conifer type had the effect of removing large volumes of timber per acre over relatively small areas. It is estimated there are 8,000 acres that were clearcut in the East Fork drainage; most of these acres have been planted.

Since the late 1960's, the demand for lumber has been exceptionally high with peaks and valleys based on market economics. As demand has increased so have concerns about sustained yield, water quality, wildlife and other resource values.

The annual allowable cut for the 1948-87 period averages 3,815 MBF; this compares with a projected 4,000 MBF in the original Forest Timber Management Plan. The largest cut occurred in 1970 when 11,226 MBF was harvested. Based on an average of 5,000 board feet cut per acre, 763 acres have been cutover per year. For the 40-year period this would amount to an estimated 30,520 acres.

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

This section is the analytic basis for the comparison of the alternatives. It describes the expected environmental consequences of each alternative on the relevant issues. The resources are described in Chapter III, the Affected Environment, and are directly linked to the issues listed in Chapter I, Purpose and Need. As noted in Chapter I, the analysis of the environmental consequences is assessed by a set of evaluation criteria that were developed for each issue area. For easy reference those criteria are repeated at the beginning of each issue area.

ISSUE 1, UNSATISFACTORY RIPARIAN CONDITIONS EXIST

The relevant evaluation criteria are:

- A. Impacts of grazing on willow density, size and utilization.
- B. Impacts of grazing on water temperature.
- C. Impacts of grazing on sedimentation production levels.
- D. Impacts of grazing on streambank stability.

Alternative 1 - The No Action Alternative

Direct and Indirect Effects

- A. There has been a slow improvement in the willow component. This is evident by the appearance of seedlings. The young and mature plants, however, are lacking. This indicates that there is regeneration occurring but the desired willows are not being allowed to mature. Some stretches of the East Fork of the Sevier River do not have any willow species present.
- B. The water temperatures of the East Fork of the Sevier River under current conditions are higher than those required (max. 68^o) for good fish habitat. It is expected that water temperatures will improve but at a very slow rate.
- C. Current sedimentation levels are far above those desired (25%) for the East Fork of the Sevier River. Sedimentation levels measured in 1991 were 50%. Upper reaches of the East Fork of the Sevier River are meeting the standards but the majority of the stream is not meeting the standards.
- D. Streambank stability is improving. This is evident by the increase in streamside vegetation. Water temperature and sedimentation improvement is slow. Some of the lower reaches of the East Fork of the Sevier River show no improvement.

Alternative 2

Direct and Indirect Effects

- A. There would be a noticeable increase in willows the year a grazing unit was rested. However, one year of rest is not enough to totally protect the willows through the following three years of increased frequency of use that would occur due to the longer stay within the units.

- B. Water temperature would improve as a direct result of increased vegetation along the streambanks.
- C. Sedimentation levels would be reduced as the vegetation improves its ability to filter out fine soil materials.
- D. Streambank stability would improve under this alternative but the rate of improvement would be slow.

Alternative 3

Direct and Indirect Effects

- A. Willow size and density would improve at a rate faster than Alternatives #1 and 2. The greatest improvement would be in the fenced riparian units where the willows would be protected from livestock grazing. They would still be subject to wildlife grazing use, but this grazing use should not be enough to curtail rapid improvements.
- B. The total improvement in water temperature would be greater than the improvements in Alternatives #1 and 2.
- C. The improvement in sedimentation production (sedimentation reduction) of the stream would be greater than the improvements in Alternative #1 and 2.
- D. Streambank stability of the unfenced stream sections would continue to improve. The fenced sections with increased emphasis on vegetation protection and improvement would show rapid response to this additional rest. Willows and other riparian vegetation would establish in these areas at a noticeable rate.

Alternative 4 - Proposed Alternative

Direct and Indirect Effects

- A. The response of willow vegetation would be similar to that described for Alternative #3. The only difference being that in the unfenced riparian areas improvement under this alternative would be greater. The frequency of use under this alternative would be less with the seven grazed units vs. six grazed units (Alternative #3).
- B. The improvement in water temperature would be similar to that described for Alternative #3. The only difference being that in the unfenced riparian areas improvement under this alternative would be greater. The frequency of use would be less with the seven grazed units vs. six grazed units.
- C. The improvement in sedimentation production would be similar to that described for Alternative #3. The only difference being that in the unfenced riparian areas improvement under this alternative would be greater. The frequency of use would be less with the seven grazed units vs. six grazed units.
- D. Streambank stability would be similar to that described for Alternative #3. The only difference being that in the unfenced riparian areas improvement under this alternative would be greater. The frequency of use would be less with the seven grazed units vs. six grazed units.

Cumulative Effects

The scope of the cumulative effects analysis (CEA) is the East Fork of the Sevier River and its tributaries above the Dixie National Forest boundary where it enters into the private lands. The separate effects of past, present and future project activities within a watershed do result in cumulative effects to riparian habitats. Activities which may contribute towards these effects include timber harvest, livestock grazing and trampling, wildlife grazing and trampling (primarily elk), recreation uses, and roads. Natural and geological erosion is occurring within the watershed and this action cannot be controlled.

A. Cumulative Effects Related to Timber Harvest

Timber harvest activities, including those of past timber sales, have the potential to affect riparian communities by increasing overland water flow and increasing the amount of sedimentation reaching a creek and being transported downstream. Reduced tree canopies may allow additional precipitation to reach the ground, and bare soil exposed by timber sale activities may be susceptible to being moved down slope. Increased peak flows and more frequent runoff events can contribute to streambank instability and erosion.

Adverse influences on riparian areas resulting from timber sales are largely negated by close attention paid to environmental issues during the planning phases of a timber sale, a high level of administrative control during the timber sale activities, and mitigation of negative effects after the sale by implementing measures such as water barring and seeding of skid trails and seeding of highly erodible sites which have been disturbed.

Roads associated with timber harvest activities also can contribute to soil movement, higher stream flows and increased sediments within a stream. Precipitation falling above a road and within the roadbed can concentrate water on the compacted road surface. This water is unable to infiltrate into the soil and therefore flows at an accelerated rate down the roadway. This flow can become channelized and the high velocity can create gullies within the road and also between the point at which the water leaves the roadbed to where it enters a stream. These effects have been reduced by measures including closing of unnecessary roads, frequent water bars which divert water off a road and grass seeding once a road has been closed. There are many roads within the East Fork of the Sevier River drainage that remain to be closed.

The reduced tree canopy and seeding of disturbed sites, roads, and skid trails following timber harvest have resulted in additional forage being produced. Domestic grasses within the seeded areas have attracted both livestock and wildlife, i.e. elk, and reduces the amount of grazing pressure on stream side vegetation. This reduces the amount of streambank sluffing and may contribute to the recovery of degraded riparian areas.

B. Cumulative Effects Related to Roads and Recreational Activities

As discussed earlier, accelerated runoff from roads has the potential for contributing to increased sedimentation of streams and to instability of streambanks. These effects are greatly reduced following a timber sale due in part to mitigation measures such as closure of unnecessary roads, constructing

water bars and grass seeding. However, in some instances these mitigation measures have been reduced in their effectiveness as a result of heavy recreational traffic on primitive roads. Heavy traffic over primitive roads often breaks down water bars and reduces the vegetation which in many cases serves as the only surfacing on the road.

Some cases of off road vehicle use and even the creation of new "two track" roads within riparian areas have been observed. This type of incident can be reduced through active educational and law enforcement programs. This will not eliminate the problem however. Individual situations when discovered will be rehabilitated using on site improvement practices.

Despite an ongoing program to identify and improve roads which are contributing to runoff and erosion, it can be expected that a moderate amount of sedimentation will continue to enter various streams within the planning area coming from roads receiving primarily recreational traffic.

The use of riparian areas by fishermen and other recreationists has the potential to degrade riparian habitats from the direct effects of walking, camping, etc. This has not been identified as a significant problem within this analysis area.

C. Cumulative Effects Related to Wildlife

Riparian habitats are important to many species of wildlife. Some species, particularly elk and beaver, may have a direct effect upon riparian habitats. Elk numbers within recent years have increased. Elk use within riparian areas has increased correspondingly. Their use of riparian areas within the analysis area occurs primarily for about 8 months or April through December. This use is generally continual for this 8 month period resulting in the repeated grazing of preferred areas. Repeated grazing can lead to loss of vigor and production of desirable forage species. This in turn may contribute to the loss of desired plant diversity and to the instability of stream banks.

Elk, and in some cases beaver, are having a direct effect on willows occurring along several streams within the analysis area. Grazing upon willow shoots and breaking of stems by rubbing may result in loss of vigor of willow plants which in some cases contributes to the reduction of the willow population.

The actual negative effects to riparian areas from wildlife use is thought to be low to moderate based on past observations.

D. Cumulative Effects Related to Livestock Grazing and the Implementation of Improved Livestock Management

During the early years of livestock grazing on these allotments, livestock rotation and distribution was not a critical concern. As a result animals were allowed in most cases to linger within riparian areas for the entire growing season resulting in adverse effects to soil, water and vegetation. Because palatable forage plants were repeatedly grazed throughout the growing period each year, desired vegetation declined. This is particularly true for willows. In addition, streambanks were continually being trampled and sluffed without being given the opportunity to heal. Lack of intensive livestock management contributed heavily to degraded riparian conditions.

