

ELBOW LAKE CATTLE AND HORSE ALLOTMENT

Environmental Analysis Report and

Range Management Plan

KETTLE FALLS RANGER DISTRICT
COLVILLE NATIONAL FOREST

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for Forest Supervisor

On the basis of the environmental analysis process documented by this report, I have determined that the proposed action will not result in a significant impact on the quality of the human environment nor is it expected to become highly controversial. Therefore, an environmental statement will not be prepared for this proposal.

Stephen Killey
for Forest Supervisor

4/24/18
Date

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I. SUMMARY

The proposal of the Management Plan is to graze 153 cattle for the season, 6/1 - 9/30, on the Elbow Lake Cattle and Horse Allotment, while allowing additional forage for wildlife.

The proposal is to divide the allotment into two suballotments. The grazing system proposed for management of the suballotments is deferred-rotation grazing. Deferred-rotation grazing combines the advantages of rotation and deferment. Grazing is delayed or interrupted on some portion of the allotment during the grazing season for one or more years. Non-continuous grazing results because all management units are successively deferred by rotation. The entire allotment is grazed each season. Forage plant seedlings in the deferred unit receive protection through the growing season, thereby enhancing seedling establishment.

This document on the Elbow Lake Allotment is a combination Range Management and Environmental Analysis Report. Policies, objectives, and programs defined here are more specifically stated in Sections 2210 and 2220 of the Forest Service Manual. This Range Management Plan will be revised when the allotment is reanalyzed or when necessary.

The Range Management plan centralizes information necessary for management of the allotment and sets down objectives for managing the impacts of domestic livestock grazing on the other resources.

The Environmental Analysis sections of this document have been conducted in accordance with the requirements of the Multiple Use Sustained Yield Act and National Environmental Policy Act.

Management direction, multiple-use coordination, and resource development and utilization for the Elbow Lake Allotment, based on Forest Service range

management objectives are:

- (1) Maintain a sustained yield of forage for domestic livestock and wildlife.
- (2) Provide local leadership in range conservation, development, and utilization.
- (3) Utilize the range resource consistent with other resource values, such as soil, watershed, recreation, and timber management.
- (4) Reverse the downward trends in the ecological condition of the vegetation cover for maintaining and managing soil stability for the watershed.
- (5) Coordinate the grazing of domestic livestock with the other resources.
- (6) Establish a proper season of use and stocking plan based upon subsequent production and utilization studies.
- (7) Evaluate the Deferred-Rotation Grazing System.
- (8) Promote stability of family ranches and farms within the local communities in the area in which the Colville National Forest is situated.
- (9) Design and construct range improvement needed for intensive range management.
- (10) Secure management and appropriate treatment where the vegetation and soil conditions are ecologically poor.
- (11) Achieve and maintain stable stream channels to maintain a high quality of water production from the watershed.

The impacts analyzed in the Environmental Analysis Report were: the effects of grazing on the vegetation, soil, watershed, litter cover, wildlife, timber, and the aesthetics of cattle grazing.

II. ALLOTMENT DESCRIPTION

Location and Land Status:

The Elbow Lake Allotment lies in Townships 39 and 40 North, Ranges 37, 38, and 39 East, Willamette Meridian, within the State of Washington, Stevens County. The area is within the Colville National Forest, Kettle Falls Ranger District. The allotment is bounded on the north by the international boundary between Canada and the United States, on the south and east by a mixture of private, State, and other Federal lands, and on the west by National Forest lands outside of the allotment. The allotment is in the general area between the Columbia and Kettle Rivers, approximately 15 miles northeast of their confluence. (See allotment map in Appendix for location and boundaries.)

Various private, State of Washington, and Bureau of Land Management lands, as well as Forest Service lands are included within the boundaries of the allotment. Acreages and percentages of ownerships are shown in Table I.

Table I:

<u>ELBOW LAKE ALLOTMENT OWNERSHIP</u>		
<u>Ownership</u>	<u>Acres</u>	<u>Percentage</u>
National Forest	26,345	83%
Bureau of Land Management	240	1%
State of Washington	1,760	6%
Private	<u>3,241</u>	<u>10%</u>
TOTAL	31,586	100%

Of this amount, 1,120 acres of State of Washington and 240 acres of Bureau of Land Management lands are included as part of the allotment under on-off provision or through private land permit.

Lands not included under an on-off provision or through a private land permit, that are within the allotment, are not considered in determining allotment capacity. This includes 3,642 acres of private and State of Washington lands, or 11 percent of the total allotment area.

Physical Characteristics:

The allotment area is located in the extreme eastern part of the Okanogan Highlands, a high plateau located generally west of the Columbia River to the Okanogan Valley. Geology of this area is highly variable with a variety of rock types that range in age from Precambrian to late Tertiary. Specifically, geology of the allotment is primarily volcanic in origin with some granitic rock. Pre-volcanic glaciation has abraded much of this granitic rock, leaving areas of rockland on mountain slopes.

Slopes within the allotment area are moderate or moderately steep, averaging 15 to 70 percent. Aspects are varied.

Soils are mostly sandy loams or loams of moderate depth and greyish-brown color. They range from low erodibility to moderately high erodibility. Generally, they have high infiltration rates and are moderately fertile.

These soils often show a deposition layer of volcanic ash. The depth of this layer is variable, being deepest on lee slopes. Profile development on soils within the allotment is generally weak.

Areas of thin, rocky soil are intermittent on this allotment where granitic rocks were scoured by pre-volcanic glaciation with little deposition of glacial till. These soils are generally restricted to the south slopes and are a continual source of runoff from rainfall and snow melt. Active erosion is present on these areas as well as on the margins of these areas. (Refer to Soils of the Republic and Kettle Falls Districts, Colville National Forest, November, 1969.)

Elevations on the allotment range from approximately 2,000 feet above sea level to 5,051 feet on Horns Mountain, the highest point. The average elevation is about 3,500 feet.

The allotment is at the southern end of the east flank of the Christina Mountain Range and contains Horns, Churchill, Leadpencil, Belshazzar, and Flagstaff Mountains.

No major waterways are found within the allotment. Locally prominent creeks are Flat Creek, American Fork Big Sheep Creek, and the East and West Forks of Crown Creek. These creeks are tributaries to the Columbia River.

Pepoon Lake on the southwest boundary of the allotment and Elbow Lake, for which the allotment was named, in the west-central portion of the allotment, are lakes that are found within the allotment. Also, several small ponds or bogs are scattered throughout the allotment. Most of these are intermittent, going dry during the summer, or drying up during dry years.

Most of the Elbow Lake Allotment is timbered. Tree species include ponderosa pine, Douglas-fir, western larch, lodgepole pine, Englemann spruce, western red cedar, subalpine fir, and western hemlock. Timber production and harvest is and will continue to be one of the primary resource activities on the allotment area.

Habitat types as classified by R. and J. Daubenmire, include Douglas-fir/snowberry, Douglas-fir/pinegrass, Douglas-fir/ninebark, grand fir/pachistima, western red cedar/pachistima, and western hemlock/pachistima. (Refer to Daubenmire, R. and Jean D. Daubenmire, 1968, Forest Vegetation of Eastern Washington and Northern Idaho, Washington Agricultural Experiment Stations, Technical Bulletin #60.)

Principle forage species include pinegrass, Idaho fescue, bluebunch wheatgrass, and Kentucky bluegrass. Shrubs found on the allotment that furnish significant browse for livestock and wildlife are; ninebark, serviceberry, willow, and wild rose.

No known threatened or endangered plant species are known to exist on the allotment.

Climate of the area is dominated by western air flows originating in the Pacific Ocean. Warm summers and cold winters are characteristic. Annual precipitation is from 20" at lower elevations to approximately 40" at higher areas. Most of this precipitation (60 - 70%) comes in the form of snow during the winter. Although summer showers are common, most of this moisture is ineffective for use by vegetation due to high evaporation rates caused by relatively high temperatures and low humidities.

The transportation system is well developed on this allotment. Most areas are served by a National Forest System Road. Principle roads include the Limestone, Churchill, American Fork, Flat Creek, and the Crown Creek roads. In addition to system roads, several non-system roads and jeep trails furnish access to all parts of the allotment. Roads are continuing to be constructed or reconstructed, primarily in conjunction with the timber management program. A continually improving transportation system is the result.

There is one developed recreational site within this allotment, the Elbow Lake Campground. This is located at the north end of Elbow Lake. It contains four camping units and has a capacity of 5,480 visitor days use. Actual use of this campground is approximately 1,000 visitor days use during a season from about June 1, to September 30. In addition to recreation use of

Elbow Lake campground, a significant amount of recreation use occurs on the allotment in the form of picnicking, dispersed area camping, driving for pleasure, hunting, and hiking.