In 1965, adjustments were made to begin more intensive livestock management through fencing of pastures and rotation of livestock grazing. More emphasis was placed on proper distribution of cattle. This began the recovery process for many of the streams and riparian habitats within the allotments.

Since the initiation of more intensified livestock management the two allotments have been managed under various rotational grazing systems. Habitat conditions have improved in some riparian areas. This is not true in all cases however, and recovery has been slow in some areas.

Implementation of any of the action alternatives will further reduce negative effects to riparian habitats. Two alternatives call for exclusion of livestock within critical or sensitive stream reaches. In addition, this and other alternatives call for reducing the duration of grazing within each pasture. Implementation of an alternative which protects critical stream reaches and reduces the duration of grazing will reduce negative effects within the riparian habitats and will contribute toward more rapid recovery of riparian vegetation including willows and streambank stability. Also, sedimentation from bank trampling and overland flow will be reduced.

ISSUE 2, ELK AND LIVESTOCK COMPETITION FOR FORAGE

The relevant evaluation criteria are:

- A. Impacts that dual wildlife and livestock grazing has on the vegetation communities.
- B. Impacts that elk and cattle have on carrying capacities.

Alternative 1 The No Action Alternative

Direct and Indirect Effects

- A. Vegetation conditions are improving in the analysis area. This improvement is at a very slow rate. However, these woody components (willows), are not responding as could be expected. If livestock numbers are maintained and elk continue to increase unchecked, then competition for forage will become detrimental to the vegetation communities.
- B. Elk do compete with livestock for available forage on suitable livestock range. The carrying capacity of elk or livestock has a direct affect on the other. At the present time, with the current livestock and elk numbers, the elk and livestock on the Paunsaugunt Plateau are compatible.

Alternative 2

Direct and Indirect Effects

- A. There are two units each year, that would not be grazed by livestock. The forage should increase, however, the diversity of the vegetation would not show much improvement.
- B. Livestock numbers would be less than Alternative #1 resulting in possibly less competition for available forage than with the other alternatives.

Alternative 3

Direct and Indirect Effects

- A. This alternative should allow the vegetation communities to continue to improve.
- B. Under this alternative the competition for forage would be the greatest, but elk and livestock grazing use should still be compatible.

Alternative 4 Proposed Alternative

Direct and Indirect Effects

- A. Under this alternative more grazing use would be directed to the upland vegetation. No change in the vegetation communities of the uplands would be expected. The Riparian communities, especially the fenced areas, should show the greatest improvements.
- B. With existing elk numbers and established livestock numbers the carrying capacity for both animals should remain stable as proposed.

Cumulative Effects

The scope of the cumulative effects analysis (CEA) is the East Fork C&H Allotment and the Crawford C&H Allotment. Many of the effects under issue 1 associated with riparian habitats as effected by wildlife (elk) also apply to this issue.

Elk numbers within recent years have increased. Their use within the analysis area occurs primarily for about 8 months or April through December. This use is generally continual for this 8 month period resulting in the repeated grazing of preferred areas. Repeated grazing can lead to loss of vigor and production of desirable forage species. This would occur primarily in the riparian areas.

Implementation of improved livestock management and vegetation manipulation projects has contributed to improving upland vegetation and watershed conditions. Prior to implementing improved livestock management and vegetation cover, plant density and composition was less than satisfactory in many areas of these allotments.

Grazing by wildlife (elk, deer, antelope), and livestock is not considered to have a significant effect upon the condition of the upland watershed. Implementation of action alternatives, which further reduces the duration of grazing, increases livestock distribution and protects selected key riparian areas which is expected to result in an upward trend in the riparian vegetation communities.

ISSUE 3, ECONOMIC IMPACTS ON GRAZING PERMITTEE

The relevant evaluation criteria are:

- A. Impacts on the livestock carrying capacity.
- B. Impacts of new range improvements.

- C. Impacts of maintenance of range improvements.
- D. Impacts of pasture moves.

Alternative 1 The No Action Alternative

Direct and Indirect Effects

- A. Under existing conditions the Crawford C&H Allotment does not have a permit obligation. The East Fork C&H Allotment is obligated for 443 cattle from 6/11-10/10 for a total of 1772 animal months (AM's).
- B. There would be no new improvements proposed.
- C. There would be no additional range improvement maintenance costs. The permittees costs would only increase as does inflation and upon the state of condition of the existing improvements.
- D. The permittees would be required to move between six units.

Alternative 2

Direct and Indirect Effects

- A. East Fork & Crawford C&H Allotments would be grazed together using a rest-rotation grazing system. This would result in a carrying capacity of 1201 AM's for a total of 325 cattle from 6/11-9/30.
- B. Pasture fences would be adjusted. Total cost to the permittees would be \$2,800. Forest Service costs would be \$5,000.
- C. Under this alternative, there would be less fence maintenance needed when the unit boundaries are adjusted.
- D. The permittees are required to move between six units.

Alternative 3

Direct and Indirect Effects

- A. The Crawford C&H Allotment would be grazed under its own four unit rest-rotation grazing system with a carrying capacity of 334 AM's for a total of 100 cattle from 6/21-9/30. The East Fork C&H Allotment would be grazed under a deferred rotation grazing system with a carrying capacity of 1278 AM's for a total of 346 cattle from 6/11-9/30.
- B. Improvements needed for this alternative would be water developments, three cattleguards, division fencing, allotment boundary fencing and riparian enhancement fencing. The total estimated costs to the permittee, with all options, would be \$17,040. Forest Service costs would be \$34,100. Without the options the permittees costs would be \$6,840 and the Forest Service costs would be \$19,860.

- C. The Forest Service would incur maintenance costs associated with the additional cattleguards. The permittees would also have additional facility maintenance costs.
- D. The permittees on the East Fork C&H Allotment would move between six units. The Crawford C&H Allotment permittees would move between four units.

Alternative 4 Proposed Alternative

Direct and Indirect Effects

- A. The Crawford & East Fork C&H Allotments would be grazed under a deferred rotation grazing system with protection fencing. The carrying capacity would be 1550 AM's for a total of 443 cattle from 6/16-9/30.
- B. The improvements needed to implement this alternative are four cattleguards, and fencing needs. The total estimated costs to the permittees, with all options, would be \$12,080. The Forest Service costs would be \$23,640. Without the options the permittees costs would be \$2,800. The Forest Service costs would be \$11,400.
- C. The permittees on the East Fork C&H Allotment would incur additional maintenance costs associated with new riparian fencing. The Forest Service costs of construction would increase due to new cattleguards around Tropic Reservoir.
- D. The permittees would move between seven units.

Cumulative Effects

The scope of the cumulative effects analysis is the East Fork C&H Allotment permittees, the potential permittees on the Crawford C&H Allotment and the U.S. Government. The cumulative effects of the economic impacts to the permittees can only be addressed as the direct and indirect effects in relationship to the analysis area. Additional economic effects are outside the scope of this analysis.

ISSUE 4, TROPIC RESERVOIR AND KINGS CREEK CAMPGROUND

The relevant evaluation criteria are:

- A. Impact of livestock use vs recreation uses.
- B. Impact of livestock use vs waterfowl habitat.

Alternative 1 The No Action Alternative

Direct and Indirect Effects

- A. The impacts of grazing on the recreation use are increasing as recreation use increases. There is also a change in the users expectations. More recreational users are less tolerant of lievestock grazing, especially in developed recreation areas. Livestock grazing is resulting in adverse impacts to recreation uses in the Kings Creek Campground area and around Tropic Reservoir.

- B. Livestock use the area around Tropic Reservoir each year. This use is scheduled for late season use. The vegetation around the lake is used greater than 50% each year. The impact on waterfowl nesting habitat is great. There is insufficient vegetation in the spring to protect nesting waterfowl. The vegetation is allowed to grow but most of the vegetation growth occurs following the nesting season.

Alternative 2

Direct and Indirect Effects

- A. Duration of livestock grazing will be longer three of four years using this alternative. One year in four there will not be any livestock use within the unit around Tropic Reservoir and the Kings Creek Campground area.
- B. There would be less impact than under Alternative #1. One year in four there would be no use by livestock on the nesting habitat. Two years in four, there should be regrowth for the following nesting season.

Alternative 3

Direct and Indirect Effects

- A. The Kings Creek Campground and surrounding area (Tropic Reservoir) would be fenced to exclude livestock grazing use, resulting in very few adverse impacts to recreationists.
- B. There should be little to no impact under this alternative to waterfowl nesting habitat adjacent to Tropic Reservoir.

Alternative 4 Proposed Alternative

Direct and Indirect Effects

- A. The Kings Creek Campground and surrounding area (Tropic Reservoir) would be fenced to exclude livestock grazing use, resulting in very few impacts to recreationists.
- B. There should be little to no impact under this alternative to waterfowl nesting habitat adjacent to Tropic Reservoir.

Cumulative Effects

The scope of this cumulative effects analysis is the area around Tropic Reservoir and Kings Creek Campground and effects on grazing permittees and recreational users.

Any protection fencing of Tropic Reservoir would effect the livestock carrying capacity for the allotment. If livestock reductions are made to enhance recreational and wildlife activities, this effects the economics of the permittees. Livestock grazing does have direct effects on waterfowl nesting habitat.

Tropic Reservoir has not sustained high numbers of trout from one year to the next. The shallow depth is one important factor which influences the lake's ability to support a viable fish population. The overall habitat quality within Tropic Reservoir and its potential for sustaining fish populations under entirely natural conditions is uncertain since the reservoir shore and upper watershed have been grazed and logged since the reservoir was created. Grazing, timber activities, roads, recreational use and natural/geological erosion are all contributing to the sedimentation levels in the reservoir. Maintaining high water levels would improve the fisheries within the reservoir. Water in Tropic Reservoir is used for irrigation and each year the water is drawn down several times. This practice influences the fisheries habitat within the reservoir.

ISSUE 5. USE OF FOREST LANDS BY ADJOINING LAND USERS

The relevant evaluation criteria are:

Potential impacts of grazing the suitable lands below the rim on the Crawford C&H Allotment.

Alternative 1 The No Action Alternative

Direct and Indirect Effects

As identified in the range analysis the carrying capacity below the rim on the Crawford C&H Allotment is 63 AM's. There is no authorized livestock grazing below the rim at this time. Unauthorized use by adjacent land users has taken place. Under this alternative no livestock use would be authorized. There would be no permit administration needed, no new improvements and with control of unauthorized livestock, vegetation community condition should improve.

Alternative 2

Direct and Indirect Effects

If livestock use was permitted under this alternative to adjacent land owners, permit administration would increase and also grazing use on the vegetation would increase. If no livestock were permitted, there would be no permit administration costs, no livestock grazing and no improvements for livestock needed.

Alternative 3

Direct and Indirect Effects

Under this alternative there would be an investment in improvements needed. Permit administration costs would increase and there would be increased grazing use on vegetation.

Alternative 4

Direct and Indirect Effects

This would be the same as Alternative #2.

Cumulative Effects

The scope of this cumulative effects analysis is the analysis area, existing permittees and adjacent land users. The separate effects of past, present and future project activities may result in cumulative effects to adjoining land users. The activity which would contribute towards these effects is livestock grazing.

There currently exists suitable livestock range below the rim on the Crawford C&H Allotment that is not obligated for grazing. These lands are not fenced off from adjacent private lands. Prior to 1986, these lands were grazed in the fall as part of the Crawford C&H Allotment. The permittee was the adjacent land user. To graze these lands with the Crawford C&H Allotment, under Alternative #3, would require allotment boundary fencing. If grazed with adjoining land users then no new boundary fencing would be needed. The 63 AM's are scattered among five separate locations in four drainages. These suitable acres do not have an effect on fisheries, little effect on recreation, some effect on soil and water resources and some effect on wildlife (primarily deer).

ISSUE 6. COMBINING CRAWFORD AND EAST FORK C&H ALLOTMENTS

The relevant evaluation criteria are:

- A. Impacts to the East Fork C&H Allotment's livestock carrying capacity.
- B. Impacts on permit administration.
- C. Impacts on the effectiveness of grazing systems.

Alternative 1 The No Action Alternative

Directs and Indirect Effects

- A. There would be no effects or change under existing conditions to the livestock carrying capacity.
- B. There would be no effects or change under existing conditions on permit administration.
- C. Not using the Crawford C&H Allotment effects the potential soil, water and vegetation improvement on the East Fork C&H Allotment while decreasing the present livestock carrying capacities.

Alternative 2

Direct and Indirect Effects

- A. Grazing the Crawford C&H Allotment with the East Fork C&H Allotment and using a rest rotation grazing system would result in a loss of 571 AM's.
- B. There would be no effects or change under existing conditions on permit administration.

- C. The grazing system would be a rest-rotation system which would be an improvement over the no action alternative.

Alternative 3

Direct and Indirect Effects

- A. Using a deferred rotation grazing system would result in a reduction of 494 AM's on the East Fork C&H Allotment and the Crawford C&H Allotment would have a gain of 334 AM's using a rest-rotation grazing system.
- B. There would be increased administration of one allotment management plan and at least one additional permit to administer.
- C. The effectiveness of the grazing system would be an improvement over Alternative #2, but would not be as effective as Alternative #4.

Alternative 4 Proposed Alternative

Direct and Indirect Effects

- A. There would be a loss of 222 AM's with this alternative.
- B. There would be no effects or change under existing conditions on permit administration.
- C. This would be the most effective grazing system of the alternatives proposed. This more intensive grazing system would benefit vegetation, soil, water, recreation and wildlife resources.

Cumulative Effects

The scope of the cumulative effects analysis is the mitigation of combining the Crawford C&H Allotment with the East Fork C&H Allotment to offset losses in livestock carrying capacity due to other resource uses and activity improvement needs.

Combining these two allotments not only maintains livestock carrying capacity of current grazing permittees, but it also allows for improved intensive management. This allows improvement to other resource uses and activities as discussed in Issue 1, dealing with riparian conditions.

MONITORING

Monitoring will be conducted to measure the effects of the selected management practices and further evaluate (1) range condition and trend, (2) effectiveness of the grazing system, (3) accomplishment of the management objectives and (4) adequacy of the stocking rate. Appendix H contains the monitoring methods that will be used.

CHAPTER V. LIST OF PREPARERS

Interdisciplinary (IDT) Team:

1. EVAN L. BOSHELL (IDT Leader)

TITLE: Range Conservationist, Powell Ranger District, Dixie National Forest

EDUCATION: 1975: Bachelor of Science, Range Management; Utah State University, Logan, Utah

EXPERIENCE: Current position since February 1990.
1985-90 Range, Watershed, Recreation & Lands Staff, Springerville Ranger District, Apache-Sitgreaves National Forest
1978-85 Range, Wildlife & Watershed Staff, Springerville Ranger District, Apache-Sitgreaves National Forest
1975-78 Range Conservationist, Williams Ranger District and Chalender Ranger District, Kaibab National Forest

2. CARLTON P. GUILLETTE

TITLE: District Ranger, Powell Ranger District, Dixie National Forest

EDUCATION: 1963: Bachelor of Science, Range Management, Utah State University, Logan, Utah

EXPERIENCE: Current position since June 1988.
1978-88 District Ranger, Salmon Ranger District, Salmon National Forest
1969-78 District Ranger Leadore Ranger District, Salmon National Forest
1964-69 Forester, Salina Ranger District, Fishlake National Forest

3. JULIANNE E. THOMPSON

TITLE: Forest Hydrologist, Dixie National Forest

EDUCATION: 1985: Bachelor of Science, Natural Resources Management; California Polytechnic State University, San Luis Obispo, CA
1985-88: Graduate Studies, Watershed Science; Colorado State University, Ft. Collins, CO

EXPERIENCE: 1988 - Present: Forest Hydrologist, Dixie National Forest

4. DANIEL J. DUFFIELD

TITLE: Forest Fisheries Biologist, Dixie National Forest

EDUCATION: 1979: Master of Science, Fisheries Biology and Management,
Michigan State University, Lansing, Michigan

EXPERIENCE: Current position since February 1989.
1982-89 Regional Fisheries Biologist, Utah Division of
Wildlife Resources
1980-82 Staff Biologist, King James Shrimp, Inc.