A wide variety of wildlife species exist on the allotment. The big game species include mule deer, whitetail deer, black bear, mountain lion; upland game species of grouse (ruffed grouse, blue grouse, and spruce grouse), and snowshoe hare; fur bearer species of beaver, short and long-tailed weasel, and mink; predator species of coyote, bobcat, and Canada lynx; as well as many non-game species of mammals, birds, and reptiles. (See checklists "Birds of the Colville National Forest," "Reptiles and Amphibians of the Colville National Forest," and Mammals of the Colville National Forest," for species found in the vicinity of the Colville National Forest.) No known threatened or endangered species of animals have been identified as occurring on the Elbow Lake Allotment.

Key deer winter range has been identified as occurring in the Squaw Creek area and south of Flagstaff Mountain in Section 33, T.40N, R.39E, W.M., and Sections 4 and 5, T.39N, R.39E, W.M. Browse production on this area is of primary concern. Livestock use must be designed to protect this production for use by deer during the winter.

Present management objectives for wildlife in this area of Washington State call for slight increases in habitat-carrying capacities for mule and white tailed deer, bear, snowshoe hare, blue and ruffed grouse, over the next 12 years. (See "A Statewide Comprehensive Plan for Fish and Wildlife on the National Forests in the State of Washington").

History and Current Status:

Available District records indicate that grazing on this allotment has always been by cattle. The allotment is suited to cattle or sheep use. Past use

has been dictated by a high demand for cattle range.

Past actual use records date back to 1943, for this allotment. Use undoubtedly occurred prior to that time.

The season of use has been changed once since 1943. In 1974, the season was changed from 6/16 - 10/15 to 6/1 - 9/30, based on the need of the permittees for late spring, early summer range. Range readiness observations generally support the 6/1 on date. A summary of past actual use is found in Appendix A.

This allotment was once a part of a larger allotment, the Churchill Allotment, which included most of the National Forest between the Columbia and Kettle Rivers. Even though the Elbow Lake Allotment was once part of the larger Churchill Allotment, it has always been managed as a separate unit.

In 1959, the Churchill Allotment was divided into six smaller allotments. At this time, the Elbow Lake Allotment was formally designated as a separate allotment. Two grazing permits were granted for the area. At that time the Forest Service and permittees agreed that one permittee would use the west half of the allotment and the other would use the east half. That pattern of use is in effect at the present time.

Apparently, no management plans or annual use plans were prepared for this allotment until 1975, when an Interim Allotment Management Plan was prepared. This plan was basically separate plans for the two halves of the allotment, and served primarily to identify problems and management considerations.

Major items of concern that were identified are as follows:

- (1) Heavy use on the east side of the allotment. Possible overstocking or unauthorized use was causing this.
- (2) Lack of controls on the boundaries of the allotment which allows freedom of movement on and off of the allotment by cattle.

- (3) Dispute between the permittees as to who should use the area between the forks of Crown Creek.
- (4) Lack of range analysis and production and utilization studies.
- (5) Lack of range improvement data.
- (6) Lack of interior livestock controls.
- (7) Coordination between timber management and range management.

Proposed management systems evolved from this plan and an agreement between the permittees was reached which called for alternating use of the area between the forks of Crown Creek between them with a year of complete rest between periods of use.

Two permits are currently issued for grazing use on the Elbow Lake Allotment. These are held by Len McIrvin of Laurier, Washington, and the partnership of John Williams and Don Guglielmino of Northport, Washington.

Len McIrvin holds a term grazing permit for 36 cattle, 6/1 - 9/30. This permit provides for 60 head, 60% on National Forest. Williams and Guglielmino presently hold a term grazing permit for 110 cattle, 6/1 - 9/30, and 10 cattle 5/16 - 9/15. Additionally, they own or lease various lands within or adjacent to the National Forest for which they have been granted private land permits for as many as 50 cattle, 6/1 - 9/30. However, no private land permit was issued in 1976 or 1977, because most of these private lands were withdrawn from the allotment. Also, in 1976, Williams and Guglielmino were granted 50 head non-use for resource protection. The same amount of non-use was granted in 1977, for personal convenience.

Present allotment management is based on two suballotments within the main allotment. The west side of the allotment, McIrvin's side, is operated under a modified rest rotation system of management. This system calls for a three year, four pasture cycle. In addition, the disputed area, or joint use area,

is utilized two years; one year by McIrvin, one year by Williams and Guglielmino, and is rested in the third year.

The four basic units of the area are each rested one year of the three year cycle on a rotational basis. Use in the pasture units not being rested in any particular year is rotated as the season progresses. This system is diagrammed as follows:

		<u>Pasture Unit</u>				
		<u>Churchill/Horns</u>	<u>Flat Creek</u>	<u>West Fork</u>	<u>American Fork</u>	<u>Joint Use</u>
Year	1	60 head 6/16-8/15	60 head 8/16-9/30	Rest	Rest	60 head 6/1-6/15
	2	60 head 8/16-9/30	Rest	60 head 6/1-6/15	60 head 6/15-8/15	Used by William & Guglielmino
	3	Rest	60 head 6/1-7/23	60 head 9/16-9/30	60 head 7/24-9/15	Rest
		Repeat Cycle				

Some weaknesses in this system have been recognized. These are as follows:

- (1) Barriers for the pasture unit boundaries are incomplete, requiring herd control through riding. This has proven ineffective at times and has resulted in incomplete rest of the pasture scheduled to be rested and/or use of the other pastures outside of the scheduled use period.
- (2) Boundaries of the pasture units are not exactly located.

This system of management is well-founded in theory and has actually resulted in some rest and deferment on certain portions of the allotment with an apparent improvement in vegetative condition and trend on some areas. However, systematic rest and deferment cannot be assured without further investment in structural range improvements. Range improvements necessary to fully implement this system are approximately two miles of fence and three cattleguards.

There has been no formalized management system developed for the east side of the allotment. However, since 1975, Williams and Guglielmino have operated their portion of the allotment according to the following system, with non-use for 50 of their 120 head permit:

		<u>Pasture Unit</u>			
<u>Zodiac</u>		<u>Crown Creek</u>	<u>Flagstaff</u>	<u>Joint Use</u>	
Year	1	50 head	50 head	10 hd. 5/16-9/15	Used by McIrvin
		6/1-8/15	8/16-9/30	10 hd. 6/1-9/30	
	2	35 head	35 head	10 hd. 5/16-9/15	15 head
		6/1-8/15	8/16-9/30	10 hd. 6/1-9/30	6/1-9/30
	3	50 head	50 head	10 hd. 5/16-9/15	Rest
		6/1-8/15	8/16-9/30	10 hd. 6/1-9/30	
Repeat Cycle					

Several deficiencies have been noted in this grazing system. These are:

- (1) This system fails to recognize the needs of the forage and browse plants for growth and reproduction.
- (2) Controls on the allotment boundary in the Flagstaff area are inadequate, allowing free movement of cattle on and off of the allotment.
- (3) Several suitable grazing areas are not being utilized, while others are over utilized.
- (4) The allotment appears to be overstocked under the full term permit.

Several good points do exist with this system of management. These are as follow

- (1) Forage is utilized when it is most palatable and nutritious.
- (2) A minimum of livestock handling is required.
- (3) Use of the allotment fits in well with the use of adjacent private and leased lands.

Len McIrvin trucks his cattle on and off the allotment, utilizing the corral southwest of Kiel Spring, for unloading and loading. Williams and Guglielmino trail their cattle on and off the allotment, from or to owned or leased lands adjacent to the Forest which they use for spring and fall pasture as well as

summer pasture for their non-permitted cattle.

Len McIrvin is also a partner in the Diamond M Ranch which holds other permits on the Colville National Forest.

III. RANGE CONDITION AND CAPACITY

Range condition and apparent trend on the allotment was measured during preliminary range environmental analysis field work done in the summer of 1976. Evaluation was made according to standard condition guides developed for Region-6. (See Kettle Falls Ranger District 2210 Range Analysis and Plans file for field data sheets.) Findings indicate that vegetative condition on the Elbow Lake Allotment is generally poor with no apparent trend while soil condition is generally good with no apparent trend on areas of primary range. (See Appendix for a complete tabulation of allotment condition and trend.) The poor vegetative condition and no apparent trend illustrates that past management has been ineffective in maintaining or improving range condition.

Indicated grazing capacity has been based on acres of primary range by range type and condition class. Four general suitable range types have been identified on the allotment, these being: (1) mountain meadow, 2; (2) browse or brushland, 5; (3) timbered range, 6; and (4) transitory range, 7. (See allotment map legend for further explanation of range types.) Mountain meadow, browse, or brushland, and timbered range are permanent range types. Transitory range is range that has been created by some cultural or natural disturbance such as logging or wildfire and as a result is capable of providing grazing on a temporary basis. Grazing capacity allocated for transitory range on this allotment is that amount felt to be the long term average of the amount of transitory range available for grazing.

Productivity by range type and condition class was measured during the 1976,

preliminary range analysis. This data has been used in computing the indicated capacity estimate. Because productivity within range types may vary from year to year due to fluctuations in climate, subsequent production studies will need to be established and maintained in order to verify the capacity estimate.