CHAPTER VI. LIST OF AGENCIES CONSULTED

U.S. Fish and Wildlife Service, Salt Lake City, Utah

Utah Division of Wildlife Resources, Southern Region, Cedar City, Utah

Utah Division of Wildlife Resources, State Office, Salt Lake City, Utah

Utah Division of Water Rights, Salt Lake City, Utah

Utah Division of Development and Conservation, Salt Lake City, Utah

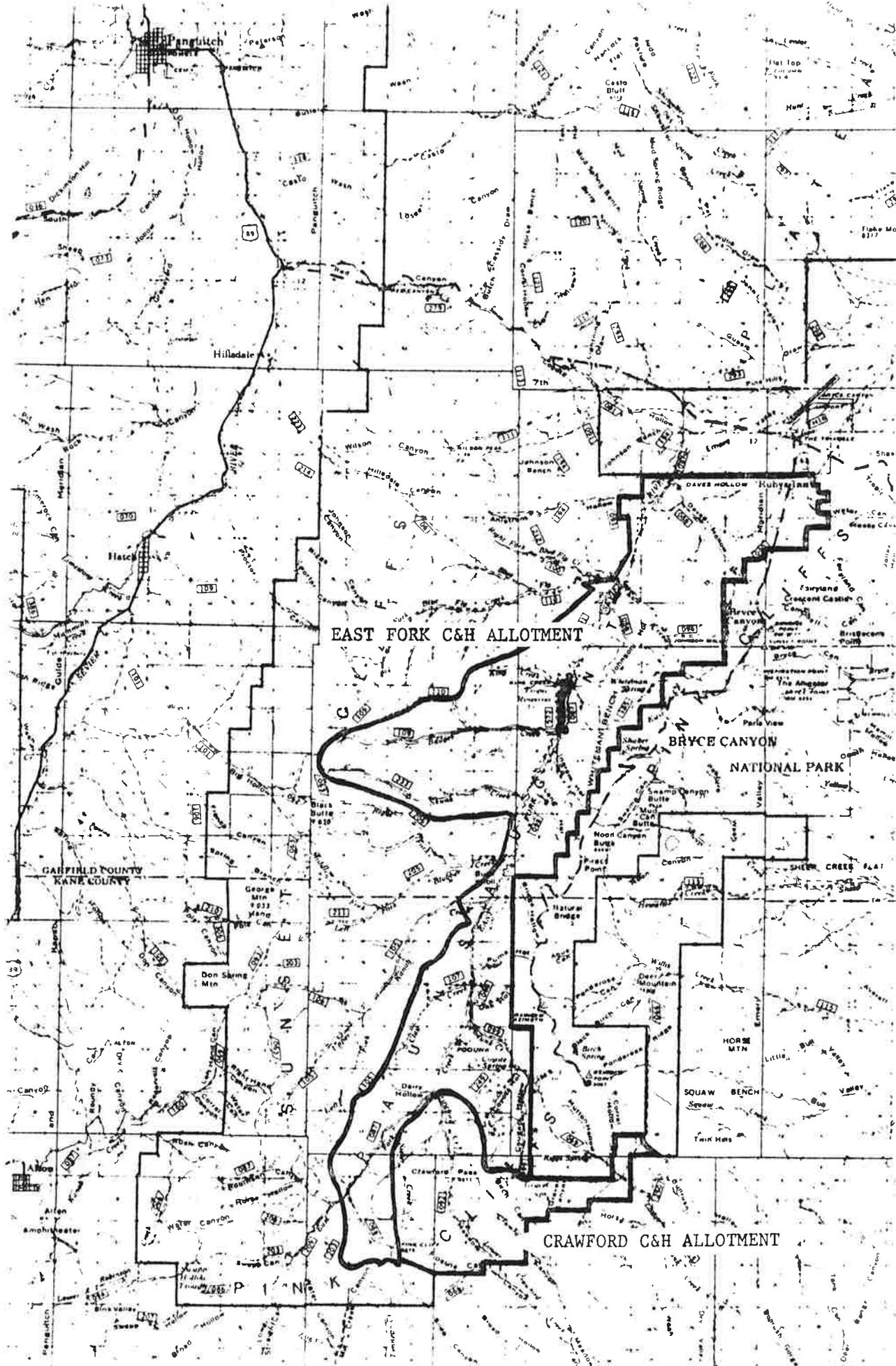
Utah Division of Environmental Health, Salt Lake City, Utah

Utah State Extension Service, Panguitch, Utah

APPENDIXES

- A. Vicinity Map
- B. Maps of Alternatives
- C. Utilization Standards for Forage Species
- D. Grazing Capacity Summary
- E. Issues, Concerns and Opportunities
- F. Public Involvement Documents
- G. Management Area Description
- H. Monitoring
- I. Cultural Resources
- J. Biological Evaluation (See Project File)
- K. Project Costs (See Project File)
- L. References

APPENDIX A
VICINITY MAP



EAST FORK C&H ALLOTMENT

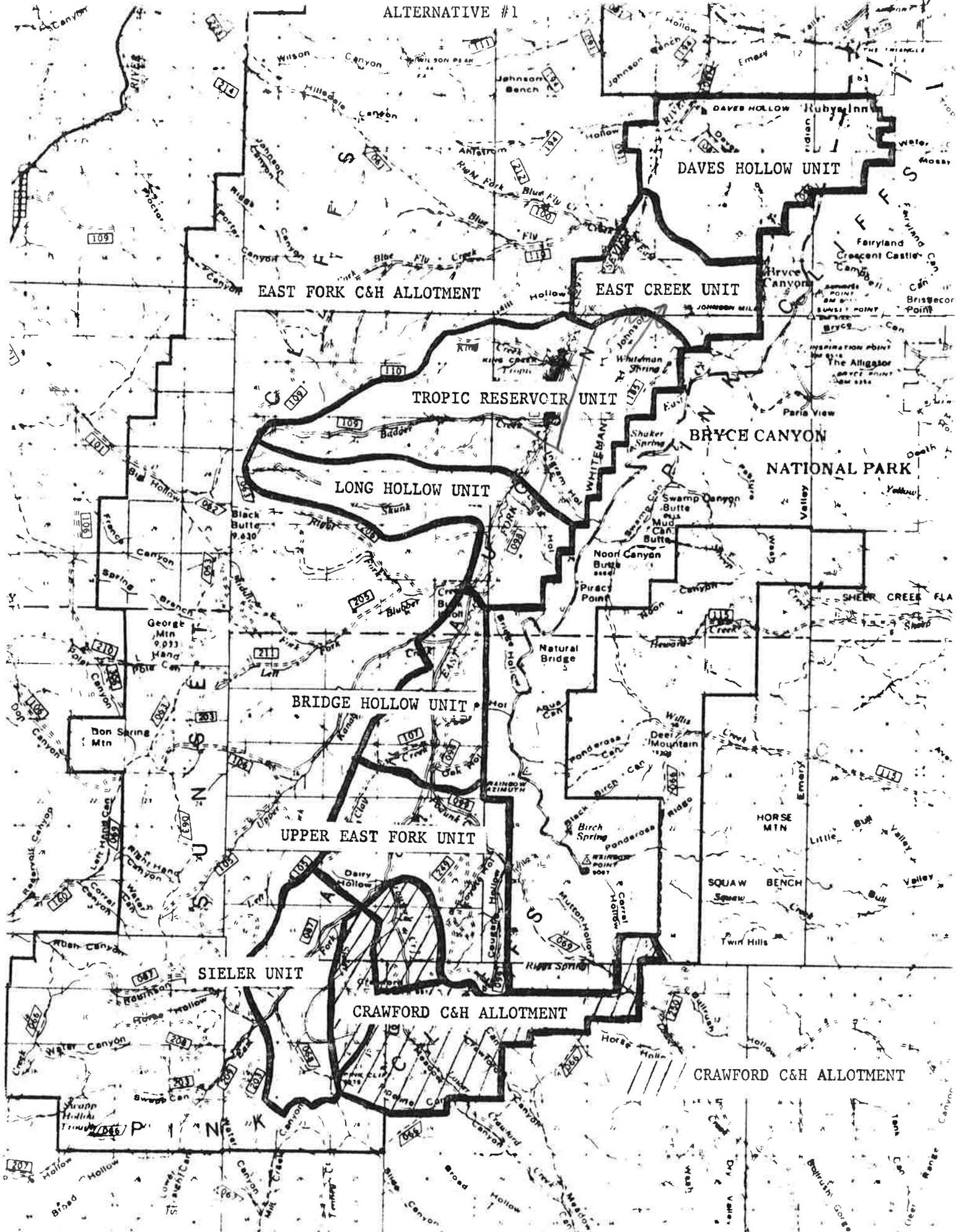
BRYCE CANYON NATIONAL PARK

CRAWFORD C&H ALLOTMENT

APPENDIX B

MAPS OF ALTERNATIVES

ALTERNATIVE #1



EAST FORK C&H ALLOTMENT

DAVES HOLLOW UNIT

EAST CREEK UNIT

TROPIC RESERVOIR UNIT

BRYCE CANYON

NATIONAL PARK

LONG HOLLOW UNIT

BRIDGE HOLLOW UNIT

UPPER EAST FORK UNIT

SIELER UNIT

CRAWFORD C&H ALLOTMENT

CRAWFORD C&H ALLOTMENT

R. 5 W.

R. 4 1/2 W.

R. 4 W.

R. 3 W.

ALTERNATIVE #2

EAST FORK/CRAWFORD C&H ALLOTMENT

DAVES HOLLOW UNIT

EAST CREEK UNIT

TROPIC RESERVOIR UNIT

BRYCE CANYON

NATIONAL PARK

LONG HOLLOW UNIT

BRIDGE HOLLOW UNIT

UPPER EAST FORK UNIT

CRAWFORD UNIT

SIELER UNIT

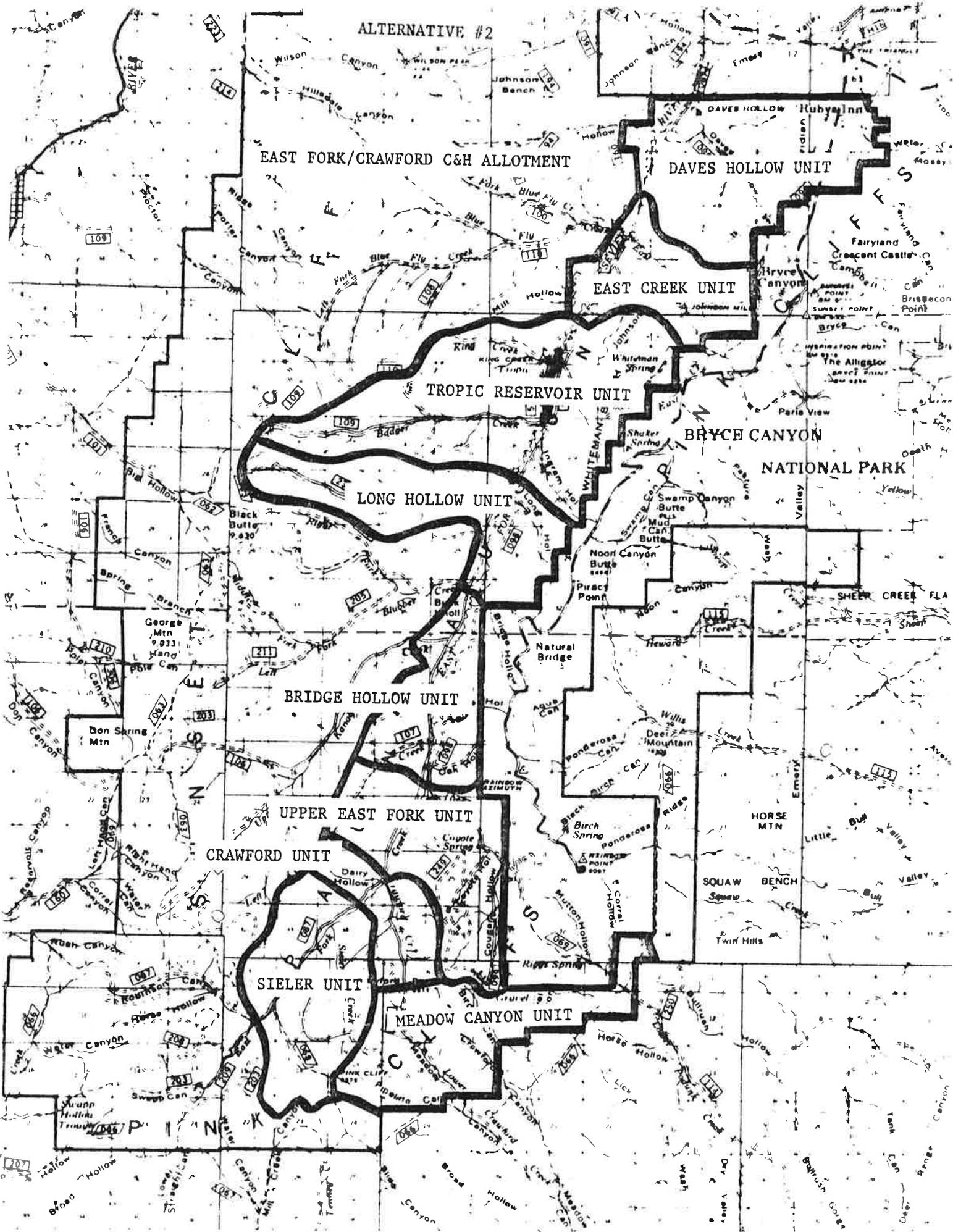
MEADOW CANYON UNIT

R. 5 W

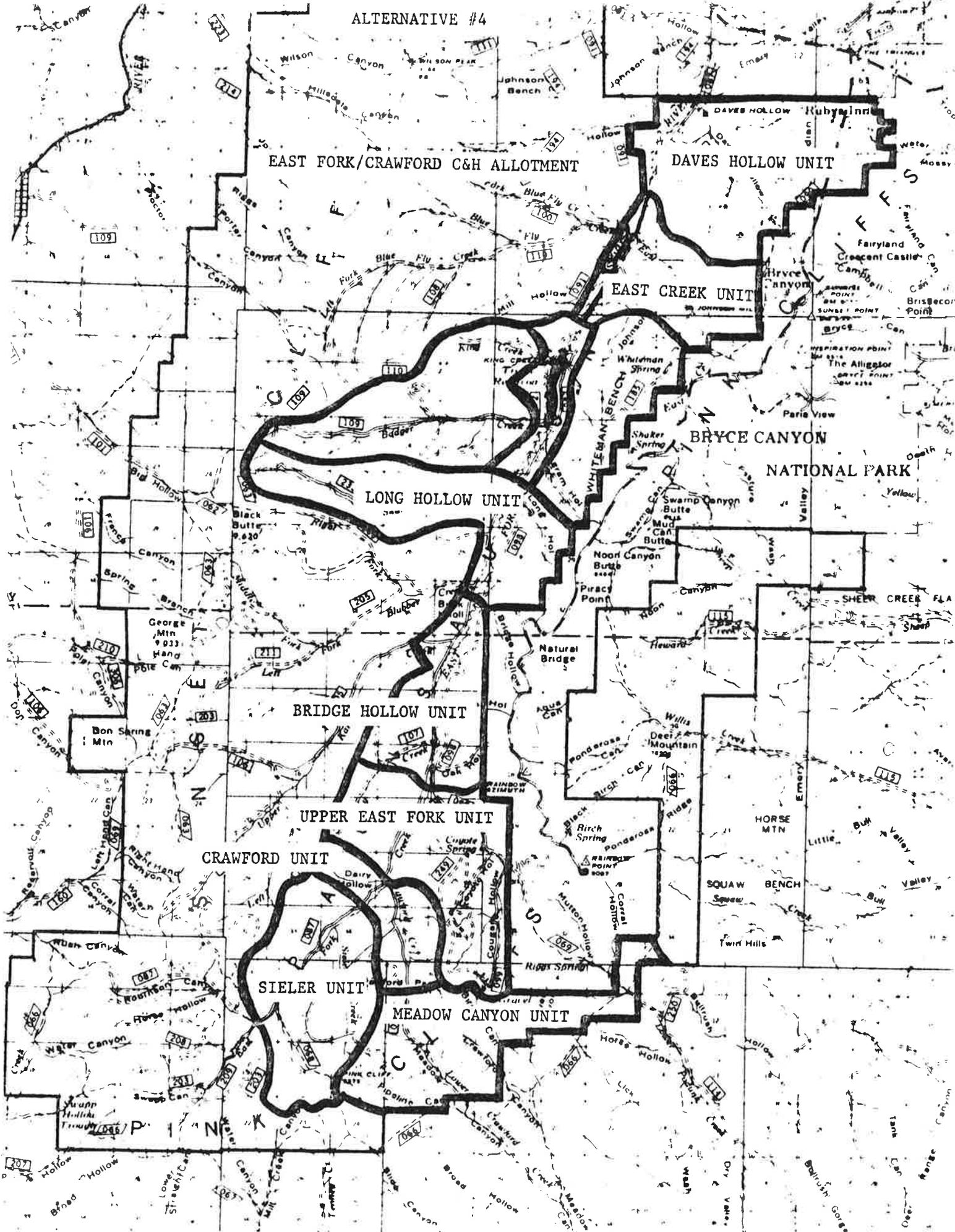
R. 4 W

R. 4 W

R. 3 W



ALTERNATIVE #4



R 5 W

R 4 W

R 4 W

R 3 W

APPENDIX C

UTILIZATION STANDARDS FOR FORAGE SPECIES

APPENDIX C

UTILIZATION STANDARDS FOR FORAGE SPECIES

The Dixie National Forest L&RMP standards and guidelines allows for a maximum use of 60 percent on heavy use pastures under a rest rotation grazing system. Using a deferred rotation system up to 50 percent use on all species is allowed except crested wheatgrass reseeding and wet meadows where 60 percent is allowable. The East Fork of the Sevier River and its tributaries have been identified as critical fisheries habitat and they are in less than desirable condition. To improve riparian conditions, plant vigor, provide streambank protection and aid deposition of sediments to rebuild degraded streambanks, the following allowable use levels will be followed to achieve desired future conditions.

The units grazed in the spring and early season, 50 percent grazing use will be allowed. In the mid season units, allowable grazing use levels will be 40 percent. This allows these units to regrow after livestock grazing. The late season grazed units maximum allowable use levels will be 30 percent. The goal is to leave stubble heights of 4 to 6 inches along riparian areas. Grazing at this use level should also reduce grazing use on browse species during the late season when livestock tend to graze browse heavier. The 4 to 6 inches in residual stubble or regrowth is to provide sufficient herbaceous forage biomass to meet the requirements of plant vigor maintenance, streambank protection, and sediment entrapment.

| <u>Management System</u> | <u>Percent Key Species Utilization (1)</u> | <u>Riparian Standards (1)</u> | <u>Fall or Winter Stubble Height in Inches (3)</u> |
|--------------------------|--|-------------------------------|--|
| Rest-Rotation(2) | 50-60 | 60 (50 Browse) | 4-6" stubble 6" critical areas |
| Deferred-Rotation | 50 | 60 (50 Browse) | 4-6" stubble 6" critical areas |

- (1) Proper use based on utilization will be considered as the measurement of the standing years growth at the time of measurement as described in the Dixie National Forest L&RMP Standards and Guidelines (maximum levels).
- (2) A rest rotation grazing system will be considered a three or four year rotation with one or two pastures completely rested each year, one grazed early and one grazed after seed ripe.
- (3) Stubble height restrictions may take precedence over percent utilization. Summer grazed pastures should not exceed 40-50 percent of current growth, to allow regrowth on streambanks. Fall use of streamside vegetation should not exceed 30 percent. Stubble height remaining at the end of the grazing season should be a minimum of 4 to 6 inches (Clary and Webster, 1989).