Indicated grazing capacity is based on productivity and estimated proper use of the key forage species. Proper use is determined by the amount of utilization that can be made of a plant while maintaining its vigor and capability to reproduce itself. Furthermore, proper use is governed by management objectives. Generally, range in less than good condition is managed for improvement which requires somewhat lower proper use standards than if the objective of management were to simply maintain range condition. Therefore, range condition influences the setting of proper use standards. Guidelines used for setting proper use standards on the Elbow Lake Allotment are as follows:

<u>Condition Class</u>	<u>Proper Use</u>
Good to Excellent	40 to 50%
Fair	25 to 40%
Poor	10 to 25%
Very Poor	0 to 10%

The system of grazing management governs the amount of use allowed within the proper use guidelines. Guidelines used on the Elbow Lake Allotment are:

<u>Management System</u>	<u>Utilization</u>
Season-long	Mid-point of use recommended for condition class.

Managment System (cont)

Deferred, Rotation,
Deferred-Rotation, and
Alternating.

Rest Rotation

Utilization (cont)

High end of use recommended for
condition class.

Sixty-six percent of available forage
on primary range or 30% of available
forage on the entire range.

The indicated grazing capacity on the Elbow Lake Allotment based on the above proper use criteria and 1976 productivity measurements are as follows:

A. Season Long Grazing System:

Range Type and Condition Class	Acres	Production Lbs/Acre	Pounds of Available Forage	Proper Use	Animal Unit Months Available*
P2D $\frac{P}{G}$	22	860	18,920	18%	3.4
P5N $\frac{P}{G}$	426	645	274,770	18%	49.4
P5N $\frac{VP}{F}$	118	222	26,196	5%	1.3
P6S $\frac{P}{G}$	181	100	18,100	18%	3.2
P6N $\frac{G}{G}$	90	400	36,000	45%	16.2
P6N $\frac{F}{G}$	623	360	224,280	33%	74.0
P6N $\frac{P}{G}$	1356	417	565,462	18%	101.8
P6N/P5N $\frac{F}{G}$	195	315	61,425	33%	20.3
P6AC $\frac{F}{G}$	77	250	19,250	33%	6.4
P6FP $\frac{F}{G}$	309	300	92,700	33%	30.6
T7S	1955	200	391,000	45%	176.0
			Total		482.6 **

*Based on a cow with calf requiring 1,000 pounds of forage per animal month.

This requirement will be considered through this analysis.

**434 Animal Unit Months are available to allocate to livestock, allowing 10% of the grazing capacity for use by wildlife. This allocation will be considered throughout this analysis.

B. Deferred, Rotation, Deferred-Rotation, or Alternating Grazing System:

Range Type and Condition Class	Acres	Production Lbs/Acre	Pounds of Available Forage	Proper Use	Animal Unit Months Available
P2D $\frac{P}{G}$	22	860	18,920	25%	4.7
P5N $\frac{P}{G}$	426	645	274,770	25%	68.7
P5N $\frac{VP}{F}$	118	222	26,196	10%	2.6
P6S $\frac{P}{G}$	181	100	18,100	25%	4.5
P6N $\frac{G}{G}$	90	400	36,000	50%	18.0
P6N $\frac{F}{G}$	623	360	224,280	40%	89.7
P6N $\frac{P}{G}$	1,356	417	565,462	25%	141.4
P6N/P5N $\frac{F}{G}$	195	315	61,425	40%	24.6
P6AC $\frac{F}{G}$	77	250	19,250	40%	7.7
P6FP $\frac{F}{G}$	309	300	92,700	40%	37.1
T7S	1,955	200	391,000	50%	195.5
			TOTAL		594.5

535 AUM's Available to Livestock.

C. Rest Rotation Grazing System

Range Type and Condition Class	Acres	Production Lbs/Acre	Pounds of Available Forage	Proper Use	Animal Unit Months Available
P2D $\frac{P}{G}$	22	860	18,920	66%	12.5
P5N $\frac{P}{G}$	426	645	274,770	66%	181.3
P5N $\frac{VP}{G}$	118	222	26,196	66%	17.3
P6S $\frac{P}{G}$	181	100	18,100	66%	11.9
P6N $\frac{G}{G}$	90	400	36,000	66%	23.8
P6N $\frac{F}{G}$	623	360	224,280	66%	148.0
P6N $\frac{P}{G}$	1,356	417	565,462	66%	373.2
P6N/P5N $\frac{F}{G}$	195	315	61,425	66%	40.5
P6AC $\frac{F}{G}$	77	250	19,250	66%	12.7
P6FP $\frac{F}{G}$	309	300	92,700	66%	61.2
T7S	1,955	200	391,000	66%	258.1
			TOTAL		1,140.5

1,026 AUM's Available to Livestock.*

*Actual capacity will be determined by the design of the grazing system.

*Under this system one pasture a season is completely rested and no capacity can be allowed for rested pastures. Actual capacity under this management system may more realistically be approximately 770 to 852 AUM's.

In addition to capacity on National Forest lands, there is also capacity on State of Washington and Bureau of Land Management lands which the Permittees lease and include as part of the allotment by either waiving grazing management to the Forest Service or including under an on-off provision.

Len McIrvin leases 520 acres of State of Washington land and 240 acres of Bureau of Land Management land which is included as part of the allotment under on-off provision. He obtained a lease for 640 acres of State of Washington land in 1978, which he intends to include in the allotment.

Indicated capacities of these lands are 30 AUM's under a season-long grazing system, 44 AUM's under a deferred, deferred-rotation, rotation, or alternating grazing system and 110 AUM's under a rest rotation grazing system. McIrvin is currently allowed 96 AUM's on account of this State lease.

Williams and Guglielmino lease 640 acres of State of Washington land which they have waived to the Forest Service for grazing management purposes in the past. Indicated capacity on this land is 27 AUM's under a season long grazing system, 30 AUM's under a deferred, deferred rotation, rotation, or alternating system and 40 AUM's under a rest rotation grazing system of management. (See Appendix for a tabulation of acreage by range type and condition class for the leased lands.)

The current permitted use on the allotment is 624 AUM's. This indicates that permitted numbers exceed the indicated grazing capacity by 44% for a season long grazing system and 17% for a deferred, deferred-rotation, rotation, or alternating grazing system. The indicated grazing capacity for a rest rotation grazing system is approximately 23% to 36% greater than the current permitted use.

As range condition improves, it is expected that productivity will increase.

Correspondingly, vegetation in high condition can withstand greater utilization. As vegetative condition improves to a good or better condition class, it is estimated that allotment capacity will increase to 827 AUM's for a season-long grazing system, 918 AUM's for a deferred, deferred-rotation, rotation or alternating grazing system, and 912 to 1010 AUM's for a rest rotation grazing system.

Also, affecting allotment capacity is the effectiveness of management systems and proposed range improvements on improving livestock distribution and increasing range productivity. As secondary range is brought into use by these practices, the allotment capacity will increase. No estimate as to the capacity increases resulting from these practices can be made at this time. However, the potential on this allotment appears to be good.

IV. RANGE IMPROVEMENTS

Existing structural range improvements on the Elbow Lake Allotment include ten water developments, five cattleguards, approximately 4.75 miles of allotment boundary fence, approximately .1 mile of interior drift fence, and 1 corral. These improvements were inventoried and their condition was checked in 1976. Generally, the water developments are in need of maintenance. Four water developments have been identified as needing reconstruction. The fences are in fair to good condition, however, annual maintenance is needed to keep them that way.

All improvement maintenance is the responsibility of the permittees with the exception of cattleguards which are to be maintained by the Forest Service.

Several range improvements have been identified for construction. These include three water developments, approximately three miles of interior

management fence, and three cattleguards. These improvements are designed to split the allotment into pasture units and improve cattle distribution to facilitate implementation of more intensive systems of grazing management. A summary of existing and proposed range improvements is found in the Appendix.

In addition to improvements within the allotment, fencing between the allotment and private lands is needed in the Flagstaff area and along the boundaries of the State and B.L.M. leases in Sections 3 and 10, T.39N, R.38E, W.M. Cooperation with the adjacent land owners is needed in order to construct this fence.

V. NEEDS FOR THE AREA

Intensive range management will result in continued long term improvement and productivity of the range resource for this allotment. Grazing of this allotment will continue to be essential for meeting the annual forage requirements for the permittee's cattle.

Recreation use is generally light when considering the entire allotment. Traffic is heavy on the Churchill Road during the summer and fall. Wood cutting, hunting, and berry picking are the preferred activities along this road. There is one developed site within the allotment; it is Elbow Lake Campground. This campground has a capacity of 20 people at one time. It is not fenced, but the natural timber barriers around the campground are holding livestock user conflicts to a minimum.

There are 5,241 acres of alienated land within the allotment, and 2,000 acres are leased by the permittees. The remaining 3,241 acres have carrying capacity, but it is not included in the capacity for the allotment.