APPENDIX D
GRAZING CAPACITY SUMMARY

APPENDIX D

GRAZING CAPACITY SUMMARY

The following estimated grazing capacities are the averages of utilization data collected from 1980 through 1990. The grazing capacities are displayed at different proper use levels.

East Fork C&H Allotment

| <u>Unit</u> | Use Levels | | |
|------------------|------------|--------|--------|
| | 30% | 40% | 50% |
| Daves Hollow | 148 AM | 198 AM | 247 AM |
| East Creek | 139 AM | 185 AM | 231 AM |
| Tropic Reservoir | 136 AM | 182 AM | 227 AM |
| Long Hollow | 169 AM | 225 AM | 281 AM |
| Bridge Hollow | 183 AM | 244 AM | 305 AM |
| Upper East Fork | 226 AM | 302 AM | 377 AM |
| Sieler | 97 AM | 130 AM | 162 AM |

Crawford C&H Allotment

| | | | |
|----------------------|--------|--------|--------|
| Upper Crawford Units | 163 AM | 218 AM | 272 AM |
|----------------------|--------|--------|--------|

Alternatives #3 & 4

Under Alternative #3 the Crawford C&H Allotment's carrying capacity was based on utilization data obtained while the allotment was being grazed using the four pasture rest-rotation grazing system.

The Meadow Canyon Unit carrying capacity of 63 AM's was taken from the range analysis data.

The year Upper Crawford Unit is rested there are 271 AM's available for grazing using a 50% use level. With this 271 AM's plus Meadow Canyon's carrying capacity of 63 AM's there is a total of 334 AM's available for grazing.

There is a 203 AM's reduction from the carrying capacity under Alternatives #3 & 4 in the East Fork C&H Allotment due to the additional protection of the riparian areas and Tropic Reservoir fencing. This reduction is based on the suitable grazing acres excluded from grazing. Both units, Tropic Reservoir and East Creek, estimated carrying capacity is reduced by the percentage of suitable acres excluded.

East Creek Unit

1128 suitable acres
259 excluded by fencing
869 acres available for grazing

Est. capacity 231
869 ac. - 1128 = 77% capacity
178 AM's Available at 50% allowable use

Tropic Reservoir Unit

753 suitable acres
-412 excluded (Tropic Reservoir)
- 73 excluded (South Tropic)
268 acres available for grazing

Est. capacity 227 AM's
268 ac. - 753 = 36% capacity
82 AM's Available at 50% allowable use

The 82 AM's that are available for grazing in the Tropic Reservoir Unit will be used with the Long Hollow Unit. The following are the changes in grazing capacity in the East Creek and the Long Hollow Units using Alternatives #3 and 4.

| <u>Unit</u> | Use Levels | | |
|-------------|------------|-----|-----|
| | 30% | 40% | 50% |
| East Creek | 107 | 142 | 178 |
| Long Hollow | 218 | 290 | 363 |

APPENDIX E
ISSUES, CONCERNS AND OPPORTUNITIES
(Identified But Not Evaluated)

APPENDIX E

ISSUES, CONCERNS AND OPPORTUNITIES

(Identified But Not Evaluated)

The following issues, concerns, and opportunities (ICO's) have been raised concerning existing resource conditions and present and potential management. They were identified by Forest Service resource specialists, cooperating agencies, forest users, and interested persons. The majority of these ICO's relate directly to livestock grazing on East Fork and Crawford C&H Allotments.

During the analysis process, these ICO's were reviewed and their relevance to the project was assessed. The following codes were used to indicate how individual ICO's were handled: CA = covered in alternatives, MM = mitigating measure, NI = not currently considered an issue.

- CA 1. Unsatisfactory riparian conditions exist on portions of the allotments. This is evident by a lack of riparian vegetation species with low diversity of vegetation species and instability of streambanks.
- NI/CA 2. There is a need to protect past resource improvement investments, including stream structures and watershed rehabilitation work.
- CA 3. Sedimentation appears to be excessive within streams.
- CA 4. The quality of the fisheries habitat could be improved with an increase in streambank vegetation cover. This improvement would lower water temperatures, provide more forage for macroinvertebrates and fish spawning habitat.
- CA 5. Elk and livestock are competing for forage, primarily in valley bottoms. Forage in the valley bottoms is being utilized by elk during the spring-summer-fall seasons, while livestock utilize forage in pastures/units as specified in the Allotment Management Plan.
- CA 6. There is an opportunity to improve waterfowl habitat around Tropic Reservoir and at other small reservoir sites (ponds) on the East Fork C&H Allotment.
- CA 7. With increased recreation use around Tropic Reservoir, livestock use has been identified as a health, safety and esthetic concern around the reservoir.
- CA 8. With the increased emphasis on wildlife and recreation management, there is a concern of possible decreases in permitted livestock use.
- CA 9. There is an opportunity to combine the East Fork and Crawford Allotments and improve resource management on both allotments.

- NI 10. There is a need to protect the Bryce Canyon National Park culinary water source (isolated land tract) and meet State of Utah water quality standards. This may require fencing on National Forest System lands.
- CA 11. There is a need to provide an economically viable AMP including livestock management, facility maintenance and construction of new facilities.
- CA 12. Deer Springs Ranch has expressed a need to use (graze) portions of the Crawford Allotment in conjunction with their private lands. Portions of the National Forest/private land boundary are not fenced making management of private lands difficult.
- NI 13. There is a desire to see elk numbers continue to rise in harmony with the environment and continue to make habitat improvements.
- CA 14. Elk and antelope introduced into the area a few years ago are consuming available livestock forage.
- NI 15. Elk damage is occurring to pasture fences.
- NI 16. Drought and insects are affecting vegetation which would normally stabilize the soil and prevent erosion and siltation of streams.
- CA 17. Rest/rotation grazing seems to be the most feasible way to protect the resource improvement and watershed rehabilitation work that has been done.
- CA 18. The range is in better shape today than fifty years ago. The permittees will continue to work with the Forest Service to maintain and improve range conditions.
- NI 19. The fishing has deteriorated and has improved very little since being poisoned a few years ago.
- NI 20. When drought conditions break and we have improved stream flow, then we can look forward to better fishing.
- CA 21. If the present increase in elk numbers is allowed to continue it will not be long before they will out number the permitted cattle.
- NI 22. Permittees and families were grazing cattle before the Forest Service came into existence, and are not being driven out by wildlife and recreation users.
- NI 23. Management plan should be implemented to control the number of elk so that both can continue to utilize available forage.
- CA 24. Its hard to believe that health and safety are endangered by cattle grazing in the Tropic Reservoir area for a short period of time.
- NI 25. A great many tourists actually enjoy seeing the cows.

- NI 26. Utah prairie dogs could have more effect on the Bryce Canyon National Park culinary water source than cattle.
- CA 27. There is an economic impact on both the government and permittees if livestock permits are terminated in favor of wildlife and recreation. There are no grazing fees collected on elk.
- NI 28. Cattle grazing provides more than a livelihood for the permittees and their families. They are a valuable resource.
- NI 29. There is a concern of the impact on small communities and people of the area and their quality of live if livestock permits are curtailed or terminated.
- CA 30. Opportunity that combining allotments and using a deferred rotation grazing system is the best plan. Rotation will allow for new growth and not have things overgrown.
- CA 31. Combining allotments would reduce the grazing in the other units.
- CA 32. Grazing the Crawford C&H Allotment would conform to the Code of Federal Regulations, Part 222.2(A), which calls for the establishment of allotments where grazing is available on Forest Service lands.
- CA 33. Water distribution is critical to proper distribution of both cattle and wildlife, realigning fences is also desirable.
- CA 34. Vegetation manipulation is important in helping maintain plant vigor and range management is one tool accepted as providing such benefits.
- CA/NI 35. Concern of how grazing impacts associated watersheds, quantifying findings.
- NI 36. Concern that the efforts the Forest Service is making now and in the future for the recovery of the Utah prairie dog be addressed in these plans.
- CA 37. There is an opportunity to provide a diverse variety of grazing by combining allotments, rather than a "high country, low country" split.
- NI 38. If reductions are made due to recreation and elk then the permittees should be compensated for these losses.
- CA 39. Siltation has greatly impacted Tropic Reservoir. Reduced water depths and increased growth of aquatic macrophytes has resulted in severe wintertime oxygen depletion in the reservoir. This situation has eliminated the reservoir's ability to overwinter fish, as well as greatly reduced diversity and number of macroinvertegrate populations.
- CA 40. Improvement of both riparian and meadow vegetation will do much to ensure the success of wild turkey in the area.

- CA 41. Sedimentation is occurring in the East Fork and its tributaries from other sources than streamside grazing. '
- NI 42. Concern that the cattlemen are not represented on the interdisciplinary team.

APPENDIX F
PUBLIC INVOLVEMENT DOCUMENTS

APPENDIX F

PUBLIC INVOLVEMENT DOCUMENTS

The following is a list of individuals or groups that made written comments in regards to the East Fork/Crawford C&H Allotment Management Plan revision. These comments are on file in the project folder at the Powell Ranger District, Dixie National Forest.

Mr. J. Robert Ott, East Fork Cattle Grazers Assoc., Cannonville, UT
Mr. Verl B. Matthews, USU Extension Agent, Panguitch, UT
Mr. Robert W. Reynolds, Superintendent, Bryce Canyon National Park, UT
Mr. Stanley L. Ponce, National Park Service, Ft. Collins, CO
Mr. Tom Shakespeare, President, Bryce Wildlife Club, Tropic, UT
Mr. Clark D. Johnson, Fish and Wildlife Service, Salt Lake City, UT
East Fork C&H Graziers Association, Tropic, UT
Mrs. Elaine Baldwin, Panguitch, UT
Obie S. & June W. Shakespear, Tropic, UT
Mr. K. Bruce Fullmer, Panguitch, UT
Norman S. & Ardis Christensen, Escalante, UT
Mr. Merlin Esplin, Kaibab Forest Products Co., Fredonia, AZ
Mr. Robert P. Veater, Panguitch, UT
Mr. LaMar LeFevre, Tropic, UT
Mrs. Cindy Stewart, Panguitch, UT
Mr. John Houston, Panguitch, UT
Mr. Thomas V. Hatch, Chairman, Garfield County Commission, Panguitch, UT
Mr. Sherrell Ott, Tropic, UT
Mr. Evan S. Callister, Manager, Deer Springs Ranch, Kanab, UT
Mr. Michael E. Christensen, State of Utah, Office of Planning and Budget,
Salt Lake City, UT
Mr. Bruce L. Bonebreak, Division of Wildlife Resources, Cedar City, UT
Mr. F. Clair Jensen, Division of Wildlife Resources, Cedar City, UT
Tom & Marilyn Jackson, Escalante, UT
Mr. Clair Veater, Panguitch, UT

APPENDIX G
MANAGEMENT AREA DESCRIPTIONS

MANAGEMENT AREA 1A
DEVELOPED RECREATION

Characteristics

This management area consists of both existing and proposed developed recreation sites.

Desired Future Condition

Developed facilities will be adequate to protect the site and provide comfort for the user. Improvements will be designed to harmonize with the environment and to minimize maintenance costs. Traffic controls will be inconspicuous unless stricter control is needed. Roads will be hard surfaced in high use areas where it is necessary to protect the resource. Development density will average 3 family units per acre. Interpretive services will be informal but generally direct. Vegetation will be managed to perpetuate the desired cover type. Vegetation will provide screening between units and shade from the hot afternoon sun. New sites will be constructed to a development scale three or less

Size

This management area contains a total area of 19,400 acres, including 1265 acres of developed sites. Sixteen thousand eight hundred seventy one acres are unsuitable for timber harvest.

Management Area Direction

Management emphasis is for developed recreation in existing and proposed campgrounds, picnic grounds, trailheads, visitor information centers, summer home groups, and water-based support facilities. Proposed sites (sites scheduled for development in the plan) are managed to maintain the site attractiveness until they are developed.

Facilities such as roads, trails, toilets, signs, etc., may be dominant, but harmonize and blend with the natural setting. Livestock grazing is generally excluded from developed sites. Existing and proposed sites are withdrawn from locatable mineral entry.

MANAGEMENT AREA 2A
SEMIPRIMITIVE RECREATION

Characteristics

The Recreation Opportunity Spectrum Semi Primitive management setting provides a special kind of outdoor experience, one dependent upon a perception of remoteness. In some cases, it also provides Forest managers with opportunities for active management, including habitat improvement, timber harvest, and travel coordinated management prescriptions can be developed. The term semi primitive refers to a management objective and not to a land classification.

Desired Future Condition

This area will provide the user with a moderate to high probability to experience isolation from the sights and sounds of human, independence, closeness to nature, tranquility and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. This opportunity exists for users to have a high degree of interaction with the natural environment.

Size

This management area contains 222,300 acres. Two hundred five thousand eight hundred five acres are unsuitable for timber harvest.

Management Area Direction

Management emphasis is for semi-primitive recreation opportunities. Motorized travel may be restricted or seasonally prohibited to designated routes to protect physical and biological resources and to meet management objectives.

Visual resources are managed so that management activities are not evident or remain visually subordinate. Past management activities such as historical changes caused by early mining, logging, and ranching may be present which are not visually subordinate, but appear to have evolved to their present state through natural processes. Landscape rehabilitation is used to restore landscapes to a desirable visual quality. Enhancement aimed at increasing positive elements of the landscape to improve visual variety is also used.

Livestock distribution and stocking rates are managed to be compatible with recreation use. The timber resource is managed using both commercial and noncommercial methods. Silvicultural prescriptions should be designed to maintain a visual quality objective of partial retention, enhance long term visual quality, diversity, and provide for insect and disease control.

Mineral and energy resources activities are generally compatible with goals of this management area subject to appropriate stipulations provided in management activities G00 - G07 in Forest direction.

Local roads may be constructed for non-recreation purposes to a minimal standard compatible with a primitive environment and located so they will not detract from the objective. Once the activity is completed, the traffic will be controlled to whatever degree necessary to maintain the desired forest setting. This will continue until the road is again needed for more intensive management purposes.

Characteristics

This management area consists of travel corridors along major traveled routes across the Forest or to specific recreational attractions on the Forest.

Desired Future Condition

This area is characterized by a modified natural environment. Resource modification and utilization practices usually harmonize with the natural environment. In some of the more modified zones within this area utilization practices enhance recreation activities, maintain vegetative cover, and soil. The opportunity to have a high degree of interaction with the natural environment and to face challenges associated with more primitive forms of recreation will not be important. Both motorized and non-motorized forms of recreation are possible in this area. The natural features of the landscape will dominate.

Size

This management area contains 131,700 acres. One hundred twenty four thousand two hundred seventy eight acres are unsuitable for timber harvest.

Management Area Direction

Management emphasis is for rural and roaded-natural recreation opportunities. Motorized and nonmotorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources.

Visual resources are managed so that management activities maintain or improve the quality of recreation opportunities. Management activities are not evident, remain visually subordinate, or may be dominant, but harmonize and blend with the natural setting. Landscape rehabilitation is used to restore landscapes to a desirable visual quality. Enhancement aimed at increasing positive elements of the landscape to improve visual variety is also used.

The harvest method by Forest cover type is clearcutting in aspen, shelterwood in ponderosa pine, mixed conifer and Englemann spruce-subalpine fir.

LIVESTOCK GRAZING

Characteristics

This management area consists of benchlands, valleys and basins at lower elevations with pinyon-juniper or sagebrush vegetation. Most of these areas have been chained and reseeded. At higher elevations this management area consists of mountain meadows and parks with sage-grass or grass-forb vegetation.

Desired Future Conditions

Acreage of areas receiving this emphasis will remain essentially the same as presently. Production and range condition will be improved. Areas where vegetation manipulation practices have been accomplished will be maintained for optimum forage production. Numbers of livestock improvements (water developments, fences) will increase.

Size

This management area contains 276,600 acres. Two hundred sixty seven three hundred sixty seven acres are unsuitable for timber harvest.

Management Area Direction

The area is managed for livestock grazing. Intensive grazing management systems are favored over extensive systems. Range condition is maintained through use of forage improvement practices, livestock management, and regulation of other resource activities. Periodic heavy forage utilization occurs. Investment in structural and nonstructural range improvements to increase forage utilization is moderate to high. Structural improvements benefit, or at least do not adversely affect wildlife. If conflicts occur between livestock and wildlife in areas of critical wildlife habitat they will be resolved in favor of wildlife. Nonstructural restoration and forage improvement practices available are seeding, planting, burning, fertilizing, pitting, furrowing, spraying, crushing, and plowing. Cutting of encroaching trees may also occur.

Investments are made in compatible resource activities. Dispersed recreational opportunities vary between semi-primitive nonmotorized and roaded natural. Management activities are evident but harmonize and blend with the natural setting.

MANAGEMENT AREA 7A
WOOD PRODUCTION AND UTILIZATION

Characteristics

This management area consists of the major Forested areas on the Forest. At lower elevations ponderosa pine is dominant. Mixed conifer species occupy mid elevation while the spruce-fir type is dominant at the highest elevation.

Desired Future Conditions

This management area contains most of the commercial timber on the Forest and is the most highly productive for growing timber.