The additional 3,241 acres will complicate verification of the allotment capacity.

Boise Cascade is planning on an intensive reforestation project for their higher productive bottom lands, Williams and Guglielmino have leased. These lands are outside the allotment, and have never been included in their private land permit. The reforestation activities will reduce the carrying capacity on these lands, and temporarily reduce the area Williams and Guglielmino have available to meet their annual range requirement for their total operation. It is uncertain as to the duration of time the cattle will need to be withheld from the area.

The SMU stream classes of the creeks within the allotment are as follows:

Sheep Creek	Class I
American Fork	Class II
E. Fork Crown Creek	Class III
Flat Creek	Class II

All of the above-mentioned streams are fisheries, and they flow into the Columbia River. The Columbia River is used for power production and irrigation.

The Department of Natural Resources timber sale in Section 16, T.40N, R.38E, W.M., is going to effect natural barriers.

Forest Service timber sales on the allotment include East Churchill, Flat Creek, and Belshazzar. The Belshazzar Sale is being accessed with an extensive road system. The West Crown Creek Sale proposed for Fiscal Year '82, will be a regeneration cut of 4 million board feet. Reforestation inventories on the allotment show 320 acres to be stocked, 14 acres non-stocked and 584 acres having received timber stand improvement work. Intensive timber management will continue to create transitory range on the allotment and cattle grazing will impact plantations.

There is mineral activity within the allotment at the Chief Joseph Mines.

Three special use permits are granted for the area, a lookout tower on top of Flagstaff mountain, a power line to the tower, and an access road to some mining claims on the northeast side of Flagstaff Mountain. The access road is used by the cattle to graze the northeast side of Flagstaff Mountain.

Approximately 540 acres of private land within the allotment has been proposed for acquisition. These acres are generally good sites.

The original cabins associated with the White Horse Mine may be of historical significance. This is going to be determined by a cultural inventory and review.

The northern boundary of the allotment is the International Boundary between Canada and the United States. Cattle do drift across this boundary.

VI. CONSTRAINTS PLACED ON THE PLAN BY LAND MANAGEMENT PLANS OR OTHER AUTHORITY

Part -1 of the Colville National Forest Multiple Use Plan gives the goals for Multiple Use of this area. Upon approval of the Colville West Planning Unit this section will need revision.

VII. ENVIRONMENTAL IMPACTS

Physical

Soil compaction and soil movement could occur on areas where livestock tend to concentrate. The degree of soil compaction by livestock depends on soil moisture content. Soils should be dehydrated sufficiently before livestock are turned on the allotment.

Soil movement occurs on areas with 66% or less soil cover. These soils are likely to be shallow soils over bedrock or lake sediment soils. An accelerated stage of soil erosion is indicated by small litter dams filling with soils and creating small terraces. Soil erosion hazard can be gauged by litter accumulations; size of bunchgrass clumps; and the abundance of plant seedlings.

Infiltration is a key to mitigating surface erosion. Infiltration can be maintained with a healthy stratified plant community.

Range cattle require salt as a supplement in their diet. Permanent salt grounds create bare soil and heavy utilization. However, salting is an effective tool in achieving good distribution and utilization on suitable range.

Salt placement is the permittee's responsibility. It is to be placed in areas of good feed, and moved when proper use is reached. Salt is not to be placed in areas of yearly heavy utilization, such as a stream bottom. Salt should be dispensed from rocks, stumps, portable salt box, etc., but it should not be dropped on the ground.

Biological

Pasture treatment is designed to defer a unit until seed shatter. Cattle will trample this seed into the soil and aid natural revegetation.

Cattle selectively graze forage plants, and excessive utilization adversely affects these species. Deferral and rotation of pastures should change the grazing pattern each year to maintain key species. The grazing season will utilize the forage during the period when the highest weight gains will result.

Deferred-rotation grazing will assure a continuation of desirable forage species. Plants in the deferred unit are protected through the growing season, thereby improving the condition of the flowering, vegetative and root systems.

Human consumption of surface water in the immediate vicinity of livestock grazing may not be safe. This impact may be mitigated by the dilution effect of a stream.

Socio-Economic

One of the objectives of the management plan is to promote stability of family ranches and farms in the area. Utilization of the allotment enables the permittees to sustain a family unit.

This allotment could be managed with sheep, but the present demand for cattle range exceeds the demand for sheep range. The topography lends itself to a practical pasture unit organization.

The Elbow Lake Allotment provides summer range to round out the annual forage needs and range requirements for 153 cattle. These 153 cattle will produce approximately 72,675 pounds of meat annually.

The following economic analysis considers only the summer season the cattle are permitted on the National Forest. The permittees operating costs for the eight month period their livestock are off the National Forest are not included in the analysis. This analysis compares only the economic value of selected grazing systems. A structural improvement life of 20 years was used in the analysis. The following discount factors were used:

- (1) 7% as recommended by the Water Resource Council.
- (2) 10% as directed by the Office of Management and Budget.
- (3) 15%, this is used to test the relative sensitivity of the values of the other two discount factors.

The discount factors project costs and benefits ahead in relation to the expected structural improvement life.

The management systems considered in the analysis are continuous grazing, deferred-rotation grazing, and rest-rotation grazing. This analysis does not consider the other resources. The benefits considered in the analysis were the animal unit months available in relation to the fair market value of an animal unit month. The costs considered

are those involved in construction and maintenance of improvements.

Continuous Grazing

Continuous grazing follows the same general plan each year. Uneven distribution and utilization is a weakness of this system. Livestock tend to concentrate on certain areas year after year. Livestock favor drainages near water and gentle topography. Forage plant deterioration and soil damage are likely on certain areas with this management system.

Len McIrvin

Investment Costs

<u>Activity Year</u>	<u>Activity</u>	<u>Cost</u>
1	Construction of Improvements	\$750
2-20	Yearly Maintenance	\$200/yr
10	Heavy Maintenance	\$500 (Structural Improvements)

Benefits to the Permittee (Unit of measure A.U.M.*)

	<u>Benefit</u>
Year 1	144 AUM's
Year 3-5	0
Year 6-15	175 AUM's
Year 16-20	0

Benefits result from construction of improvements. A \$6.50 per animal unit month fair market value is used for the analysis.

*Animal Unit Month

Present Value of Costs (PVC) - Len McIrvin

<u>Activity Year</u>	<u>Activity Cost</u>	<u>Discount Factor</u>	<u>PVC 7%</u>	<u>PVC 10%</u>	<u>PVC 15%</u>	
1	750	1.00	\$750	\$750	\$750	
2-20	200	8.786	\$1757			
2-20	200	6.7881		\$1356		
2-20	200	4.6336			\$927	
10	500	.5084	\$254			
10	500	.3855		\$193		
10	500	.2472			\$124	
			\$2761	\$2299	\$1801	Total

Present Value of Benefits (PVB) - Len McIrvin

<u>Year</u>	<u>Value of Benefit</u>	<u>Discount Factor</u>	<u>PVB 7%</u>	<u>PVB 10%</u>	<u>PVB 15%</u>
3-5	144 AUM x \$6.50 = \$936	1.4754	\$1381		
3-5	144 AUM x \$6.50 = \$936	1.3034		\$1220	
3-5	144 AUM x \$6.50 = \$936	1.0683			\$1000
6-20	175 AUM x \$6.50 = \$1138	5.8285	\$6633		
6-20	175 AUM x \$6.50 = \$1138	4.1583		\$4732	
6-20	175 AUM x \$6.50 = \$1138	2.4748			\$2816
			\$8014	\$5952	\$3816

Net Present Worth (NPW) = PVB-PVC Continuous Grazing

<u>Discount Factor</u>	<u>Len McIrvin</u>
7%	NPW = \$8014 - \$2761 = \$5253
10%	NPW = \$5952 - \$2299 = \$3653
15%	NPW = \$3816 - \$1801 = \$2015

Benefit-Cost Ratio - Continuous Grazing

$$B/C = \frac{PV \text{ Benefit}}{PV \text{ Cost}}$$

<u>Discount Factor</u>	<u>Benefit Cost Ratio - Len McIrvin</u>
7%	\$8014/\$2761 = 2.90
10%	\$5952/\$2299 = 2.59
15%	\$3816/\$1801 = 2.10

John Williams and Don GuglielminoInvestment Costs

<u>Activity Year</u>	<u>Activity</u>	<u>Cost</u>
1	Construction of Improvements	\$1050
2-20	Yearly Maintenance	\$200/yr
10	Heavy Maintenance	\$500 (Structural Improvements)

Benefits to the Permittee (Unit of Measure A.U.M)

	<u>Benefit</u>
Present Permit	490 AUM
Year 2-20	190 AUM

Benefits result from construction of improvements. A \$6.50 per animal unit month fair market value was used for the analysis.