The basic long-range objectives of timber management for this area are:

1. Create and maintain nearly equal areas in seedlings and saplings, poletimber, immature sawtimber and mature sawtimber.
2. Create and maintain stand conditions that will minimize growth loss and mortality from insects and diseases.
3. Convert slow growing stands of mature sawtimber (beyond culmination of mean annual increment for the product size objective) to young, thrifty stands of desirable species.

These basic objectives, if implemented, will contribute toward the goal of reaching 90 percent of optimum timber growth rates at long-term sustained yield by 2030. The harvest schedule offered by the Preferred Alternative precludes attainment of this goal by 2030 because of the severe departure from the current base sale schedule that would be required. Substantial progress, however, is expected.

Ponderosa Pine Type

Areas of ponderosa pine will be managed almost exclusively through shelterwood methods. Sapling and pole stands will be precommercially thinned to leave between 120 and 150 trees per acre depending on site productivity. Stands of immature sawtimber will receive improvement harvests (intermediate cutting or commercial thinning) once or twice during the 110 to 130 year rotation on a 20 to 40 year entry period. Seed cutting will be done primarily to provide site protection for planted seedlings. These activities will be implemented on a schedule to provide a reasonable balance of acres in each of the age classes in the shortest time possible as constrained in the management area prescription. This balance should be achieved by 2030 with close to 90 percent of the optimum growth rate for most sites realized. Conditions favorable for significant insect and disease losses will be minimized. Small scattered areas of relatively inaccessible ponderosa pine on slopes over 40 percent will likely remain in an unmanaged condition.

MANAGEMENT AREA 9A
RIPARIAN MANAGEMENT

Characteristics

This management area is located adjacent to perennial streams and across the Forest. Components of the area include the aquatic ecosystem, the riparian ecosystem (characterized by distinct vegetation), and adjacent ecosystems that are within approximately 100 feet measured horizontally from both edges of perennial streams and from the shores of lakes and other still water bodies. All of the components are managed together as a land unit comprising an integrated riparian area, and not as separate components.

Desired Future Condition

Riparian area acreage remains essentially the same as currently exists. Riparian ecosystem remains healthy and viable. Sufficient habitat remains to support at least minimum viable populations of riparian dependent wildlife species. Water quality is not impaired below existing levels and is improved in some areas. Stream channel stability is maintained or, in areas where it is severely degraded, is improved to least minimally acceptable standards. Area provides multiple resource outputs while providing protection to riparian dependent values.

Size

This management area contains 9100 acres. Eight thousand fifty two acres are unsuitable for timber harvest.

Management Area Direction

The goals of management are to provide healthy, self-perpetuating plant communities, meet water quality standards, provide habitats for viable populations of wildlife and fish, and provide stable stream channels and still water body shorelines. The aquatic ecosystem may contain fisheries habitat improvement and channel stabilizing facilities that harmonize with the visual setting and maintain or improve wildlife or fish habitat.

Forest riparian ecosystems are treated to improve wildlife and fish habitat diversity through specified silvicultural objectives. Timber harvest and other vegetation treatments are used to achieve multi-resource benefits emphasizing riparian values.

Livestock grazing is at a level that will assure maintenance of the vigor and regenerative capacity of the riparian plant communities. Developed recreation and other facility construction for overnight use is restricted or modified within the 100-year floodplain. Dispersed recreation will be managed to maintain ecological stability and visual objectives of the management area.

The management area over which this prescription is to be applied will also be affected by several management activities in the Forest-wide direction. Most notable is the direction involving riparian area management, upland zones, water uses management, water resource improvement and maintenance, dam administration and maintenance, and elsewhere.

APPENDIX H
MONITORING

APPENDIX H

MONITORING

Studies and inspections will continue to be made on the allotment to further evaluate (1) range condition and trend, (2) effectiveness of the grazing system, (3) accomplishment of the management objectives and (4) adequacy of the stocking rate.

A. Nested Frequencies

There are three nested frequency clusters on the allotment. These studies will be re-read approximately every 10 years.

B. Riparian Transects

There are two riparian transects on the allotment. These studies will be re-read approximately every 5 years.

C. Unit Examinations

Unit examinations will be conducted annually within each unit of the allotment. These exams will evaluate compliance with the Annual Operating Plans directions. They will also firm up carrying capacities.

D. Utilization Surveys

Elk use will be monitored by using utilization cages. These plots will be established in key riparian areas and will evaluate elk use prior to livestock grazing.

E. Willow Plots

Some willows will be caged to determine potential growth without livestock or wildlife use.

F. Sedimentation Surveys

Sedimentation levels will be monitored to evaluate water quality and fisheries spawning trends.

G. Streambank Stability

Streambank stability will be monitored in representative reaches of the stream (photo plots).

APPENDIX I
CULTURAL RESOURCES

United States
Department of
Agriculture

Forest
Service

Dixie N.F.

RECEIVED
POWELL

JAN 23 1992

Reply to: 1950

Date: January 21, 1992

Subject: Cultural Resources - Revised Allotment Management

To: District Ranger

This memo is in regard to the impacts on cultural resources from the Proposed Action and alternatives to the Proposed Action which are described in the Environmental Assessment for the East Fork/Crawford C&H Allotment Management Plan.

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

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

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



MARIAN JACKLIN
Forest Archaeologist

APPENDIX J
BIOLOGICAL EVALUATION
(See Project File)

APPENDIX K
PROJECT COSTS
(See Project File)

APPENDIX L

REFERENCES

APPENDIX L

REFERENCES

- Anderson, E. William, Franzen, David C., Melland, Jack E., April 1990. "Rx Grazing to Benefit Watershed-Wildlife-Livesock." *Rangelands* Vol. 12, No. 2: 105-111
- Austin, Dennis D., Urness, Philip J., and Riggs, Robert, Nov. 1986. "Vegetal Change in the Absence of Livestock Grazing, Mountain Brush Zone, Utah." *Journal of Range Management*, Vol. 39, No. 6: 514-517.
- Balley, Derek W., Rittenhouse, Larry R., Aug. 1989. "Management of Cattle Distribution." *Rangelands* Vol. II, No. 4: 159-161.
- Chaneg, Ed; Elmore, Wayne; Platts, William S., January 1991. "Livestock Grazing on Western Riparian Areas."
- Clary, Warren P., Webster, Bert F., May 1989. "Managing Grazing of Riparian Areas in the Intermountain Region." USDA Forest Service, Intermountain Research Station: 1-11.
- Crocker-Bedford, D., 1975 Utah Prairie Dog Habitat Evaluation. Proc. Utah Wildlife Tech. Mtg. 7pp
- Crouse, Michael R., Kindachy, Robert R. "A Method For Predicting Riparian Vegetation Potential of Semiarid Rangelands.": 110-116
- Davis, Jerry W., 1981. "Livestock vs. Riparian Habitat Management - There Are Solutions.": 175-184
- Dixie National Forest Land and Resource Management Plan, 1986.
- East Fork of the Sevier River Photographic Comparison, Powell Ranger District
- Ellison, Lincoln. "Grazing Standards in Range Management.": 136-147.
- Forest Service File, 2210 Analysis and Plans, East Fork C&H Allotment
- Forest Service File, 2210 Analysis and Plans, Crawford C&H Allotment
- Forest Service File, 2230 Permits
- Guthery, Fred S., Deyoung, Charles A., Feb. 1990. "Can Livestock Be Used as a Tool to Enhance Wildlife Habitat?." USDA Forest Service, No. 194: 41-53.
- Kie, John G. "Using Livestock to Manage Wildlife Habitat: Some Examples California Annual Grassland and Wet Meadow Communities.": 7-24.
- Laycock, W.A. "Evaluation of Management as a Factor in the Success of Grazing Systems.": 166-170.

- Marcus, Michael D., Young, Michael K., Noel, Lynn E., Mullan, Beth A., Salmonid-Habitat Relationships in the Western United States: Feb. 1990. USDA Forest Service, RM-188.
- Orodho, Apollo B., Trlica, M.J., March 1990. "Long Term Heavy Grazing Effects on Soil and Vegetation in the Four Corners Region." The Southwestern Naturalist." Vol. 35, No. 1: 10-14.
- Platts, William S., 1985. "Riparian Stream Management.": 70-74
- Platts, William S., May 1989. "Compatibility of Livestock Grazing Strategies With Fisheries." USDA Forest Service: 103-110
- Sanderson, H. Reed, Meganck, Richard A., Sept. 1986 "Range Management and Scenic Beauty as Perceived by Dispersed Recreationists." Journal of Range Management Vol. 39, No. 5: 464-469.
- Sharp, L., 1983. "Management of Seeded Rangeland to Maintain Forage Plants." USDA Forest Service: 180-183
- Soil Survey of Panguitch Area, Utah, USDA Soil Conservation Service, July 1990
- Stoddart, Laurence A., Smith, Arthur D., 1975. Range Management, McGraw-Hill, Inc.
- Utah Endangered, Threatened and Sensitive Plant Field Guide, 1991.
- USDA Forest Service Handbook, Section 2209.21 Range Analysis Handbook, R-4 FSH 11/86