Present Value of Costs (PVC) - Williams & Guglielmino

<u>Activity Year</u>	<u>Activity Cost</u>	<u>Discount Factor</u>	<u>PVC 7%</u>	<u>PVC 10%</u>	<u>PVC 15%</u>	
1	\$1050	1.000	\$1050	\$1050	\$1050	
2-20	\$200	8.7860	\$1757			
2-20	\$200	6.7781		\$1356		
2-20	\$200	4.6336			\$927	
10	\$500	.5083	\$254			
10	\$500	.3859	\$193			
10	\$500	.2479			\$124	
			\$3061	\$2599	\$2100	Total

Present Value of Benefits (PVB) - Williams & Guglielmino

<u>Year</u>	<u>Value of Benefit</u>	<u>Discount Factor</u>	<u>PVB 7%</u>	<u>PVB 10%</u>	<u>PVB 15%</u>
2-20	190 AUM x \$6.50 = \$1235	8.7860	\$10850		
2-20	190 AUM x \$6.50 = \$1235	6.7780		\$8370	
2-20	190 AUM x \$6.50 = \$1235	4.6336			\$5722

Net Present Worth (NPW) - PVB-PVC Continuous Grazing

<u>Discount Factor</u>	<u>W & G</u>
7%	NPW = \$10850 - 3061 = \$7780
10%	NPW = \$8370 - 2599 = \$5771
15%	NPW = \$5722 - 2100 = \$3622

Benefit-Cost Ratio - Continuous Grazing

$$B/C = \frac{PV \text{ Benefit}}{PV \text{ Cost}}$$

Discount
Factor

Benefit Cost Ratio - Williams & Guglielmino

7%	$\$10850/\$3061 = 3.54$
10%	$\$8370/\$2599 = 3.20$
15%	$\$5722/\$2100 = 2.72$

Continuous Grazing System

Analysis of Profit to Permittees

Len McIrvin

Year 1	144 AUM's/4 months = 36 animals
Year 6-15	175 AUM's/4/months = 44 animals
Year 16-20	0
Year 1-6	36 animals x 80% calf crop = 29 calves to market 29 animals x 475 lbs/calf = 13775 lbs of red meat 13775 lbs of red meat x \$.35/lb = \$7821.25/yr
Year 7-20	44 animals x 80% calf crop = 35 animals 35 animals x 475 lbs = 16625 lbs of red meat 16625 lbs of red meat x \$.35/lb = \$5818.75/yr

Williams & Guglielmino (4 month season)

Year 1	490 AUM or 120 animals
Year 3-20	190 AUM or 47 animals
Year 1-2	120 animals x 80% calf crop = 96 calves to market 96 calves x 475 lbs/calf = 45600 lbs of red meat 45600 lb of red meat x \$.35/lb = \$15960/yr
Year 3-20	47 animals x 80% calf crop = 38 calves to market 38 calves x 475 lbs/calf = 18050 lbs of red meat 18050 lb of red meat x \$.35/lb = \$6317.50/hr

Deferred Rotation Grazing System (2 Suballotments)

The permittees have indicated through their involvement, they prefer this grazing system. The Elbow Lake Allotment will be managed as one allotment with two suballotments and two deferred-rotation grazing systems.

Deferred-rotation grazing combines the advantages of rotation and deferment. Grazing is deferred on some portion of the allotment during the growing season for one or more years. The other pastures are successively deferred by rotation. The entire allotment is grazed each year. Deferred-rotation grazing will utilize the entire capacity each year and all pastures will be used heavily for a short period of time.

Len McIrvin

Investment Costs

<u>Activity</u> <u>Year</u>	<u>Activity</u>	<u>Cost</u>
1	Construction of Improvements	\$3500 .
2-20	Yearly Maintenance	\$600/hr .
10	Heavy Maintenance	\$1700 .

Benefits to the Permittee (Unit of Measure A.U.M.)

<u>Year</u>	<u>Benefits</u>
1-3	144 AUM's
4-5	180 AUM's
6-20	220 AUM's

Present Value of Costs (PVC) - Len McIrvin

<u>Activity Year</u>	<u>Activity Cost</u>	<u>Discount Factor</u>	<u>PVC 7%</u>	<u>PVC 10%</u>	<u>PVC 15%</u>
1	\$3500	1.000	\$3500	\$3500	\$3500
2-20	\$600	8.7860	\$5272		
2-20	\$600	6.7781		\$4067	
2-20	\$600	4.6336			\$2780
10	\$1700	.5084	\$864		
10	\$1700	.2472			\$420
			\$9636	\$8222	\$6700

Present Value of Benefits (PVB) - Len McIrvin

<u>Year</u>	<u>Value of Benefit</u>	<u>Discount Factor</u>	<u>PVB 7%</u>	<u>PVB 10%</u>	<u>PVB 15%</u>
1-3	144 x \$6.50 = \$936	1.6894	\$1582		
1-3	144 x \$6.50 = \$936	1.5778		\$1447	
1-3	144 x \$6.50 = \$936	1.4136			\$1323
4-5	180 x \$6.50 = \$1170	.7130	\$834		
4-5	180 x \$6.50 = \$1170	.6209		\$726	
4-5	180 x \$6.50 = \$1170	.4972			\$582
6-20	220 x \$6.50 = \$1430	5.8286	\$8335		
6-20	220 x \$6.50 = \$1430	5.03989		\$7206	
6-20	220 x \$6.50 = \$1430	3.2304			
			\$10751	\$9379	\$6524

A \$6.50 per animal unit month fair market value was used for this analysis.

Net Present Worth (NPW) = PVB-PVC Deferred Rotation Grazing

<u>Discount Factor</u>	<u>Len McIrvin</u>
7%	NPW = \$10751 - 9636 = \$1115
10%	NPW = \$9379 - 8222 = \$1157
15%	NPW = \$6524 - 6700 = \$-176

Benefit -Cost Ratio - Deferred Rotation Grazing

$$B/C = \frac{PV \text{ Benefit}}{PV \text{ Cost}}$$

<u>Discount Factor</u>	<u>Benefit Cost Ratio (Len McIrvin)</u>
7%	\$10751/9636 = 1.12
10%	\$9379/8222 = 1.14
15%	\$6524/6700 = .97

Williams & GuglielminoInvestment Costs

<u>Activity Year</u>	<u>Activity</u>	<u>Cost</u>
1	Construction of Improvements	\$4400
2-20	Yearly Maintenance	\$700/yr
10	Heavy Maintenance	\$1700

Benefits to the Permittee (Unit of Measure A.U.M.)

<u>Year</u>	<u>Benefits</u>
1-3	190 AUM's
4-5	220 AUM's
6-20	299 AUM's

Benefits resulting from construction of improvements.

Present Value of Costs (PVC) - Williams & Guglielmino

Activity Year	Activity Cost	Discount Factor	PVC 7%	PVC 10%	PVC 15%
1	\$4400	1.000	\$4400	\$4400	\$4400
2-20	\$700	8.7860	\$6150		
2-20	\$700	6.7781		\$4745	
2-20	\$700	4.6336			\$3244
10	\$1700	.5084	\$864		
10	\$1700	.3855		\$655	
10	\$1700	.2472			\$420
			\$11414	\$ 9800	\$8064 Total

A \$6.50 per animal unit month fair market value was used for the analysis.

Present Value of Benefits (PVB) - Williams & Guglielmino

Year	Value of Benefit	Discount Factor	PVB 7%	PVB 10%	PVB 15%
1-3	190 x \$6.50 = \$1235	1.6987	\$2087		
1-3	190 x \$6.50 = \$1235	1.5778		\$1949	
1-3	190 x \$6.50 = \$1235	1.4136			\$1746
4-5	220 x \$6.50 = \$1430	.7130	\$1020		
4-5	220 x \$6.50 = \$1430	.6209		\$888	
4-5	220 x \$6.50 = \$1430	.4972			\$711
6-20	299 x \$6.50 = \$1944	5.8285	\$11331		
6-20	299 x \$6.50 = \$1944	4.1583		\$8084	
6-20	299 x \$6.50 = \$1944	2.4748			\$4811
			\$14438	\$10921	\$7268

Net Present Worth (NPW) = PVB-PVC Deferred Rotation Grazing

<u>Discount Factor</u>	<u>W&G</u>
7%	NPW = \$14438 - 11414 = \$3024
10%	NPW = \$10921 - 9800 = \$1121
15%	NPW = \$7268 - 8064 = \$796

Benefit - Cost Ratio - Deferred Rotation Grazing

$$B/C = \frac{PV \text{ Benefit}}{PV \text{ Cost}}$$

<u>Discount Factor</u>	<u>Benefit Cost Ratio - Williams & Guglielmino</u>
7%	\$14438/\$11414 = 1.26
10%	\$10921/\$9800 = 1.11
15%	\$7268/\$8064 = .90

Deferred-Rotation Grazing Analysis of Profit to Permittees

<u>Len McIrvin</u>	(4 month season)
Year 1	144 AUM's or 36 animals
Year 4-5	180 AUM's or 45 animals
Year 6-20	220 AUM's or 55 animals
Year 1	36 animals x 80% calf crop = 29 calves 29 calves x 475 lb/calf = 13775 lb of beef to market 13775 lb x \$.35/lb = \$4821.25/yr
Year 4-5	45 animals x 80% calf crop = 36 calves 36 calves x 475 lb/calf = 17100 lb of beef to market 17100 lb x \$.35/lb = \$5985/yr
Year 6-20	55 animals x 80% calf crop = 44 calves 44 calves x 475 lb/calf = 20900 lb of beef to market 20900 lb x \$.35/lb = \$7315/yr

Williams & Guglielmino (4 month season)

Year 1-3	190 or 47 animals
Year 4-5	220 or 55 animals
Year 6-20	299 or 75 animals
Year 1	47 animals x 80% calf crop = 38 calves 38 calves x 475 lb/calf = 18050 lb of red meat to market 18050 lb x \$.35/lb = \$6318
Year 4-5	55 animals x 80% calf crop = 44 calves 44 calves x 475 lb/calf = 20900 lb of red meat to market 20900 lb x \$.35/lb = \$7315/yr
Year 6-20	75 animals x 80% calf crop = 60 calves 60 calves x 475 lb/calf = 28500 lb of beef to market 28500 x \$.35/lb = \$9975/yr

Rest Rotation Grazing

Rest rotation grazing includes further refinement and combination of deferment and rotation. It has the additional component of complete rest on parts of the allotment during certain years or entire growing seasons. The rest periods provide for more complete restoration of vigor and encourage better establishment of new plants of desirable forage species. Elbow Lake would be managed as one allotment and with one herd under this system of management.

Elbow LakeInvestment Costs

<u>Activity Year</u>	<u>Activity</u>	<u>Cost</u>
3-5	Construction of Improvements	\$13500
2-20	Maintenance	\$900
10	Heavy Maintenance	\$2000

Benefits to the Permittees (Unit of Measure A.U.M.)

<u>Year</u>	<u>Benefits</u>
1	780 AUM's
3-5	800 AUM's
6-15	830 AUM's
16-20	900 AUM's

Present Value of Cost (PVC)

<u>Activity Year</u>	<u>Activity Cost</u>	<u>Discount Factor</u>	<u>PVC 7%</u>	<u>PVC 10%</u>	<u>PVC 15%</u>
1	\$13500	1.000	\$13500	\$13500	\$13500
2-20	\$900	8.786	\$ 7907		
2-20	\$900	6.7781		\$6100	
2-20	\$900	4.6336			\$4170
10	\$1000	.5084	\$508		
10	\$1000	.3855		\$386	
10	\$1000	.2472			\$247
			\$21915	\$19986	\$17917
					Total

Present Value of Benefits (PVB)

<u>Year</u>	<u>Value of Benefit</u>	<u>Discount Factor</u>	<u>PVB 7%</u>	<u>PVB 10%</u>	<u>PVB 15%</u>
1	780 x \$6.50 = \$5070	1.000	\$5070	\$5070	\$5070
3-5	800 x \$6.50 = \$5200	1.4759	\$7675		
3-5	800 x \$6.50 = \$5200	1.3039		\$6780	
3-5	800 x \$6.50 = \$5200	1.0690			\$5559
6-15	830 x \$6.50 = \$5395	4.3414	\$23422		
6-15	830 x \$6.50 = \$5395	3.2508		\$17538	
6-15	830 x \$6.50 = \$5395	1.0629			\$5734
16-20	900 x \$6.50 = \$5850	1.1473	\$6712		
16-20	900 x \$6.50 = \$5850	.6899		\$4036	
16-20	900 x \$6.50 = \$5850	.3051			\$1785
			\$42879	\$33424	\$18148
					Total

A \$6.50 per animal unit month fair market value was used for the analysis.

Net Present Worth (NPW) = PVB-PVC Rest Rotation Grazing

<u>Discount Factor</u>	
7%	NPW \$42879 - 21915 = \$20964
10%	NPW \$33424 - 19986 = \$13438
15%	NPW \$18148 - 17917 = \$231

Benefit-Cost Ratio - Rest Rotation Grazing

$$B/C = \frac{PV \text{ Benefits}}{PC \text{ Costs}}$$

<u>Discount Factor</u>	<u>Benefit Cost Ratio - Rest Rotation Grazing</u>
7%	\$42879/\$21915 = 1.96
10%	\$33424/\$19986 = 1.67
15%	\$18148/\$17917 = 1.01

Rest Rotation Grazing Analysis of Profit to Permittees (4 month season)

Year 1	780 AUM's or 195 animals
Year 3-5	800 AUM's or 200 animals
Year 6-15	830 AUM's or 207 animals
Year 16-20	900 AUM's or 225 animals
Year 1	195 animals x 80% calf crop = 156 calves 156 calves x 475 lb/calf = 74100 lb of beef to market 74100 lb x \$.35/lb = \$25935
Year 3-5	200 animals x 80% calf crop = 160 calves 160 calves x 475 lb/calf = 76000 lb of beef to market 76000 lb x \$.35/lb = \$26600/yr
Year 6-15	207 animals x 80% calf crop = 166 calves 166 calves x 475 lb/calf = 78850 lb of beef to market 78850 lb x \$.35/lb = \$27598/yr
Year 16-20	225 animals x 80% calf crop = 180 calves 180 calves x 475 lb/calf = 85500 lb of beef to market 85500 lb x \$.35/lb = \$29925/yr

Summary of Net Present Worth of Alternatives

Discount Factor	NPW Continuous Grazing System		NPW Deferred Rotation System		NPW Rest Rotation Grazing System
	McIrvin	W&G	McIrvin	W&G	
7%	\$5253	\$7780	\$1115	\$3024	\$20964
10%	\$3653	\$5771	\$1157	\$1121	\$13438
15%	\$2015	\$3622	-\$176	-\$796	\$231

Summary of Benefit Cost-Ratio of Alternatives

Discount Factor	B/C Continuous Grazing System		B/C Deferred Rotation System		B/C Rest Rotation System
	McIrvin	W&G	McIrvin	W&G	
7%	2.90	3.54	1.12	1.26	1.96
10%	2.59	3.20	1.14	1.11	1.67
15%	2.10	2.72	.97	.90	1.01

Summary of Market Values to Permittees from Implementation of Various Grazing Systems

Continuous Grazing System				Deferred Rotation Grazing System			
Year	McIrvin	Year	W&G	Year	McIrvin	Year	W&G
1-6	\$4821	1-2	\$15960	1	\$4821	1	\$6318
7-20	\$5818	3-20	\$6317	4-5	\$5985	4-5	\$7315
				6-20	\$7315	6-20	\$9975

Rest Rotation Grazing System

Year	
1	\$25935
3-5	\$26600
6-15	\$27598
16-20	\$29925

This analysis is based on the costs to the permittees to implement a grazing system, and the benefits resulting in increased capacity because of the investment. At first glance it appears that the continuous grazing system is the best system economically since it has the greatest benefit cost ratio. At this point, it is well to review the volume of benefit in dollars from each system, and the Net Present Worth. From

an environmental and economic standpoint the rotation grazing systems have greater returns. The continuous grazing system would eventually result in vegetative and soil damage.

Structural range improvements, such as fences, water developments and cattleguards are needed to implement the grazing system. Installation of these structures should blend as much as possible into the surrounding landscape, so as not to contribute to a less than enjoyable outdoor experience. Some Forest visitors may enjoy seeing and photographing range cattle and a cowboy rider, who is a figure representing our past western history.

Dead livestock near roads, trails, or live streams are unsightly and unsanitary to any Forest visitor. All carcasses must be moved at least 100 yards from roads, trails, or live streams, and should be disposed of in one way or another.

The range planning process for the Elbow Lake Allotment has disclosed the complexities that exist for this allotment. The range planning process will have to continue to be flexible and an on-going process to manage the allotment within Forest Service regulations and policies.

VIII. ALTERNATIVES TO PROPOSED ACTION

No Action

This alternative would continue present management systems and use levels. It is expected that range condition on much of the allotment would continue to decline due to heavy stocking rates and poor animal distribution. In addition, other resource values would be degraded from impacts of

poorly controlled livestock use. These impacts would be expected to be: increased soil movement and compaction due to reduced vegetative and litter soil cover and livestock concentration on preferred areas; lowered water quality due to concentration of livestock near streams and increased siltation; increased conflicts with wildlife populations due to direct competition for forage and browse; lower aesthetic values due to heavy utilization of forage and browse; and decreased timber productivity due to concentration of livestock in regeneration areas.

This alternative would require no construction of range improvement structures. This would eliminate the need for large capital expenditures by the permittees and Forest Service, and future maintenance needs. Also, this would preclude any further visual alteration of the natural environment as a result of man-made structures. On the other hand, no range improvement construction would eliminate any chance for benefits that may be achieved through improved livestock distribution and better control.

The short term effects of this alternative on the permittees would be to maintain their current economic returns from the allotment by keeping the stocking levels static. However, long term effects would be to lower the economic returns from the allotment due to decreased productivity which would result in the necessity to reduce stocking levels and/or a reduced rate of gain on the livestock utilizing the allotment.

Stock With Sheep

The terrain and vegetative composition of the allotment is well suited for use by sheep. Use by sheep under a herded system of use would

result in positive control of the livestock distribution and use pattern. Opportunity would be available to implement an improved system of range management without the need for construction of expensive pasture division fences.

Due to the preference of sheep for forbs and browse species, grasses would be favored under use by sheep, resulting in improved ground cover and soil stabilization.

Current water developments are inadequate to supply a band of sheep and would need to be reconstructed before sheep could utilize them.

Present permittees operations would be greatly affected by this alternative. They would have to find pasture elsewhere for their permitted cattle or convert their operations from cattle to sheep which would have very large economic and social consequences to them.

Furthermore, the demand for cattle range far exceeds the demand for sheep range at this time. It is questionable whether a qualified permittee with sufficient numbers of sheep could be found who would be interested in stocking this allotment.

Continuous, Season-Long Grazing

This alternative would call for stocking the allotment at levels indicated for a season-long grazing system by the preliminary range environmental analysis. This is the least intensive of the grazing systems considered and would result in a stocking level significantly lower than the current permitted use, and other, more intensive management systems. No provision would be made for rotating livestock between grazing areas, resulting in free choice of the cattle of areas and forage species.

Yearly allowable use would be based on utilization of key forage species

on key areas of the allotment. Allowable use would be considered achieved when proper use of the key species occurred on the key areas.

Proper use management is based on the knowledge that most plants can withstand removal of a portion of their current growth each year and still make full and normal growth the following year. The amount of the plant that can be safely removed each year is called the "proper-use" amount.

The fallacy in this management model is that there is no practical point on the stocking scale where close grazing of some part of the vegetation does not occur. Livestock graze the range selectively, by areas, species, and individual plants. They consistently graze the more palatable plants and more accessible or preferred areas closely and invariably beyond the proper use level. Plants grazed heavily one year tend to receive heavy use the next. As a result, the stocking rate only determines the size of the heavily used area and the rate of vegetative change due to grazing. So regardless of the stocking level, the more palatable and accessible plants are gradually eliminated. The process then shifts to less-palatable plants and leads progressively to ever-enlarging areas of deterioration.

This grazing system would require the least amount of input in the form of range improvements, livestock handling, and range administration, however, in the long run it can only result in the degradation of the grazing and related resources, and a loss in productivity.

Rest Rotation Grazing

This is the most intensive of the grazing systems considered. Stocking rates would be significantly higher than less intensive management systems. This grazing system combines the advantages to the resource of periodic deferment of the forage species until after maturity and

periodic complete rest from grazing in order to overcome the adverse effects of close cropping and trampling with grazing for maximum livestock production. Of the grazing systems considered in this analysis, rest rotation has the potential for the fastest improvement in range condition by providing for more complete restoration of plant vigor and encouraging plant reproduction and establishment of new plants.

To implement this system would require a significant amount of fence construction to divide the allotment into pasture units, and construction of additional water developments to adequately supply the additional pastures.

The permittees chose not to develop this system because of the necessity to combine cattle herds in order to minimize the number of pasture units needed, and because of the intensive livestock handling required.

This system of management is still considered a satisfactory alternative and could be implemented if the necessity were seen or if the situation of the permittees change to where they would prefer this alternative.

IX. RELATIONSHIPS BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The primary objective of grazing management on Forest Service land is the production of livestock while maintaining long-term productivity of the basic land resource. Therefore, range management is based on the capabilities of the land to produce in the long term. The proposed action is designed to insure the long-term productivity of the basic land resource while harvesting a portion of the available forage yearly for short-term economic and social benefits.

X. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF THE RESOURCES

Livestock grazing will alter species composition, and it can reduce the number of relatively non-competitive species. Minor amounts of soil will be lost, and selectively grazed forage plants will have shorter stubble at the end of the grazing season. Range management can enhance the value of the forage resource through management of key plant species on a sustained-even flow basis.

State and Federally designated threatened and endangered species have not been observed nor recorded in the area. Should any of these species be located, all management efforts will be made to protect the species.

Should any irreversible or irretrievable commitment of any of the renewable resources begin to appear in a regular negative sequence, then grazing will be suspended on that portion of the allotment, or the allotment in total.

The non-use for resource protection agreement will be drawn up for that portion affected.

XI. MANAGEMENT REQUIREMENTS AND CONSTRAINTS

Season of Use and Stocking

The Elbow Lake Allotment is to be managed as two sub-allotments. The west side of the allotment being used by McIrvin and the east side being used by Williams and Guglielmino with an area of joint use in the center of the allotment. The recommended stocking is 135 cattle during a season of 6/1 - 9/30 for a total of 540 ^{AUM's} AUM's on National Forest lands. In addition, it is recommended to allow 18 cattle during the same season on account of leased lands included by the permittees in the allotment. This amounts to 72 AUM's. Allocation is recommended pending verification of the lease by the permittees.

Total stocking is recommended at 153 cattle for 612 AUM's on State and Bureau of Land Management lands, and Forest Service lands.

These stocking rates are subject to change pending verification of allotment capacity through production and utilization studies.

The recommended stocking by permittee is 61 head on National Forest and 11 head on State and BLM lands for McIrvin, and 74 head on National Forest and 7 head on State lands for Williams and Guglielmino.

This stocking rate amounts to 72 cattle, 85% on National Forest for Len McIrvin. This is a change from the previous permitted use which called for 60 cattle, 60% on National Forest.

This recommended change is based on results of preliminary range analysis.

Len McIrvin's commensurability is below that of the recommended stocking rate on National Forest lands. Commensurability will need to be brought up to the number indicated in the recommended stocking rate before any term grazing permits can be issued for numbers above that commensurability rating.

The recommended stocking rate for Williams and Guglielmino on National Forest lands is 38% below their current permitted number. It is recommended that non-use for resource protection be granted Williams and Guglielmino for that portion of their permit above the recommended stocking rate while the range capacity is being verified.

The Elbow Lake Allotment is to be managed under a seven pasture deferred rotation grazing system. (See Allotment Map for pasture unit boundaries.) Williams and Guglielmino will use pasture units number 1, 2, 3, and 4.

McIrvin will use pasture units number 5 and 6. Use of pasture unit number 7 will be alternated between the permittees.

Capacities of the pasture units are as follows:

	Flagstaff Unit 1	Pepoon Lk. Unit 2	Crown Ck. Unit 3	Zodiac Unit 4	Churchill Unit 5	Flat Ck. Unit 6	Rose Ranch Unit 7
AUM's	62	50	86	104	116	154	44

The deferred rotation schedule is summarized below:

Year	Williams and Guglielmino				McIrvin		Joint Use Rose Ranch Unit 7
	Flagstaff Unit 1	Pepoon Lk. Unit 2	Crown Ck. Unit 3	Zodiac Unit 4	Churchill Unit 5	Flat Ck. Unit 6	
1978	28 cattle	28 cattle	53 cattle	53 cattle	50 cattle	72 cattle	McIrvin 22 cattle
	6/1-8/10	8/11-9/30	6/1-7/31	8/1-9/20	6/1-7/31	8/1-9/30	6/1-7/31
	66 AUM's	46 AUM's	106 AUM's	106 AUM's	100 AUM's	144 AUM's	44 AUM's
1979	28 cattle	28 cattle	31 cattle	53 cattle	72 cattle	72 cattle	Wms. & Gugl. 22 cattle
	8/1-9/30	6/1-7/31	8/1-9/30	6/1-7/31	8/11-9/30	6/1-8/10	8/1-9/30
	56 AUM's	56 AUM's	62 AUM's	106 AUM's	120 AUM's	168 AUM's	44 AUM's
1980	28 cattle	28 cattle	34 cattle	53 cattle	72 cattle	72 cattle	Wms. & Gugl. 19 cattle
	6/1-8/7	8/8-9/30	6/1-8/10	8/11-9/30	6/1-7/31	8/1-9/30	6/1-8/10
	66 AUM's	46 AUM's	79 AUM's	88 AUM's	144 AUM's	144 AUM's	44 AUM's
1981	28 cattle	28 cattle	53 cattle	53 cattle	48 cattle	72 cattle	McIrvin 24 cattle
	8/1-9/30	6/1-7/31	8/1-9/30	6/1-7/31	8/6-9/30	6/1-8/5	8/6-9/30
	56 AUM's	56 AUM's	106 AUM's	106 AUM's	89 AUM's	154 AUM's	45 AUM's

Repeat Cycle Beginning in 1982

The average use for each of the pasture units over the four year cycle is as follows:

Flagstaff Unit 1	Pepoon Lk. Unit 2	Crown Ck. Unit 3	Zodiac Unit 4	Churchill Unit 5	Flat Ck. Unit 6	Rose Ranch Unit 7
61 AUM's	51 AUM's	88 AUM's	102 AUM's	113 AUM's	152 AUM's	44 AUM's

Herd Management

Cattle entering the west half of the allotment are to be trucked to the Flat Creek corral. From there, they are to be distributed to the appropriate pasture unit.

Cattle entering the east half of the allotment are to be trailed directly to the correct pasture unit from adjacent private or leased lands.

Roundup in the fall is to be accomplished in a timely manner. September 30, is the last day cattle are to be on the allotment.

Actual move dates between the early use pastures and the deferred pastures may vary from year to year depending on maturation dates of the forage species and actual utilization within the pastures. Move dates should be governed by the dates of seed maturity on bunchgrass to take full advantage of the value of deferrment. However, if forage utilization reaches planned limits prior to that time, moves between units should be made then. Actual move dates will be agreed upon jointly by the Forest Service and the permittees following on-the-ground inspections of plant development and pasture unit utilization.

Moves should be completely accomplished within five days after the agreed upon move date. Moves should begin two to three days prior to the move date. Early use pastures should be cleared of cattle as much as possible by five days after the move date to prevent over utilization of that pasture, and utilization of any plant regrowth which might occur after the move date.

Permittees should watch for overgrazing and soil damage throughout the grazing season and take appropriate action if problems should develop.

Riding will be necessary to assure proper livestock distribution and movement, and to assure that livestock have a continual supply of salt and water.

Livestock salting will be done according to the "drop salting" method. That is, no permanent salt grounds will be used. Salt will be placed away from areas of concentrated use and moved to "fresh feed" areas as proper use is approached adjacent to salt locations. Salt will be used to the extent practicable to effect good livestock distribution. Salt should be distributed within a pasture unit prior to moving stock in, and picked up before moving them out, to enhance movement. As a general rule, salt should not be placed within 1,000 feet of any water source, or on or immediately adjacent to roads, unless for a specific management purpose, such as to increase utilization in the area or to aid in gathering stock at the end of the grazing season. Salt should not be placed directly on the ground. Stumps, rocks, downed trees, or portable salt boxes, should be utilized for salt placement where practical.

Allotment Inspections and Studies

Range readiness checks will be made on the allotments as deemed necessary to determine yearly turn on dates and establish long term average range readiness dates. Range readiness checks will be made on one or more key areas on the allotment. Range readiness criteria is as follows:

<u>Species</u>	<u>Minimum Stage of Development</u>
Bluebunch Wheatgrass	Leaf Length of 6"
Pinegrass	Leaf Length of 4"
Kentucky Bluegrass	Boot Stage

Soils dry and firm enough to withstand compaction from trampling.

Production and utilization plots are to be established on selected key areas of the allotment during the spring of 1978. These plots are to be read yearly near the end of the use period to verify allotment capacity. Utilization is to be measured according to the paired plot or actual weight method. Key area locations are shown on the allotment map. A tabulation of key areas and their key species are shown in the Appendix.

There is one permanent range trend cluster established on this allotment. There is some question as to its effectiveness for monitoring trend as it is apparently located within secondary range. This transect cluster should be reread in 1978, and its effectiveness evaluated at that time. If it is found to be unrepresentative of the grazing impacts on the allotment, this transect cluster should be dropped as a permanent range trend study location.

Additional range trend transect clusters are needed on the allotment. These should be established in conjunction with key areas Number 1, 5, and 6, in 1978. The photo transect method of trend sampling as described in Region-6 Regional Guide 2-1, July 1976, should be used in setting up these transects. Range trend transects should be reread every five years.

At least two range inspections should be made each year on the allotment. The first should be made prior to the anticipated move dates from early pastures to deferred pastures to determine utilization within early pastures and to check plant development in deferred pastures. The second inspection should be made near the end of the grazing season to determine utilization of deferred pastures. Effectiveness of the management systems and problem areas can be noted during these inspections. The permittees will be

invited to accompany the Forest Officer on these inspections and share in the gathering of the necessary data.

Cattle are to be counted by the Forest Service as they enter the allotment.

Range improvements will be spot checked periodically to assure that they are being maintained and to assess their effectiveness.

An annual plan of use will be prepared yearly by the Forest Service and the permittees to define how the range will be used for the coming year. Compliance with this plan as well as terms of the grazing permit and provisions of the management plan will be checked yearly.

Interim Actions

Several pasture division fences are needed before the selected management system can be implemented. Construction of these has been scheduled for completion prior to the 1978 grazing season. Other range improvements have been scheduled as shown on the Proposed Range Improvement Summary in the Appendix.

If the proposed pasture division fences cannot be constructed prior to the 1978 grazing season, then stocking rates will have to be adjusted in accordance with the grazing system that can be used as determined by the amount of construction that has been completed.

The grazing system should become fully operational with completion of the Kiel Spring - Whitehorse fence, the Rose Ranch fence, the Elbow Lake fence, and the Flagstaff fence.

Correlation With Other Uses and Activities

The Elbow Lake campground is unfenced. Cattle are free to enter the area, which would cause conflicts with recreational users. This conflict has

been minimal in the past due to dense timber barriers around the campground.

When use by cattle occurs within the campground, the permittees will be required to remove the stock from the area. If the problem develops to the point where cattle use cannot be controlled through riding and herding, a cattleguard will have to be installed on the road into Elbow Lake campground and enough fence to stop the stock will have to be built.

Several timber sales are either operating on this allotment at this time or are proposed for sale in the near future. Where erosion control seedings and tree planting are used to control erosion and restock the area, cattle control will be necessary following the activity to allow establishment of these practices. Where possible, it is suggested that cattle be excluded from these areas for at least two growing seasons, following the activity. This may be done by altering the deferrment schedule to allow for this, temporary fencing to exclude the areas from use, herding and distributing cattle away from these areas, through partial non-use of the grazing permit which allows non-use of the pasture unit affected, or a combination of these practices.

The needs for each timber sale will have to be evaluated on a case by case basis for the necessity of the above practices. Specific actions will be defined in the annual use plans.

Annual allotment use plans should be coordinated with timber sale logging plans to prevent or mitigate conflicts that may result due to cattle grazing within a timber sale area during logging activity.

Several natural barriers to cattle movement have been identified as occurring on the allotment. In many instances, these are used as pasture unit or allotment boundaries. Dense timber stands are often a major portion of these barriers. Timber sale activity has the potential of removing these barriers with roads or removal of the restricting timber. When this occurs, provisions should be made to replace the barrier or otherwise restore a means of controlling livestock movement.

The State of Washington has proposed harvesting timber on Sections 16 and 36, T.40N, R.38E, W.M., which are within the allotment and leased for grazing purposes by the permittees. This activity is expected to increase grazing capacity by opening up access to these areas and creating transitory range. Grazing capacity allowed on account of these leased lands should be recalculated upon completion of this sale activity and increased available forage should be allocated to the permittees.

Deer hunting is a popular activity on the allotment. To prevent conflicts between deer hunters and cattle grazing, all cattle must be removed from the allotment prior to the opening of the general deer season.

Several land exchanges have been proposed on the allotment area. These proposals would generally benefit range management by blocking in ownership patterns. However, these exchanges may effect the grazing capacity on the allotment by shifting the relative proportions of primary, secondary, transitory, and unsuitable range. If and when these exchanges are accomplished, the allotment capacity will have to be recalculated.

The allotment is bounded on the north by the International Boundary between Canada and the United States and on the east and south by various private, State of Washington, and Bureau of Land Management lands. The International Boundary is largely unfenced. Some cattle movement has occurred back and forth across this boundary in the past, but has generally been restricted by the presence of steep terrain and natural timber barriers. As activities adjacent to this boundary increase on either side of the border, there is a possibility that cattle movement across it will increase and fencing will become necessary. Coordination between the two governments, land management agencies, and affected permittees will be necessary.

Much of the alienated lands outside the allotment boundary as well as within it are unfenced. Fencing needs along these boundaries should be continually evaluated. Private land holders should be encouraged to construct fences where problems occur. The State, BLM, and the Forest Service should coordinate their needs. Where the opportunity exists to improve land use patterns by including alienated lands within the allotment under a coordinated use plan, these opportunities should be pursued. Opportunities to include Forest Service land in management units outside of the allotment to make logical units should not be ignored.

XII. CONSULTATION WITH OTHERS

Input and comments were requested by letter from the following, their input and comments were written into the various sections of this plan.

- (1) Steve Zender -- Wildlife Biologist - Washington Fish and Game
- (2) Bureau of Land Management - Spokane, Washington
- (3) Boise Cascade Corporation - Kettle Falls, Washington
- (4) Linda Bond - Chairperson, Northern Rockies Chapter Sierra Club

(5) U.S.D.A. Soil Conservation Service - Colville, Washington

(6) Stevens County Commissioners - Colville, Washington

The permittees, (Len McIrvin, John Williams, and Don Guglielmino), were kept well informed through personal contact and meetings, throughout the Environmental Analysis process.